

The 14th Asian Conference on the Social Sciences

May 26–29, 2023 | TOKYO, JAPAN

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OFFICIAL CONFERENCE PROCEEDINGS

Organised by The International Academic Forum (IAFOR) in association with the IAFOR Research Centre at Osaka University and IAFOR's Global University Partners

ISSN: 2186-2303



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The Asian Conference on the Social Sciences 2023

Official Conference Proceedings

ISSN: 2186-2303



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The International Academic Forum (IAFOR)  
Sakae 1-16-26-201  
Naka Ward, Nagoya, Aichi  
Japan 460-0008  
[www.iafor.org](http://www.iafor.org)





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## ***Public Debt and Economic Growth: Case of South-American Nations***

Chittawan Chanagul, Kasetsart University, Thailand

The Asian Conference on the Social Sciences 2023  
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### **Abstract**

The objective of this study is to give an overview of public debt in South-American nations from 2000 through 2019. In addition, this research seeks to find out the relationship between public debt and economic growth in these nations. To achieve the objectives, the descriptive statistics is provided and followed by the regression analysis. The results drawn from this study suggest that public debt of most countries have generally been increasing over the past decade, whereas that of Bolivia, Peru, Paraguay, and Uruguay shows the decreasing trend. Regarding the Regression analysis, mean year of schooling as well as trade openness and investment are shown to have a positive impact on the growth rates whereas public debt is negatively related with economic growth. Not surprisingly, the corruption perception index has a positive relationship with the growth. In other words, when a nation has low corruption prevalence, the economic growth gets higher.

Keywords: Public Debt, Economic Growth, Schooling

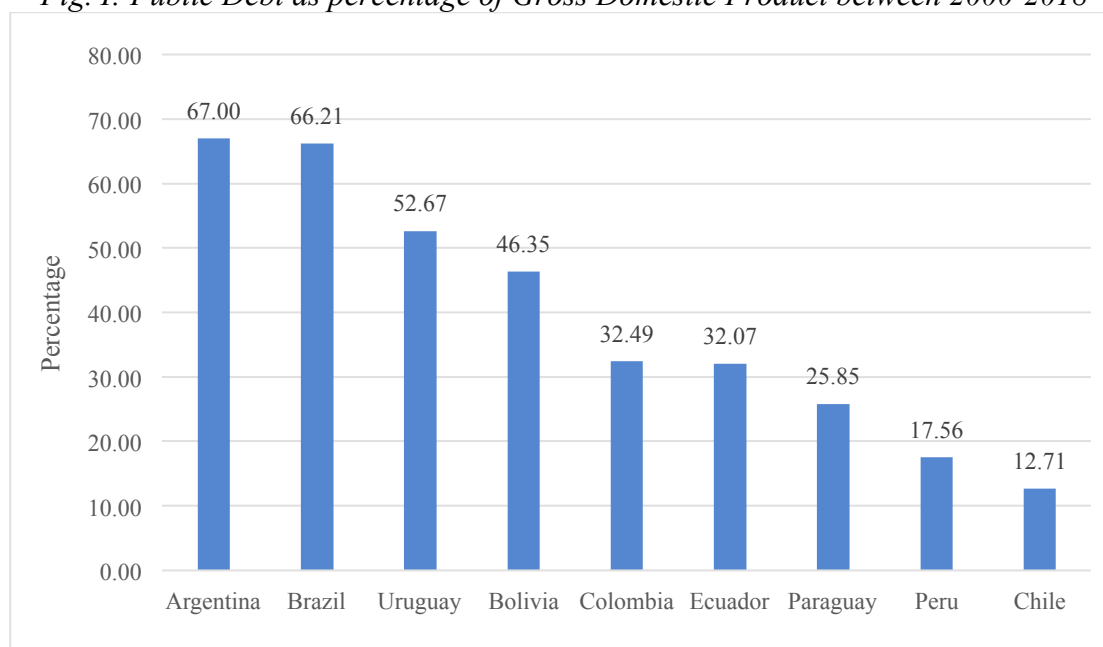
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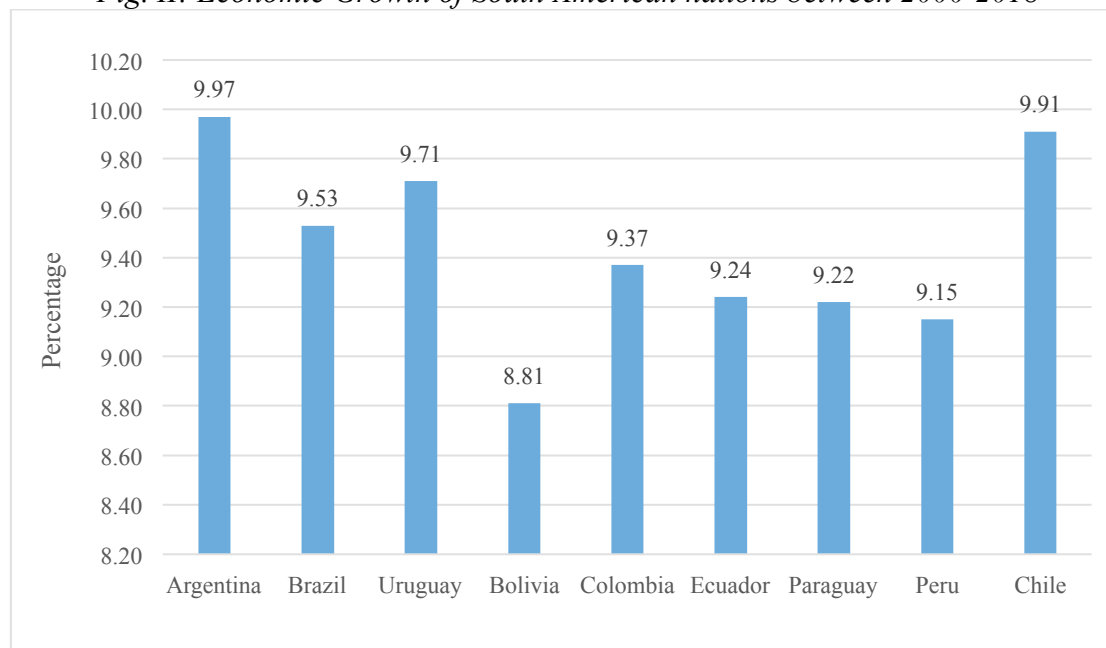
## 1. Introduction

Richard A. Musgrave regarded as the father of the field of public finance defined the role of government into three types; allocation, redistribution, and stabilization of the economy. Public debt is financial obligation of government arising from borrowings as a result of budget deficit or guarantee of debt. In other words, a budget deficit leads to increase in public debt which, in turns, means a rise in government expenditure of the following years due to the interest costs. In the future, therefore, government must collect higher taxes in order to cope with the expected high payment. However, it is believed that many taxes produce distortion i.e. people would be discouraged to work and/or invest if the government impose too high of a tax. Thus, tax collection would lead to inefficiency and therefore hinder economic growth of a nation. A huge number of empirical studies have been done in order to test the impact of public debt on economic growth. Although many study using data of developed nation indicate that the public debt obstruct the bright prospect of growth for nations (Balassone et al., 2011). However, the research on this topic adopting the data of developing countries is still inconclusive.

*Fig. 1: Public Debt as percentage of Gross Domestic Product between 2000-2018*



When examined the average data across South American nations, Figure 1 shows that Argentina has the highest public debt as percentage of Gross Domestic Product (GDP), and followed by Brazil and Uruguay, respectively. Similarly, the average economic growth of these countries in such specific period, particularly, Argentina and Uruguay, were comparatively the highest in this region as shown in Figure 2. This research aiming at examining the relationship between public and economic growth, therefore, can give a discrete explanation for South America nations, developing countries differing in background and socioeconomic context from their industrialized cohorts.

*Fig. II: Economic Growth of South American nations between 2000-2018*

## 2. Model and Data

From the previous section, public debt which may have relationship with economic growth can be found using panel data analysis. The models can be presented as follows.

$$GDP_{it} = \beta_0 + \beta_1 EXP_{it} + \beta_2 DEBT_{it} + \beta_3 INVEST_{it} + \beta_4 SAVING_{it} + \beta_5 SCHOOL_{it} + \beta_6 TRADE_{it} + \varepsilon$$

Where GROWTH is GDP growth.

DEBT is public debt.

INVEST is the percentage of investment in country in relation to Gross Domestic Product (GDP).

SAVING is the percentage of saving in country in relation to Gross Domestic Product (GDP).  
TRADE is trade openness.

SCHOOL is mean year of schooling.

The data used in the analysis is a yearly data of Argentina, Brazil, Uruguay, Bolivia, Columbia, Ecuador, Paraguay, Peru, and Chile from 2000-2018. The variables were mainly collected from the World Bank and the International Monetary Fund (IMF).

### 3. Results and Conclusion

*Table 1: Panel data analysis using Pooled OLS, Fixed Effect and Random Effect Model*

	Pooled OLS	Fixed	Random
INVEST	0.978*** (5.83)	0.383*** (3.43)	0.498*** (4.16)
DEBT	-0.261*** (-5.76)	-0.183** (-2.19)	-0.184** (-2.34)
SCHOOL	0.269*** (11.32)	0.240*** (6.55)	0.231*** (8.63)
TRADE	-0.219*** (-3.29)	0.199 (1.16)	0.077 (0.53)
COR	0.001 (-0.69)	0.014*** (3.34)	0.008** (2.25)
Constant	4.348*** (5.09)	4.077*** (4.08)	4.568*** (4.95)
Obs.	87	87	87
R <sup>2</sup>	0.81	0.57	0.67
Hausman Test	Chi-square = Prob. = 0.00	Chi-square = Prob. = 0.00	Chi-square = Prob. = 0.00

*Note: The value in parentheses is t-statistics.*

To begin with, the Hausman test was adopted and it is shown that random effects are appropriate. The results derived from models in Table 1 show that economic growth is negatively and significantly driven by public debt. Next, the findings show that means year of schooling as well as investment spending have a positive impact on the growth rates as expected. In addition, the Corruption Perception Index (COR) leads to higher economic growth. In other words, when corruption in a country decreases, the economic growth rises.

The results suggest that public debt does undermine growth rates in South American nations. The findings are in accordance with the various researches (DiPeitro & Anoruo, 2012; Gómez-Puig & Sosvilla-Rivero, 2017; Sosvilla-Rivero, 2018; Presbitero, 2012). This implies that, the government should consider this negative impact altogether with the positive effect of it on other aspects, for example, the redistribution function of government. The role of government is to balance these two objectives; allocation function and redistribution function, to the best interest of the society.



#### 4. References

- Andrea F Presbitero, (2012). Total Public Debt and Growth in Developing Countries. *The European Journal of Development Research*, Vol. 24, Pp. 606–626.  
<https://link.springer.com/article/10.1057/ejdr.2011.62>
- Balassone et al., (2011). Public Debt and Economic Growth in Italy. *Quaderni di Storia Economica. Banca d'italia*, Vol. 44, pp. 5-18.  
<https://www.bancaditalia.it/pubblicazioni/quaderni-storia/2018-0044/QSE-44.pdf>
- DiPeitro, W. and Anoruo, E., (2012). Government size, public debt and real economic growth: a panel analysis. *Journal of Economic Studies*, Vol. 39(4), pp. 410-419.
- Gómez-Puig, M. and Sosvilla-Rivero, S., (2017). Public debt and economic growth: Further evidence for the euro area. *Working Paper. Instituto Complutense de Estudios Internacionales*, pp. 5-21.  
[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3041117](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3041117)
- Sosvilla-Rivero, S., (2018). New empirical evidence on the impact of public debt on economic growth in EMU countries. *Revista de Economía Mundial*, Vol. 51, pp. 101-120.  
<https://search.proquest.com/openview/9d3e0d93857f53c2aa47a9fd4a2067fb/1?pq-origsite=gscholar&cbl=796395>



***Protecting a Minority Culture in a Bilingual Society:  
The Impact on Canadian Society of Laws Restricting English Use in Quebec***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

This paper presents the complex historical context and development of language laws and related government cultural policies at the federal and provincial level in Canada and examines the profound impact on Canadian society of laws restricting English use in the predominantly French-speaking province of Quebec. Landmark Canadian language laws are compared and contrasted, and the effect of such language laws on Canadian society, culture, education, business, politics, and immigration policy is examined. The numerous and significant linguistic, cultural, and political challenges faced by bilingual and multicultural Canadian society are compared with similar situations in other officially bilingual or multilingual countries and societies. The growing influence of English on the evolution of French spoken in Quebec is also addressed. In order to preserve its unique cultural identity and Francophone society, the provincial Quebec government has sought to increase its autonomy from the federal government in a wide range of areas, leading to political conflict of varying levels of intensity and duration with the federal government (Béland, Lecours & Schmeiser, 2021). Language is a fundamental expression of cultural identity in a society, and the disappearance of a language may lead to the extinction of a unique cultural identity. Predictions regarding the future development of language laws are made based on current and historical trends in government policy and on continuing changes in bilingual Canadian society.

Keywords: Minority Culture, Bilingual Society, Language Laws, Quebec

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## **Introduction**

Language laws in Quebec restricting the use of English and promoting the French language have evolved from a complex historical context and decades of specific, ambitious government language policies. Language is not merely a method of communication, it is an essential expression of cultural identity (Templin, Seidl, Wickström & Feichtinger, 2016). The francophone majority population of Quebec has managed to preserve its language, French culture, and unique identity for centuries despite numerous political, cultural, and economic challenges in an English majority Canada and North America. Bilingual and multilingual societies face numerous challenges and pressures and need to find a delicate legal, cultural, and political balance between the linguistic rights of different groups.

## **The Historical Context and Development of Laws Restricting English Use in Quebec**

Quebec was a French colony for centuries until it was conquered by British forces. Centuries of French colonial rule in Quebec, also called New France, ended in 1760 after a decisive victory by Britain, and Quebec became a new British colony under military occupation (Land & Geloso, 2020). English became the language of government and law during the British military occupation of Quebec. In 1774, the Quebec Act granted the Catholic French-speaking population religious freedom and permitted the use of French civil law, important changes which had the effect of preserving and promoting the use of French (Uzzell, 2018). The Quebec Act was a recognition that a majority of citizens in Quebec were Francophones and that French remained the dominant language of daily life and business for most inhabitants despite British rule. In 1791, the Constitutional Act gave French official recognition in government and law in Quebec (Hillinger, 2019). The Constitutional Act was another major step in preserving and promoting the French language. Enlightened and tolerant British rulers in Quebec chose coexistence with the French language and French culture rather than cultural assimilation by force.

After decades of relatively peaceful coexistence, a Francophone political movement against British rule began to grow in Quebec. After a failed rebellion in 1837 by a large group of French Canadians, the governor general Lord Durham wrote a report which called for the complete assimilation of French Canadians into British culture and the English language (Garrard, 2021). The 1837 rebellion by some, but not all Francophones in Quebec, convinced some British rulers that cultural assimilation of the Francophones was necessary. Some members of the British ruling class in Quebec viewed the Francophones to be backward and judged their culture to be inferior. The policy of complete cultural assimilation was not adopted, although the official use of French was banned for nearly a decade in Quebec. Relations between the Anglophones and Francophones in Quebec gradually improved, and the use of French was allowed to increase in public life. In 1867, the Constitution Act gave official language status to French in the new Dominion of Canada and in Quebec, which became a founding province of the new semi-independent nation (Hillinger, 2019). French had survived British colonial rule in Quebec.

Although Francophones formed the majority of the population, Anglophones continued to hold most key positions in business and industry up to the 1960s. Beginning in the 1960s, the provincial government in Quebec started to formulate language policies to favor the use of French, and such policies tended to conform to international legal standards regarding human rights but were not without controversy (Binkovitz, 2015). A new generation of Francophones worked to improve their educational, economic and political status. In the

1960s, a social movement began in Quebec called the Quiet Revolution which called for a reduction in the influence of the Catholic Church and for more social mobility and economic influence for French speakers (Ketterer-Hobbis, 2017). The average levels of education and incomes of Francophones increased steadily in Quebec.

In the 1977, the provincial government introduced the Charter of the French Language which limited the use of English in the education system, on store signs, and in local and provincial governments (Schmid, Zepa & Snipe, 2004). At the time, the birth rate of Francophones was in decline, the economic status of many French speakers was still low, and many were concerned that English speakers could eventually become the majority in Quebec. The Charter of the French Language was a challenge to the official national policy of a bilingual Canadian society since it stated that Quebec was an officially French province (Iacovino, 2015). Some Anglophones began to leave Quebec.

The landmark Bill 101 was adopted into law in Quebec in 1977 and declared French to be the official language in government, education, and the courts (Ketterer-Hobbis, 2017). Anglophones criticized the bill and became concerned about their future. English signs in public were banned, and access to English education was limited (Ketterer-Hobbis, 2017). Bill 101 may be viewed as a significant step in the direction of full political independence and sovereignty for a Quebec nation.

Bilingualism became an increasingly important aspect of national cultural policy in the 1960s. In 1969, the government of Canada had begun to treat both French and English as equal official languages in government services, but that was not enough to prevent the introduction of the pro-French Bill 101 in Quebec (Spencer, 2008). The national policy of bilingualism was not enough to satisfy many Francophones who wanted more political power for Quebec. To promote national unity and the national policy of bilingualism, the federal Canadian government increased federal services offered in French and English in all provinces (Bourhis & Sioufi, 2017). Minority French speakers in other Canadian provinces benefited from the national policy of bilingualism.

In 2007, the Parti Québécois (PQ), a political party calling for the creation of an independent, sovereign, officially French Quebec nation, tried to introduce the Quebec Identity Act (Bill 195), which would have given Quebec more control over immigration into the province of Quebec (Iacovino, 2015). The Quebec Identity Act was an attempt to define Quebec identity in terms other than just the French language. In 2013, a minority government Parti Québécois attempted, but failed, to introduce the Charter of Quebec Values, a charter intended to create a legal outline to define a distinct Quebec identity (Iacovino, 2015). The Charter of Quebec Values went beyond the promotion and preservation of the French language and seemed to challenge the national Canadian policy of multiculturalism and diversity.

In 2018, for the first time in nearly half a century, a political party that was not explicitly a separatist party calling for full political independence from Canada won the Quebec provincial election. The Coalition Avenir Quebec (the Quebec Future Coalition or CAQ), led by the wealthy businessman François Legault, won a majority of seats campaigning on promises to reduce immigration and to limit the display of religious symbols by public workers such as teachers and police officers (Béland, Lecours & Schmeiser, 2021). Many Francophones seemed concerned by a steady increase in visible minorities in Quebec society. The number of Allophones, immigrants who do not speak English or French as a first language, has been increasing in Quebec, and many Allophones give priority to learning

English since English ability can help to secure higher paying jobs, even in Quebec (Grenier, 2019). The proportion of Francophones in the Quebec population may decrease significantly if current immigration trends continue.

Despite decades of language laws, English still enjoys a high status among many Francophones. Code-switching refers to the simultaneous, alternating use of words and phrases in two languages by bilingual speakers in a conversation. Many French speakers in Montreal often mix more English into their conversations than English speakers mix French into their conversations (Valenti, 2014). Quebec French has been influenced heavily by English. The relatively high use of English words and phrases by French speakers in Montreal may indicate that English, closely associated with business management and the majority English-speaking North American culture, still has a higher social status in Quebec than French (Valenti, 2014). English skills can increase employment opportunities in Quebec. Some French speakers view the use of English in Montreal, the largest city in Quebec, with concern and continue to worry about the future of French as a minority language in North America (Bourhis, 2019). Some bilingual Francophones do not view English as a threat to French Quebec culture.

Since the conquest of Quebec by Britain in 1760, the status of French in Quebec has undergone a long series of complex and often diametrically opposed changes, but the French language and French culture of Quebec have managed to survive and thrive. Integrating new immigrants successfully into Quebec culture and the French language is a major challenge for the Quebec provincial government and French society in Quebec (Grenier, 2019). High and increasing levels of immigration are necessary to offset the ageing population and shrinking workforce in Quebec, but maintaining a majority of Francophones in Quebec may be difficult in the long term since most new immigrants are not Francophones and Francophone birth rates in Quebec are not increasing significantly.

### **The Positive and Negative Effects of Language Laws on Quebec and on Canadian Society**

The effects of language laws have been largely positive for the majority Francophone population. Against the odds, French speakers in Quebec have preserved their language and culture for centuries, despite being a minority population in a predominately English-speaking Canada and English-speaking North America. In approximately one generation, starting in the 1960s with assertive and comprehensive language policies to promote French usage in education, work, and government, Quebec Francophones have attained high levels of education, political and economic power and created a more secular society in which the role of the Catholic Church has been reduced (Hamers & Hummel, 1994). Language laws have been beneficial to Francophones and helped to raise their living standards. The Quebec economy, long dominated by English speakers, is now influenced significantly by Francophone business leaders in many industries (Hamers & Hummel, 1994). From the perspective of Francophones, Quebec language policies and laws favoring French usage over English have been extremely successful. More than eighty percent of Quebec citizens still speak French as a native language and work in French, the number of bilingual Anglophones has increased, and access to English-language schools has been significantly reduced (Bourhis & Sioufi, 2017). However, some Anglophones complain of linguistic discrimination. The language laws in Quebec which restrict the use of English are sometimes criticized in Quebec, in other Canadian provinces, and in other countries. Anglophones residing in Quebec have been critical of Quebec's language policy and have challenged some

language laws in Quebec courts (Ketterer-Hobbis, 2017). Quebec language laws have had a clear and direct impact on business signs, companies, schools, and government services (Soroka, 2014). French language skills have become essential for many Anglophones.

Language laws promoting French have had some negative effects on the minority Anglophone population and on the Quebec economy. A steady stream of Anglophones have left Quebec since the implementation of language laws. Since the introduction of Quebec language laws in the 1970s, more than 300,000 English speakers in Anglophone communities in Quebec, many of them highly educated, have chosen to move to English-speaking Canadian provinces (Bourhis, 2019). The loss of so many highly skilled and educated workers has had a negative effect on the Quebec economy.

The Quebec Office of the French Language (Office Québécois de la Langue Française or OQLF), is a branch of the provincial government which monitors English usage and enforces Quebec language laws. In February 2013, the OQLF ordered an Italian restaurant in Montreal to replace many common Italian words on its menu with French words, a controversial action which was criticized and ridiculed in Quebec, Canada, and other countries (Ketterer-Hobbis, 2017). Many people, including Francophones, thought that the OQLF had gone too far in this case to protect the use of French. There was no danger of Italian ever replacing French as the majority language in Quebec. This amusing case was dubbed 'Pastagate,' the overzealous leader of the OQLF resigned, and the governing PQ pro-separatism party chose not to continue to strengthen existing language laws (Ketterer-Hobbis, 2017). Language laws may sometimes damage Quebec's international reputation and cause uncertainty for investors.

The Canadian Charter of Rights and Freedoms, designed to protect many individual and group rights, has not been formally accepted by Quebec since it may limit the ability of the Quebec government to place cultural restrictions on some citizens (Iacovino, 2015). Quebec's position creates political tension that does not enhance national unity. There is also tension between the rights of the individual protected by the Canadian Constitution and the desire of Quebec to place linguistic and cultural restrictions on minority groups to protect the French language and culture (Richez, 2014). Quebec's language laws and attempts to control its own immigration policy have some negative consequences for Anglophones, for other minority groups, for national unity, and sometimes for Quebec's international reputation.

### **Linguistic, Cultural and Political Challenges in Officially Bilingual and Multilingual Countries**

Language laws and guidelines are not unique to Quebec and exist in many bilingual and multilingual countries. Laws pertaining to the use, preservation, and promotion of minority languages are increasing in the European Union, and linguistic rights are viewed as a form of basic human rights in the European Charter for Regional or Minority Languages (Määttä, 2005). Language use has become a human right. The Council of Europe, an EU organization, creates principles for the protection of minority languages, but these guiding principles are not legally binding and may affect EU member states differently (Määttä, 2005). Minority language groups exist in many European countries.

Some countries, rather than being concerned about the protection of their own language and control of minority languages, have opted to actively promote and increase the use of the international language of English. For example, an increasing number of university programs are offered in English in the Netherlands (Duarte, 2022). Other countries, such as Thailand,

take the opposite approach and promote only one official majority language. In Thailand, the majority national language of Thai is the only official language in public education despite the presence of minority language groups such as the Malays in Thailand (Boonlong, 2007). Minority language groups in Thailand must learn the majority national language to be able to function effectively in society. Rather than imposing the majority language on minority groups, some multilingual and multicultural countries such as Switzerland have several official languages, all with equal status in society regardless of the relative size of their populations. Switzerland has four official languages with equal status. German is the majority language in Switzerland, but French, Italian, and a Latin language called Romansh are all official national languages, and local citizens can democratically choose the primary language used in their schools (Hega, 2001). Some countries can become successful by embracing multicultural policies.

Quebec language laws have had a global impact and directly influenced language policies in other countries. Countries such as Lithuania, Latvia, and Estonia, which have large Russian-speaking minorities, employ an approach to language policies and laws which is similar to the Charter of the French Language in Quebec and actively promote the majority language in business, education, and immigration (Maurais, 1991). The Latvian government was concerned by the growing influence of the large Russian-speaking minority. In the 1990s, Latvia actually used large parts of the Quebec Charter of the French Language as a model for its own language laws to restrict the use of Russian and faced the same types of criticisms and challenges as Quebec (Schmid, Zepa & Snipe, 2004). Just as in Quebec, protecting the rights of one linguistic group came at the expense of another group. Language laws help to protect a majority language but may infringe on the rights of individuals in the minority group (Schmid, Zepa & Snipe, 2004). Language laws have become a human rights issue. Some language laws in Quebec could, in some cases, be interpreted as being in conflict with international laws and with international treaties that Canada has signed (Binkovitz, 2015). Language policy needs to include a consideration of issues such as human rights and the freedom of expression.

### **Implications and Conclusion**

Quebec's language laws and policies have been successful in protecting the French language and culture in a majority English-speaking Canada and North America. Official language policies can be effective in preserving and promoting a minority language in a society (Templin, Seidl, Wickström & Feichtinger, 2016). However, the preservation of French in Quebec has come at the expense of the minority Anglophone community which has experienced a steady reduction of its own linguistic rights. To avoid charges of excessive discrimination and to show that Anglophones are still welcome in Quebec, some government and health services in Quebec are provided in English, and English is still taught in Francophone schools (Spencer, 2008). Canada is officially a bilingual country with both English and French enjoying equal status as official languages at the federal level, but French has been declared to be the official language in Quebec by successive pro-Francophone provincial governments. This situation creates an ongoing sense of linguistic, cultural, and political tension which varies in intensity over time between Quebec and the federal government and between Quebec and majority English-speaking provinces. Future majority French-speaking Quebec governments will probably continue to seek more political autonomy from the federal Canadian government and continue to face legal challenges concerning linguistic rights from the Anglophone community and its supporters outside Quebec.



Pro-Francophone Quebec governments, even those advocating for complete political separation from Canada, have not been able to completely abolish the use of English in Quebec, an act which would be too repressive and undoubtedly meet with fierce resistance, criticism and legal challenges at the provincial, national, and even international level. In a long and complex history, French and English have competed for linguistic dominance in Quebec, and both languages have survived existential political threats in different periods. Both French and English in Quebec have proven to be resilient, and both languages seem destined to continue to coexist in Quebec.

Decades of language laws and language policies planned by the Quebec provincial government which made French the main official language have ensured the priority use of French in education, work, cultural events, and government services in Quebec (Hamers & Hummel, 1994). However, Quebec's rapidly ageing and retiring workforce has increased the need for high levels of immigration, but most new immigrants are not native speakers of French or English. Quebec's current governing provincial party, the CAQ, is seeking to create its own criteria for immigrants to Quebec which may conflict with the federal national immigration policy. The conflict between the rights of Quebec Francophones and the rights of individuals of minority groups in Quebec remains unresolved and may continue to be a difficult political and cultural balancing act filled with contradictions. Despite Quebec's decades of success in preserving and raising the political and economic status of the French language, there is no guarantee that French will remain the majority language in Quebec in the long term if Francophone birth rates remain low and immigration levels of Allophones who prefer to learn English increase exponentially.

## References

- Béland, D., Lecours, A., & Schmeiser, P. (2021). Nationalism, secularism, and ethno-cultural diversity in Quebec. *Journal of Canadian Studies*, 55(1), 177–202. Retrieved February 4, 2023, from EBSCO database.
- Binkovitz, I. A. (2015). International legal regimes and language policy in Quebec: A case study of compliance, and some continuing tension. *Wisconsin International Law Journal*, 33(2), 223–253. Retrieved August 10, 2022, from EBSCO database.
- Boonlong, F. R. (2007). The language rights of the Malay minority in Thailand. *Asia-Pacific Journal on Human Rights & the Law*, 8(1), 47–63. Retrieved September 2, 2022, from EBSCO database.
- Bourhis, R. Y. (2019). Evaluating the impact of Bill 101 on the English-speaking communities of Quebec. *Language Problems & Language Planning*, 43(2), 198–229. Retrieved August 6, 2022, from EBSCO database.
- Bourhis, R. Y., & Sioufi, R. (2017). Assessing forty years of language planning on the vitality of the Francophone and Anglophone communities of Quebec. *Multilingua*, 36(5), 627–661. Retrieved August 12, 2022, from EBSCO database.
- Duarte, J. (2022). The implementation of plurilingual language policies in Higher Education – the perspective of language learning students. *Language Learning in Higher Education*, 12(2), 367–389. Retrieved February 2, 2023, from EBSCO database.
- Garrard, G. (2021). John Stuart Mill and the liberal idea of Canada. *British Journal of Canadian Studies*, 33(1), 31–46. Retrieved February 5, 2023, from EBSCO database.
- Grenier, G. (2019). Quebec's language policy and economic globalization. *Language Problems & Language Planning*, 43(2), 179–197. Retrieved August 7, 2022, from EBSCO database.
- Hamers, J. F., & Hummel, K. M. (1994). The francophones of Quebec: Language policies and language use. *International Journal of the Sociology of Language*, 94(6), 127–152. Retrieved August 16, 2022, from EBSCO database.
- Hega, G. M. (2001). Regional identity, language, and education policy in Switzerland. *Compare: A Journal of Comparative Education*, 31(2), 205–227. Retrieved August 11, 2022, from EBSCO database.
- Hillinger, A. (2019). The status of the French language in British North America: From the conquest to the confederation. *Translation & Interpreting*, 11(2), 18–31. Retrieved February 9, 2023, from EBSCO database.
- Iacovino, R. (2015). Contextualizing the Quebec charter of values: Belonging without citizenship in Quebec. *Canadian Ethnic Studies*, 47(1), 41–60. Retrieved August 10, 2022, from EBSCO database.

- Ketterer-Hobbis, S. (2017). “The Comic and the Rule” in Pastagate: Food, humor, and the politics of language in Quebec. *Food, Culture & Society*, 20(4), 709–727. Retrieved August 9, 2022, from EBSCO database.
- Land, J., & Geloso, V. (2020). Colonial military garrisons as labor-market shocks: Quebec City and Boston, 1760-1775. *Social Science Quarterly*, 101(4), 1326–1344. Retrieved August 9, 2022, from EBSCO database.
- Määttä, S. (2005). The European Charter for Regional or Minority Languages, French language laws, and national identity. *Language Policy*, 4(2), 167–186. Retrieved August 11, 2022, from EBSCO database.
- Maurais, J. (1991). A Sociolinguistic comparison between Quebec’s Charter of the French Language and the 1989 language laws of five Soviet republics. *Journal of Multilingual and Multicultural Development*, 12(1–2), 117–126. Retrieved August 4, 2022, from EBSCO database.
- Richez, E. (2014). Losing relevance: Quebec and the constitutional politics of language. *Osgoode Hall Law Journal*, 52(1), 190–233. Retrieved August 3, 2022, from EBSCO database.
- Schmid, C., Zepa, B., & Snipe, A. (2004). Language policy and ethnic tensions in Quebec and Latvia. *International Journal of Comparative Sociology*, 45(3), 231–252. Retrieved September 6, 2022, from EBSCO database.
- Soroka, T. (2014). Quebec’s politics of language: Uncommonly restrictive regime or ill-repute undeserved? *TransCanadiana*, 7(1), 151–174. Retrieved September 2, 2022, from EBSCO database.
- Spencer, V. (2008). Language, history, and the nation: An historical approach to evaluating language and cultural claims. *Nations & Nationalism*, 14(2), 241–259. Retrieved September 17, 2022, from EBSCO database.
- Templin, T., Seidl, A., Wickström, B.-A., & Feichtinger, G. (2016). Optimal language policy for the preservation of a minority language. *Mathematical Social Sciences*, 81(1), 8–21. Retrieved September 3, 2022, from EBSCO database.
- Uzzell, L. A. (2018). James Murray: A forgotten champion of religious freedom. *Catholic Historical Review*, 104(1), 57–91. Retrieved September 12, 2022, from EBSCO database.
- Valenti, E. (2014). “Nous autres c’est toujours bilingue anyways”: Code-switching and linguistic displacement among bilingual Montréal students. *American Review of Canadian Studies*, 44(3), 279–292. Retrieved August 10, 2022, from EBSCO database.



*Sinking in the Hooks: Technical Standards and De Facto Aid Tying in  
ODA Infrastructure Projects*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

The practice of tying aid – attaching conditions which force procurement from the donor country – is widely regarded as negative, with the OECD noting how the practice can increase costs and reduce the freedom of recipients to procure goods and services from other countries. Indeed, since 1979, the practice of aid tying has declined significantly, from more than 50% among DAC members to just 10-20% in the 2010s. However, despite these promising headline figures, aid can still be “tied” via more subtle mechanisms which, intentionally or not, privilege the private sector of the donor nation and reduce value and freedom of choice for recipients. This paper utilises Japanese high speed rail projects in India and Vietnam as case studies, conducting life-cycle analyses of these projects to examine areas where the use of Japanese technical and industrial standards will reduce competition and reduce the freedom of choice for the recipient countries to seek non-Japanese suppliers or develop native alternatives. The paper argues that technical standards “sink in the hooks”, creating a de facto tying effect which, while not technically binding on recipients, has much the same impact as formal tied aid in the long term. The paper ultimately concludes that further internationalisation of aid – the incorporation of third countries into bilateral aid flows and advocacy for the universality of technical standards where possible – will ultimately make international aid more sustainable, providing better value for recipient countries by reducing their long-term reliance on the economies of single bilateral donors.

Keywords: International Development, High-Speed Rail, Japan, India, Vietnam

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## Introduction

Aid tying is widely regarded as a negative in international development practice. Numerous countries note their preference for International Competitive Bidding (ICB) such as Japan (Japan International Cooperation Agency, 2009, p.64), the UK (UK Department for Business and Trade and UK Department for International Trade, 2021), and France (Agence Francaise de Development, 2023) all state this publicly, and indeed across all OECD-DAC donors some 80.72% of aid was untied in 2021 (OECD Stat, 2023). Nonetheless, when it comes to actual aid practice, it is not uncommon for bidding processes – intentionally or not – to favour the donor country’s private sector. As one example, among Japanese aid projects, 70% of untied aid projects were awarded to Japanese firms in 2017 (OECD, 2020). This paper argues that one contributing factor to this is the promulgation and use of donor country technical standards in ODA projects, focusing on the example of Japanese development assistance in the area of High-Speed Rail (HSR). The core hypothesis on which this paper is based is that technical standards unintentionally make non-donor country firms less competitive in international bidding processes, which can have the unintended consequence of reducing the value of these project for recipient countries.

HSR projects are awash with specific technical requirements. Japan’s *Shinkansen* bullet trains are perhaps the world’s most famous and successful implementation of HSR infrastructure, and in recent years the Japanese government has attempted to export the technology behind them for large-scale loan aid-backed infrastructure projects in numerous countries, including India along the Mumbai-Ahmedabad corridor (Jain, 2019, p.2) and potentially in Vietnam to connect Hanoi and Ho Chi Minh City along the spine of the country (Onishi, 2019; Kaizuka, 2021). This paper uses these two examples as case studies to examine how technical standards can potentially create competitive advantages in near-term bidding processes and provide recurrent sources of revenue in the long term for private sector firms in the donor country, *de facto* tying aid by precluding the ability of the firms of other countries to effectively compete and “sinking in the hooks” by creating long term dependencies. Again, this is not to suggest that this is done with ill intent on the part of donors; rather this is a consequence of the highly technical nature of such projects and the knowledge and expertise of those drafting the plans and feasibility studies of such projects. This is achieved through analysis of the feasibility studies and technical papers surrounding both projects, with a focus initially on rail and track infrastructure, followed by an examination of the trainsets proposed for use. The paper ultimately concludes that greater internationalisation of the projects, including the incorporation of expertise from staff outside the donor country itself and further internationalisation of technical standards, is likely to deliver better value for recipient countries in the long term.

## Literature Review

The literature on aid tying is voluminous and near-universal in its criticality of the practice, cited often without further qualification as “ineffective” (Easterly and Pfitze, 2008, p.30) or that it increases costs and is linked too heavily with commercial interests (Hall, 2011, p.648). The OECD, for its part, claims that as much as 15-30% can be added to the cost of a project if aid is tied, heavily criticising the practice in its own documentation noting that it reduces the value for money for recipients and encouraging donors to abandon the practice to the “greatest extent possible” (OECD, 2023). There are some caveats – for instance, Knack and Smets note that in circumstances where corruption is high, aid tying can still be a net positive and incur fewer losses than would arise from graft (Knack and Smets, 2013, p.71) – but nonetheless, there is a significant consensus against tied aid. This paper does not seek to challenge this

position; rather, it is useful in the framing of the research – if tied aid is almost universally viewed as a negative practice for reasons of value and recipient choice, how is it still perpetuated and can it be further reduced? This paper explores technical standards in ODA infrastructure projects in relation to this question.

Pioneering work in this field has been done by Estache and Iimi (Estache and Iimi, 2012), who argue that a perceived need for quality would lead to a lack of space for compromise and excludes potential bidders, noting the trade-off between quality assurance and the potential costs incurred by limiting those able to participate in bidding processes. Iimi's work further notes that this is also impacted by project type, with some projects such as road construction easier to divide among multiple bidders and requiring less technical means to carry out than subway or power plant projects which require more specific technical expertise (Iimi, 2006, p.123). The issue is also raised by Arase (Arase, 1994, pp.177–178) but this is only cursory and the issue is not explored in detail beyond a brief note that the use of technical standards can create long-term procurement and consumption effects. Coughlin, et al. likewise discuss issues relating to long-term industrial dependency, but the focus is specifically on components which might be locally producible (Coughlin et al., 1988, p.21) which is less likely to be the case in highly-specialised major infrastructure projects. Overall, however, technical standards in ODA are a somewhat neglected area in the literature in relation to long term dependencies; most of the existing literature notes the impact of meeting technical standards on bidding processes and the potential for the exclusion of the recipient country's private sector. This paper seeks to address this shortcoming and examine the issue of long-term dependency in more detail by engaging deeply with two core case studies – the Vietnamese North-South Express Railway (NSER) and the Indian Mumbai-Ahmedabad High Speed Railway (MAHSR).

The Vietnamese North-South Express Railway has thus far attracted relatively little attention in the academic literature, being still an on-paper only project. The author has previously examined the NSER from a sustainability perspective, finding that depending on the load factor of the railway, it may perform worse in some cases than planes for environmental impact (Kaizuka, 2021). This paper explored some of the technical standards involved in the railway, such as the use of Japan Industrial Standards (JIS) 60kg rails and the use of E5-Series Shinkansen (Kaizuka, 2021, p.11), but it did not explore these from the perspective of industrial dependency. Aside from the author's own work, most of the literature on the NSER focuses on economic perspectives, such as the work by Ngoc and Nishiuchi which examines the potential impacts on social equity (Ngoc and Nishiuchi, 2022), and the work by Kikuchi and Nakamura which questions the level of profitability the railway might achieve based on a comparison to performance of the Japanese *Shinkansen* network (Kikuchi and Nakamura, 2020) but overall the Vietnamese NSER is an emerging field of interest which requires further study. It is in part to address this deficiency that the NSER was chosen as a main point of analysis.

Of the two case studies, the literature surrounding the Mumbai-Ahmedabad HSR project is considerably more developed, especially among India and Japan-based academics who have already contributed voluminously to the literature on the project, across numerous fields. For instance, Purnendra Jain explores the political and geopolitical aspects of the Mumbai-Ahmedabad HSR project, arguing that it is a signal of the growing warmth between India and Japan and that for Japan there is a competitive aspect vis-à-vis Chinese aid programmes (Jain, 2019) and as with the Vietnamese NSER, much of the literature focuses on the potential economic ramifications of the project, such as the work by Sugimori, et al. which explores the potential impacts on inter-regional disparity along the route, concluding that for the line to have the greatest benefits, the areas along it should develop unique industrial structures (Sugimori

et al., 2022). Likewise, the work by Karmarkar, et al., examines the economic viability of the MAHSR in terms of how much customers are willing to pay for tickets over conventional rail, providing policy recommendations to optimise future ridership (Karmarkar et al., 2023). However, as with the Vietnamese NSER, issues surrounding potential dependency are scarcely explored in the existing literature, and again, this paper seeks to address this shortcoming.

## Methodology

This paper uses publicly available data to assess the proposed technical standards on the two railways in relation to potential short and long-term dependencies. This is largely drawn from the respective JICA feasibility studies for the two railways (Japan International Cooperation Agency and Vietnam Railways, 2013; Japan International Cooperation Agency et al., 2015). Other sources are drawn on where appropriate, such as the website of National High Speed Rail Corporation, Ltd., the state-owned enterprise responsible for the execution of the MAHSR project (National High Speed Rail Corporation Limited, 2023b). It begins with an examination of the proposed rail and track infrastructure followed by an examination of the proposed trainsets, which in both cases are E5-series *Shinkansen* trainsets identical to the ones used in Japan (Japan International Cooperation Agency et al., 2015, 4.54; Japan International Cooperation Agency et al., 2019a, 4.87). The paper follows this by exploring which private companies offer products capable of meeting the technical standards laid out in the feasibility studies. These case studies are selected because of their profile – both are expensive projects, and the MAHSR in particular has become a kind of flagship for Japan’s push to export *Shinkansen* technology. For both, the feasibility studies are already highly developed, and they are highly comparable in that they both seek to export fundamentally the same technology with the only difference being the market context. This ensures the robustness of the findings and ensures that unique points in a single market context do not distort the overall implications.

The two points of analysis – rail and track infrastructure and rolling stock – are selected because they are considered the most likely to present issues of dependency in the long-term, and because having two points of analysis will increase the robustness of the findings. Rail and track infrastructure is not widely interchangeable and must be constructed to specific standards vis-à-vis profile, weight, and gauge – for instance, JIS-60kg rails, as are used on *Shinkansen* tracks, have a different cross-sectional profile to those used on European, Australian or other railway lines (Nippon Steel Corporation, 2020, pp.10–11), meaning that they are not interoperable. The railway – short of a complete refit – would be limited to rails of the original specification. Likewise, the rolling stock – being constrained by numerous and cascading technical requirements such as the design of overhead power supplies and the car width for the purpose of passing through tunnels, among others – is likely to be a source of long-term dependency. Even with technology transfer agreements, the advanced and complex nature of manufacturing the rolling stock required for HSR would likely require large sums of capital investment and may be less viable than simply importing the vehicles in the long term or providing incentives for Japanese firms to manufacture the products locally (which is to some degree already the case in the MAHSR [National High Speed Rail Corporation Limited, 2023a]).

This comes with some limitations. It would be beyond the scope of this project to examine all of the private sector firms with the requisite capital to produce the products required to meet JIS requirements on the two railways, which would require significant and intricate knowledge of the product ranges, capital investitures, and internal processes of potentially hundreds of firms. As such, the paper limits itself to only high-end producers with public-facing product



catalogues. While this has the potential to exclude some firms able to compete in international competitive bidding, it is likely that these firms would not be able to compete in any case with high-end, major producers, due to the aforementioned issues with the level of capital investment required. Second, this paper does not cover the full set of technical standards which could potentially create dependencies. Again, it would be beyond the scope of this paper to do so, and other technical standards are as such best left for future research. This paper seeks only to work as a proof of concept that technical standards can lead to *de facto* and possibly unintentional tied aid, with the intention that the principle can be applied in analysis of other aid projects in different donor and recipient contexts.

### **Case 1: Rail Infrastructure**

In both the Vietnamese and Indian HSR projects, the basic technical standards for the rail profile were recommended in the JICA feasibility studies to be based on JIS-60kg/m rails, identical to those used on *Shinkansen* tracks in Japan itself (Japan International Cooperation Agency et al., 2015, 9.161; Japan International Cooperation Agency et al., 2019a, 3.3). The MAHSR Feasibility Study did consider the possibility of the UIC (International Union of Railways) 60kg standard instead, but it noted the need to verify affinity with the wheel tread of the E5-series *Shinkansen* for stable operation at high speeds (Japan International Cooperation Agency et al., 2015, 9.161), and in any case the final decision taken was to use the JIS-60kg standard, and the National High Speed Rail Corporation is open about the fact that these will be imported from Japan (National High Speed Rail Corporation Limited, 2021). JIS-60kg rails are currently used mainly in Japan itself, with the only other major use case being in Taiwan which also uses *Shinkansen*-derived trains on its high speed rail network, combined with some European-derived components as part of the wider design (Chang, 2010, p.162). This, of course, naturally privileges Japanese, and to a lesser degree Taiwanese, companies which already produce them en masse and are most likely to have the capital resources to produce them cheaply. While it is, of course, possible, that other producers could manufacture rails to these standards, the requisite capital investment needed to do so may make them uncompetitive on price.

Domestically, the annual procurement of JIS-60kg rails by JR West alone averages 2.13bn yen<sup>1</sup> (West Japan Railway Company, 2023). This procurement covers an area of 812.6km of *Shinkansen* track across two lines, less than the Vietnamese NSER at 1541km but greater than the MAHSR at 508km (Japan International Cooperation Agency et al., 2019a, 1.21; National High Speed Rail Corporation Limited, 2021, p.1). The annual procurement cost, based on the JR West data, can be estimated at roughly 2.6 million yen per kilometre<sup>2</sup>. Notwithstanding any additional costs incurred by local circumstances, this would mean that the annual procurement value on the MAHSR would be some 1.3bn yen and 4.05bn yen on the Vietnamese NSER. This is clearly a large business, and one which will produce significant recurring revenue for companies which produce JIS-60kg rails. Of course, this will only increase further if more of the proposed Indian high speed railway lines are constructed, especially if they are constructed to the same technical standards.

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<sup>1</sup> Approx. US\$15.8m at time of writing on May 5<sup>th</sup>, 2023.

<sup>2</sup> 2,134,934,000 yen divided by 812.6, equalling 2,627,287.7 yen per kilometre.

## Case 2: Rolling Stock

The proposed rolling stock on the MAHSR is based on E5-series *Shinkansen* trainsets, as are currently used on the Tohoku Shinkansen in Japan (National High Speed Rail Corporation Limited, 2021, p.21). While the final planning for the Vietnamese NSER is not yet completed, the extensive use of the E5-series as the point of reference in the JICA studies (Japan International Cooperation Agency et al., 2019a) implies that it is being recommended for use there as well. E5 trainsets are highly advanced technologically, and all *Shinkansen* designs require manufacturing processes which are not necessarily easily accessible outside Japan itself – for instance, the 9000+ tonne press used in the manufacture of the aluminium car bodies of the N700-series was one of only a handful in the entire world (Morimura and Seki, 2005, p.41). Likewise, they contain significant numbers of patented, proprietary components - searching the database for the Japan Patent Office using the terms *Shinkansen* (新幹線) or *Kousoku Tetsudou* (高速鉄道, high-speed rail) reveals 37 design and 407 utility patents and 21 design and 341 utility patents, respectively<sup>3</sup> (JPlatPat, 2023b; JPlatPat, 2023a). This is already a large number, and it does not even account for the potential cascade effects through the wider supply chain as individual components may also have proprietary and patented manufacturing processes which would not be visible in a search carried out in the above manner. Moreover, the trainsets themselves have wider bodies operating on a wider loading gauge when compared to European UIC-derived standards (Watson et al., 2022), meaning that non-Japanese designs would have to be modified to accommodate the Japanese technical standards. This may also have further impacts, such as in bridge and tunnel design, which Japanese firms are also better-positioned to meet.

The procurement cost of *Shinkansen* trainsets varies depending on the individual circumstances, and many of the procurement contracts are not made available to the public. However, some insight into the long term procurement costs can be seen via the Taiwan High Speed Rail network, which recently concluded an agreement to pay \$930m for a purchase of 12 N700S-series *Shinkansen* trainsets from a consortium led by Hitachi and Toshiba (Ryugen, 2023). This permits a rough estimate of \$77.5m per individual trainset, although this is an imperfect estimate since the cost was derived via a bidding process and is not fixed (Ryugen, 2023). The trainsets have variable service life-cycles, but they are generally intended to last 15 to 20 years without significant renovation during this time (Watson et al., 2022). Again, this is likely to become a significant form of recurring revenue for Japanese firms – for Japanese rolling stock companies, there will be significant repeat revenue both as the service life of individual trains ends and as the proposed lines expand their operations. Taiwan’s HSR has been in operation since 2007 and the initial contracts were formulated in 1998 (Railway Bureau of Taiwan, 2019); if Taiwan, which possesses wealth similar to Japan (Kawate, 2022) and has similar advanced manufacturing capabilities, cannot create a competitive domestic alternative to simply purchasing from Japan in this span of time, then what hope exists for Vietnam or India to do the same?

## Discussion

In both cases, there are clear avenues for long-term dependencies on Japanese companies where technical standards have had the effect of “sinking in the hooks”. As one example, Nippon Steel, in particular, is likely to become a major beneficiary of both the MAHSR and the NSER

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<sup>3</sup> Not all patents appearing through the use of the search term are directly related, but the overwhelming majority are.

– it enjoys a total monopoly on wheels and axles in the Japanese market alongside a major market share in bogie manufacturing (Nippon Steel Corporation, 2023b), being the only company producing train wheels in Japan (Nippon Steel Corporation, 2023a). Even if Indian or Vietnamese competitor products to these eventually become available, Nippon Steel will enjoy a virtual monopoly in these rolling stock components in the initial procurement phase and in the short term upon the opening of both lines. It also has a further business in rail manufacturing to the JIS-60kg standard, and it controls over 60% of the overall Japanese steel rail market (Barrow, 2014; Nippon Steel Corporation, 2020), giving it a powerful position in both rolling stock (albeit indirectly) and rail procurement processes. This is likely to be replicable on other individual components in the designs on the railway, where Japanese firms will be in key positions to benefit from any components required to be manufactured to a specific technical standard.

As noted above, the only existing example of *Shinkansen* systems having been successfully exported to date has been in Taiwan. The Taiwanese HSR has had since 1998 to develop domestic alternatives, but it still procures, at large cost, trainsets from Japan (Ryugen, 2023). Even the rails themselves are not produced by any major Taiwanese steel manufacturer, so it is likely that these are also still procured from Japan, in addition to other maintenance-related costs such as replacement wheels and axles. China Steel Corporation in particular is the world's 26<sup>th</sup>-largest steel producer (World Steel Association, 2023), and indeed it does produce some products to JIS specifications, but none of these are in the rail industry (China Steel Corporation, 2023). In India, it is conceivable that a company on the scale of Tata Steel, the world's tenth-largest producer (World Steel Association, 2023) could produce these products in the long-term, possessing a long products business (Tata Steel Long Products Limited, 2021) and a business producing rolling stock components (Financial Express, 2017), these are not currently manufactured to JIS specifications and in the latter case already face constraints on production capacity, meaning that significant capital investment would be required to be able to compete with existing producers. In Vietnam, the largest steel company, the state-owned Viet Nam Steel Corporation, has businesses in neither category (Viet Nam Steel Corporation, 2023). If Taiwanese steel manufacturers see no business potential in serving the domestic high speed rail network, despite advanced manufacturing capabilities, then it is probable that neither Indian nor Vietnamese steel producers will not see any business potential either. Japanese firms are thus able to benefit in the long term from procurement and replacement even after initial project completion.

This is a direct result of the relative uniqueness of Japanese Industrial Standards and the ensuing ripple effects through the supply chains of products which meet them. Even products which are designed with standardisation in mind have to be customised to meet the needs of different customers (Lacôte, 2005, p.6). JICA staff are aware of the problems that can be caused by this – indeed, their technical recommendations in other projects, such as in the Philippines, are formulated in a manner to deliberately avoid long-term technological reliance on Japan (Japan International Cooperation Agency, n.d., 3.6-3.7), but this approach has not been taken with HSR systems. There are two probable reasons for this which are common to both the MAHSR and the NSER.

First is the use of HSR systems as flag-flying “national prestige” projects. The MAHSR in particular saw heavy involvement from the top levels of the Japanese government, being launched personally by Prime Minister Abe in 2017 (BBC News, 2017). Japan is by no means the only country which has done this; China has attempted to do the same with its own infrastructure and HSR systems (Oh, 2018, p.534), as has France with TGV exports (Preston,

2016, p.48). HSR, perhaps more than any other type of infrastructure development, is often highly politicised, and is intended as a showcase for the achievements of the donor country in technological terms and as a vector for soft power – indeed, the history of the *Shinkansen* being utilised in this manner can be traced as far back as the original *Shinkansen* during the 1964 Olympics (Jeong and Grix, 2023, p.7). If this is, indeed, an objective of policymakers, then there is little point in promulgating a more open system of bidding and procurement where non-donor country technology can be easily incorporated or can be seen as a competitor – permitting such a scenario would undermine the ability to achieve a core objective in the design specification. Of course, these decisions are not taken one-sidedly – both India and Vietnam undertook their own decisions to proceed with these projects and will receive their own share of benefits as the projects begin to take shape, not least that they will have a highly advanced railway line. However, the inevitable cost of these benefits is a degree of long-term dependency with a *de facto* tying effect.

Second is the existing expertise of the JICA staff and the consulting firms which conducted the feasibility studies on both railways. In both cases, the consulting firms are mostly Japanese in origin – on the MAHSR, the firms on the 2015 feasibility study were Japan International Consultants for Transportation, Oriental Consultants Global, and Nippon Koei (Japan International Cooperation Agency et al., 2015), while on the Vietnamese NSER the firms working on the most recent data collection survey were PADECO, Yachiyo Engineering, and Fukken Engineering, with Ernst & Young ShinNihon being the only non-Japanese firm involved (Japan International Cooperation Agency et al., 2019b). Notwithstanding any commercial relationships these firms may have with construction firms, this naturally limits the pool of expertise to those used to dealing with specifically Japanese standards and engineering processes – they are unlikely to be in a position to recommend anything else. This is a common issue in JICA-led feasibility studies and projects, and it severely limits the diversity of opinion and experience being brought into these studies. This is *de facto* tying in itself, but it creates a further *de facto* tying effect by advantaging companies which already manufacture to Japanese technical and engineering standards.

## Conclusions

In both the MAHSR and the NSER, a strong *de facto* tying effect has been introduced. This is partially a result of the politics surrounding the respective projects – especially on the MAHSR – but it is also in part the inadvertent result of the lack of non-Japanese expertise being involved in the feasibility study and data collection stages. In both cases, this would have been resolved by greater inclusion of non-Japanese experts to provide alternative viewpoints and to more comprehensively examine whether alternative systems might have offered better value for money for the countries involved in the long term, such as French, German or Italian designs, or even bespoke designs depending on the individual circumstances of the recipient country.

Moreover, feasibility studies should recommend the use of universal standards where possible. High speed rail is a particularly difficult area to do this in, considering that existing systems essentially fall into distinct camps which are not mutually compatible without modification (such as Hitachi's modified designs to meet European technical standards based on the company's A-Train design (Hiroi, 2022)). While such modifications are possible, they disadvantage the ability of firms to compete because the necessary modifications drive up costs or require new capital investment. The creation of universal standards in new HSR systems for developing countries would level the playing field in this regard – while in the short term this would also increase costs, in the long-term it would create a more competitive environment

and deliver better value for money for recipient countries which would not be forced into a choice between expensive investment in developing a local alternative or long-term procurement from a single source. These recommendations, where possible, should be adopted at OECD-DAC level.

These issues are by no means unique to Japanese ODA programmes, and are likely to be applicable to any large-scale, technologically advanced infrastructure project. Future research should consider the findings of this paper in relation to the promulgation of similar systems as led by other donor countries, and it should consider the practical basis for the further universalisation of rail standards to ensure competitiveness in bidding processes. As things stand, technical standards are “sinking in the hooks” and creating a *de facto* tying effect, driving up long-term costs for recipient countries by reducing long-term competition.

### **Acknowledgements**

The author would like to thank his supervisors, Professor Kweku Ampiah and Dr. Jieun Kim, and his wife, Sara Kaizuka, for their helpful advice and input while writing this paper.

## References

- Agence Francaise de Development 2023. Bid invitations and procurement. *Agence Francaise de Development*. [Online]. [Accessed 29 April 2023]. Available from: <https://www.afd.fr/en/bid-invitations-and-procurement>
- Arase, D. 1994. Public-Private Sector Interest Coordination in Japan's ODA. *Pacific Affairs*. 67(2), pp.171–199.
- Barrow, K. 2014. Nippon Steel produces 150m-long rails. *International Railway Journal*. [Online]. [Accessed 9 May 2023]. Available from: <https://www.railjournal.com/track/nippon-steel-produces-150m-long-rails/>
- BBC News 2017. India launches first bullet train project. *BBC News*. [Online]. [Accessed 10 May 2023]. Available from: <https://www.bbc.com/news/world-asia-india-41251210>
- Chang, K.-H. 2010. *Technological Construction as Identity Formation: The High Speed Rail, Hybrid Culture and Engineering/Political Subjectivity in Taiwan*. [Online] Doctoral Thesis, Blacksburg, Virginia: Virginia Polytechnic Institute and State University. Available from: [https://vtechworks.lib.vt.edu/bitstream/handle/10919/77976/etd-05312010-160002\\_Chang\\_K\\_D\\_2010.pdf?sequence=1](https://vtechworks.lib.vt.edu/bitstream/handle/10919/77976/etd-05312010-160002_Chang_K_D_2010.pdf?sequence=1)
- China Steel Corporation 2023. Available product size & further information. [Accessed 9 May 2023]. Available from: [https://www.csc.com.tw/csc\\_e/pd/size/size.html](https://www.csc.com.tw/csc_e/pd/size/size.html)
- Coughlin, P., Mwau, G. and Begumisa, G. 1988. *Tied Aid, Industrial Dependence and New Tactics for Negotiations: Observations from Kenya* [Online]. Nairobi: University of Nairobi Institute for Development Studies. [Accessed 1 May 2023]. Available from: <https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/1316/wp457-318511.pdf?sequence=1>
- Easterly, W. and Pfitze, T. 2008. Where Does the Money Go? Best and Worst Practices in Foreign Aid. *The Journal of Economic Perspectives*. 22(2), pp.29–52.
- Estache, A. and Iimi, A. 2012. Quality or Price? Evidence from ODA-Financed Public Procurement. *Public Finance Review*. 40(4), pp.435–469.
- Financial Express 2017. Railways growth: How Rail Wheel Factory has kept the machinery rolling, save nation billions of dollars. *Financial Express*. [Online]. [Accessed 9 May 2023]. Available from: <https://www.financialexpress.com/opinion/railways-growth-how-rail-wheel-factory-has-kept-the-machinery-rolling-save-nation-billions-of-dollars/735665/>
- Hall, S. 2011. Managed tied aid competition: Domestic politics, credible threats, and the Helsinki disciplines. *Review of International Political Economy*. 18(5), pp.646–672.
- Hiroi, Y. 2022. Hitachi trains set off for global market from U.K., birthplace of rail. *Nikkei Asia*. [Online]. [Accessed 11 May 2023]. Available from: <https://asia.nikkei.com/Business/Transportation/Hitachi-trains-set-off-for-global-market-from-U.K.-birthplace-of-rail>

- Imi, A. 2006. Auction Reforms for Effective Official Development Assistance. *Review of Industrial Organization*. 28(2), pp.109–128.
- Jain, P. 2019. *Japan's Foreign Aid and 'Quality' Infrastructure Projects: The Case of the Bullet Train in India* [Online]. Tokyo: Japan International Cooperation Agency Research Institute. [Accessed 10 June 2021]. Available from: <https://core.ac.uk/download/pdf/277480586.pdf>
- Japan International Cooperation Agency 2009. Chapter 2: Guidelines for Procurement under Japanese ODA Loans *In: Handbook for Procurement under Japanese ODA Loans* [Online]. Tokyo: Japan International Cooperation Agency. [Accessed 29 April 2023]. Available from: [https://www.jica.go.jp/english/our\\_work/types\\_of\\_assistance/oda\\_loans/oda\\_op\\_info/guide/handbooks/c8h0vm0000aoeuck-att/chapter2\\_en.pdf](https://www.jica.go.jp/english/our_work/types_of_assistance/oda_loans/oda_op_info/guide/handbooks/c8h0vm0000aoeuck-att/chapter2_en.pdf)
- Japan International Cooperation Agency n.d. *Chapter 3: Railway Technical Standard* [Online]. Tokyo: Japan International Cooperation Agency. [Accessed 10 May 2023]. Available from: [https://openjicareport.jica.go.jp/pdf/11633401\\_09.PDF](https://openjicareport.jica.go.jp/pdf/11633401_09.PDF)
- Japan International Cooperation Agency, Ministry of Railways, Republic of India, Japan International Consultants for Transportation Co., Ltd., Oriental Consultants Co., Ltd., and Nippon Koei Co., Ltd. 2015. *Joint Feasibility Study for Mumbai-Ahmedabad High Speed Railway Corridor*. Tokyo & Delhi: Japan International Cooperation Agency & Indian Ministry of Railways.
- Japan International Cooperation Agency, PADECO Co. Ltd., Yachiyo Engineering Co., Ltd., Fukken Engineering Co., Ltd., and Ernst & Young ShinNihon LLC 2019a. *Data Collection Survey on the North-South High Speed Rail Project in the Socialist Republic of Vietnam: Final Report* [Online]. Tokyo: JICA. [Accessed 10 June 2021]. Available from: [https://openjicareport.jica.go.jp/pdf/12345716\\_01.pdf](https://openjicareport.jica.go.jp/pdf/12345716_01.pdf)
- Japan International Cooperation Agency, PADECO Co. Ltd., Yachiyo Engineering Co., Ltd., Fukken Engineering Co., Ltd., and Ernst & Young ShinNihon LLC 2019b. *Data Collection Survey on the North-South High Speed Rail Project in the Socialist Republic of Vietnam: Final Report Disclosure Document Chapters 4-6* [Online]. Tokyo: Japan International Cooperation Agency. [Accessed 2 July 2021]. Available from: [https://openjicareport.jica.go.jp/pdf/12345716\\_02.pdf](https://openjicareport.jica.go.jp/pdf/12345716_02.pdf)
- Japan International Cooperation Agency and Vietnam Railways 2013. *Study for the Formulation of High Speed Railway Projects on Hanoi-Vinh and Ho Chi Minh-Nha Trang Section: Final Report Summary* [Online]. Tokyo: Japan International Cooperation Agency. [Accessed 7 October 2021]. Available from: <https://openjicareport.jica.go.jp/pdf/12154654.pdf>
- Jeong, J. and Grix, J. 2023. An analysis of Japan's soft power strategies through the prism of sports mega-events. *Sport in Society*., pp.1–21.
- JPlatPat 2023a. JPlatPat: 新幹線 (Shinkansen). [Accessed 8 May 2023]. Available from: <https://www.j-platpat.inpit.go.jp/s0100>

- JPlatPat 2023b. JPlatPat: 高速鉄道 (Kousoku Tetsudo). [Accessed 8 May 2023]. Available from: <https://www.j-platpat.inpit.go.jp/s0100>
- Kaizuka, J. 2021. Even Electric Trains Use Coal: Fixed and Relative Costs, Hidden Factors and Income Inequality in HSR Projects with Reference to Vietnam's North–South Express Railway. *Sustainability*. **13**(24), p.13563.
- Karmarkar, O.D., Jana, A. and Velaga, N.R. 2023. Willingness to pay for reduced travel time: Case study of Mumbai - Ahmedabad High Speed Railway. *Case Studies on Transport Policy*. **12**, p.100974.
- Kawate, I. 2022. Taiwan to surpass Japan in GDP per capita this year: JCER. *Nikkei Asia*. [Online]. [Accessed 8 May 2023]. Available from: <https://asia.nikkei.com/Economy/Taiwan-to-surpass-Japan-in-GDP-per-capita-this-year-JCER>
- Kikuchi, T. and Nakamura, T. 2020. *Vietnam's High-Speed Railway and the Profitability of 'Shinkansen'*. Singapore: Nanyang Technological University.
- Knack, S. and Smets, L. 2013. Aid Tying and Donor Fragmentation. *World Development*. **44**, pp.63–76.
- Lacôte, F. 2005. Alstom—Future Trends in Railway Transportation. *Japan Railway and Transport Review*. **42**.
- Morimura, T. and Seki, M. 2005. The process of achieving 270 km/h operation for Tokaido Shinkansen - Part 2: Technology development. *Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit*. **219**(1), pp.27–43.
- National High Speed Rail Corporation Limited 2021. *India's Bullet Train Ride: The Journey So Far* [Online]. Delhi: National High Speed Rail Corporation, Ltd. [Accessed 3 May 2023]. Available from: <https://nhsrcl.in/sites/default/files/2021-06/Final%20Digital%20Book.pdf>
- National High Speed Rail Corporation Limited 2023a. NHSRCL: 'Make in India' initiative based HSR sub-system. [Accessed 2 May 2023]. Available from: <https://nhsrcl.in/en/about-us/make-in-india>
- National High Speed Rail Corporation Limited 2023b. NHSRCL: National High Speed Rail Corporation Limited. [Accessed 2 May 2023]. Available from: <https://nhsrcl.in/en/home>
- Ngoc, A.M. and Nishiuchi, H. 2022. Impact of High-Speed Rail on Social Equity—Insights from a Stated Preference Survey in Vietnam. *Sustainability*. **14**(2), p.602.
- Nippon Steel Corporation 2023a. List of Products | Railway, Automotive, Machinery Parts | Products | Nippon Steel Corporation. *Nippon Steel Corporation*. [Online]. [Accessed 8 May 2023]. Available from: <https://www.nipponsteel.com/en/product/railway-automotive-machinery-parts/list/>



- Nippon Steel Corporation 2020. *Rails* [Online]. [Accessed 18 May 2021]. Available from: [https://www.nipponsteel.com/product/catalog\\_download/pdf/K003en.pdf](https://www.nipponsteel.com/product/catalog_download/pdf/K003en.pdf)
- Nippon Steel Corporation 2023b. Railways | Products | Nippon Steel & Sumitomo Metal Corporation. [Accessed 9 May 2023]. Available from: <https://www.nipponsteel.com/en/product/use/railway/index.html>
- OECD 2020. *OECD Development Co-operation Peer Reviews: Japan 2020* [Online]. OECD. [Accessed 29 April 2023]. Available from: [https://www.oecd-ilibrary.org/development/oecd-development-co-operation-peer-reviews-japan-2020\\_b2229106-en](https://www.oecd-ilibrary.org/development/oecd-development-co-operation-peer-reviews-japan-2020_b2229106-en)
- OECD 2023. Untied aid - OECD. [Accessed 1 May 2023]. Available from: <https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/untied-aid.htm>
- OECD Stat 2023. Aid (ODA) tying status [DAC7b]. *OECD Stat*. [Online]. [Accessed 29 April 2023]. Available from: <https://stats.oecd.org/>
- Oh, Y.A. 2018. Power asymmetry and threat points: negotiating China's infrastructure development in Southeast Asia. *Review of International Political Economy*. **25**(4), pp.530–552.
- Onishi, T. 2019. Vietnam revives \$58bn high-speed rail project despite cost hurdle. *Nikkei Asia*. *Nikkei Asian Review*. [Online]. Available from: <https://asia.nikkei.com/Economy/Vietnam-revives-58bn-high-speed-rail-project-despite-cost-hurdle>
- Preston, J. 2016. Direct and indirect effects of high-speed rail *In*: D. Albalade and G. Bel, eds. *Evaluating High-Speed Rail*. Routledge.
- Railway Bureau of Taiwan 2019. Railway Construction- HSR Planning- Taiwan High Speed Rail(HSR) Project. *Railway Bureau, MOTC*. [Online]. [Accessed 8 May 2023]. Available from: <https://www.rb.gov.tw/en/showpage.php?lmenuid=24&smenuid=74>
- Ryugen, H. 2023. Taiwan to buy bullet trains from Hitachi-Toshiba duo in \$930m deal. *Nikkei Asia*. [Online]. [Accessed 8 May 2023]. Available from: <https://asia.nikkei.com/Business/Transportation/Taiwan-to-buy-bullet-trains-from-Hitachi-Toshiba-duo-in-930m-deal>
- Sugimori, S., Hayashi, Y., Takeshita, H. and Isobe, T. 2022. Evaluating the Regional Economic Impacts of High-Speed Rail and Interregional Disparity: A Combined Model of I/O and Spatial Interaction. *Sustainability*. **14**(18), p.11545.
- Tata Steel Long Products Limited 2021. TSLP | Steel | TATA Steel Long Product Limited. [Accessed 9 May 2023]. Available from: <https://www.tatasteellp.com/product/steel/>
- UK Department for Business and Trade and UK Department for International Trade 2021. Aid funded business. *GOV.UK*. [Online]. [Accessed 29 April 2023]. Available from: <https://www.gov.uk/guidance/aid-funded-business>

Viet Nam Steel Corporation 2023. Manufacturing. *Viet Nam Steel Corporation*. [Online]. [Accessed 9 May 2023]. Available from: <https://vnsteel.vn/en/field-of-activity/reinforcement-steel-1.html>

Watson, I., Ali, A. and Bayyati, A. 2022. Energy Efficiency of High-Speed Railways. *Advances in Environmental and Engineering Research*. **03**(04), pp.1–22.

West Japan Railway Company 2023. Procurement items / Rails and other track materials. *West Japan Railway Company*.

World Steel Association 2023. Top Producers. *worldsteel.org*. [Online]. [Accessed 9 May 2023]. Available from: <https://worldsteel.org/steel-topics/statistics/top-producers/>

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## *Why the Leviathan Is a Mortal God: From Nominalism to Mortalism*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

### **Abstract**

This paper attempts to answer the question of why Leviathan is a mortal god in Leviathan, despite the fact that when sovereignty was established, it was intended to be immortal, but because of the many inconsistencies in sovereignty itself, the seeds of natural death were planted. But the reason for this, firstly, is that sovereignty can die, not that Leviathan can die; secondly, Leviathan saw the possibility of civil war, so Leviathan's "death" could not be an intrinsic factor. Therefore, from the perspective of sovereign change, the reason that Leviathan is mortal is not sufficient. By analyzing the nominalistic ideas in Hobbes' thought, especially Ockham's natural law ideas. It is demonstrated how Hobbes established his own physical and natural law system within the framework of nominalism and proved that Leviathan is a result of voluntarism, possessing great power to resist civil unrest and provide protection. While demonstrating how Leviathan was established, the thesis also provides an in-depth analysis of the text and concepts of Leviathan. It also explores Hobbes' concept of mortalism, from the earlier to the later period of thought. In other works, he considers the soul to be in an immortal state and does not consider it to be capable of being in an unconscious state after death. In Leviathan, on the other hand, he considers the soul to be mortal, since immortal life is as terrible as eternal punishment. In the end, this thesis tries to answer the ideological reasons why Leviathan is mortal.

Keywords: Leviathan, Nominalism, Mortalism

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## Introduction

Although there are many logical incompleteness and ideological contradictions in Hobbes' works, Hobbes's core idea is self-consistent. Hobbes's philosophical system is not merely a mechanistic logical analysis, but he also tries to raise the fundamental issues of moral life and social order.<sup>1</sup>

Hobbes writes in Chapter 17 of Leviathan:

This is the Generation of that great LEVIATHAN, or rather (to speak more reverently) of that Mortall God, to which we owe under the Immortal God, our peace and defense.<sup>2</sup>

As God, he is immortal, but as an artificial God, he is mortal.

If we want to try to answer the question of why Leviathan is mortal, then in terms of ideological system, "Leviathan" is not a single work, and it needs to be interpreted in conjunction with Hobbes' other texts. In "On Objects" ("De Corpore) and On Citizenship ("De Cive "), it can be seen that Hobbes was greatly influenced by nominalism and Aristotle.

Nominalism proposes an unknowable explanation of God and attempts to redeem theology. At the same time Hobbes inherited the tradition of medieval nominalism. Secondly, on the basis of nominalism, it discusses the concept of mortalism.

Mortalism is also called soul sleep or annihilationism. It is a Christian doctrine and doctrine of the Reformation period. Hobbes was not a mortalist (mortalist) at the beginning, but Hobbes' thought changed later. "Hobbes' s Mortalism" provides the basis for the study of Hobbes's mortalism.

So on the basis of these two, come to the answer of why leviathan is mortal.

## 2. Natural law

### 2.1 Nominalism and Natural Law

Hobbes' concept of the state of nature actually comes directly from Occam's natural law thought. Although Occam does not have a dedicated work on natural law, we can categorize natural law thought in his writings. The natural law thought of nominalism can also be called voluntarism, and the opposite is realism. In the debate on the difference between general concepts and special concepts, realism believes that the subjective world and the objective world are completely corresponding, including the "universal" has its own counterpart in the objective world, so in the concept of realism, the lex Naturalis is interpreted as an act of reason independent of the will, God is the guide who relies on reason (reason) behavior, and God cannot change the natural law order.

For Occam, names are the basic. Occam dislikes Platonism. In his view, everything in the world is unique. Without the individualized principle that Scotus said, there is no real universals. Pure nominalism thus proceeds to the opposite proposition of realism, and these

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<sup>1</sup> Hobbes' Political Philosophy: Foundations and Origins; Preface

<sup>2</sup>Leviathan ch17 p73

commands are justified only if God is the lawgiver. In this case, nominalism has moved towards the position of voluntarism: the power to determine human behavior comes from the will of the individual, and the power to determine the law is the will of God. Therefore, voluntarism is the tradition of nominalistic natural law, and this is the source of positive law theory for Hobbes's view that leviathan is the sovereign and his orders are the highest orders.

## 2.2 Occam and Natural Law: Types of Natural Law and Correct Rationality

In fact, Occam often refers to natural law as "correct reason". Right reason (*recta ratio*) comes from the Greek translation of logos, which in Latin translates the notion that reason has an inner orientation that enables reason itself to distinguish right from wrong. Cicero said: "The real law (*vera lex*) is correct rationality (*recta ratio*), consistent with nature, applicable to all men, stable, constant, summons duty by command, deters crime by prohibition."<sup>3</sup>

Thus in chapter fourteen of Leviathan Hobbes writes:

A LAW OF NATURE, (Lex Naturalis) is a Precept, or general Rule, found out by Reason.<sup>4</sup>

Hobbes showed that natural law is a kind of cognition, a kind of universal rule, just the rule discovered by reason.

And Occam wrote in "Quotes": "No action is completely moral, unless what the will wishes in the action is governed by correct reason, because the will is governed by proper reason." Here, it seems that the will It shows that it should be dominated by reason.<sup>5</sup> How should we understand Occam's thought?

Will, not reason, is considered to be at the heart of law. The core of Occam's thought is, "God's will wants correct reason to govern what it wills."<sup>6</sup> Therefore, there is no disunity between the standard of correct reason and God's will, and correct reason depends on God's will. Reason is only part of God's infallibility.<sup>7</sup> Therefore, Occam's political thought and philosophical thought are consistent and belong to the category of voluntarism. So Occam wrote in the first part of "Dialogus", "Natural law or obvious natural reason", "to use the natural order of reason is to use natural law."<sup>8</sup>

Occam distinguishes the ordinary power of God power (and absolute power power), God used ordinary power to establish a moral order, and Occam also claimed that the natural law at this time is absolute, immutable, and without any immunity.<sup>9</sup> And by absolute power, the use of absolute power to order creatures to do the opposite of what is actually forbidden.

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<sup>3</sup>Cicero Republic II 22

<sup>4</sup>Leviathan ch14 p53

<sup>5</sup>SENT.hi,qu.12 CCG: "... there is no act perfectly virtuous except the will through that act wants dictated by right reasoning because of the fact that it is dictated by the right reason "

<sup>6</sup>Medieval Theories of Natural Law: William of Ockham and the Significance of the Voluntarist Tradition

<sup>7</sup>SENT.I, dist.xli .qu.I K: "... all the will is right conforming reason but it is not always conformable reason right of the former which: to show cause Why? will he must want this by the very fact that will the divine wills this , right reason dictates that it is to be wanted .

<sup>8</sup> 《 DIAL 》 I 6 ch100 p629 line 45: " Using natural dictation of reason , this is using natural law

《 DIAL 》 III, II, III, ch6.p932, line 65, "... because natural law is immutable in the first way and invariable as "indispensable "

Occam postulates that the absolute power of God expresses itself lawfully in accordance with the natural order, so that Christians should believe in God's divine promises in the Bible.<sup>10</sup> Occam limited the power of God to some constant rules, such as being wet by water, etc. Occam actually gave God a regular expression. God expressed himself according to these rules. He promised One part is forbidden and another part is forbidden, so the behavior and phenomenon have nothing to do with their own nature, only the will of God determines such a result.

Therefore, in the field of theology, God's **will** is not subject to any restrictions, and it is a completely irrational field that excludes any intervention of rational theology. In contrast, Occam believes that the will of rulers in the world, whether it is the pope or the monarch, is not absolute (absolute), and they are all bound by the Bible.

Obviously, as a natural law, the most fundamental one is obedience, and obedience is the inevitable result of correct reason.

### 3. Physics and nominalism

#### 3.1 Vacuum

In the first three parts of *On Bodies*, Hobbes establishes the philosophical foundations of his compendium of natural knowledge. In Part IV, he deals with the subject of physics.

First of all, Hobbes does not admit the existence of a vacuum. Of course, this is inherited from Aristotle's point of view. Hobbes uses fluid aether replaces the idea of a vacuum, invisible objects like "tiny atoms scattered throughout the space between the earth and the stars", and "finally, the most numerous fluid aether, fills the rest of the universe, leaving no room"<sup>11</sup>:

*No vacuum should be used, but the causes of these phenomena should be shown to us, if not made to appear more likely, at least equally probable.*<sup>12</sup>

Here, Hobbes believes in the non-existence of vacuum, which serves as a basis for the development of his subsequent theory, that is, the non-vacuum matter can complete his physics system, that is, any movement is a matter for him. The motion of matter drives the motion of another matter. For Hobbes, both physics and moral psychology are about movement, and these are supposed to be concerned with the movement of the mind. Therefore, in "de corpore, Hobbes writes that "we shall examine the movements of the mind, that is, desire, greed, love..." This means that the basis of Hobbes' philosophy is motion and the interaction of forces.

In "de In the twenty-fifth chapter of corpore, Hobbes believes that sensation is caused by the outward reaction and effort of sensory organs. According to Hobbes, feeling is still a kind of movement. For Hobbes, the only cause of motion of a material carrier is the motion of adjacent bodies. Thus, when discussing physical causation, Hobbes used such a materialistic notion of monism.

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<sup>10</sup> Medieval Theories of Natural Law: William of Ockham and the Significance of the Voluntarist Tradition

<sup>11</sup> Hobbes,"concerning body",p426

<sup>12</sup> Hobbes,"concerning body",p425

It can be seen that Occam is standing on the basis of opposing universals, and believes that objects must be able to interact with each other. And this nominalist thinking clearly influenced Hobbes' concepts of names and counting.

### 3.2 Name and calculation

In Hobbesian nominalism, names have no universal meaning.

Precisely because names are separate and isolated, the result of this is the possibility of calculation between things.

According to Hobbes, rationality is computation<sup>13</sup>:

By RATIOCINATION, I mean computation. Now to compute, is either to collect the sum of many things that are added together, or to know what remains when one thing is taken out of another. Ratiocination, therefore, is the same with addition and subtraction...

This is the underlying logic of Hobbesian politics. It is precisely because and only because things can be added and subtracted that political agreements can be born. Thus using "correct reason" (*recta ratio*) is reckoning, that is, "addition and subtraction of sequences of common nouns recognized as signs or ideas."

And in Occam's thought, God's will wants right reason to govern what it wants. So Hobbes pushed correct rationality to an extreme, "If all the affirmative and negative processes on which the final conclusion is based and the inferences are made are not certain, then the final conclusion is also not certain." Under the deduction of correct<sup>14</sup> rationality, Rational reasoning (reckoning) must be strictly implemented, otherwise the desired result cannot be achieved. And it is reasoning that gives Leviathan a possibility.

### 3.3 Substance and Soul

In Leviathan, in the chapter "of the kingdom of darkness", Hobbes paints a picture of the natural world. Depicts a corrupt natural philosophy. The illegitimacy of this philosophy lies in its notion of substance incorporeall. For Hobbes, the idea of an immaterial entity was impossible in philosophy. In Hobbes' interpretation, although souls and angels are discussed many times in the Bible, there is no discussion that these spirits are invisible.<sup>15</sup> In chapter thirty-four, Hobbes writes:

Here if by the spirit of god be meant god himself, the is motion attributed to god, and consequently Place, which are intelligible only of bodies, and not of substance incorporeall.<sup>16</sup>

Here Hobbes denies that God appears as an incorporeal entity. In fact, in Leviathan, in order to achieve its materialistic purpose, Hobbes distinguishes the existence of two kinds of *ens* (entities). One is what we can see and one is invisible, such as God and angels. Therefore, there is and only the former, that is, the visible substance is the research object of philosophy,

<sup>13</sup> De corpore p13

<sup>14</sup> Leviathan p31-32

<sup>15</sup> Leviathan p615, p644

<sup>16</sup> Leviathan ch34

while the latter is only the object of faith. What "leviathan" wants to construct is a natural philosophy, the universe is "the aggregation of all objects, and there is no part of it that is not a body." The reason for mentioning the entity is that in "leviathan", Hobbes holds the views of materialism and mortalism at the same time. In "leviathan", he believes that the soul as a substance is not immortal.

At the same time, Hobbes' ontology is simple, and in the three parts of "leviathan", people are the core of Hobbes' research.

Hobbes wrote that the sovereign is the soul of the state, and that once the soul is separated from the body, no one can receive any movement from the soul.<sup>17</sup> Sovereignty is precisely an entity which cannot be separated from the state. On this level why leviathan is mortal The question of god should be transformed into the question of why the sovereign as the soul is mortal.

#### 4. The kingdom of two gods

Chapter 35 of Leviathan reads:

In short, the kingdome of God is a Civil kingdome; which consisted, first in the obligation of the people of Israel to those laws, which Moses should bring unto them from Mount Sinai; and which afterwards the High priest of the time being, should deliver to them from before the Cherubins in the Sanctum Sanctorum; and which kingdome having been cast off, in election of Saul ,the Prophets foretold, should be restored by Christ; and the Restauration whereof we daily pray, when we say in the Lords Prayer...

It can be seen from this that Hobbes divided the Kingdom of God into two, one is the original Kingdom of God (the original of god); one is the future kingdom of God in Christ that will be restored by Christ. As Eric said: "The concept of the linear development of human history comes from theology, and its strength comes from the Christian belief that human development is the result of meaningful stages of development for salvation."<sup>18</sup> Therefore, Hobbes' division contains a historical dimension, that is, human beings have experienced the original kingdom of God, and at the same time they still have to experience the kingdom of God in Christ in the sense of eschatology.

Hobbes believed that both Adam and Abraham had a covenant with God, and that the kingdom of God did not appear until the time of Moses, when the Israelites believed God was king and obeyed his laws. Hobbes in "de Corpore wrote that Israel recognized God as King because it was no longer willing to submit to human rule.<sup>19</sup> After experiencing the captivity of Babylon, the Israelites took God as their king and established the kingdom of God. This kingdom is no longer subject to human rule, it is the kingdom of God who is free. Such a country is thus the result of a political event.

Therefore in "de In Chapter 16 of Corpore, Hobbes explained that human authority is only the authority to interpret God's word, and no other authority. That is to say, the authority of the Kingdom of God belongs only to God, and other authorities are either legal with His permission or illegal. Hobbes emphasized that the Israelites are free in the kingdom of God,

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<sup>17</sup> Leviathan ch21

<sup>18</sup> Political theory and the pattern of general history

<sup>19</sup> De corpore p184



because apart from their obedience to God and obedience to God's law, they are free. And then, when the Israelites chose Saul as their king, the kingdom of God was abandoned. Here we will not discuss why the Israelites abandoned the kingdom of God.

In the thirty-fifth chapter of "Leviathan", Hobbes said that the kingdom of God is a secular kingdom. When the Israelites abandoned the kingdom of God, the prophet predicted that the kingdom of God would be restored by Christ. And the kingdom has not yet come, and the kingdom of God will only be restored when Christ comes again, beginning on the day of Judgment Day.

Why is it said that when Christ was in the world, his power would not weaken the power of the Jews or Caesar? Because when Jesus ruled the believers on earth, he was exercising the power of a shepherd.<sup>20</sup> That is to say, God did not grant Christ the power to judge, nor did he have the power to compel, but only the power to reveal. So when Christ came, although the rulership was divided, Christ was still the king of this world.

So what is the meaning of Leviathan's establishment? Apart from being an idealized model, the kingdom of God in Christ, what does Leviathan mean?

For Hobbes, Leviathan still plays the role of katechon, and only Leviathan can withstand the coming of civil war before Christ's kingdom of God comes. In addition, if we regard sovereignty as the soul of the country, then combined with the mortalism below, the soul as an entity is still in a state of sleep, waiting to wake up before Christ comes. So for Leviathan, Leviathan is a transitional stage between two kingdoms of gods, and in this stage, this artificial god has all the characteristics of gods, but is still an entity with a soul in essence. In the following, we will discuss why mortalism is the answer to mortal. The crux of the god problem.

## 5. Mortalism

Modern theologians use "mortalism" or "Christian mortalism" to describe the medieval phrase "soul sleep" or "soul death". "Soul sleep" was popularized by John Calvin in his Latin book *Psychopannychia*. *Psycho* comes from the Greek *Ψυχή*, which means soul, spirit, and *pannychia* comes from the Greek *παν- νυχίς*, which means all-night banquet.<sup>21</sup> So the original meaning of the word is that the soul is conscious and active.

It wasn't until a later period that the meaning of *psychopannychia* changed, and the meaning became the exact opposite. Mortalism means that Christians believe that the human soul will not be naturally immortal (naturally immortal),<sup>22</sup> and at the same time after the death of the body, the soul enters an unconscious intermediate state (intermediate). Among the early Christian priests there were differences of opinion regarding the exact state of the soul after the death of the body. Until 1439 the idea that the soul remained conscious after the death of the body was more authoritative than the recovery of the body.<sup>23</sup> During the Reformation in

<sup>20</sup> De corpore p201

<sup>21</sup> Barth, K (1995), *The theology of John Calvin*, p. 161

<sup>22</sup> Garber; Ayers (2003), *The Cambridge history of seventeenth-century philosophy*, vol. I: Volume 2, p. 383, "But among philosophers they were perhaps equally notorious for their commitment to the mortalist heresy; this is the doctrine which denies the existence of a naturally immortal soul."

<sup>23</sup> Hobbes's Mortalism p661

the sixteenth century, the religious reformers mortalists invented several varieties until Tyndale, one of the great pioneers of the English Reformation, began to attack the orthodox theology of the soul's immortality, which gave England The first extended writing by Christians defending the idea of mortalism.

Clearly, the Leviathan is the most radical of all Hobbes's writings. In Leviathan, Hobbes rejects the soul as an incorporeal entity substance). But in his other works, such as "De cive" and "the Element of Law", Hobbes held "soul is "mortal" attitude. This attitude is contradictory to the concept of "mortalism" in "leviathan."

Although most scholars regard mortalism as the logical deduction of Hobbes' materialism (materialism), David Johnston in "Hobbes' s He does not regard mortalism as a logically necessary reasoning, but believes that mortalism is not a problem-free logical conclusion of materialism as claimed by Hobbes.<sup>24</sup>

So in Hobbes' philosophical system, how should we understand it?

In chapter 46 of "leviathan" it is written:

The world, (I mean not the Earth onely, that denominates the Lovers of it Worldly men, but the Universe, that is the whole masse of all things that are) is Corporeall, that is to say, Body; ... And because the Universe is All, that which is no part of it, is Nothing; and consequently no where. Nor does it follow from hence, that Spirits are nothing: for they have dimensions, and are therefore really Bodies.<sup>25</sup>

From this passage, it seems that Hobbes insisted in the leviathan that the soul cannot be immortalized naturally (immortal by nature),<sup>26</sup> and this view seems to be the result of a logical corollary made by his materialism, since he insisted that the soul is a substance, so it must not be possible for the soul to be eternal after the death of the body.

It seems that the discussion on mortalism can end here, but on this basis, I still want to discuss Hobbes's change of thought on mortalism.

In "De In cive, Hobbes maintains a Christian's complete thought about faith. Hobbes sums up the traditional belief that "natural reason cannot be known, but can only be revealed" as "*animam esse immortalem*" (soul is immortal).<sup>27</sup> Obviously, if hobbes' idea of mortalism is only deduced from materialism, it cannot explain the inconsistency of this idea in hobbes' works. For example, Leo Strauss believed that the beginning of Hobbes' treatment of theology was materialism.<sup>28</sup>

David Johnston from Hobbes against Thomas White's manuscript, Anti-White, begins, explaining why Hobbes's mind changed. This is an early writing by Hobbes from 1642 to 1643 in which he opposed Thomas White's idea of the connection between body and soul which Hobbes objected, implies the conclusion that the soul eventually becomes the body.

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<sup>24</sup> Hobbes's Mortalism p648

<sup>25</sup> Leviathan ch46 p280

<sup>26</sup> Leviathan ch38 ch44

<sup>27</sup> Hobbes *De cive*, ch17

<sup>28</sup> Leo Staruss, *Political Philosophy of Hobbes*, p59-78

In the penultimate chapter, Hobbes discusses the concept of "eternal suffering" torment), Thomas White argues that eternal pain is better than nonexistent. Hobbes objected to this notion, for him, the existence of eternal pain is actually worse than the erasure of existence itself. On the contrary, Hobbes concluded that "philosophers can sincerely maintain (the existence of hell) not because of the knowledge gained from philosophy, but a belief in the authority of the Bible and the Church".<sup>29</sup> This manuscript at least hints at some of the ideas of mortalism that emerge later in the *Leviathan*.

In fact, including his *Anti-White*, Hobbes's early surviving texts all refer to or imply that the soul is immortal (soul is immortal). The view that the soul is eternal was consistent with orthodox Christianity until at least 1640. Of course, if we reason from *Leviathan*, it is also possible that Hobbes has been covering up the truth that he is a mortalist before that. But David Johnston dismisses this possibility as plausible, since Hobbes would have had no legitimate reason to conceal his true theological views, which he would not have needed to discuss if they were clearly pagan.<sup>30</sup>

Why did Hobbes become a mortalist again in *Leviathan*?

Hobbes believed that immortality was a greater reward than this life, and that eternal torment was likewise a greater torment than natural death. So for people facing civil war and chaos, are these things really worth pursuing? In *Leviathan* Hobbes believed that spreading mortalism could bring peaceful results. Because Hobbes believed that mortalism could solve a punishment called divine sanctions). For example, in "The Element of Law", Hobbes wrote: "why should a man incur the danger of a temporal death, by displeasing of his superior, if it were not for fear of eternal death hereafter?"<sup>31</sup> For Hobbes For Booth, fear (fear) is the direct driving force of survival, whether it is fear of the state of nature or fear of civil war, or fear of God's punishment (fear of damnation), fear is the ability to overcome a person's temporary death (temporal death.)<sup>32</sup>

Therefore, in *Leviathan*, Hobbes' main purpose is to remove the fear of the soul image, so as to prevent these fears from destroying sovereignty. So *Leviathan* played an important political role in mortalism.

Therefore, when Hobbes writes that the sovereign is the soul of the state, the soul, as a substance, must be mortal.

## Conclusion

Why *Leviathan* is a mortal God?

Although sovereignty is established, in people's intention, it is hoped that sovereignty will last forever, but because sovereignty itself has many incongruities, it will plant the seeds of natural death.

But this reason, first, is only the reason why sovereignty can die, not the reason why *Leviathan* can die; second, *Leviathan* sees the possibility of civil war, so *Leviathan's* death

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<sup>29</sup> *Anti-White*, ch4,p3

<sup>30</sup> Hobbes's Mortalism p653

<sup>31</sup> The Element of Law,ch2.6.5

<sup>32</sup> Hobbes's Mortalism p655

cannot be an internal factor. So from the perspective of sovereignty change, the reason why Leviathan is mortal is not sufficient.

Leviathan is not an ordinary sovereign state, he has imitated God since its establishment. He has the voluntaristic power of God (*potestas*), he has the highest power in this world, so that no other authority on earth can compare with it (*non est potestas super terram quae compareur.*) In the above discussion of natural law and voluntarism, we found that in "Leviathan", various factors that threaten national sovereignty, including spiritual rights, fear, etc., have been excluded, so Leviathan is the only one. As a result of voluntarism, possesses great power to resist civil strife and provide protection.

At the same time, Leviathan is also a result of Hobbesian physics. In discussions about physics and nominalist concepts, the Leviathan is the result of the movement. Hobbes denied the existence of a vacuum, cleared the way for the movement of objects, and at the same time vigorously promoted the research results of geometry, all names (names) can be calculated, and reason is reckoning. In physics, Hobbes introduced correct rationality (*recta ratio*) and think that Leviathan is the result of correct rationality. It is precisely because human beings are rational individuals of addition and subtraction that it is possible to reach a contract, and it is possible for Leviathan to be born.

These two announced the difference between Leviathan and the so-called countries before. Leviathan can suppress wars, and at the same time, it has the possibility of being born rationally.

On the other hand, Hobbes wrote about two kingdoms of God in "Leviathan". Leviathan is the state before Christ's kingdom of God came, which is why I mentioned mortalism. Sovereignty, as the soul of the country, can even be understood as the soul waiting for the second coming of Christ and waiting in sleep, so the soul cannot be in an immortal state.

Finally, in the discussion of mortalism, although Hobbes has a great shift in thinking, in other writings, he considers the soul to be an immortal state, and does not think that the soul can remain unconscious after death. And in "Leviathan", he considers the soul mortal, because immortal life is as terrible as eternal punishment. A more radical work than the others, the Leviathan aims to eliminate any threat to sovereignty, including divine punishment (divine sanctions), or the diminution of hope or fear, any threat to sovereignty must be removed.

He attacks the very fear of punishment and seeks to overthrow the supernatural element of any religion. All this requires only the stability of sovereignty.

So for Hobbes, the soul must be mortal so that sovereignty can be stable.

Thus, leviathan is a result of voluntarism and at the same time a result of Hobbesian physics. Hobbes denied the possibility of the soul being an incorporeal and argued that the soul is mortal. Therefore, as the sovereign of the soul, Leviathan must also be mortal.

## References

- Barth, K. (1995). *The theory of John Calvin* , Wm. B. Eerdmans Publishing.
- Cicero. (1995). *De Re Publica* , Cambridge university press.
- Garber, A. (2003). *The Cambridge history of seventeenth-century philosophy*.
- Hobbes, T. (1976). *Anti-White* , London.
- Hobbes, T. (1994). *Human Nature and De corpore Politico(the Element of Law)*, Oxford university press.
- Hobbes, T. (1988). *Léviathan*, F. Tricaud, Paris:Siley.
- Hobbes, T. *The English Works of Thomas Hobbes of Malmesbury, Vol. 2 Of Liberty. Of Dominion. Of Religion* (Thomas Hobbes), London.
- Johnston, D. (1989). Hobbes's Mortalism , *History of Political Thought* 10(4): 647-663.
- Oakley, F. (1961). Medieval Theories of Natural Law: William of Ockham and the Significance of the Voluntarist Tradition, *Natural Law Forum*.
- Staruss, L. (1996). *Political Philosophy of Hobbes*, University Of Chicago Press.
- Strong, T. B. (2007). The Sacred Quality of the Political: Reflections on Thomas Hobbes and Carl Schmitt;A Journal for Philosophical Study of Public Affairs No. 22, September,pp. 1-63.
- Voegelin, E. (2007). "Political Reading History Draft", East China Normal University Press.
- Voegelin, E. (2007). Political theory and the pattern of general history, *The American Political Science Review* , Vol . 38, No. 4 ( Aug., 1944) , pp. 746-754.
- William of Ockham. (2003). *a letter to the Friars Minor and Other Writings*, China University of Political Science and Law Press.
- William of Ockham. In libros Sententiarum (Commentary on the Sentences of Peter Lombard).
- William of Ockham. *Opus nonaginta dierum* (1332–34).
- William of Ockham. *Summa logicae* ( Sum of Logic ) (c. 1323, OP 1).



***Applying DANP to Explore the Critical Factors for Building  
Taiwan Restaurant Industry's Customer Loyalty***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

The restaurant industry in Taiwan embeds a characteristic of easy entrance and lower imitation barriers that results in a fierce competition in nature. How to build customer loyalty for encouraging customers to visit repeatedly is an essential challenge for every restaurant manager. This article employs the DANP method to explore the criteria and their priority for building restaurant customer loyalty. The thirteen evaluation criteria are firstly extracted from past literature and are categorized into four clusters; then consult with ten scholars/experts who are excellent in restaurant industry; finally, interview with another fourteen senior restaurant managers to collect their practical opinions. The research results reveal that Differentiation Cluster is the “main cause-factor” while Brand Image Cluster is the “main effect-factor” among the clusters. Customer Experience Cluster has the significant relationship with other clusters and locates at the central role among the four clusters. This article also distinguishes the restaurants into two groups: national-wide chain restaurants and the well-known local independent restaurants. For the national-wide chain restaurants, the top three important criteria are Trust, Product Quality, and Product Innovation; the last three criteria are Customer Satisfaction, Price Effectiveness, and Atmosphere. While the top three important criteria for the well-known local independent restaurants are Reputation, Trust, and Product Quality; the last three criteria are Product Innovation, Social Media Marketing, and Atmosphere. This article also finds that the focuses of the national-wide chain restaurant managers are pursuing the consistent service for all branch restaurants while the well-known local independent restaurant managers insist in maintaining traditional uniqueness.

Keywords: MCDM (Multi-Criteria Decision Making), DEMATEL, ANP, DANP, Customer Loyalty, Restaurant Industry

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## 1. Introduction

Restaurant industry occupies an important place in national economy. Accompany with the people's growing income and lifestyle transforming of the consumption pattern, the customers have many choices in selecting their favorite restaurant. The restaurant industry in Taiwan embeds a property of easy entrance and lower imitation barriers, the incumbent restaurants always face fierce competition. How to build customer loyalty to encourage customers to visit repeatedly and can be distinguished out of competitors is an essential challenge for every restaurant manager.

Most of the past literature on customer loyalty concentrated on the customers' perspective. They focused on how customers are passively perceived the products, services, or environments provided by restaurants and then engender the sensation of loyalty, i.e., the data for analysis is directly collected from customers by questionnaires (Mohammad et al., 2012; Al-Tit, 2015; Pratminingsih, 2018; Satti, Babar, & Parveen, 2022; Ahmed et al., 2023). Instead, this article stands from the viewpoints of restaurant managers and investigates how they can actively strive for customer loyalty by providing tasty products, excellent services, or comfortable environments.

This article separates the concerned restaurants into two groups: the national-wide chain restaurants and the well-known local independent restaurants<sup>1</sup> to engage in exploring the criteria that can help restaurant managers to build customer loyalty. This article employs the DANP methodology proposed by Ou Yang et al. (2008), which originally combined the models of DEMATEL and ANP model, to investigate the criteria and their priority of building customer loyalty for restaurant managers. We found that the restaurant managers will pay more attention on Differentiation Cluster and do not take serious on Brand Image Cluster. The focuses of the national-wide chain restaurant managers are pursuing the consistent service for all branch restaurants while the well-known local independent restaurant managers insist in maintaining traditional uniqueness. The results of this article will provide suggestions to the potential restaurant managers when they plan to enter into restaurant industry. Also, the different criteria priority for chain restaurants and independent restaurants will provide an opportunity for independent restaurants who prepare to expand their operation into chain restaurants.

The research structure of this article is organized as follows: Section 2 briefly reviews the past literature concerning about the important determinants of building customer loyalty; Section 3 expresses the employed research methodology and research procedure; The research results and discussion are shown in Section 4; Section 5 states the conclusion of this article.

## 2. Literature Review

This article aims at exploring the major determinants for restaurant industry to effectively build customer loyalty. Firstly, establish research framework and identifies four clusters, i.e. Brand Image Cluster, Customer Experience Cluster, Differentiator Cluster, and Customer Relationship Management (CRM) Cluster. Then, further develops thirteen criteria by extracting from past literature under the above clusters.

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<sup>1</sup> This article defines national-wide chain restaurant as the restaurants which has a head quarter and two or more branch restaurants located in different areas in Taiwan; the well-known local independent restaurant is a famous individual restaurant that operates at a specific area in Taiwan.



## 2.1 Brand Image Cluster

Brand image denotes the overall perception of a brand shaped by consumers' impressions and experiences (Budiman, 2015) and plays a critical role in helping customers to decide whether or not to buy the brand and further influencing their repurchase behavior (Bian & Moutinho, 2011; Azmi et al., 2022). Gómez-Rico et al. (2022) stated that advertising promotion, corporate social responsibility, and social media can helpfully building a strong brand image. Fraihat et al (2023) found that CSR activities can positively influence on reputation and brand image. Brand Image Cluster includes Corporate Social Responsibility (CSR) Criterion, Reputation Criterion, and Social Media Marketing Criterion.

1. **CSR Criterion:** The restaurant company will participate CSR activities (e.g., charity activities, social care, and ecological conservation) to enhance customers' positive attitude (Han, Yu, & Kim, 2019) and create good image of the restaurant (Park, 2019).
2. **Reputation Criterion:** The reputation assessment of a restaurant focuses mostly on meals quality, meals feature, service quality, and dinning environment, etc. (Richard & Zhang, 2012). The restaurant company have to pay more attention to the reaction of the experienced customers for their consumption satisfaction and the effect of their word of mouth (Harahap et al., 2018; Williams, Buttle, & Biggemann, 2012).
3. **Social Media Marketing Criterion:** The restaurant company can apply social media such as some App in internet to create, share, and communicate its product or service information. Through social media, restaurant company can easily interact with customers (Yaakop, Anuar, & Omar, 2013; Nguyen & Khoa, 2019; Grover, Kar, & Janssen, 2019; Hsu, 2012; Seo & Park, 2018) to shape brand image on target market (Barreda et al., 2015).

## 2.2 Customer Experience Cluster

Creating a unique experience is an increasing trend to improvement company's confidence and loyalty (Klaus, 2014). Most companies use customer satisfaction to assess their customers' experiences (Klaus & Maklan, 2013; Kim & Kim, 2022). Customer Experience Cluster includes Consumer Satisfaction Criterion, Product Quality Criterion, Service Quality Criterion, and Atmosphere Criterion.

1. **Consumer Satisfaction Criterion:** To increase customer satisfaction, the restaurant company must enhance food quality (taste, freshness of meals, and amount of food), hygiene (clean dining area and clean staff), responsiveness (prompt service) and menu (display, variety, and knowledge of items) (Almohaimmed, 2007).
2. **Product Quality Criterion:** For increasing the customers' dinning satisfaction, the restaurant company has to maintain a high level of its product quality (Peri, 2006). To raise the product quality, the restaurant has to emphasize the characteristics of meals, such as: taste, freshness, appearance, temperature (Kabir, 2016), food appearance, aesthetics (Kristiawan, Hartoyo, & Suharjo, 2021), special features, reliability (Garvin, 1984), and some of the combination of these dimensions.
3. **Service Quality Criterion:** To satisfy customer, the restaurant company has to raise service quality by compressing the disparity between the expected and actual services (Cronin &

Taylor, 1992), such as service process, service environment, service staff, and service experience.

4. Atmosphere Criterion: The restaurant company will provide customers a good experience in perceiving the quality of surrounding space (Liu & Jang, 2009), including decor, noise level, temperature, cleanliness, smell, lighting, color, and music (Sulek & Hensley, 2004; Pecotić, Bazdan, & Samardžija, 2014).

### 2.3 Differentiation Cluster

Differentiation offers a superior, different, and unique products or services to the customers (Porter, 1980) and distinguishes the company' and competitors' offerings (Kotler & Amstrong, 2010). Differentiation strategy included company's performing innovation (Kaliappen & Hilman, 2014), design, physical attributes, features (Gyampah & Acquaah, 2008). Differentiator Cluster includes Price Effectiveness Criterion, Product Innovation Criterion, and Product Attribute Criterion.

1. Price Effectiveness Criterion: The restaurant company can provide the meals with excellent value and reasonable price to its customers (Campbell, 2020; Goldsmith, Flynn, & Kim, 2010).
2. Product Innovation Criterion: The restaurant company can frequently introduce new taste and new flavor of food and beverages (Tüzünkan & Albayrak, 2015), or significantly improve meals in its characteristics or original appearance to satisfy customer (Atalay, Anafarta, & Sarvan, 2013).
3. Product Attribute Criterion: The restaurant company has to enhance product attributes include food safety, cleanliness, food quality, speed of service, perceived value of the food and drink items, quality of service, staff friendliness, price, variety of menu, close travel distance, and parking facility (Harrington, Ottenbacher, & Way, 2013; Upadhyay, Singh, & Thomas, 2007; Ponnam & Balaji, 2014) to increase customers' satisfaction and loyalty.

### 2.4 CRM Cluster

CRM seeks to establish long-term relationships with the customers on committed, trusting, and cooperative relationships (Jain, Jain, & Dhar, 2002). Chen & Ching (2007) concluded that CRM includes service and customization, loyalty programs, cross selling. Therefore, CRM Cluster comprises of Trust Criterion, Loyalty Program Criterion, and Customization Criterion.

1. Trust Criterion: The restaurant company has to build customers' confidence (Suhartanto, 2019; Morgan & Hunt, 1994) in food safety, food taste, service, and dinning atmosphere (Afzal et al., 2010; Song et al., 2022) to affects customer's repurchase intention and behaviors (Atkinson & Rosenthal, 2014).
2. Loyalty Program Criterion: The restaurant company provides bonus points redeemable for prizes or discounts (Sharp & Sharp, 1997; Furinto, Pawitra, & Balqiah, 2009), special treatment rewards designed to deliver comfort and peace of mind (Furinto, Pawitra, & Balqiah, 2009) or free gifts (Gu et al., 2022), to improve the relationship between business and customer (Ou et al., 2011).

3. Customization Criterion: The restaurant company builds a one-on-one interaction process with customer and designs tailored products or services for individual customer’s preference or needs (Fels, Falk, & Schmitt, 2017; Wu, 2004), to generate value and enhance customer relationships to create customer satisfaction and loyalty (Franke & Piller, 2003).

### 3. Research Methodology

This article adopts the DANP method proposed by Ou Yang et al. (2008), which combines DEMATEL and ANP procedures, to investigate the MCDM problems of how the restaurant managers engage in building customer loyalty. The ANP is employed to evaluate the priority of criteria for evaluates the priority of building customer loyalty. Then, the DEMATEL procedure is used to investigate interdependences between clusters and weights the even-weighted clusters in ANP.

#### 3.1 Research Procedure

For more precise, this article consults ten scholars/experts in the related fields to modify and complement the original edition of evaluation criteria. The final version of “The Criteria Description of Customer Loyalty” is shown as Table 3.1.

#### 3.2 Data Processing Steps

The data processing steps adopt the model proposed by Ou Yang et al. (2008) and the revised procedure by Lee (2021). Fig.3.2 shows the more detail flowchart of DANP steps rearranged by this article.

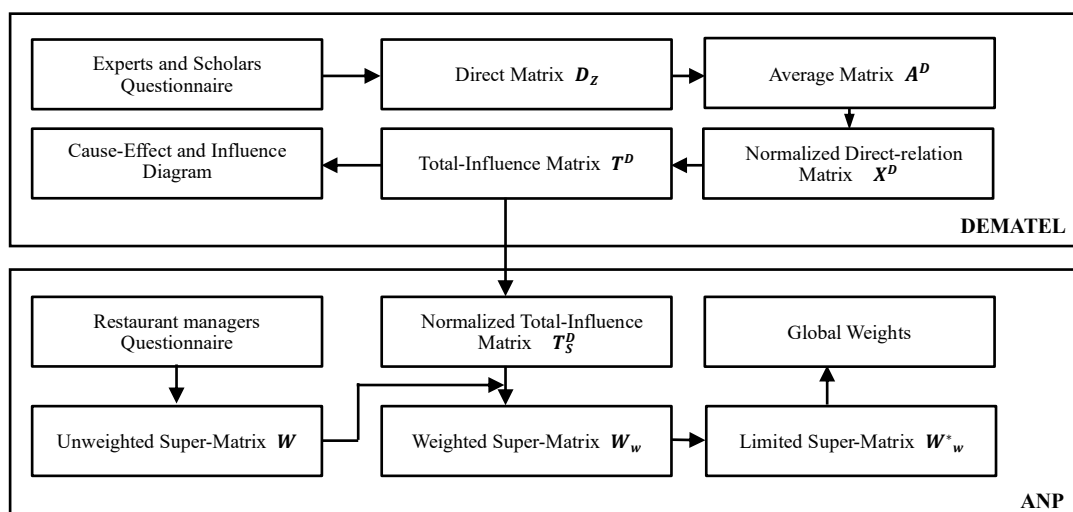


Fig. 3.1: The Flowchart of DANP Steps (Source: Rearranged by This Article)

Table 3.1: The Criteria Description of Customer Loyalty

Clusters	Criteria	Description	Sources
(B) Brand Image	(B1) Corporate Social Responsibility (CSR)	The restaurant company will participate CSR activities (e.g., charity activities, social care, product services, and ecological conservation) to enhance customer positive attitude and create good image and reputation of the restaurant.	Han et al., 2019 Park, 2019
	(B2) Reputation	The reputation assessment of a restaurant focuses mostly on meals quality, meals feature, service quality, and dining environment, etc. The restaurant company have to pay more attention to the reaction of the experienced customers for their consumption satisfaction and the effect of their word of mouth.	Richard & Zhang, 2012 Harahap et al., 2018
	(B3) Social Media Marketing	The restaurant company can apply social media such as some App in internet to create, share, and communicate its product or service information. Through social media, restaurant company can easily interact with customers to shape brand image on target market.	Nguyen & Khoa, 2019 Grover, 2019 Seo & Park, 2018 Barreda et al., 2015
(E) Customer Experience	(E1) Customer Satisfaction	To increase customer satisfaction, the restaurant company will enhance food quality (taste, freshness of meals and amount of food), hygiene (clean dining area and clean staff), responsiveness (prompt service) and menu (display, variety, and knowledge of items).	Almohaimmeed, 2017
	(E2) Product Quality	For increasing the customers' dining satisfaction, the restaurant company has to maintain a high level of its product quality. To raise the product quality, the restaurant has to emphasize the characteristics, such as: taste, freshness, appearance, temperature, food appearance, aesthetics, special features, reliability, and some of the combination of these dimensions.	Peri, 2006 Kabir, 2016 Kristiawan, Hartoyo, & Suharjo, 2021
	(E3) Service Quality	To satisfy customer, the restaurant company has to raise service quality by compressing the disparity between the expected and actual services, such as service process, service environment, service staff, and service experience.	Cronin & Taylor, 1992
	(E4) Atmosphere	The restaurant company will provide customers have a good experience in perceiving the quality of surrounding space, including decor, noise level, temperature, cleanliness, smell, lighting, color, and music.	Liu & Jang, 2009 Pecotić, Bazdan, & Samardžija, 2014
(D) Differentiation	(D1) Price Effectiveness	The restaurant company can provide the meals with excellent value and reasonable price to its customers.	Campbell, 2020 Goldsmith, Flynn, & Kim, 2010
	(D2) Product Innovation	The restaurant company can frequently introduce new taste and flavor of food and beverages or significantly improve meals in its characteristics or original appearance to satisfy customer.	Tüzünkan & Albayrak, 2015 Atalay et al., 2013

Table 3.1 The Criteria Description of Customer Loyalty (Con't)

Clusters	Criteria	Description	Sources
(D) Differentiation	(D3) Product Attribute	The restaurant company has to enhance product attributes include food safety, cleanliness, food quality, speed of service, perceived value of the food and drink items, quality of service, staff friendliness, price, variety of menu, close travel distance, and parking facility to increase customers' satisfaction and loyalty.	Upadhyay, Singh, & Thomas, 2007 Ponnam & Balaji, 2014
	(M1) Trust	The restaurant company have to build customers' confidence in food safety, food taste, service, and dinning atmosphere to affects customers' repurchase intention and behaviors.	Morgan & Hunt, 1994 Suhartanto, 2019 Afzal et al., 2010 Song et al., 2022 Atkinson & Rosenthal, 2014
(M) Customer Relationship Management (CRM)	(M2) Loyalty Program	The restaurant company provides bonus points redeemable for prizes or discounts, special treatment rewards designed to deliver comfort and peace of mind or free gifts, to improve the relationship between business and customer.	Sharp & Sharp, 1997 Furinto, Pawitra, & Balqiah, 2009 Gu et al., 2022 Ou et al., 2011
	(M3) Customization	The restaurant company builds a one-on-one interaction process with customer and designs tailored products or services for individual customer's preference or needs, to generate value and enhance customer relationships to create customer satisfaction and loyalty.	Fels, Falk, & Schmitt, 2017 Wu, 2004 Franke & Piller, 2003

### 3.2.1 Apply DEMATEL for Network Relationship

Step D1: Calculate the direct relation matrix  $D_z$

Each questionnaire received from respondent will produce a direct matrix  $D_z$ , Where  $z = 1, 2, \dots, n$ , where  $n$  represents the number of respondents. Each element of  $D_z$ , denoted by  $d_{ij}^z$  shows the initial direct effects that each cluster  $i$  exerts on and receives from other cluster  $j$ , Then,  $i$  is the  $i$ th row and  $j$  is the  $j$ th column.  $D_z$  is expressed as Eq. (1).

$$D_z = \begin{bmatrix} d_{11}^z & \dots & d_{1j}^z & \dots & d_{1n}^z \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ d_{i1}^z & \dots & d_{ij}^z & \dots & d_{in}^z \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ d_{n1}^z & \dots & d_{nj}^z & \dots & d_{nn}^z \end{bmatrix} \tag{1}$$

Step D2: Averaging the direct-relation matrix  $A^D$

The average matrix  $A^D$  is calculated by the mean of the same elements in the various direct matrices of the respondents. Each element of matrix  $A^D$ , represented as  $a_{ij}^D$ , is calculated by Eq. (2).

$$a_{ij}^D = \frac{\sum_{z=1}^n d_{ij}^z}{n} \tag{2}$$

*Step D3: Normalizing the direct-relation matrix  $X^D$*

The normalized direct-relation matrix  $X^D$  can be obtained by normalizing the  $A^D$  through Eqs. (3) and (4), in which all the diagonal elements equal to zero.

$$S^D = \min \left[ \frac{1}{\max \sum_{j=1}^n |a_{ij}^d|}, \frac{1}{\max \sum_{i=1}^n |a_{ij}^d|} \right] \quad (3)$$

$$X^D = S^D \times A^D \quad (4)$$

*Step D4: Deriving the total influence matrix  $T^D$*

$T^D$  is the direct/indirect matrix which can be acquired through Eq. (5), in which  $I$  is identity matrix. The elements  $t_{ij}^D$  of  $T^D$  is direct and indirect influence from cluster  $i$  to cluster  $j$  and when  $\lim_{k \rightarrow \infty} X^k = [0]_{n \times n}$ , the total-influence matrix is listed as follows:

$$T^D = \lim_{k \rightarrow \infty} (X^D + X^{D^2} + X^{D^3} + \dots + X^{D^k}) = \lim_{k \rightarrow \infty} X^D (I - X^D)^{-1} \quad (5)$$

Vector  $r$  and vector  $c$  respectively represent the sum of rows and sum of columns of the total relation matrix  $T^D$ , which defined by Eq. (6) and Eq. (7), respectively.

$$r = (r_i)_{n \times 1} = \left[ \sum_{j=1}^n t_{ij} \right]_{n \times 1} \quad (6)$$

$$c = (c_j)_{1 \times n} = (c_j)_{1 \times n}' = \left[ \sum_{i=1}^n t_{ij} \right]_{1 \times n}' \quad (7)$$

In Eq. (6),  $r_i$  is the sum of the  $i$ th row of  $T^D$  which represents the sum of direct and indirect influences of cluster  $i$  affecting on the other clusters; In Eq. (7),  $c_j$  is the sum of the  $j$ th column of  $T^D$  and represents the sum of direct and indirect influences cluster  $j$  received from the other clusters. In the case of  $i = j$ , the sum ( $r_i + c_i$ ) shows the aggregate of the row sum and column sum of cluster  $i$  which is called “prominence” that indicate the total influence given and received by cluster  $i$ . If the value of ( $r_i + c_j$ ) is high, it means that cluster  $i$  plays a central role and has a stronger linkage with the other clusters. In addition, the difference ( $r_i - c_i$ ) shows the prioritization of cluster  $i$  which is called “relation”. If ( $r_i - c_i$ )  $> 0$ , it represents that cluster  $i$  influences other clusters. ( $r_i - c_i$ )  $< 0$  means cluster  $i$  is influenced by other clusters.

*Step D5: Setting an  $\alpha$ -cut as a threshold to obtain the cause-effect diagram and influence diagram*

Each element  $t_{ij}$  in  $T^D$  provides the information of how much influence of cluster  $i$  can impose on cluster  $j$ . To filter out the minor influence clusters in  $T^D$ , Ou Yang et al. (2008) proposed to set a threshold  $\alpha$ . In  $T^D$ , if the original value of each element is smaller than  $\alpha$  and the element value will be replaced by 0. But many authors (e.g., Chiu et al., 2013; Shen et al., 2014; Hsu et al., 2013) suggested that eliminating the less influence elements by  $\alpha$ -cut may eliminate some key clusters in DEMATEL, and therefore result in information distortion in ANP. Furthermore, if the element values in any row or column in  $T_\alpha^D$  are all 0, the calculation in ANP can never be convergent. This article adopts the revised version of  $\alpha$ -cut. For example, if the elements  $t_{11}^D$ ,  $t_{21}^D$ ,  $t_{31}^D$ ,  $t_{23}^D$  are smaller than  $\alpha$ , those elements will just be signed an asterisk “\*” symbol instead of replaced by 0. The dash and solid line in influence diagram respectively denote minor and significant influence, shown as Fig. 3.2.

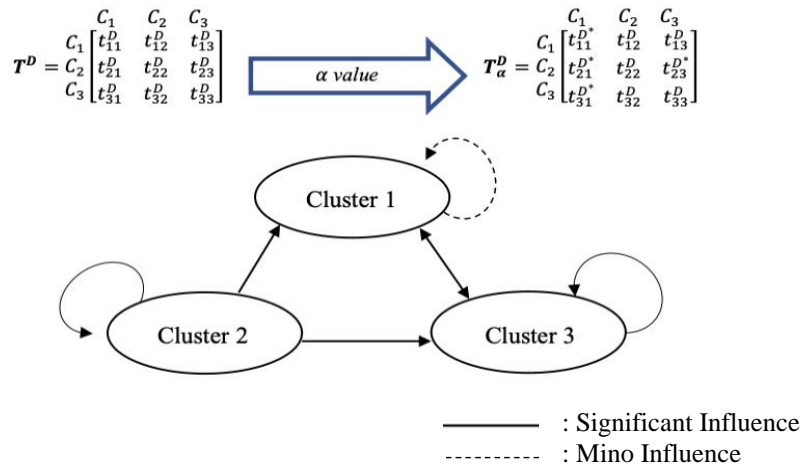


Fig. 3.2 The Revised Edition of  $T_\alpha^D$  and Influence Diagram for This Article (Source: Revised by This Article)

### 3.2.2 Apply ANP for Weighted Measurements

Step A1: Building the direct super matrix  $A_z$

The direct matrix  $A_z$ ,  $z = 1, 2, \dots, n$ , expressed as Eq. (8), is received from respondent’s questionnaire, where  $n$  represents the total number of respondents. Each element in  $A_z$ , denoted by  $a_{ij}^z$  shows the initial direct effect that the criterion exerts on and received from the other criteria,  $A_z$  is expressed as Eq. (8). In  $A_z$ ,  $c_n$  denotes the  $n$ th cluster,  $e_{nm}$  denotes the  $m$ th element in  $n$ th cluster, and  $A_{ij}$  is the principal eigenvector of the influence of the elements compared in the  $j$ th cluster to the  $i$ th cluster.

$$A_z = \begin{matrix} & & C_1 & C_2 & \dots & C_n \\ & e_{11} \dots e_{1m_1} & e_{21} \dots e_{2m_2} & \dots & e_{n1} \dots e_{nm_n} \\ C_1 & e_{11} & e_{12} & \dots & e_{1n} \\ \vdots & \vdots & \vdots & \dots & \vdots \\ C_2 & e_{21} & e_{22} & \dots & e_{2n} \\ \vdots & \vdots & \vdots & \dots & \vdots \\ C_n & e_{n1} & e_{n2} & \dots & e_{nn} \end{matrix} \begin{bmatrix} a_{11}^z & a_{12}^z & \dots & a_{1n}^z \\ a_{21}^z & a_{22}^z & \dots & a_{2n}^z \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1}^z & a_{n2}^z & \dots & a_{nn}^z \end{bmatrix} \tag{8}$$

Step A2: Averaging the direct super matrix

The average matrix  $A^A$  is calculated by the mean of the same elements in the various direct matrices of the respondents. In the  $A^A$ , each element  $a_{ij}^A$ , is calculated by Eq. (9).

$$a_{ij}^A = \frac{\sum_{z=1}^n a_{ij}^z}{n} \tag{9}$$

Step A3: calculating the initial direct-relation matrix  $X^A$

The normalized direct-relation matrix  $X^A$  is produced by normalizing the  $A^D$  through Eqs. (10) and (11). In the  $X^A$ , all diagonal elements are equal to zero.

$$S^A = \min \left[ \frac{1}{\max \sum_{j=1}^n |a_{ij}^A|}, \frac{1}{\max \sum_{i=1}^n |a_{ij}^A|} \right] \tag{10}$$

$$X^A = S^A \times A^A \tag{11}$$

Step A4: Deriving the total influence matrix  $T^A$

$T^A$  is the direct/indirect matrix which can be derived from Eq. (12), in which  $I$  is an identity matrix. The elements  $t_{ij}^A$  in  $T^A$  is direct and indirect influence from cluster  $i$  to cluster  $j$  and when  $\lim_{k \rightarrow \infty} X^k = [0]_{n \times n}$ .

$$T^A = \lim_{k \rightarrow \infty} (X^A + X^{A^2} + X^{A^3} + \dots + X^{A^k}) = \lim_{k \rightarrow \infty} X^A (I - X^A)^{-1} \tag{12}$$

Step A5: Normalizing the total influence matrix  $T_N^A$

The normalized total influence matrix  $T_N^A$  is presented as Eq. (13).

$$T_N^A = \begin{matrix} & \begin{matrix} C_1 & C_2 & \dots & C_n \end{matrix} \\ \begin{matrix} C_1 \\ C_2 \\ \vdots \\ C_n \end{matrix} & \begin{bmatrix} e_{11} \dots e_{1m_1} & e_{21} \dots e_{2m_2} & \dots & e_{n1} \dots e_{nm_n} \\ T_N^{A11} & T_N^{A12} & \dots & T_N^{A1n} \\ \vdots & \vdots & \ddots & \vdots \\ e_{21} & e_{22} & \dots & e_{2m_2} \\ T_N^{A21} & T_N^{A22} & \dots & T_N^{A2n} \\ \vdots & \vdots & \ddots & \vdots \\ e_{n1} & e_{n2} & \dots & e_{nm_n} \\ T_N^{An1} & T_N^{An2} & \dots & T_N^{Ann} \end{bmatrix} \end{matrix} \tag{13}$$

For deriving  $T_N^A$ , calculates the sum of all the elements in each cluster in  $T^A$ , then divide every element by the summation. Demonstrate  $T_N^{A11}$  by Eqs. (14) and (15).

$$s_{ei}^{11} = \sum_{j=1}^{m_1} t_{ej}^{A11}, i = 1, 2, \dots, m_1 \tag{14}$$



$$\begin{aligned}
 T_N^{A^{11}} &= \begin{bmatrix} t_{11}^{A^{11}} / s_{e1}^{11} & \dots & t_{12}^{A^{11}} / s_{e1}^{11} & \dots & t_{1m_1}^{A^{11}} / s_{e1}^{11} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{21}^{A^{11}} / s_{e2}^{11} & \dots & t_{12}^{A^{11}} / s_{e1}^{11} & \dots & t_{2m_1}^{A^{11}} / s_{e2}^{11} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{m_1 1}^{A^{11}} / s_{em_1}^{11} & \dots & t_{m_1 1}^{A^{11}} / s_{em_1}^{11} & \dots & t_{m_1 m_1}^{A^{11}} / s_{em_1}^{11} \end{bmatrix} \\
 &= \begin{bmatrix} t_{N11}^{A^{11}} & \dots & t_{N12}^{A^{11}} & \dots & t_{N1m_1}^{A^{11}} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{N21}^{A^{11}} & \dots & t_{N22}^{A^{11}} & \dots & t_{N2m_1}^{A^{11}} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{Nm_1 1}^{A^{11}} & \dots & t_{Nm_1 2}^{A^{11}} & \dots & t_{Nm_1 m_1}^{A^{11}} \end{bmatrix} \tag{15}
 \end{aligned}$$

Step A6: Acquiring the unweighted super-matrix  $W$

Transpose  $T_N^A$ , gains the unweighted super-matrix  $W$  as Eq. (16) for preparation of calculating the weighted super-matrix  $W_W$ .

$$\begin{aligned}
 W &= \begin{matrix} & \begin{matrix} C_1 & C_2 & \dots & C_n \end{matrix} \\ \begin{matrix} C_1 \\ C_2 \\ \vdots \\ C_n \end{matrix} & \begin{bmatrix} e_{11} \dots e_{1m_1} & e_{21} \dots e_{2m_2} & \dots & e_{n1} \dots e_{nm_n} \\ W_{11} & W_{12} & \dots & W_{1n} \\ \vdots & \vdots & \ddots & \vdots \\ e_{21} & e_{22} & \dots & e_{2m_2} \\ W_{21} & W_{22} & \dots & W_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ e_{n1} & e_{n2} & \dots & e_{nm_n} \\ W_{n1} & W_{n2} & \dots & W_{nn} \end{bmatrix} \end{matrix} \tag{16}
 \end{aligned}$$

Step A7: Acquiring the normalized total-influence matrix  $T_N^D$

Applying the different cluster weights established in DEMATEL and normalizes the total-influence matrix  $T^D$ , the normalized total-influence matrix  $T_N^D$  is produced by Eqs. (17) and (18).

$$T^D = \begin{bmatrix} t_{11}^D & \dots & t_{1j}^D & \dots & t_{1n}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{i1}^D & \dots & t_{ij}^D & \dots & t_{in}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{n1}^D & \dots & t_{nj}^D & \dots & t_{nn}^D \end{bmatrix}, \quad d_i = \sum_{j=1}^n t_{ij}^D \tag{17}$$

$$T_N^D = \begin{bmatrix} t_{11}^D/d_1 & \dots & t_{1j}^D/d_1 & \dots & t_{1n}^D/d_1 \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{i1}^D/d_i & \dots & t_{ij}^D/d_i & \dots & t_{in}^D/d_i \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{n1}^D/d_n & \dots & t_{nj}^D/d_n & \dots & t_{nn}^D/d_n \end{bmatrix} = \begin{bmatrix} t_{N11}^D & \dots & t_{N1j}^D & \dots & t_{N1n}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{Ni1}^D & \dots & t_{Nij}^D & \dots & t_{Nin}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{Nn1}^D & \dots & t_{Nnj}^D & \dots & t_{Nnn}^D \end{bmatrix} \tag{18}$$

Step A8: Acquiring the weighted super-matrix  $W_W$

Multiplies the transposed normalized total-influence matrix  $T_N^{D'}$  by unweighted super-matrix  $W$ . Then, the weighted super-matrix  $W_W = T_N^{D'} \times W$  is produced as Eq. (19).

$$W_W = \begin{bmatrix} t_{N_{11}}^D \times W_{11} & \dots & t_{N_{1j}}^D \times W_{1j} & \dots & t_{N_{1n}}^D \times W_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{N_{i1}}^D \times W_{i1} & \dots & t_{N_{ij}}^D \times W_{ij} & \dots & t_{N_{in}}^D \times W_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{N_{n1}}^D \times W_{n1} & \dots & t_{N_{nj}}^D \times W_{nj} & \dots & t_{N_{nn}}^D \times W_{nn} \end{bmatrix} \tag{19}$$

Step A9: Acquiring the limited super-matrix  $W_W^*$

Limit the weighted super-matrix  $W_W$  by raising to a adequately large power, until it converged and become to a long-term stable limited super-matrix  $W_W^*$  as Eq. (20). It obtains a global priority vector also is called DANP influential weights (Chiu, Tzeng, & Li, 2013).

$$\lim_{k \rightarrow \infty} W_W^k \tag{20}$$

Step A10: Ranking the global weights

The global weights are ranked base on the global priority vector by the limited super-matrix  $W_W^*$ .

#### 4. Research Results and Discussion

This article collects data which from the ten scholars/experts and ten senior managers of restaurant. Then, this article follows the data processing steps explain in section 3.2 to research the influence relationships among clusters and rank the priority of criteria when restaurant managers building customer loyalty.

##### 4.1 The Relationships among Clusters

Ten direct matrixes are collected from ten scholars/ experts questionnaires. By Eq. (2), the average matrix  $A^D$  is shown as Table 4.1.

Table 4.1 The Average Matrix  $A^D$  (n=10)

Cluster	B	E	D	M
B	0	2.4	2.3	3.2
E	3.3	0	2.7	3.4
D	2.7	3.1	0	2.7
M	3.4	2.7	2	0

The normalized direct-relation matrix  $X^D$  is obtained by normalizing the  $A^D$  by Eqs. (3) and (4) as Table 4.2.

Table 4.2 The Direct-Influence Matrix  $X^D$

Cluster	B	E	D	M
B	0	0.25532	0.24468	0.34034
E	0.35106	0	0.28723	0.36710
D	0.28723	0.32979	0	0.28723
M	0.36170	0.28404	0.21277	0

By Eq. (5), the total influence matrix  $T^D$  is given as Table 4.3.

Table 4.3 The Total Influence Matrix  $T^D$

Cluster	B	E	D	M
B	2.09526	2.06000	1.84450	2.32862
E	2.65855	2.12494	2.11009	2.64142
D	2.45429	2.22736	1.7580	2.43334
M	2.39689	2.10663	1.8533	2.11027

Employ Eqs. (6) and (7), the values of  $r_i + c_i$  and  $r_i - c_i$  are calculated to gain the gives and received influences of the four clusters as Table 4.4. Based on Table 4.4, the cause-effect diagram of total relationship is shown as Fig. 4.1.

Table 4.4 The Gives and Received Influences of the four Clusters

Cluster	$r_i$	$c_i$	$r_i + c_i$	$r_i - c_i$
B	8.3284	10	17.9334	-1.2766
E	9.53500	8.51892	18.0539	1.0161
D	8.87302	7.56594	16.4390	1.3071
M	8.46712	9.51366	17.9808	-1.0465

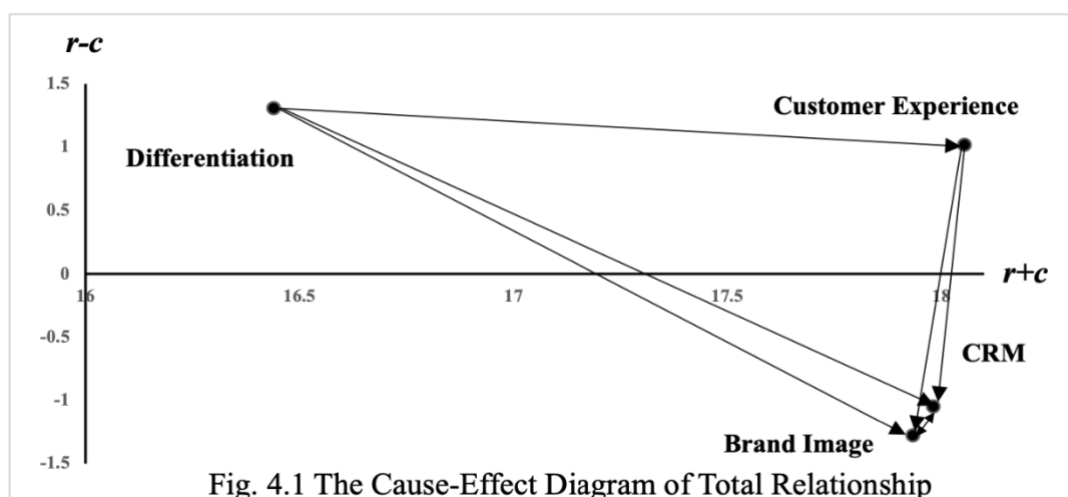


Fig. 4.1 The Cause-Effect Diagram of Total Relationship

Fig. 4.1 reveals that Differentiation Cluster has the positive and largest  $r_i - c_i$  value. It represents that Differentiation Cluster has the most influence on the other clusters and can be called “main cause-factor” among the clusters. At the same time, Differentiation Cluster also has the least  $r_i + c_i$  value, it implies that restaurant managers should firstly consider Differentiation Cluster when they choose the other clusters to evaluate customer loyalty. On

the contrary, Brand Image Cluster has the lowest negative  $r_i - c_i$  value, it means that Brand Image Cluster receives the most influence from the other clusters and can be seen as the “main effect-factor” among the clusters. Yet, the Brand Image Cluster has near the highest  $r_i + c_i$  value. It shows that restaurant managers must pay more attention on the criteria in Brand Image Cluster. Customer Experience Cluster is an extreme. Custom Experience Cluster has the highest  $r_i + c_i$  value and almost highest positive  $r_i - c_i$  value. It states that Custom Experience Cluster is located in the central role among the four clusters and has the significant relationship with other clusters. It exposes that restaurant managers should frequently consider Customer Experience Cluster with the other clusters. For distinguishing the minor and significant influencer, the threshold value  $\alpha = \sum t_{ij}/16 = 2.20022$ . If original value of element in  $T^D$  is smaller than  $\alpha$ , put an asterisk sign “\*” on the upper right of that element value as Table 4.5. Based on  $T^D$ , this article draws the influence diagram of the four clusters as Fig. 4.2.

Table 4.5 The Total Influence Matrix  $T^D$

Cluster	B	E	D	M
B	2.09526*	2.06000*	1.84450*	2.32862
E	2.65855	2.12494*	2.11009*	2.64142
D	2.45429	2.22736	1.75800*	2.43334
M	2.39689	2.10663*	1.85333*	2.11027*

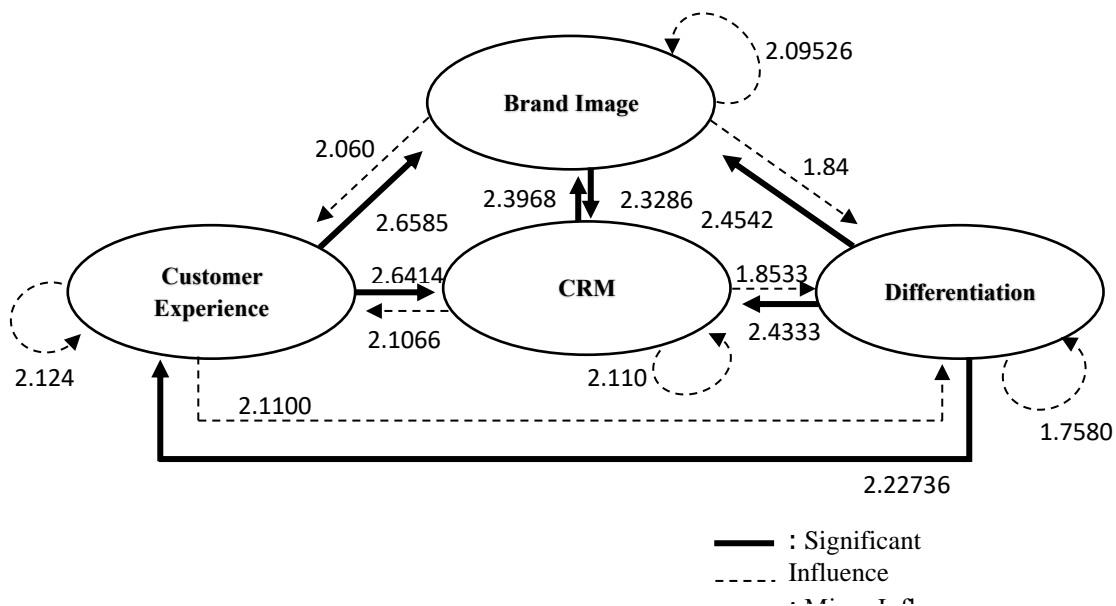


Fig. 4.2 Influence Diagram of the Four

In Fig. 4.2, Differentiation Cluster is the most significant influencer in the four clusters, it means that restaurant managers will firstly consider Differentiation Cluster when building customer loyalty. On the other hand, Brand Image Cluster is most significant influenced by the other clusters, it denotes that when restaurant managers building customer loyalty, the last consideration is Brand Image Cluster.

### 4.2 Measuring the Priority of Criteria by ANP

For contrasting the priority difference between national-wide chain restaurants and well-known local independent restaurants, in ANP procedure, the data is collected from seven national-wide chain restaurants and seven well-known local independent restaurants to create fourteen direct super matrixes  $A_z$ ,  $z = 1, 2, \dots, 14$  by interviewing the incumbency restaurant managers to evaluate the important criteria for customer loyalty. In the fourteen direct super matrixes  $A_z$ ,  $z = 1, 2, \dots, 7$  represent seven national-wide chain restaurants and  $z = 8, 9, \dots, 14$  denote the other well-known local independent restaurants, respectively.

The average direct super matrix  $A^A$  of national-wide chain restaurants and well-known local independent restaurants are calculated by Eq. (9), shown as Table 4.6.1 and Table 4.6.2.

Table 4.6.1 The Average Direct Super Matrix of Chain Restaurants  $A^A$  (n=7)

	B1	B2	B3	E1	E2	E3	E4	D1	D2	D3	M1	M2	M3
<b>B1</b>	1.000	1.374	2.806	7.000	8.000	6.857	3.857	3.589	5.143	4.714	6.286	4.571	3.429
<b>B2</b>	4.071	1.000	<b>0.409</b>	3.302	5.857	3.429	1.214	2.071	8.286	4.286	4.857	3.714	2.714
<b>B3</b>	2.556	5.000	1.000	4.286	6.429	6.429	2.429	3.857	3.171	2.371	6.857	4.857	4.857
<b>E1</b>	0.145	1.780	0.621	1.000	4.143	3.857	2.071	1.238	3.429	1.286	1.000	0.873	0.873
<b>E2</b>	0.126	0.369	0.300	0.623	1.000	0.378	0.268	0.272	0.426	0.408	2.505	1.233	0.537
<b>E3</b>	0.254	0.568	0.278	0.628	5.857	1.000	0.510	0.521	1.700	0.581	4.449	5.457	3.369
<b>E4</b>	0.524	1.750	0.778	0.914	6.143	4.429	1.000	2.119	5.000	3.857	6.714	6.571	4.429
<b>D1</b>	1.532	1.628	0.628	1.750	5.571	4.143	2.333	1.000	5.857	3.429	5.143	2.857	2.143
<b>D2</b>	0.396	0.123	1.216	0.548	5.429	2.873	0.311	0.184	1.000	1.512	3.857	2.179	0.768
<b>D3</b>	0.506	0.419	2.473	0.905	5.143	2.714	0.438	0.464	3.163	1.000	4.643	1.679	0.893
<b>M1</b>	0.372	0.434	0.253	1.000	4.607	1.493	0.274	0.398	0.628	0.648	1.000	1.448	0.917
<b>M2</b>	0.509	0.630	0.411	2.143	5.878	1.082	0.261	0.661	2.768	3.018	4.446	1.000	0.530
<b>M3</b>	0.643	0.667	0.405	2.143	4.143	1.475	0.421	0.735	3.929	2.929	3.762	4.286	1.000

Table 4.6.2 The Average Direct Super Matrix of Local Restaurants  $A^A$  (n=7)

	B1	B2	B3	E1	E2	E3	E4	D1	D2	D3	M1	M2	M3
<b>B1</b>	1.000	3.857	3.149	5.429	8.714	7.000	4.571	4.449	1.842	5.071	5.306	2.391	3.954
<b>B2</b>	0.636	1.000	1.645	3.873	7.444	4.608	3.214	2.788	1.582	1.703	4.873	1.891	2.104
<b>B3</b>	2.776	4.873	1.000	5.730	8.714	7.036	7.286	5.143	5.429	6.571	6.857	7.714	6.286
<b>E1</b>	0.335	1.679	1.522	1.000	2.714	2.036	0.804	1.929	1.593	0.749	0.770	0.628	0.574
<b>E2</b>	0.115	1.385	0.115	0.759	1.000	0.367	0.126	1.251	0.135	0.137	0.497	0.275	0.294
<b>E3</b>	0.255	2.507	0.678	1.200	6.571	1.000	0.938	2.493	1.434	1.275	1.200	2.220	1.419
<b>E4</b>	0.412	0.788	0.141	2.786	8.286	4.464	1.000	2.631	1.821	2.476	4.286	1.306	3.000
<b>D1</b>	1.366	3.034	0.397	3.208	7.161	3.324	1.895	1.000	3.893	3.732	3.592	4.020	2.878
<b>D2</b>	2.304	4.159	0.307	4.159	7.714	5.730	2.302	2.524	1.000	6.143	6.571	6.000	5.029
<b>D3</b>	0.537	3.444	0.262	4.048	7.571	5.875	1.044	1.628	0.282	1.000	4.857	2.587	1.735
<b>M1</b>	1.351	1.643	0.253	3.786	5.286	3.743	1.205	1.427	0.261	0.316	1.000	0.239	0.675
<b>M2</b>	3.468	2.925	0.134	3.857	6.286	4.470	1.750	2.246	0.960	1.763	5.429	1.000	1.171
<b>M3</b>	2.239	3.909	0.271	3.429	6.000	4.589	1.187	1.608	1.780	1.521	3.429	1.476	1.000

The initial direct-influence matrix  $X^A$  of chain restaurants and local restaurants are calculated by Eqs. (10) and (11), shown as Table 4.7.1 and Table 4.7.2.

Table 4.7.1 The Direct-Influence Matrix  $X^A$  of Chain Restaurants

	B1	B2	B3	E1	E2	E3	E4	D1	D2	D3	M1	M2	M3
<b>B1</b>	0.015	0.020	0.041	0.103	0.117	0.101	0.057	0.053	0.075	0.069	0.092	0.067	0.050
<b>B2</b>	0.060	0.015	0.006	0.048	0.086	0.050	0.018	0.030	0.121	0.063	0.071	0.054	0.040
<b>B3</b>	0.037	0.073	0.015	0.063	<b>0.094</b>	0.094	0.036	0.057	0.047	0.035	0.101	0.071	0.071
<b>E1</b>	0.002	0.026	0.009	0.015	0.061	0.057	0.030	0.018	0.050	0.019	0.015	0.013	0.013
<b>E2</b>	0.002	0.005	0.004	0.009	0.015	0.006	0.004	0.004	0.006	0.006	0.037	0.018	0.008
<b>E3</b>	0.004	0.008	0.004	0.009	0.086	0.015	0.007	0.008	0.025	0.009	0.065	0.080	0.049
<b>E4</b>	0.008	0.026	0.011	0.013	0.090	0.065	0.015	0.031	0.073	0.057	0.098	0.096	0.065
<b>D1</b>	0.022	0.024	0.009	0.026	0.082	0.061	0.034	0.015	0.086	0.050	0.075	0.042	0.031
<b>D2</b>	0.006	0.002	0.018	0.008	0.080	0.042	0.005	0.003	0.015	0.022	0.057	0.032	0.011
<b>D3</b>	0.007	0.006	0.036	0.013	0.075	0.040	0.006	0.007	0.046	0.015	0.068	0.025	0.013
<b>M1</b>	0.005	0.006	0.004	0.015	0.068	0.022	0.004	0.006	0.009	0.010	0.015	0.021	0.013
<b>M2</b>	0.007	0.009	0.006	0.031	0.086	0.016	0.004	0.010	0.041	0.044	0.065	0.015	0.008
<b>M3</b>	0.009	0.010	0.006	0.031	0.061	0.022	0.006	0.011	0.058	0.043	0.055	0.063	0.015

Table 4.7.2 The Direct-Influence Matrix  $X^A$  of Local Independent Restaurants

	B1	B2	B3	E1	E2	E3	E4	D1	D2	D3	M1	M2	M3
B1	0.012	0.046	0.038	0.065	0.104	0.084	0.055	0.053	0.022	0.061	0.064	0.029	0.047
B2	0.008	0.012	0.020	0.046	0.089	0.055	0.039	0.033	0.019	0.020	0.058	0.023	0.025
B3	0.033	0.058	0.012	0.069	0.104	0.084	0.087	0.062	0.065	0.079	0.082	0.092	0.075
E1	0.004	0.020	0.018	0.012	0.033	0.024	0.010	0.023	0.019	0.009	0.009	0.008	0.007
E2	0.001	0.017	0.001	0.009	0.012	0.004	0.002	0.015	0.002	0.002	0.006	0.003	0.004
E3	0.003	0.030	0.008	0.014	0.079	0.012	0.011	0.030	0.017	0.015	0.014	0.027	0.017
E4	0.005	0.009	0.002	0.033	0.099	0.053	0.012	0.032	0.022	0.030	0.051	0.016	0.036
D1	0.016	0.036	0.005	0.038	0.086	0.040	0.023	0.012	0.047	0.045	0.043	0.048	0.034
D2	0.028	0.050	0.004	0.050	0.092	0.069	0.028	0.030	0.012	0.074	0.079	0.072	0.060
D3	0.006	0.041	0.003	0.048	0.091	0.070	0.013	0.020	0.003	0.012	0.058	0.031	0.021
M1	0.016	0.020	0.003	0.045	0.063	0.045	0.014	0.017	0.003	0.004	0.012	0.003	0.008
M2	0.042	0.035	0.002	0.046	0.075	0.054	0.021	0.027	0.012	0.021	0.065	0.012	0.014
M3	0.027	0.047	0.003	0.041	0.072	0.055	0.014	0.019	0.021	0.018	0.041	0.018	0.012

The direct/indirect matrix  $T^A$  can be derived from Eq. (12). By Eqs. (13) to (15), the normalized total influence matrix  $T_N^A$  is calculated. Then transpose  $T_N^A$  as Eq. (16) to gain the unweighted super-matrix  $W$  as Table 4.8.1 and 4.8.2.

Table 4.8.1 The Unweighted Super-Matrix  $W$  of Chain Restaurants

	B1	B2	B3	E1	E2	E3	E4	D1	D2	D3	M1	M2	M3
B1	0.223	0.601	0.307	0.137	0.207	0.263	0.224	0.366	0.242	0.185	0.327	0.303	0.332
B2	0.319	0.230	0.530	0.597	0.442	0.453	0.487	0.405	0.182	0.201	0.404	0.388	0.375
B3	0.459	0.168	0.163	0.265	0.351	0.283	0.289	0.230	0.575	0.614	0.268	0.309	0.293
E1	0.233	0.207	0.199	0.106	0.228	0.112	0.108	0.137	0.089	0.120	0.144	0.205	0.221
E2	0.374	0.455	0.394	0.417	0.474	0.665	0.509	0.445	0.574	0.541	0.598	0.593	0.513
E3	0.263	0.250	0.296	0.320	0.196	0.157	0.305	0.281	0.290	0.279	0.210	0.157	0.204
E4	0.131	0.088	0.111	0.157	0.102	0.066	0.077	0.137	0.046	0.060	0.049	0.045	0.062
D1	0.235	0.149	0.304	0.194	0.212	0.169	0.181	0.117	0.115	0.134	0.207	0.119	0.113
D2	0.420	0.544	0.407	0.553	0.429	0.546	0.467	0.546	0.412	0.608	0.425	0.446	0.510
D3	0.344	0.308	0.289	0.253	0.359	0.285	0.353	0.337	0.473	0.258	0.368	0.435	0.377
M1	0.449	0.451	0.431	0.420	0.560	0.370	0.409	0.492	0.535	0.577	0.366	0.654	0.442
M2	0.327	0.330	0.311	0.333	0.298	0.394	0.360	0.304	0.324	0.269	0.393	0.223	0.426
M3	0.224	0.220	0.259	0.248	0.142	0.236	0.231	0.205	0.140	0.154	0.241	0.124	0.132

Table 4.8.2 The Unweighted Super-Matrix  $W$  of Local Restaurants

	B1	B2	B3	E1	E2	E3	E4	D1	D2	D3	M1	M2	M3
B1	0.168	0.222	0.301	0.139	0.111	0.138	0.271	0.278	0.312	0.167	0.354	0.448	0.319
B2	0.521	0.432	0.572	0.506	0.792	0.683	0.604	0.615	0.603	0.733	0.530	0.483	0.601
B3	0.312	0.346	0.127	0.354	0.097	0.179	0.125	0.107	0.085	0.099	0.116	0.068	0.081
E1	0.210	0.204	0.203	0.174	0.285	0.155	0.181	0.208	0.211	0.216	0.254	0.227	0.220
E2	0.369	0.400	0.351	0.415	0.434	0.585	0.481	0.443	0.401	0.416	0.391	0.397	0.404
E3	0.265	0.244	0.250	0.286	0.197	0.156	0.264	0.231	0.276	0.297	0.261	0.266	0.284
E4	0.156	0.151	0.196	0.125	0.084	0.104	0.073	0.117	0.113	0.072	0.094	0.110	0.092
D1	0.392	0.437	0.328	0.426	0.688	0.454	0.388	0.203	0.313	0.500	0.570	0.438	0.360
D2	0.197	0.262	0.297	0.341	0.149	0.271	0.261	0.388	0.151	0.177	0.197	0.215	0.319
D3	0.411	0.300	0.374	0.234	0.163	0.275	0.350	0.410	0.536	0.323	0.233	0.347	0.320
M1	0.450	0.514	0.371	0.408	0.459	0.323	0.484	0.381	0.400	0.511	0.475	0.627	0.531
M2	0.237	0.238	0.340	0.312	0.271	0.396	0.191	0.350	0.323	0.281	0.210	0.179	0.262
M3	0.313	0.248	0.289	0.280	0.270	0.281	0.325	0.269	0.277	0.207	0.315	0.194	0.207

By Eqs. (17) and (18), employ the cluster weights established in DEMATEL to normalize the total-influence matrix  $T^D$ , the normalized total-influence matrix  $T_N^D$  is produced as Table 4.9.

Table 4.9 The Normalized Total Influence Matrix  $T_N^D$

Cluster	B	E	D	M
B	0.252	0.247	0.221	0.280
E	0.279	0.223	0.221	0.277
D	0.277	0.251	0.198	0.274
M	0.283	0.249	0.219	0.249

By Eq. (19) The weighted super-matrix  $W_w$  of chain restaurants and local restaurants are received, then follows Eq. (20), the limited super-matrix  $W_w^*$  of chain restaurants and local restaurants are shown as Table 4.10.1 and Table 4.10.2.

Table 4.10.1 The Limited Super-Matrix  $W_w^*$  of Chain Restaurants

	B1	B2	B3	E1	E2	E3	E4	D1	D2	D3	M1	M2	M3
B1	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080
B2	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
B3	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092
E1	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041
E2	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123
E3	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058
E4	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
D1	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039
D2	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102
D3	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
M1	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.130	0.130
M2	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088
M3	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052

Table 4.10.2 The Limited Super-Matrix  $W_w^*$  of Local Restaurants

	B1	B2	B3	E1	E2	E3	E4	D1	D2	D3	M1	M2	M3
B1	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068
B2	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
B3	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046
E1	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
E2	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101
E3	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061
E4	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028
D1	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
D2	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
D3	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067
M1	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125
M2	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073
M3	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071

### 4.3 Rank the Criteria

Based on the global priority vector by the limited super-matrix  $W_w^*$ , the global weights are ranked. The local weights are the sum of the global weights in the cluster and divided by a criterion in that cluster, which is represent as a criterion relative importance in that cluster. The weights and ranks of the evaluation criteria for chain restaurants and independent restaurants are shown as Table 4.11.1 and Table 4.11.2.

Table 4.11.1 The Weights and Ranks of the Evaluation Criteria of Chain Restaurants

Cluster	Criterion	Local weights	Global weights	Rank
Brand Image	(B1) Corporate Social Responsibility	0.293954	0.079979	7
	(B2) Reputation	0.368351	0.100221	4
	(B3) Social Media Marketing	0.337694	0.091879	5
	The sum of the Global weights		<b>0.272080</b>	
Customer Experience	(E1) Customer Satisfaction	0.170206	0.041291	11
	(E2) Product Quality	0.508838	0.123437	2
	(E3) Service Quality	0.239499	0.058100	9
	(E4) Atmosphere	0.081457	0.019761	13
	The sum of the Global weights		<b>0.242591</b>	
Differentiation	(D1) Price Effectiveness	0.180072	0.038841	12
	(D2) Product Innovation	0.471216	0.101640	3
	(D3) Product Attribute	0.348712	0.075217	8
	The sum of the Global weights		<b>0.215698</b>	
Customer Relationship Management	(M1) Trust	0.481286	0.129770	1
	(M2) Loyalty Program	0.325620	0.087797	6
	(M3) Customization	0.193094	0.052064	10
	The sum of the Global weights		<b>0.269631</b>	

Table 4.11.2 The Weights and Ranks of the Evaluation Criteria of Local Restaurants

Cluster	Criterion	Local weights	Global weights	Rank
Brand Image	(B1) Corporate Social Responsibility	0.250157	0.068063	7
	(B2) Reputation	0.582061	0.158367	1
	(B3) Social Media Marketing	0.167782	0.045650	12
	The sum of the Global weights		<b>0.272080</b>	
Customer Experience	(E1) Customer Satisfaction	0.218125	0.052915	10
	(E2) Product Quality	0.416214	0.100970	3
	(E3) Service Quality	0.249871	0.060617	9
	(E4) Atmosphere	0.115790	0.028090	13
	The sum of the Global weights		<b>0.242591</b>	
Differentiation	(D1) Price Effectiveness	0.442606	0.095469	4
	(D2) Product Innovation	0.245018	0.052850	11
	(D3) Product Attribute	0.312377	0.067379	8
	The sum of the Global weights		<b>0.215698</b>	
Customer Relationship Management	(M1) Trust	0.463472	0.124966	2
	(M2) Loyalty Program	0.271450	0.073191	5
	(M3) Customization	0.265077	0.071473	6
	The sum of the Global weights		<b>0.269631</b>	

Observe Table 4.11.1, the criteria priority of global weights for chain restaurants is ranked as: Trust > Product Quality > Product Innovation > Reputation > Social Media Marketing > Loyalty Program > Corporate Social Responsibility > Product Attribute > Service Quality > Customization > Customer Satisfaction > Price Effectiveness > Atmosphere. The national-wide chain restaurant managers rank the most important criterion in each cluster from the local weight is: Reputation Criterion in Brand Image Cluster, Product Quality Criterion in Customer Experience Cluster, Product Innovation Criterion in Differentiation Cluster, and Trust Criterion in Customer Relationship Management Cluster. In Table 4.11.2, the criteria priority of global weights for local independent restaurants is ranked as: Reputation > Trust > Product Quality > Price Effectiveness > Loyalty Program > Customization > Corporate Social Responsibility > Product Attribute > Service Quality > Customer Satisfaction > Product Innovation > Social Media Marketing > Atmosphere. The well-known local independent restaurant managers rank the most important criterion in each cluster from the local weight is Reputation Criterion in



Brand Image Cluster, Product Quality Criterion in Customer Experience Criterion, Price Effectiveness Criterion in Differentiation Cluster, and Trust Criterion in Customer Relationship Management Cluster.

According to Table 4.11.1 and 4.11.2, the top three factors for national-wide chain restaurants and well-known local independent restaurants both include "Trust Criterion" and "Product Quality Criterion". Research results show that both types of restaurant managers emphasize building trust and maintaining good product quality as important factors when establishing of customer loyalty. On the contrary, "Atmosphere Criterion" was ranked the last criterion for both national-wide chain restaurants and well-known local independent restaurants in terms of building customer loyalty. Atmosphere is considered relatively less important compared to other criteria, and restaurant managers believe that most customers are still more concerned about the experience of the products themselves. Therefore, Atmosphere was placed at the bottom of the list of considerations. Table 4.11.1 shows that "Product Innovation Criterion" is the third important factor, whereas in Table 4.11.2, it is ranked in eleventh. National-wide chain restaurant managers believe that product innovation is quite important for them because they are spread out across the country and need to respond to changes in market demand, serve a variety of customers with different and changing preference, and compete with other competitors. Therefore, national-wide chain restaurants must continuously offer diversified products and launch new products to attract more customers, increase sales, enhance brand awareness to differentiate themselves from competing peers for improving customer loyalty. On the other hand, the well-known local independent restaurants typically sell a single or limited item and mainly focus on serving local customers. Well-known local independent restaurant managers believe that most of their customers are searching for recalling the memory of "the traditional old sweet flavor", in such case, the local independent restaurants do not want to introduce new products and place greater emphasis on maintaining the original taste and consistent quality.

## 5. Conclusion

The low entrance threshold and imitation barriers of restaurant industry attracts many businesses being fervent to join this arena. As the increasing choices for customers arise fierce competition in Taiwan restaurant industry. For maintaining even increasing restaurant performance, the issue of how to build customer loyalty for encouraging customers to visit their restaurants repeatedly is therefore an essential challenge for every restaurant manager.

According to the research results, this article suggests that the restaurants managers have to pay more attention on the Differentiation Cluster and do not distracted by Brand Image Cluster. Furthermore, the national-wide chain restaurant (well-known local independent restaurant) managers must focus heavily on the Trust, Product Quality, and Product Innovation Criteria (Reputation, Trust, and Product Quality Criteria). As for Customer Satisfaction, Price Effectiveness, and Atmosphere criteria (Product Innovation, Social Media Marketing, and Atmosphere criteria), those are just located at the middle place for national-wide chain restaurant managers and well-known local independent restaurant managers respectively while building customer loyalty. The research results of this article can provide suggestions to the potential restaurant managers when they plan to enter into restaurant industry. In addition, understanding the different focuses for the national-wide chain restaurant managers who are pursuing the service consistence for all their branch restaurants while the well-known local independent restaurant managers who are insisting in maintaining traditional uniqueness, the founding of this article may provide a guideline for the well-known local independent

restaurants who are preparing to expand their operation scale to national-wide chain restaurants. Past scholars have proposed many studies on customer loyalty in restaurant industry, with a focus on understanding the factors that influence customer loyalty from the perspective of customers. This article evaluates the importance ranking of criteria for building customer loyalty in the restaurant industry from the perspective of industry managers, and provides a reference for industry managers to establish customer loyalty. It identifies the criteria that are relatively important for building customer loyalty, and provides guidance for aspiring entrepreneurs in the restaurant industry on how to run a restaurant and enhance customer loyalty.

Considering the variety forms of restaurants, from street vendors, road-side stalls, to luxurious high-end restaurants, the criteria and priority of building customer loyalty must be differentiated. This article simply separates the different types of operation models into national-wide chain restaurants and well-known local independent restaurants and does distinguish the diversity modes of operation. Yet, the results of this article may provide as a start point for future research in this field.

## References

- Afzal, H., Khan, M. A., ur Rehman, K., Ali, I., & Wajahat, S. (2010). Consumer's trust in the brand: Can it be built through brand reputation, brand competence and brand predictability. *International Business Research*, 3(1), 43-51.
- Ahmed, S., Al Asheq, A., Ahmed, E., Chowdhury, U. Y., Sufi, T., & Mostofa, M. G. (2023). The intricate relationships of consumers' loyalty and their perceptions of service quality, price and satisfaction in restaurant service. *The TQM Journal*, 35(2), 519-539.
- Al-Tit, A. A. (2015). The effect of service and food quality on customer satisfaction and hence customer retention. *Asian Social Science*, 11(23), 129-139.
- Almohaimmeed, B. M. (2017). Restaurant quality and customer satisfaction. *International Review of Management & Marketing*, 7(3), 42-49.
- Amoako-Gyampah, K., & Acquah, M. (2008). Manufacturing strategy, competitive strategy and firm performance: An empirical study in a developing economy environment. *International Journal of Production Economics*, 111(2), 575-592.
- Atalay, M., Anafarta, N., & Sarvan, F. (2013). The relationship between innovation and firm performance: An empirical evidence from Turkish automotive supplier industry. *Procedia-Social & Behavioral Sciences*, 75, 226-235.
- Atkinson, L., & Rosenthal, S. (2014). Signaling the green sell: The influence of eco-label source, argument specificity, and product involvement on consumer trust. *Journal of Advertising*, 43(1), 33-45.
- Azmi, M., Shihab, M. S., Rustiana, D., & Lazirkha, D. P. (2022). The effect of advertising, sales promotion, and brand image on repurchasing intention (study on shopee users). *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, 3(2), 76-85.
- Barreda, A. A., Bilgihan, A., Nusair, K., & Okumus, F. (2015). Generating brand awareness in online social networks. *Computers in Human Behavior*, 50, 600-609.
- Bian, X., & Moutinho, L. (2011). The role of brand image, product involvement, and knowledge in explaining consumer purchase behaviour of counterfeits: Direct and indirect effects. *European Journal of Marketing*, 45(1/2), 191-216.
- Budiman, A. (2015). Social media and brand image: A study on UNKL347 clothing comp. *Image: Jurnal Riset Manajemen*, 4(1), 1-14.
- Chen, J. S., & Ching, R. K. (2007). The effects of mobile customer relationship management on customer loyalty: Brand image does matter. In *2007 40th Annual Hawaii International Conference on System Sciences (HICSS'07)*, 2502-2511.
- Chiu, W. Y., Tzeng, G. H., & Li, H. L. (2013). A new hybrid MCDM model combining DANP with VIKOR to improve e-store business. *Knowledge-Based Systems*, 37, 48-61.

- Cronin Jr, J. J., & Taylor, S. A. (1992). Measuring service quality: A reexamination and extension. *Journal of Marketing*, 56(3), 55-68.
- Fels, A., Falk, B., & Schmitt, R. (2017). User-driven customization and customer loyalty: A survey. *Procedia CIRP*, 60, 410-415.
- Fraihat, B. A. M., adnan Bataineh, K., Aln'emi, E. A. S., Ahmad, A. Y. B., Daoud, M. K., & Almasarweh, M. S. (2023). How corporate social responsibility enhances reputation, and organizational brand image?. *Journal of Namibian Studies: History Politics Culture*, 33, 5216-5246.
- Franke, N., & Piller, F. T. (2003). Key research issues in user interaction with user toolkits in a mass customisation system. *International Journal of Technology Management*, 26(5-6), 578-599.
- Furinto, A., Pawitra, T., & Balqiah, T. E. (2009). Designing competitive loyalty programs: How types of program affect customer equity. *Journal of Targeting, Measurement and Analysis for Marketing*, 17, 307-319.
- Goldsmith, R. E., Flynn, L. R., & Kim, D. (2010). Status consumption and price sensitivity. *Journal of Marketing Theory & Practice*, 18(4), 323-338.
- Gómez-Rico, M., Molina-Collado, A., Santos-Vijande, M. L., Molina-Collado, M. V., & Imhoff, B. (2022). The role of novel instruments of brand communication and brand image in building consumers' brand preference and intention to visit wineries. *Current Psychology*, 1-17.
- Grover, P., Kar, A. K., & Janssen, M. (2019). Diffusion of blockchain technology: Insights from academic literature and social media analytics. *Journal of Enterprise Information Management*. 32, 735-757.
- Gu, W., Luan, X., Song, Y., & Shang, J. (2022). Impact of loyalty program investment on firm performance: Seasonal products with strategic customers. *European Journal of Operational Research*, 299(2), 621-630.
- Han, H., Yu, J., & Kim, W. (2019). Environmental corporate social responsibility and the strategy to boost the airline's image and customer loyalty intentions. *Journal of Travel & Tourism Marketing*, 36(3), 371-383.
- Harahap, D., Hurriyati, R., Gaffar, V., & Amanah, D. (2018). The impact of word of mouth and university reputation on student decision to study at university. *Management Science Letters*, 8(6), 649-658.
- Jain, R., Jain, S., & Dhar, U. (2002). Measuring customer relationship management. *Journal of Services Research*, 2(2), 97-109.
- Kabir, J. M. (2016). *Factors influencing customer satisfaction at a fast food hamburger chain: The relationship between customer satisfaction and customer loyalty*. Wilmington University (Delaware).

- Kaliappen, N., & Abdullah, H. H. (2014). Does service innovation act as a mediator in differentiation strategy and organizational performance nexus? An empirical study. *Asian Social Science*, *10*(11), 123-131.
- Kim, Y. J., & Kim, H. S. (2022). The impact of hotel customer experience on customer satisfaction through online reviews. *Sustainability*, *14*(2), 848.
- Klaus, P. (2014). Towards practical relevance: Delivering superior firm performance through digital customer experience strategies. *Journal of Direct, Data & Digital Marketing Practice*, *15*, 306-316.
- Klaus, P. P., & Maklan, S. (2013). Towards a better measure of customer experience. *International Journal of Market Research*, *55*(2), 227-246.
- Kotler, P., & Armstrong, G. M. (2010). *Principles of marketing*. Pearson Education India.
- Kristiawan, Y., Hartoyo, H., & Suharjo, B. (2021). Customer satisfaction: Service quality or product quality (case study at fast food restaurant in Jabodetabek). *Binus Business Review*, *12*(2), 165-176.
- Lee, D.-X. (2021). Apply DANP to investigate the investment evaluation criteria on startups for venture capitalists. *Unpublished master thesis*, National University of Kaohsiung, Taiwan.
- Liu, Y., & Jang, S. S. (2009). Perceptions of Chinese restaurants in the US: What affects customer satisfaction and behavioral intentions? *International Journal of Hospitality Management*, *28*(3), 338-348.
- Mohammad, H., Ali, D., Afshin, R., & Ali, H. (2012). Evaluation of factors affecting customer loyalty in the restaurant industry. *African Journal of Business Management*, *6*(14), 5039-5046.
- Nguyen, H. M., & Khoa, B. T. (2019). Perceived mental benefit in electronic commerce: Development and validation. *Sustainability*, *11*(23), 6587-6608.
- Ou Yang, Y. P., Shieh, H. M., Leu, J. D., & Tzeng, G. H. (2008). A novel hybrid MCDM model combined with DEMATEL and ANP with applications. *International Journal of Operations Research*, *5*(3), 160-168.
- Ou, W. M., Shih, C. M., Chen, C. Y., & Wang, K. C. (2011). Relationships among customer loyalty programs, service quality, relationship quality and loyalty: An empirical study. *Chinese Management Studies*, *5*(2), 194-206.
- Park, E. (2019). Corporate social responsibility as a determinant of corporate reputation in the airline industry. *Journal of Retailing & Consumer Services*, *47*, 215-221.
- Pecotić, M., Bazdan, V., & Samardžija, J. (2014). Interior design in restaurants as a factor influencing customer satisfaction. *RIThink*, *4*, 10-14.
- Peri, C. (2006). The universe of food quality. *Food Quality & Preference*, *17*(1-2), 3-8.

- Porter, M. E. (1980). *Competitive strategy*, New York: Free Press.
- Ponnam, A., & Balaji, M. S. (2014). Matching visitation-motives and restaurant attributes in casual dining restaurants. *International Journal of Hospitality Management*, 37, 47-57.
- Pratminingsih, S. A., Astuty, E., & Widyatami, K. (2018). Increasing customer loyalty of ethnic restaurant through experiential marketing and service quality. *Journal of Entrepreneurship Education*, 21(3), 1-11.
- Richard, J. E., & Zhang, A. (2012). Corporate image, loyalty, and commitment in the consumer travel industry. *Journal of Marketing Management*, 28(5-6), 568-593.
- Satti, Z. W., Babar, S. F., & Parveen, S. (2022). Role of customer satisfaction as a mediator between sensory marketing and customer loyalty: a case of Pakistani restaurant industry. *Journal of International Food & Agribusiness Marketing*, 1-23.
- Seo, E. J., & Park, J. W. (2018). A study on the effects of social media marketing activities on brand equity and customer response in the airline industry. *Journal of Air Transport Management*, 66, 36-41.
- Sharp, B., & Sharp, A. (1997). Loyalty programs and their impact on repeat-purchase loyalty patterns. *International Journal of Research in Marketing*, 14(5), 473-486.
- Shen, K. Y., Yan, M. R., & Tzeng, G. H. (2014). Combining VIKOR-DANP model for glamor stock selection and stock performance improvement. *Knowledge-Based Systems*, 58, 86-97.
- Suhartanto, D. (2019). Predicting behavioural intention toward Islamic bank: A multi-group analysis approach. *Journal of Islamic Marketing*, 10(4), 1091-1103.
- Tüzünkan, D., & Albayrak, A. (2015). Research about moleculer cuisine application as an innovation example in Istanbul restaurants. *Procedia-Social & Behavioral Sciences*, 195, 446-452.
- Upadhyay, Y., Singh, S. K., & Thomas, G. (2007). Do people differ in their preferences regarding restaurants? An exploratory study. *Vision: The Journal of Business Perspective*, 11(2), 7-22.
- Wu, J. J. (2004). Influence of market orientation and strategy on travel industry performance: An empirical study of e-commerce in Taiwan. *Tourism Management*, 25(3), 357-365.

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*Applying DANP to Investigate the Important Constitution Criteria on  
Effective Leadership Behaviors*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

Leaders play an important role for subordinates' job satisfaction and organization performance. This paper adopts the DANP approach proposed by Ou Yang et al. (2008) which combines the DEMATEL and ANP procedures to investigate the important constitution criteria on effective leadership behaviors. The fifteen evaluation criteria for effective leadership behavior are extracted from the past literature and are classified into four clusters. For consolidating the research structure, this paper firstly consults ten scholars/experts who are excellent in human resources domain to verify the fifteen evaluation criteria and the four clusters, then collects those scholars/experts' opinions about the mutual influence among clusters. Finally, interviews another nine practical senior Human Resources managers by pair-wise comparison questionnaire to assess the importance priority of the criteria. The research results show that the External-oriented cluster has the greatest impact on the other clusters, but also is the least important cluster. Change-oriented cluster displays on the opposite direction, it is highly influenced by the other clusters. In addition, the HR manager respondents specify the top three criteria are Encouraging Innovation criterion, External Scanning criterion, and Advocating Change criterion, while the least three criteria are Consideration, Recognition criterion, and Empowering criterion. Unexpectedly, the research results imply that most HR managers in Taiwan are incline to the "concern for production" dimension of the managerial grid instead of the "concern for people" dimension.

Keywords: MCDM (Multi-Criteria Decision Making), DEMATEL, ANP, DANP, Effective Leadership

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## 1. Introduction

From the heritage of old buildings and historical stories, it is reasonable to deduce that there must exist many large organizations and their operating management methods in ancient times. Unfortunately, those ancient effective management methods are seldom and systematically retained to recent days. Until early 20 century, Taylor published "*The Principles of Scientific Management*" in 1911, he proposed that productivity can increase through jobs simplifying based on the philosophy of 'hardworking could not optimizing the efficiency.' In 1930s, Hawthorne Studies ignited the 'human relations era' which completely changed the perception of managers on motivation, job productivity, and employee satisfaction, thereafter. Hawthorne Studies also shed light on the schools of human relationship and the study on leadership theories.

People frequently mixed up that management and leadership to be the same thing. They believed that managers are equivalent to leaders. Yet, this concept is not entirely correct (Algahtani, 2014; Bohoris & Vorria, 2007). According to past researches, the differences between management and leadership are based on the behaviors they engage in. Bennis and Nanus (1985) pointed out that "managers do the things right, leaders do the right thing." In general, managers are responsible for completing day-to-day tasks, focusing on actions, maintaining operations, and applying the rules (Algahtani, 2014; Yukl, 1989; Zaleznik, 1992). It implies that managers will complete daily tasks efficiently. Whereas, leaders stress on inspiring people's enthusiasm, caring more about people, realizing vision, pursuing long-term goals, innovating, and daring to challenge the status quo (Algahtani, 2014; Bennis & Nanus, 1985; Kotter, 2001; Simonet & Tett, 2013; Zaleznik, 1992).

Past researchers were eager to search for the particular behaviors (e.g., planning, recognizing, and advocating change) that the effective leaders have to perform (Yukl, 2012) or the specific attributes (e.g., vision, inspiration, empathy, and trustworthiness) that the effective leaders must possess (Bennis & Townsend, 1989). Considering that not every leadership behavior or attribute can effectually help organization to develop and create competition competence, it is necessary to explore this issue in a more deeply and systematically manner to explore the determinants of effective leaders. Organizational leaders often face variety challenges. In such situation, what behaviors should an effective leader exhibit to solve the problems, and which behaviors can be classified as effective leadership behaviors are interesting research topics. Past studies on effective leadership mostly focused on the viewpoints of the followers while evaluating effective leadership behaviors or attributes, this paper will instead stress on the criteria of effective leadership under the perspective of leaders themselves.

This paper finds that Encouraging Innovation is the most important leadership behavior. Organizations should seek and cultivate future high-level managers with innovative thinking to meet the future diverse needs. External Scanning is the second important behavior. It indicates that effective leaders must constantly gather external information and share useful information internally. The third important behavior is Advocating Change behavior. In current complex and changing environment, effective leaders should cultivate a change-oriented mindset. All the relaxing three behaviors fall into the Relationship-oriented cluster, reflecting that effective leaders concern more on work-related affairs.

This paper is organized as follows: Section 2 reviews the past literature concerning about the effective leaders' behaviors or attributes, extracts the criteria for effective leadership; The



adopted research methodology is described in Section 3; The research results is shown in Section 4; Section 5 is the conclusion of this paper.

## **2. Literature Review and Criteria Extraction**

Based on Yukl (2012) and reviewed relative literature, this paper extracts fifteen criteria and classifies into four clusters, namely Task-oriented Cluster, Relationship-oriented Cluster, Change-oriented Cluster, and External-oriented Cluster.

### **2.1 Task-oriented Cluster**

Task-oriented Cluster aims to accomplish the assigned tasks. For ensuring people, equipment, and other resources are used in an efficient way (Yukl, 2012), Task-oriented Cluster includes Clarifying Criterion, Planning Criterion, Monitoring Criterion, and Problem Solving Criterion.

1. Clarifying Criterion: For avoiding misunderstand the goal of their duties, effective leaders have to assign tasks (Kim & Yukl, 1995), inform responsibilities, expected task goals and performance (Yukl & Van Fleet, 1982), work deadlines, and specify work rules to their inexperienced subordinates (Holloway, 2012; Yukl & Van Fleet, 1982).
2. Planning Criterion: For creating a guideline to achieve their goals, effective leaders will determine short-term and long-term plans to develop activities and allocate resources according to the goals, identify the resources and labors required to complete the task, and allocate the priority of resources according to their degree of importance (Yukl, 2012; Kim & Yukl, 1995; Yukl & Van Fleet, 1982; Yukl & Kanuk, 1979; Amabile et al., 2004; Holloway, 2012).
3. Monitoring Criterion: Effective leaders have to pay attention to employees to ensure that subordinates accurately follow his instructions (Kim, 2019), check the work progress and quality (Kim & Yukl, 1995; Yukl, 2012; Holloway, 2012), supervise the working results of subordinates for correctly evaluating their performance (Klein et al., 2006; Künzle et al., 2010), detect and correct operation errors simultaneously for forbidding the subordinates will make serious mistakes (Klein et al., 2006; Künzle et al., 2010).
4. Problem Solving Criterion: Effective leaders have to identify the work-related problems which may disrupt operations before becoming seriously. They need to analyze the cause and consequence of the problem systematically but timely and find solutions of the problem. Then take relevant actions quickly, and implement those solutions to solve the problems (Yukl & Van Fleet, 1982; Furlan et al., 2019).

### **2.2 Relationship-oriented Cluster**

Relationship-oriented Cluster is an approach which focuses on the subordinates' job satisfaction and motivation (Rüzgar, 2018). For understanding deeply on job satisfaction and motivation, the related factors will be discussed on Supporting Criterion, Recognition Criterion, Development Criterion, and Empowering Criterion.

1. Consideration Criterion: Effective leaders must take care of the feelings of subordinates (Druskat & Wheeler, 2003). Through showing friendliness and understanding, support, and

sympathy (Kim & Yukl, 1995; Yukl & Van Fleet, 1982; Yukl & Kanuk, 1979; Druskat & Wheeler, 2003; Yukl et al., 2009) to their subordinates, and encouraging subordinates when they encounter difficulties to help subordinates build self-confidence (Kim & Yukl, 1995; Yukl, 2012; Yukl et al., 2009). Effective leaders also have to treat subordinates fairly and impartially to reduce turnover (Yukl & Van Fleet, 1982; Yukl & Kanuk, 1979).

2. **Recognition Criterion:** Effective leaders have to respect and pay attention to subordinates (Hansen et al., 2002; Luthans, 2000), praise for affirming performance (Yukl, 2012; Kim & Yukl, 1995; Yukl & Van Fleet, 1982; Amabile et al., 2004; Yukl, 2009) and offer rewards for completing certain tasks or goals (Yukl, 2012; Kim & Yukl, 1995; Lartey, 2021) to form a positive reinforcement to improve and increase the willingness of subordinates to take responsibility and reducing employee turnover rate and increasing productivity (Luthans, 2000).
3. **Development Criterion:** Effective leaders have to expand the work capacity (Dachner et al., 2021; McCauley & Hezlett, 2001), provide useful guidance (Yukl, 2012; Yukl & Van Fleet, 1982; Yukl et al., 2009), assist in learning necessary skills (Yukl et al., 2009), and enable to function effectively (McCauley & Hezlett, 2001) to subordinates to enhance the professional skills of subordinates and promote organizational performance.
4. **Empowering Criterion:** Effective leaders will decentralize of power and responsibility for important tasks to highly autonomous knowledge workers (Yukl, 2012; Kim & Yukl, 1995; Amabile et al., 2004; Wall et al., 2002; Leach et al., 2003; Ahearne et al., 2005; Cheong et al., 2019; Yukl & Van Fleet, 1982; Amundsen & Martinsen, 2015). They invite members into work-related decision-making (Yukl, 2012; Yukl & Van Fleet, 1982; Amabile et al., 2004), take into account the suggestions provided by subordinates (Yukl, 2012; Yukl & Van Fleet, 1982; Yukl & Kanuk, 1979; Amabile et al., 2004; Sharma & Kirkman, 2015), transfer power from top manager to subordinates to solve work problems without the approval (Yukl et al., 2009; Yukl, 2012) for improving the subordinates' self-confidence (Kim & Yukl, 1995) and increasing their team motivation and productivity.

### **2.3 Change-oriented Cluster**

In the permanent changing world, one of the primary objectives for effective leaders is to identify and implement desirable changes in tasks, outputs or work procedures for the leader's team or work unit (Yukl et al., 2019). For successfully undertaken necessary changes in the organization, the Advocating Change Criterion, Encouraging Innovation Criterion, and Facilitating Collective Learning Criterion deserve to be discussed.

1. **Advocating Change Criterion:** Effective leaders have to advocate for change by proposing ideal changes, raising appropriate strategies, and explaining to subordinates the need to respond to change (Yukl, 2012; Park et al., 2018). They will alternate the existing operation processes and strategies, resource allocation, and even its members in the organization (Shin, Taylor, & Seo, 2012; Huber et al., 1993) to reduce the impact of change (Bejinariu et al., 2017).
2. **Encouraging Innovation Criterion:** Effective leaders have to stimulate and support followers to adopt innovative thinking to solve problems, create new products and service processes (Yukl, 2012; Park et al., 2018; Dionne et al., 2004; Rafferty & Griffin, 2004), inspire followers to reconsider ideas that have long not been challenged (Dionne et al.,

2004) to comply the changing environment.

3. **Collective Learning Criterion:** Effective leaders will encourage members of an organization to learn together (Yukl, 2009), exchange skills and knowledge besides accompany with changing interaction patterns and behaviors among members (Garavan & McCarthy, 2008), improve existing processes or developing new processes (Yukl, 2012) to help the organization to achieve good performance and complete work in a more efficient way.
4. **Charismatic Leadership Criterion:** Effective leaders have to clearly express their ideas to win the subordinates to support their vision and values (Supratman et al., 2021), strengthen subordinates' commitment to internalize the vision, and create exceptionally strong admiration and respect to the leaders (Waldman & Yammarino, 1999) to encourage subordinates to transform their personal interests into group interests (Shamir et al., 1993; Hansen et al., 2020).

## 2.4 External-oriented Cluster

External environment significantly impacts the performance of effective leaders. To comply with the influence of external environment, Mintzberg (1973) declared that effective leaders have to collect outer intelligence to improve their effective of decision-making. In this subsection, External Cluster explores the Networking Criterion, External Scanning Criterion, and Representing Criterion, respectively.

1. **Networking Criterion:** Effective leaders have to keep in touch with the sources of information and strive for their support through social activities (Kim & Yukl, 1995; Day, 2000; Gould & Penley, 1984; Forret & Dougherty, 2004), focus on goal-oriented behavior within/outside the organization that creates, cultivates, and utilizes interpersonal relationships to receive valuable information to facilitate work-related activities (Gibson, Hardy, & Buckley, 2014; Wolff & Moser, 2009), and maintain good relationships with outsiders by participating in events, clubs, professional conferences, and ceremonies (Yukl, 2012; Hassan et al., 2018), to create networking.
2. **External Scanning Criterion:** Effective leaders have to accurately scanning the external environment in trends, changes, and information to identify potential opportunities and threats or discover the potential customers (Park et al., 2018; Yukl et al., 2002; Yukl, 2019; Choo, 1999; Hassen et al., 2018), collect and apply external information to organization's future planning (Auster & Choo, 1993; Choo, 1999), and pay heavy attention on industry-related technologies, political situations, and behaviors of stakeholders (Brown & Kline, 2020; Albright, 2004; Hassen et al., 2018), to improve management efficiency and organizational performance.
3. **Representing Criterion:** Effective leaders have to play the roles as promoter, ambassador, and external coordinator to arrange external affairs (Yukl, 2012), speaking for the organization, guarding the organization's reputation, and protecting subordinates (Park et al., 2018). They also have to liaise with people outside the organization and negotiate to leverage the strengths of all parties for the benefit of the organization (Yukl, 2012; Yukl & Van Fleet, 1982; Hassan et al., 2018).

### **3. Methodology**

This paper adopts the DANP model that was proposed by Ou Yang et al. (2008). The DANP model combines DEMATEL and ANP. It is a procedure to deal with the problems of criteria interdependence and feedback. DEMATEL is used to determine the degree of influence between clusters, and is weighted according to the degree of influence which improves the shortcomings of ANP assuming that each cluster has the same weight.

#### **3.1 Research Procedure**

To investigate criteria that affect effective leaders' behaviors, this paper firstly extracts fifteen criteria from related literature and consults with ten experts and scholars excellent in this field to revise the initial criteria and further classified into four clusters, namely Task-oriented Cluster, Relationship-oriented Cluster, Change-oriented Cluster, and External-oriented Cluster. The description of effective leadership behavior criteria is shown as Table 3.1. In the final stage, this paper interviews another nine senior HR managers to collect the actual perception of the real world.

**Table 3. 1 The Description of Effective Leadership Behaviors Criteria**

Clusters	Criteria	Description	Sources
(T) Task-oriented	(T1) Clarifying	For avoiding misunderstand the goal of their duties, effective leaders have to assign tasks, inform responsibilities, expected task goals and performance, work deadlines, and specify work rules to their inexperienced subordinates.	Kim & Yukl, 1995 Yukl & Van Fleet, 1982 Holloway, 2012
	(T2) Planning	For creating a guideline to achieve their goals, effective leaders will determine short-term and long-term plans to develop activities and allocate resources according to the goals, identify the resources and labors required to complete the task, and allocate the priority of resources according to their degree of importance.	Yukl, 2012 Kim & Yukl, 1995 Yukl & Van Fleet, 1982 Yukl & Kanuk, 1979 Amabile et al., 2004 Holloway, 2012
	(T3) Monitoring	Effective leaders have to pay attention to employees to ensure that subordinates accurately follow his instructions, check the work progress and quality, supervise the working results of subordinates for correctly evaluating their performance, detect and correct operation errors simultaneously for forbidding the subordinates will make serious mistakes.	Kim, 2019 Kim & Yukl, 1995 Yukl, 2012 Hollway, 2012 Klein et al., 2006 Künzle et al., 2010
	(T4) Problem Solving	Effective leaders have to identify the work-related problems which may disrupt operations before becoming seriously. They need to analyze the cause and consequence of the problem systematically but timely and find solutions of the problem. Then take relevant actions quickly, and implement those solutions to solve the problems.	Yukl & Van Fleet, 1982 Furlan et al., 2019
(R) Relationship-oriented	(R1) Consideration	Effective leaders must take care of the feelings of subordinates. Through showing friendliness and understanding, support, and sympathy to their subordinates, and encouraging subordinates when they encounter difficulties to help subordinates build self-confidence. Effective leaders also have to treat subordinates fairly and impartially to reduce turnover.	Druskat & Wheeler, 2003 Kim & Yukl, 1995 Yukl & Van Fleet, 1982 Yukl & Kanuk, 1979 Yukl et al., 2009
	(R2) Recognition	Effective leaders have to respect and pay attention to subordinates, praise for affirming performance and offer rewards for completing certain tasks or goals to form a positive reinforcement to improve and increase the willingness of subordinates to take responsibility and reducing employee turnover rate and increasing productivity.	Hansen et al., 2002 Luthans, 2000 Yukl, 2012 Kim & Yukl, 1995 Yukl & Van Fleet, 1982 Amabile et al., 2004 Yukl, 2009 Lartey, 2021
	(R3) Development	Effective leaders have to expand the work capacity, provide useful guidance, assist in learning necessary skills, and enable to function effectively to subordinates to enhance the professional skills of subordinates and promote organizational performance.	Dachner et al., 2021 McCaughey & Hezlett, 2001 Yukl, 2012 Yukl & Van Fleet, 1982 Yukl et al., 2009
	(R4) Empowering	Effective leaders will decentralize of power and responsibility for important tasks to highly autonomous knowledge workers. They invite members into work-related decision-making, consider the suggestions provided by subordinates, transfer power from top manager to subordinates to solve work problems without the approval for improving the subordinates' self-confidence and increasing their team motivation and productivity.	Yukl, 2012 Kim & Yukl, 1995 Amabile et al., 2004 Wall et al., 2002 Leach et al., 2003 Ahearne et al., 2005 Cheong et al., 2019 Yukl & Van Fleet, 1982 Amundsen & Martinsen, 2015 Yukl & Kanuk, 1979 Sharma & Kirkman, 2015

**Table 3.1 The Description of Effective Leadership Behaviors Criteria (Con't 1)**

Clusters	Criteria	Description	Sources
(C) Change-oriented	(C1) Advocating Change	Effective leaders have to advocate for change by proposing ideal changes, raising appropriate strategies, and explaining to subordinates the need to respond to change. They will alternate the existing operation processes and strategies, resource allocation, and even its members in the organization to reduce the impact of change.	Yukl, 2012 Park et al., 2018 Shin, Taylor, & Seo, 2012 Huber et al., 1993 Bejinariu et al., 2017
	(C2) Encouraging Innovation	Effective leaders have to stimulate and support followers to adopt innovative thinking to solve problems, create new products and service processes, inspire followers to reconsider ideas that have long not been challenged to comply the changing environment.	Yukl, 2012 Park et al., 2018 Dionne et al., 2005 Rafferty & Griffin, 2004
	(C3) Collective Learning	Effective leaders will encourage members of an organization to learn together, exchange skills and knowledge besides accompany with changing interaction patterns and behaviors among members, improve existing processes or developing new processes to help the organization to achieve good performance and complete work in a more efficient way.	Yukl, 2009 Garavan & McCarthy, 2008 Yukl, 2012
	(C4) Charismatic Leadership	Effective leaders have to clearly express their ideas to win the subordinates to support their vision and values, strengthen subordinates' commitment to internalize the vision, and create exceptionally strong admiration and respect to the leaders to encourage subordinates to transform their personal interests into group interests.	Supratman et al., 2021 Waldman & Yammarino, 1999 Shamir et al., 1993 Hansen et al., 2020
(E) External-oriented	(E1) Networking	Effective leaders have to keep in touch with the sources of information and strive for their support through social activities, focus on goal-oriented behavior within/outside the organization that creates, cultivates, and utilizes interpersonal relationships to receive valuable information to facilitate work-related activities, and maintain good relationships with outsiders by participating in events, clubs, professional conferences, and ceremonies, to create networking.	Kim & Yukl, 1995 Day, 2000 Gould & Penley, 1984 Forret & Dougherty, 2004 Gibson, Hardy, & Buckley, 2014 Wolff & Moser, 2009 Yukl, 2012 Hassan et al., 2018
	(E2) External Scanning	Effective leaders have to accurately scanning the external environment in trends, changes, and information to identify potential opportunities and threats or discover the potential customers, collect and apply external information to organization's future planning, and pay heavy attention on industry-related technologies, political situations, and behaviors of stakeholders, to improve management efficiency and organizational performance.	Park et al., 2018 Yukl et al., 2002 Choo, 1999 Hassen et al., 2018 Auster & Choo, 1993 Hagen et al., 2003 Brown & Kline, 2020 Albright, 2004
	(E3) Representing	Effective leaders have to play the roles as promoter, ambassador, and external coordinator to arrange external affairs, speaking for the organization, guarding the organization's reputation, and protecting subordinates. They also have to liaise with people outside the organization and negotiate to leverage the strengths of all parties for the benefit of the organization.	Yukl, 2012 Park et al., 2018 Yukl and Van Fleet, 1982 Hassan et al., 2018

### 3.2 Data Processing Steps

Based on the model of Ou Yang et al. (2008) and the revised version of Lee (2021), this paper depicts the flowchart of the modified DANP as Fig. 3.2. In this subsection, each step of the modified DANP will be described in more detail.

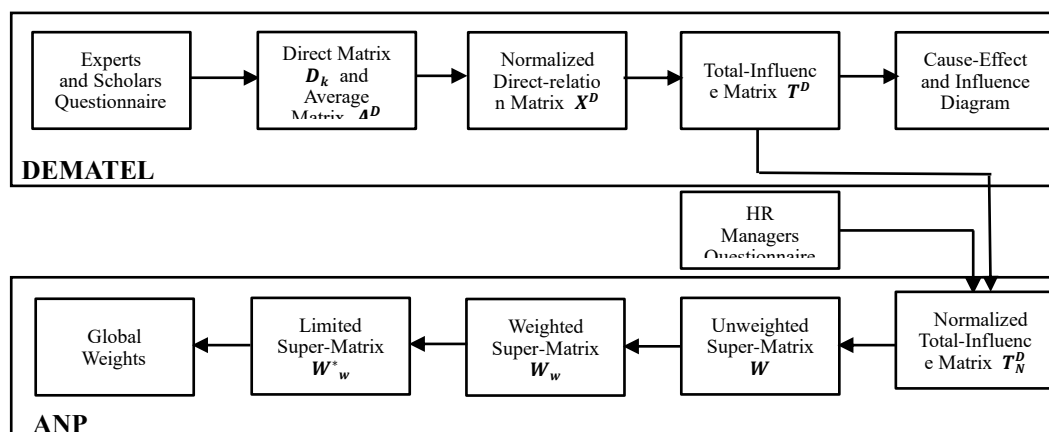


Fig. 3. 1 The Flowchart of DANP Steps (Source: Rearranged by This Paper)

#### 3.2.1 DEMATEL for Network Relationship

*Step1: Calculate the direct relation matrix  $D_k$  and average direct-relation matrix  $A^D$*

Each respondent questionnaire gives a direct matrix  $D_k$ ,  $k = 1, 2, \dots, n$ , where  $n$  represents the number of respondents, the elements of  $D_k$ , denoted by  $d_{ij}^k$ , presents the influence cluster  $i$  impacts on cluster  $j$ , shown as Eq. (1). By averaging each corresponding element in  $D_k$ , gains the average direct-relation matrix  $A^D$ . The element in average matrix, denotes as  $a_{ij}^D$ . The  $A^D$  equation is calculated by Eq. (2).

$$D_k = \begin{bmatrix} d_{11}^k & \dots & d_{1j}^k & \dots & d_{1n}^k \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ d_{i1}^k & \dots & d_{ij}^k & \dots & d_{in}^k \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ d_{n1}^k & \dots & d_{nj}^k & \dots & d_{nn}^k \end{bmatrix} \tag{1}$$

$$a_{ij}^D = \frac{\sum_{k=1}^n d_{ij}^k}{n} \tag{2}$$

*Step2: Normalizing the direct-relation matrix*

Normalizing  $A^D$  by Eqs. (3) and (4), receive the normalized direct-relation matrix  $X^D$ , and all principal diagonal factors are equal to zero.

$$S^D = \min \left[ \frac{1}{\max \sum_{j=1}^n |a_{ij}^D|}, \frac{1}{\max \sum_{i=1}^n |a_{ij}^D|} \right] \tag{3}$$

$$\mathbf{X}^D = \mathbf{S}^D \times \mathbf{A}^D \quad (4)$$

*Step D3: Deriving the total influence matrix  $\mathbf{T}^D$*

The direct/indirect matrix  $\mathbf{T}^D$  can be obtained by Eq. (5), where  $\mathbf{I}$  denotes identity matrix, and  $t_{ij}^d$  is expressed as the direct and indirect influence from cluster  $i$  to cluster  $j$ .

$$\mathbf{T}^D = \lim_{k \rightarrow \infty} (\mathbf{X}^D + \mathbf{X}^{D^2} + \mathbf{X}^{D^3} + \dots + \mathbf{X}^{D^k}) = \lim_{k \rightarrow \infty} \mathbf{X}^D (\mathbf{I} - \mathbf{X}^D)^{-1} \quad (5)$$

*Step D4: Analyzing the results of influences and relationships*

Vector  $r$  and vector  $c$  denote the vector of row sum and vector of column sum of  $\mathbf{T}^D$ , can be obtained by Eqs. (6) and (7).

$$r = (r_i)_{n \times 1} = [\sum_{j=1}^n t_{ij}]_{n \times 1} \quad (6)$$

$$c = (c_j)_{1 \times n} = (c_j)'_{1 \times n} = [\sum_{i=1}^n t_{ij}]'_{1 \times n} \quad (7)$$

In Eq. (6),  $r_i$  is the sum of the  $i^{\text{th}}$  row of  $\mathbf{T}^D$  which represents the sum of direct and indirect influences of cluster  $i$  impacting on the other clusters; Similarity,  $c_j$  in Eq. (7) is the sum of the  $j^{\text{th}}$  column of  $\mathbf{T}^D$  which represents the sum of direct and indirect influences cluster  $j$  received from the other clusters. When  $i=j$ , the  $r_i + c_i$  is called the “prominence” of cluster  $i$  that indicates the strength of total influence accumulated both gives to and receives from the other clusters. The higher  $r_i + c_i$  value of cluster  $i$  is, the stronger connection with the other clusters will be. High  $r_i + c_i$  value means that the cluster  $i$  plays a central role and has a higher priority. On the other hand, the  $r_i - c_i$  is called “relation” that indicates the prioritization of cluster  $i$ . If  $r_i - c_i$  is positive, then cluster  $i$  is net affecting other clusters; if  $r_i - c_i$  is negative, then cluster  $i$  is net influenced by the other clusters (Tzeng et al., 2007). When the  $r_i - c_i$  value is high, it means that cluster  $i$  has a strong influence on other clusters than it receives from the other clusters, it represents that cluster  $i$  may have the low priority (Li and Tzeng, 2009; Wu, 2011).

*Step D5: Setting an  $\alpha$ -cut as a threshold to filter the minor clusters*

$\mathbf{T}^D$  expresses the influence strength of cluster  $i$  imposes on cluster  $j$ . Ou Yang et al. (2008) suggested to set a threshold to screen out the minor influence clusters. The  $\alpha$  value is calculated by the average of all elements in  $\mathbf{T}^D$ ,  $\alpha = \sum_{i=1}^n \sum_{j=1}^n t_{ij} / n^2$  where  $n$  is the number of clusters. If the original value of each element in  $\mathbf{T}^D$  is smaller than  $\alpha$ , then the element value will be replaced by 0 as  $\mathbf{T}_\alpha^D$ . Because the element values in  $\mathbf{T}^D$  are always with slightly difference, eliminating the minor influence elements may disregard some key clusters in DEMATEL, and then distort the result in ANP. This paper employs the suggestion of Du & Li, (2021) and Dalvi-Esfahani et al. (2019), just sign an asterisk “\*” mark on the upper right of the minor influence elements instead of replaced by 0.

### 3.2.2 Weighted Measurements by ANP

*Step A1: Building the direct super matrix  $\mathbf{A}_y$*



After interviewing and gathering information from the eight Human Resource managers, each respondent's reply is recorded as a direct matrix  $A_y$ ,  $y = 1, 2, \dots, n$ , where  $n$  represents the number of respondents, expressed as Eq. (8). Each element in  $A_y$  is denoted by  $a_{ij}^y$ , expresses the original direct effects of each criterion exerts to and receives from the other criteria.

$$A_y = \begin{matrix} & \begin{matrix} C_1 & C_2 & \dots & C_n \end{matrix} \\ \begin{matrix} C_1 \\ C_2 \\ \vdots \\ C_n \end{matrix} & \begin{matrix} e_{11} \dots e_{1m_1} & e_{21} \dots e_{2m_2} & \dots & e_{n1} \dots e_{nm_n} \\ \left[ \begin{matrix} a_{11}^y & a_{12}^y & \dots & a_{1n}^y \\ a_{21}^y & a_{22}^y & \dots & a_{2n}^y \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1}^y & a_{n2}^y & \dots & a_{nn}^y \end{matrix} \right] \end{matrix} \end{matrix} \quad (8)$$

In Eq. (8),  $c_n$  represents the  $n^{\text{th}}$  cluster,  $e_{nm}$  represents the  $m^{\text{th}}$  element in  $n^{\text{th}}$  cluster,  $A_{ij}$  represents the principal eigenvector of the influence of elements compared in the  $j^{\text{th}}$  cluster to the  $i^{\text{th}}$  cluster.

*Step A2: Averaging the direct matrix*

The average matrix  $A^S$  is to calculate the mean of the same elements in each direct matrix. Each element of  $A^S$  is expressed as  $a_{ij}^A$ , denoted as Eq. (9).

$$a_{ij}^A = \frac{\sum_{y=1}^n a_{ij}^y}{n} \quad (9)$$

*Step A3: calculating the initial direct-relation matrix  $X^A$*

By Eqs. (10) and (11), normalize  $A^S$  and gain the initial direct-relation matrix  $X^A$ , the principal diagonal elements are all equal to zero.

$$S^A = \min \left[ \frac{1}{\max \sum_{j=1}^n |a_{ij}^A|}, \frac{1}{\max \sum_{i=1}^n |a_{ij}^A|} \right] \quad (10)$$

$$X^A = S^A \times A^A \quad (11)$$

*Step A4: Deriving the total influence matrix  $T^A$*

By Eq. (12), obtains the total influence matrix  $T^A$ , where  $I$  represents the identity matrix. The element  $ij$  in  $T^A$  denotes the direct and indirect influence from element  $i$  to element  $j$ .

$$T^A = \lim_{y \rightarrow \infty} (X^A + X^{A^2} + X^{A^3} + \dots + X^{A^y}) = \lim_{y \rightarrow \infty} X^A (I - X^A)^{-1} \quad (12)$$

Step A5: Normalizing the total influence matrix  $T_N^A$

By Eq. (13), the normalized total influence matrix  $T_N^A$  is calculated.

$$T_N^A = \begin{matrix} & \begin{matrix} C_1 & C_2 & \dots & C_n \\ e_{11} \dots e_{1m_1} & e_{21} \dots e_{2m_2} & \dots & e_{n1} \dots e_{nm_n} \end{matrix} \\ \begin{matrix} C_1 \\ C_2 \\ \vdots \\ C_n \end{matrix} & \begin{bmatrix} T_N^{A11} & T_N^{A12} & \dots & T_N^{A1n} \\ T_N^{A21} & T_N^{A22} & \dots & T_N^{A2n} \\ \vdots & \vdots & \ddots & \vdots \\ T_N^{An1} & T_N^{An2} & \dots & T_N^{Ann} \end{bmatrix} \end{matrix} \tag{13}$$

The process for calculating  $T_N^A$  is as follows: Firstly, separate each cluster in  $T^A$ , then calculate the summation of all the elements in that cluster, finally divide every element by the summation. Thus, we can normalize the clusters in  $T^A$ . For example, the calculating procedure of  $T_N^{A11}$  is illustrated by Eqs. (14) and (15).

$$s_{ei}^{11} = \sum_{j=1}^{m_1} t_{ej}^{11}, i = 1, 2, \dots, m_1 \tag{14}$$

$$T_N^{A11} = \begin{bmatrix} t_{11}^{A11}/s_{e1}^{11} & \dots & t_{12}^{A11}/s_{e1}^{11} & \dots & t_{1m_1}^{A11}/s_{e1}^{11} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{21}^{A11}/s_{e2}^{11} & \dots & t_{22}^{A11}/s_{e2}^{11} & \dots & t_{2m_1}^{A11}/s_{e2}^{11} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{m_11}^{A11}/s_{em_1}^{11} & \dots & t_{m_12}^{A11}/s_{em_1}^{11} & \dots & t_{m_1m_1}^{A11}/s_{em_1}^{11} \end{bmatrix} = \begin{bmatrix} t_{N11}^{A11} & \dots & t_{N12}^{A11} & \dots & t_{N1m_1}^{A11} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{N21}^{A11} & \dots & t_{N22}^{A11} & \dots & t_{N2m_1}^{A11} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{Nm_11}^{A11} & \dots & t_{Nm_12}^{A11} & \dots & t_{Nm_1m_1}^{A11} \end{bmatrix} \tag{15}$$

Step A6: Obtaining the unweighted super-matrix  $W$

The unweighted super-matrix  $W$  is obtained by transposing matrix  $T_N^A$  as Eq. (16) for the preparation to calculate the weighted super-matrix  $W_W$ .

$$W = \begin{matrix} & & \begin{matrix} C_1 & C_2 & \dots & C_n \end{matrix} \\ \begin{matrix} C_1 \\ C_2 \\ \vdots \\ C_n \end{matrix} & \begin{matrix} e_{11} \dots e_{1m_1} & e_{21} \dots e_{2m_2} & \dots & e_{n1} \dots e_{nm_n} \\ \begin{bmatrix} W_{11} & W_{12} & \dots & W_{1n} \\ W_{21} & W_{22} & \dots & W_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ W_{n1} & W_{n2} & \dots & W_{nn} \end{bmatrix} \end{matrix} \end{matrix} \quad (16)$$

Step A7: Obtaining the normalized total-influence matrix  $T_N^D$

Saaty (1996) assumed that each cluster has the even weight in ANP method. is a phenominon in the actual world. For correcting this unreal assumption, this paper utilizes the diverse cluster weights established in DEMATEL to normalized the total-influence matrix  $T^D$ . Then, employ Eqs. (17) and (18) to obtain the normalized total-influence matrix  $T_N^D$ .

$$T^D = \begin{bmatrix} t_{11}^D & \dots & t_{1j}^D & \dots & t_{1n}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{i1}^D & \dots & t_{ij}^D & \dots & t_{in}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{n1}^D & \dots & t_{nj}^D & \dots & t_{nn}^D \end{bmatrix}, \quad d_i = \sum_{j=1}^n t_{ij}^D \quad (17)$$

$$T_N^D = \begin{bmatrix} t_{11}^D/d_1 & \dots & t_{1j}^D/d_1 & \dots & t_{1n}^D/d_1 \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{i1}^D/d_i & \dots & t_{ij}^D/d_i & \dots & t_{in}^D/d_i \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{n1}^D/d_n & \dots & t_{nj}^D/d_n & \dots & t_{nn}^D/d_n \end{bmatrix} = \begin{bmatrix} t_{N11}^D & \dots & t_{N1j}^D & \dots & t_{N1n}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{Ni1}^D & \dots & t_{Nij}^D & \dots & t_{Nin}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{Nn1}^D & \dots & t_{Nnj}^D & \dots & t_{Nnn}^D \end{bmatrix} \quad (18)$$

Step A8: Obtaining the weighted super-matrix  $W_w$

Multiply the unweighted super-matrix  $W$  by the transposed normalized total-influence matrix  $T_N^{D'}$ , i.e.  $W_w = T_N^{D'} \times W$ , results the weighted super-matrix  $W_w$ , shown as Eq. (19).

$$W_w = \begin{bmatrix} t_{N11}^D \times W_{11} & \dots & t_{Nj1}^D \times W_{1j} & \dots & t_{Nn1}^D \times W_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{N1i}^D \times W_{i1} & \dots & t_{Nji}^D \times W_{ij} & \dots & t_{Nni}^D \times W_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{N1n}^D \times W_{n1} & \dots & t_{Njn}^D \times W_{nj} & \dots & t_{Nnn}^D \times W_{nn} \end{bmatrix} \quad (19)$$

Step A9: Obtaining the limited super-matrix  $W_w^*$

By raising the weighted super-matrix  $W_w$  to a sufficiently large power k, shown as Eq. (20), until it converges to a long-term stable super-matrix named limited super-matrix  $W_w^*$ . From  $W_w^*$ , there obtains a global priority vector or is called the DANP weights (Chen, Hsu, and Tzeng, 2011).

$$\lim_{k \rightarrow \infty} W_w^k \tag{20}$$

*Step A10: Ranking the global weights*

Refer to the limited super-matrix  $W_w^*$ , according to the global priority vector, the global weights are ranked.

#### 4. Research Results

Follow the data processing steps in section 3.2, this paper analyzed the interrelationships between clusters and the relative importance of criteria, and ranked the importance of effective leadership behaviors.

##### 4.1 The Relationships among Clusters

In DEMATEL stage, this paper collected the opinions of ten scholars/experts on the influence relationship between the four clusters to create ten direct matrices  $D_k$ ,  $k=1, 2, 3, \dots, 10$ . Based on the Eq. (2), results in the average matrix  $A^D$ . Normalize  $A^D$  by Eqs. (3) and (4), obtain the initial direct-influence matrix  $X^D$  as Table 4.1.

Table 4.1 The Initial Direct-Influence Matrix  $X^D$

Cluster	Task-oriented	Relationship-oriented	Change-oriented	External-oriented
Task-oriented	0	0.24638	0.37681	0.21739
Relationship-oriented	0.30435	0	0.30435	0.14493
Change-oriented	0.24638	0.21739	0	0.28986
External-oriented	0.21739	0.26087	0.31884	0

Calculate the total influence matrix  $T^D$  by Eq. (5) as shown in Table 4.2.

Table 4.2 The Total-Influence Matrix  $T^D$

Cluster	Task-oriented	Relationship-oriented	Change-oriented	External-oriented
Task-oriented	0.78298	0.93897	1.23911	0.88285
Relationship-oriented	0.95627	0.68143	1.11952	0.77607
Change-oriented	0.91653	0.86292	0.88566	0.87088
External-oriented	0.92930	0.91789	1.16264	0.67205

For understanding the direct/indirect influence of cluster  $i$ , this paper adopts Eqs. (5) and (6) to calculate the values of give-influence  $r_i$  and receive-influence  $c_i$ . After obtaining the values of  $r_i$  and  $c_i$ ; then calculate the values of  $r_i + c_i$  and  $r_i - c_i$  to analyze the relationships of influence among the four clusters. The received and gives influences of the four clusters shown as Table 4.3.

Table 4.3 The Received and Gives Influences of the Four Clusters

Cluster	$r_i$	$c_i$	$r_i + c_i$	$r_i - c_i$
Task-oriented	3.84391	3.58508	7.42899	0.25883
Relationship-oriented	3.53328	3.40121	6.93449	0.13208
Change-oriented	3.53599	4.40693	7.94292	-0.87094
External-oriented	3.68188	3.20184	6.88372	0.48004

To illustrate the interactions among the four clusters more clearly, this paper has plotted the impact-relation map (IRM), shown as Fig. 4.1.

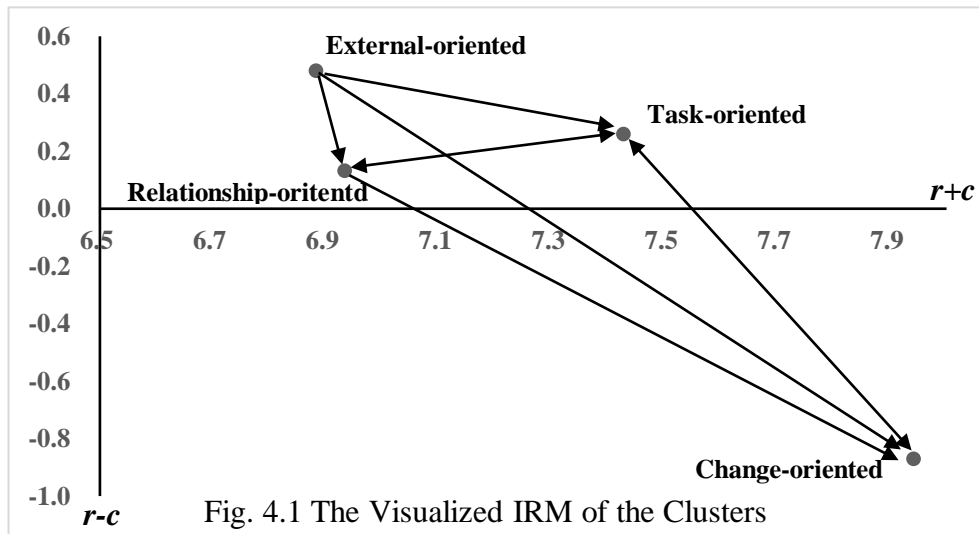


Fig. 4.1 The Visualized IRM of the Clusters

From Fig. 4.1, the External-oriented cluster has the highest  $r_i - c_i$  value. It means that External-oriented cluster has the greatest impact on the other clusters and is typically referred to as the "main cause-factor". At the same time, External-oriented cluster also is the least important cluster with the smallest  $r_i + c_i$  value. It expresses that effective leader can only adopt passive reaction behaviors to the criteria in External-oriented cluster. On the other hand, Change-oriented is completely opposite to External-oriented cluster. Change-oriented cluster has the smallest  $r_i - c_i$  value, reflecting that it is highly influenced by the other clusters which is typically referred as the "main effect-factor". However, its  $r_i + c_i$  value is the largest, indicating that the effective leader need to proactively pay more attention to the criteria in Change-oriented cluster. As for the Task-oriented cluster and Relationship-oriented clusters, it seems that they are "stuck in the middle" with medium  $r_i + c_i$  value and positive  $r_i - c_i$  value. The effective leader just imposes minor attention on the criteria in those two clusters.

To identify the strength of influence between clusters, this paper uses the total average value of all elements in matrix  $T^D$  as a threshold value  $\alpha$ , in order to filter the less significant clusters. The value of  $\alpha = \sum t_{ij}/16=0.91219$ . Elements in  $T^D$  that are lower than  $\alpha$  will be marked with a "\*" in the upper right corner to distinguish their influence as Table 4.4.

Table 4.4 The  $\alpha$ -cut Total Impact Matrix  $T^D_\alpha$

Cluster	Task-oriented	Relationship-oriented	Change-oriented	External-oriented
Task-oriented	0.78298*	0.93897	1.23911	0.88285*
Relationship-oriented	0.95627	0.68143*	1.11952	0.77607*
Change-oriented	0.91653	0.86292*	0.88566*	0.87088*
External-oriented	0.92930	0.91789	1.16264	0.67205*

Based on the Table 4.4, the influence diagram of the four clusters is drawn as Fig. 4.2.

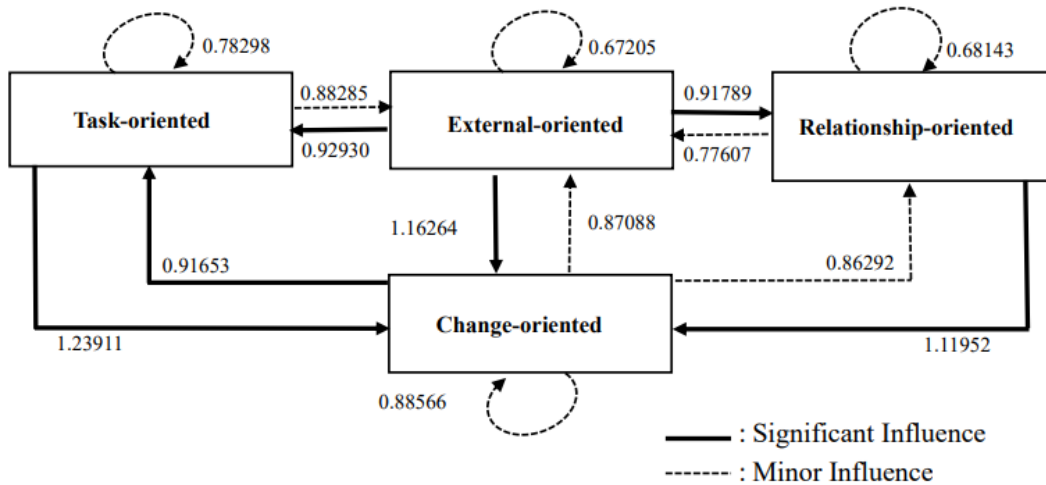


Fig. 4.2 Influence Diagram of the Four Clusters

Observe Fig. 4.2, the External-oriented cluster plays as a radiation role that affects every other clusters, it shows that the behaviors in the other clusters of effective leaders are constrained by External-oriented cluster when they are engaging in effective leadership. On the other hand, the Change-oriented cluster is the most influenced by the other clusters, it expresses that the effective leaders should pay more attention on the Change-oriented cluster when they are exerting the behaviors in the other clusters. In addition, Fig. 4.2 also illustrates that every cluster as only minor influence loop or is said weak self-influence effect. It reveals that every criterion in its cluster is relatively mutual independent.

#### 4.2 Measuring the Priority of Criteria by ANP

In the ANP stage, this paper interviews nine senior human resource managers with practical experience, they provide a more authentic reflection of the workplace situation. and obtained nine direct super matrices  $A_y$ ,  $y = 1, 2, \dots, 9$ . Average the nine direct super matrices by Eq. (9), receives the average matrix  $A^S$ . Adopt Eqs. (10) and (11) to normalize the average matrix  $A^S$ , results the initial direct-influence matrix  $X^A$  as Table 4.5.

Table 4.5 The Initial Direct-Influence Matrix  $X^A$

Criteria	T1	T2	T3	T4	R1	R2	R3	R4	C1	C2	C3	C4	E1	E2	E3
T1	0.023	0.021	0.029	0.068	0.086	0.066	0.104	0.072	0.078	0.046	0.079	0.072	0.052	0.066	0.100
T2	0.099	0.023	0.012	0.054	0.042	0.053	0.039	0.035	0.036	0.043	0.045	0.047	0.024	0.035	0.030
T3	0.060	0.084	0.023	0.066	0.062	0.065	0.069	0.070	0.059	0.060	0.053	0.042	0.068	0.039	0.042
T4	0.055	0.057	0.049	0.023	0.012	0.018	0.039	0.057	0.066	0.062	0.036	0.013	0.020	0.039	0.025
R1	0.026	0.036	0.060	0.087	0.023	0.025	0.056	0.043	0.046	0.049	0.045	0.030	0.034	0.036	0.025
R2	0.048	0.030	0.049	0.088	0.047	0.023	0.042	0.031	0.027	0.039	0.042	0.040	0.054	0.057	0.052
R3	0.021	0.064	0.053	0.047	0.049	0.060	0.023	0.027	0.022	0.026	0.030	0.026	0.033	0.027	0.021
R4	0.046	0.064	0.052	0.047	0.028	0.063	0.078	0.023	0.016	0.035	0.023	0.041	0.047	0.054	0.057
C1	0.046	0.067	0.071	0.046	0.069	0.071	0.070	0.079	0.023	0.051	0.042	0.038	0.047	0.043	0.032
C2	0.072	0.062	0.054	0.043	0.067	0.072	0.073	0.062	0.046	0.023	0.023	0.036	0.029	0.028	0.045
C3	0.037	0.034	0.056	0.067	0.065	0.060	0.075	0.045	0.052	0.056	0.023	0.064	0.034	0.033	0.031
C4	0.052	0.037	0.082	0.086	0.048	0.059	0.072	0.063	0.058	0.068	0.053	0.023	0.043	0.063	0.060
E1	0.078	0.104	0.039	0.071	0.051	0.047	0.086	0.042	0.031	0.053	0.028	0.057	0.023	0.067	0.058
E2	0.042	0.086	0.061	0.060	0.064	0.052	0.082	0.030	0.045	0.059	0.037	0.045	0.013	0.023	0.030
E3	0.036	0.092	0.064	0.071	0.086	0.047	0.093	0.028	0.035	0.039	0.036	0.040	0.013	0.034	0.023

Substitute  $X^A$  into the Eq. (12), obtains the total influence matrix  $T^A$ . Next, utilize Eqs. (14) and (15), obtains the normalized total influence matrix. Then transpose  $T_N^A$  by Eq. (16), results the unweighted super-matrix  $W$  as Table 4.6.

Utilize the four cluster weights established in DEMATEL, employs Eqs. (17) and (18) to normalize  $T^D$ , obtains the normalized total-influence matrix  $T_N^D$  as Table 4.7. Multiplying the transposed  $T_N^D$  by the unweighted super-matrix  $W$  by Eq. (19), yields the weighted super-matrix  $W_w$  as Table 4.8. By Eq. (20),  $W_w$  will converge to a long-term stable state, referred as the limited super-matrix  $W_w^*$ , shown as Table 4.9.

Table 4.6 The Unweighted Super-Matrix  $W$

Criteria	T1	T2	T3	T4	R1	R2	R3	R4	C1	C2	C3	C4	E1	E2	E3
T1	0.212	0.310	0.238	0.251	0.198	0.226	0.197	0.227	0.221	0.251	0.218	0.220	0.242	0.212	0.200
T2	0.244	0.219	0.286	0.277	0.236	0.228	0.285	0.275	0.269	0.262	0.238	0.232	0.289	0.285	0.287
T3	0.230	0.185	0.195	0.239	0.247	0.229	0.245	0.233	0.250	0.230	0.246	0.255	0.199	0.234	0.234
T4	0.313	0.286	0.282	0.234	0.318	0.317	0.274	0.266	0.261	0.257	0.298	0.294	0.270	0.269	0.279
R1	0.249	0.244	0.240	0.210	0.220	0.261	0.261	0.218	0.240	0.243	0.249	0.231	0.239	0.254	0.272
R2	0.228	0.257	0.241	0.221	0.224	0.221	0.279	0.264	0.243	0.247	0.241	0.241	0.232	0.237	0.224
R3	0.306	0.283	0.288	0.300	0.318	0.300	0.255	0.328	0.282	0.289	0.301	0.298	0.320	0.314	0.318
R4	0.217	0.215	0.231	0.269	0.238	0.218	0.205	0.190	0.236	0.221	0.209	0.230	0.209	0.195	0.186
C1	0.262	0.242	0.258	0.292	0.260	0.237	0.242	0.228	0.227	0.275	0.258	0.263	0.236	0.250	0.250
C2	0.242	0.266	0.277	0.298	0.281	0.273	0.270	0.281	0.288	0.253	0.280	0.293	0.283	0.287	0.272
C3	0.252	0.245	0.238	0.225	0.243	0.248	0.249	0.228	0.245	0.225	0.200	0.242	0.220	0.226	0.238
C4	0.244	0.247	0.226	0.185	0.216	0.243	0.239	0.263	0.240	0.247	0.262	0.202	0.261	0.237	0.241
E1	0.278	0.288	0.342	0.284	0.316	0.309	0.329	0.298	0.323	0.296	0.313	0.289	0.255	0.284	0.282
E2	0.338	0.364	0.330	0.379	0.361	0.354	0.350	0.351	0.354	0.335	0.349	0.361	0.383	0.354	0.378
E3	0.383	0.348	0.328	0.336	0.323	0.337	0.321	0.351	0.324	0.369	0.337	0.350	0.361	0.363	0.339

Table 4.7 The Normalized Total Influence Matrix of the Four Clusters  $T_N^D$

Cluster	Task-oriented	Relationship-oriented	Change-oriented	External-oriented
Task-oriented	0.204	0.244	0.322	0.230
Relationship-oriented	0.271	0.193	0.317	0.220
Change-oriented	0.259	0.244	0.250	0.246
External-oriented	0.252	0.249	0.316	0.183

Table 4.8 The Weighted Super-Matrix  $W_w$

Criteria	T1	T2	T3	T4	R1	R2	R3	R4	C1	C2	C3	C4	E1	E2	E3
T1	0.043	0.063	0.049	0.051	0.054	0.062	0.054	0.062	0.058	0.066	0.057	0.058	0.062	0.054	0.051
T2	0.050	0.045	0.058	0.057	0.065	0.063	0.078	0.075	0.070	0.069	0.063	0.061	0.074	0.073	0.074
T3	0.047	0.038	0.040	0.049	0.068	0.063	0.067	0.064	0.066	0.060	0.065	0.067	0.051	0.060	0.060
T4	0.064	0.059	0.058	0.048	0.087	0.087	0.075	0.073	0.068	0.067	0.078	0.077	0.069	0.069	0.072
R1	0.061	0.060	0.059	0.051	0.042	0.050	0.050	0.042	0.059	0.060	0.061	0.057	0.059	0.062	0.067
R2	0.056	0.063	0.059	0.054	0.043	0.042	0.053	0.050	0.060	0.061	0.059	0.059	0.057	0.058	0.055
R3	0.075	0.069	0.070	0.073	0.061	0.057	0.049	0.063	0.069	0.071	0.074	0.073	0.079	0.077	0.078
R4	0.053	0.053	0.056	0.066	0.045	0.042	0.039	0.036	0.058	0.054	0.051	0.056	0.051	0.048	0.046
C1	0.085	0.079	0.084	0.095	0.083	0.076	0.077	0.073	0.057	0.069	0.065	0.066	0.076	0.080	0.080
C2	0.079	0.087	0.090	0.097	0.090	0.087	0.086	0.090	0.072	0.063	0.070	0.073	0.091	0.092	0.087
C3	0.082	0.080	0.078	0.073	0.078	0.079	0.080	0.073	0.061	0.056	0.050	0.061	0.070	0.072	0.076
C4	0.080	0.081	0.074	0.060	0.069	0.078	0.076	0.084	0.060	0.062	0.066	0.051	0.083	0.076	0.077
E1	0.063	0.065	0.077	0.064	0.068	0.067	0.071	0.064	0.078	0.071	0.076	0.070	0.045	0.050	0.050
E2	0.076	0.082	0.074	0.086	0.078	0.076	0.075	0.076	0.085	0.081	0.084	0.087	0.068	0.063	0.067
E3	0.086	0.078	0.074	0.076	0.070	0.073	0.069	0.076	0.078	0.089	0.081	0.084	0.064	0.064	0.060

Table 4.9 The Limited Super-Matrix  $W_W^*$

Criteria	T1	T2	T3	T4	R1	R2	R3	R4	C1	C2	C3	C4	E1	E2	E3
T1	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057
T2	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065
T3	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058
T4	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070
R1	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056
R2	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056
R3	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070
R4	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051
C1	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076
C2	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
C3	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071
C4	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071
E1	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065
E2	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077
E3	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075

### 4.3 Ranking the Criteria priority

Each steady row value in  $W_W^*$  represents the global weight of the corresponding criterion. Sum up the global weights in each cluster can obtain the local weight of that cluster. Then, dividing the local weight by the global weights of the criteria will give the criteria's local weights. Finally, rank the global weights gains the priority orders of criteria, shown as Table 4.10.

Table 4.10 Weights and Ranks of the Evaluation Criteria

Cluster	Criterion	Local Weight	Global Weight	Rank
		<b>0.24960</b>		
Task-oriented	(T1) Clarifying	0.23732	0.05924	11
	(T2) Planning	0.25724	0.06421	10
	(T3) Monitoring	0.23366	0.05832	12
	(T4) Problem Solving	0.27178	0.06784	8
		<b>0.23264</b>		
Relationship-oriented	(R1) Consideration	0.23710	0.05516	14
	(R2) Recognition	0.24774	0.05763	13
	(R3) Development	0.29355	0.06829	7
	(R4) Empowering	0.22160	0.05155	15
		<b>0.30039</b>		
Change-oriented	(C1) Advocating Change	0.25547	0.07674	3
	(C2) Encouraging Innovation	0.27562	0.08279	1
	(C3) Collective Learning	0.23260	0.06987	6
	(C4) Charismatic Leadership	0.23631	0.07099	5
			<b>0.21737</b>	
External-oriented	(E1) Networking	0.30139	0.06551	9
	(E2) External Scanning	0.35354	0.07685	2
	(E3) Representing	0.34507	0.07501	4

Examining Table 4.10, the HR manager respondents indicate the most important criterion in each cluster from the global weight perspective are listed as follows: Problem Solving criterion in the Task-oriented cluster; Development criterion in the Relationship-oriented cluster; Encouraging Innovation criterion in the Change-oriented cluster; and External Scanning criterion in the External-oriented cluster. While from the global weight perspective, the HR manager respondents specify the top three criteria are Encouraging Innovation criterion, External Scanning criterion, and Advocating Change criterion, while the last three



criteria are Consideration criterion, Recognition criterion, and Empowering criterion. Unexpectedly, the last three criteria are all located in the Relationship-oriented cluster, which is traditionally seen as the essential elements for effective leadership behaviors. This result reveals that most HR managers in Taiwan are inclined to the “concern for production” side of the managerial grid (Blake & Mouton, 1964) instead of the “concern for people” side.

## 5. Conclusion

In today's rapidly changing environment, leaders play a critical role in organizations. Their every behavior can impact their subordinates, departments, and even the future of the company. With an increasing number of challenges arising, leaders face increasingly complex and difficult problems. Therefore, in order to keep the company competitive, how can the effective leaders exercise suitable behaviors to effectively lead their subordinates or teams for helping organizations to raise performance, expand prosperity, achieve sustainable development, and maintain longevity is an important research subject.

The research results indicate that effective leaders should focus more on the External-oriented cluster rather than being drawn the way by the Change-oriented cluster from the perspective of clusters. In terms of criteria level, leaders must pay more attention on Encouraging Innovation criterion, External Scanning criterion, and Advocating Change criterion. On the other hand, Consideration criterion, Recognition criterion, and Empowering criterion may not list on the immediate priority for effective leaders.

This paper proposes the following findings. Effective leaders in Taiwan consider "Encouraging Innovation" as the most important leadership behavior. They believe that effective leaders can drive the growth of organizations and the career of employees by encouraging innovation, enabling organizations to gain a competitive advantage, and creating value in the market. Therefore, organizations should seek and cultivate future high-level managers with innovative thinking to meet the future diverse needs. The second important criterion is "External Scanning", it indicates that effective leaders must constantly gather external information and share useful information internally so that organizations can keep their steps with external environmental changes. Finally, the third most important criterion is "Advocating Change". In the current complex and changing environment, change is a challenge for many organizations. Effective leaders should cultivate a change-oriented mindset in the organization and subordinates during regular times to reduce obstacles during change and minimize the impact on the organization during dynamic environmental changes. The last three criteria all fall into the Relationship-oriented cluster, reflecting that effective leaders in Taiwan concern more on work-related affairs than that of their subordinates, which aligns with traditional Chinese occupational values. Although past literature often emphasizes the importance of leader-subordinate relationship issues, this paper discovers that most present HR managers in Taiwan still incline to perform the “concern for production” side of managerial grid.

Finally, the conclusion of this paper not only can provide valuable insights for those who aspire to become effective leaders to understand the important leadership behaviors they must behave, but also offers the aggressive organizations the guide lines to correctly assess potential candidates for future qualified high-level managers.

## References

- Ahearne, M., Mathieu, J., & Rapp, A. (2005). To empower or not to empower your sales force? An empirical examination of the influence of leadership empowerment behavior on customer satisfaction and performance. *Journal of Applied Psychology, 90*(5), 945-955.
- Albright, K. S. (2004). Environmental scanning: Radar for success. *Information Management Journal, 38*(3), 38-45.
- Algahtani, A. (2014). Are leadership and management different? A review. *Journal of Management Policies and Practices, 2*(3), 71-82.
- Amundsen, S., & Martinsen, Ø. L. (2015). Linking empowering leadership to job satisfaction, work effort, and creativity: The role of self-leadership and psychological empowerment. *Journal of Leadership & Organizational Studies, 22*(3), 304-323.
- Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. (2004). Leader behaviors and the work environment for creativity: Perceived leader support. *The Leadership Quarterly, 15*(1), 5-32.
- Auster, E., & Choo, C. W. (1993). Environmental scanning by CEOs in two Canadian industries. *Journal of The American Society for Information Science, 44*(4), 194-203.
- Bejinariu, A. C., Jitarelu, A., Sarca, I., & Mocan, A. (2017). Organizational change management-concepts definitions and approaches inventory. *The Leadership Quarterly, 28*(1), 5-32.
- Bennis, W., & Nanus, B. (1985). *The strategies for taking charge*. New York: Harper Row, 41.
- Bennis, W. G., & Townsend, R. (1989). *On becoming a leader*. Reading, MA: Addison-Wesley.
- Blake, R. R., & Mouton, J. S. (1964). *The managerial grid: The key to leadership excellence*. Houston, Gulf Publishing.
- Bohoris, G. A., & Vorria, E. P. (2008). Leadership vs management. *Business Excellence/Performance Management View, 12*, 1-8.
- Brown, R. S., & Kline, W. A. (2020). Exogenous shocks and managerial preparedness: A study of US airlines' environmental scanning before the onset of the COVID-19 pandemic. *Journal of Air Transport Management, 89*, 1-9.
- Cheong, M., Yammarino, F. J., Dionne, S. D., Spain, S. M., & Tsai, C. Y. (2019). A review of the effectiveness of empowering leadership. *The Leadership Quarterly, 30*(1), 34-58.
- Choo, C. W. (1999). The art of scanning the environment. *Journal of the American Society for Information Science, 25* (3), 21-24.

- Dachner, A. M., Ellingson, J. E., Noe, R. A., & Saxton, B. M. (2021). The future of employee development. *Human Resource Management Review*, 31(2), 1-14.
- Day, D. V. (2000). Leadership development: A review in context. *The Leadership Quarterly*, 11(4), 581-613.
- Dionne, S. D., Yammarino, F. J., Atwater, L. E., & Spangler, W. D. (2004). Transformational leadership and team performance. *Journal of Organizational Change Management*, 17(2), 177-193.
- Druskat, V. U., & Wheeler, J. V. (2003). Managing from the boundary: The effective leadership of self-managing work teams. *Academy of Management Journal*, 46(4), 435-457.
- Furlan, A., Galeazzo, A., & Paggiaro, A. (2019). Organizational and perceived learning in the workplace: A multilevel perspective on employees' problem solving. *Organization Science*, 30(2), 280-297.
- Forret, M. L., & Dougherty, T. W. (2004). Networking behaviors and career outcomes: differences for men and women? *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 25(3), 419-437.
- Garavan, T. N., & McCarthy, A. (2008). Collective learning processes and human resource development. *Advances in Developing Human Resources*, 10(4), 451-471.
- Gibson, C., H. Hardy III, J., & Ronald Buckley, M. (2014). Understanding the role of networking in organizations. *Career Development International*, 19(2), 146-161.
- Gould, S., & Penley, L. E. (1984). Career strategies and salary progression: A study of their relationships in a municipal bureaucracy. *Organizational Behavior and Human Performance*, 34(2), 244-265.
- Hansen, S. D., Miller, D. R., & Noack, D. (2020). The impact of charismatic leadership on recruitment, development, and firm performance. *Journal of Managerial Issues*, 32(2), 215-229.
- Hassan, S., Prussia, G., Mahsud, R., & Yukl, G. (2018). How leader networking, external monitoring, and representing are relevant for effective leadership. *Leadership & Organization Development Journal*, 39(4), 455-467.
- Hansen, F., Smith, M., & Hansen, R. B. (2002). Rewards and recognition in employee motivation. *Compensation & Benefits Review*, 34(5), 64-72.
- Holloway, J. B. (2012). Leadership behavior and organizational climate: An empirical study in a non-profit organization. *Emerging Leadership Journeys*, 5(1), 9-35.
- Huber, G. P., Sutcliffe, K. M., Miller, C. C., & Glick, W. H. (1993). Understanding and predicting organizational change. *Organizational Change and Redesign*, 215-265.

- Kim, H., & Yukl, G. (1995). Relationships of managerial effectiveness and advancement to self-reported and subordinate-reported leadership behaviors from the multiple-linkage mode. *The Leadership Quarterly*, 6(3), 361-377.
- Kim, S. L. (2019). The interaction effects of proactive personality and empowering leadership and close monitoring behavior on creativity. *Creativity and Innovation Management*, 28(2), 230-239.
- Klein, K. J., Ziegert, J. C., Knight, A. P., & Xiao, Y. (2006). Dynamic delegation: Shared, hierarchical, and deindividualized leadership in extreme action teams. *Administrative Science Quarterly*, 51(4), 590-621.
- Kotter, J. P. (2001). What leaders really do. *Harvard Business Review*, 79(11), 85-96.
- Künzle, B., Kolbe, M., & Grote, G. (2010). Ensuring patient safety through effective leadership behavior: A literature review. *Safety Science*, 48(1), 1-17.
- Lartey, F. M. (2021). Impact of career Planning, employee autonomy, and manager recognition on employee engagement. *Journal of Human Resource & Sustainability Studies*, 9(2), 135-157.
- Leach, D. J., Wall, T. D., & Jackson, P. R. (2003). The effect of empowerment on job knowledge: An empirical test involving operators of complex technology. *Journal of Occupational and Organizational Psychology*, 76(1), 27-52.
- Lee, D.-X. (2021). Apply DANP to investigate the investment evaluation criteria on startups for venture capitalists. Unpublished Master Thesis, National University of Kaohsiung.
- Luthans, K. (2000). Recognition: A powerful, but often overlooked, leadership tool to improve employee performance. *Journal of Leadership Studies*, 7(1), 31-39.
- McCauley, C. D., & Hezlett, S. A. (2001). Individual development in the workplace. In N. Anderson, D. S. Ones, H. K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial, work, and organizational psychology*, 313–335. Thousand Oaks, CA: Sage.
- Mintzberg, H., 1973, *The Nature of Managerial Work*. New York: Harper & Row.
- Ou Yang, Y. P., Shieh, H. M., Leu, J. D., & Tzeng, G. H. (2008). A novel hybrid MCDM model combined with DEMATEL and ANP with applications. *International Journal of Operations Research*, 5(3), 160-168.
- Park, S., Jeong, S., Jang, S., Yoon, S. W., & Lim, D. H. (2018). Critical review of global leadership literature: Toward an integrative global leadership framework. *Human Resource Development Review*, 17(1), 95-120.
- Rafferty, A. E., & Griffin, M. A. (2004). Dimensions of transformational leadership: Conceptual and empirical extensions. *The Leadership Quarterly*, 15(3), 329-354.

- Rüzgar, N. (2018). The effect of leaders' adoption of task-oriented or relationship-oriented leadership style on leader-member exchange (LMX), in the organizations that are active in-service sector: A research on tourism agencies. *Journal of Business Administration Research*, 7(1), 50-60.
- Shamir, B., House, R. J., & Arthur, M. B. (1993). The motivational effects of charismatic leadership: A self-concept-based theory. *Organization Science*, 4(4), 577-594.
- Sharma, P. N., & Kirkman, B. L. (2015). Leveraging leaders: A literature review and future lines of inquiry for empowering leadership research. *Group & Organization Management*, 40(2), 193-237.
- Shin, J., Taylor, M. S., & Seo, M. G. (2012). Resources for change: The relationships of organizational inducements and psychological resilience to employees' attitudes and behaviors toward organizational change. *Academy of Management Journal*, 55(3), 727-748.
- Simonet, D. V., & Tett, R. P. (2013). Five perspectives on the leadership–management relationship: A competency-based evaluation and integration. *Journal of Leadership and Organizational Studies*, 20(2), 199-213.
- Supratman, O. V., Entang, M., & Tukiran, M. (2021). The relationship of charismatic leadership, employee personality, and employee performance: Evidence from PT. Karya Abadi Luhur. *International Journal of Social and Management Studies*, 2(2), 17-41.
- Tzeng, G. H., Cheng, C. H., & Li, C. W. (2007). Evaluating intertwined effects in e-learning programs: A novel hybrid MCDM model based on factor analysis and DEMATEL. *Expert Systems with Applications*, 32(4), 1028-1044.
- Waldman, D. A., & Yammarino, F. J. (1999). CEO charismatic leadership: Levels-of-management and levels-of-analysis effects. *Academy of Management Review*, 24(2), 266-285.
- Wall, T. D., Cordery, J. L., & Clegg, C. W. (2002). Empowerment, performance, and operational uncertainty: A theoretical integration. *Applied Psychology*, 51(1), 146-169.
- Wolff, H. G., & Moser, K. (2009). Effects of networking on career success: A longitudinal study. *Journal of Applied Psychology*, 94(1), 196-235.
- Wu, H. Y., Lin, Y. K., & Chang, C. H. (2011). Performance evaluation of extension education centers in universities based on the balanced scorecard. *Evaluation and Program Planning*, 34(1), 37-50.
- Yukl, G., Gordon, A., & Taber, T. (2002). A hierarchical taxonomy of leadership behavior: Integrating a half century of behavior research. *Journal of Leadership & Organizational Studies*, 9(1), 15-32.

- Yukl, G., Mahsud, R., Prussia, G., & Hassan, S. (2019). Effectiveness of broad and specific leadership behaviors. *Personnel Review*, 48, 774-783.
- Yukl, G., & Kanuk, L. (1979). Leadership behavior and effectiveness of beauty salon managers. *Personnel Psychology*, 32(4), 663-675.
- Yukl, G., O'Donnell, M., & Taber, T. (2009). Influence of leader behaviors on the leader-member exchange relationship. *Journal of Managerial Psychology*, 24(4), 289-299.
- Yukl, G., & Van Fleet, D. D. (1982). Cross-situational, multimethod research on military leader effectiveness. *Organizational Behavior & Human Performance*, 30(1), 87-108.
- Yukl, G. (1989). Managerial leadership: A review of theory and research. *Journal of Management*, 15(2), 251-289.
- Yukl, G. (2009). Leading organizational learning: Reflections on theory and research. *The Leadership Quarterly*, 20(1), 49-53.
- Yukl, G. (2012). Effective leadership behavior: What we know and what questions need more attention. *Academy of Management Perspectives*, 26(4), 66-85.
- Zaleznik, A. (1992). Managers and leaders: are they different? *Harvard Business Review*, 70(2), 126-135.

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***Apply DANP to Investigate the Determinants of Foreign Enterprises Investing in Taiwan Hi-Tech Industries***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

Foreign direct investment plays an important role in Taiwan's economic development. This paper investigates the criteria that MNEs use to assess the investment determinants in Taiwan. There are thirteen criteria extracted from past literature and classified into five groups based on the OLI (Ownership, Location, International) theory proposed by Dunning (1980). The initial criteria are consulted with ten advanced experts and scholars through questionnaires to consolidate the research structure, then interviews another ten senior MNE managers face-to-face to collect their opinions for the relative importance of each pair of criteria by pair-wise comparison questionnaires. This paper adopts the DANP approach developed by Ou Yang et al. (2008) which combines DEMATEL and ANP procedures to analyze the priority of assess criteria. The research results show that the Government Policies Group and the Cluster Driven Seeking Group are the "main cause-factor" while the Market Seeking Group is the "main effect-factor" among the five groups. Cluster Driven Seeking Group also has significant relationships with other groups. Finally, the top three priority criteria are Re-Exports Opportunity, Governmental Incentives, and Industrial Clusters, while the last three priority criteria are Political Stability, Infrastructure, and Economic Environment. Even Taiwan faces the severe geopolitical tension, MNE managers still rank the Geopolitical Risk Criterion at the tenth priority.

Keywords: MCDM, DANP, FDI, Economic Development, High Technology Industries

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## 1. Introduction

From the database of World Bank, the global economic growth rate increases steadily over the past six decades except for the impact of covid-19 in 2020. At the same period of time, the global inward and outward flows and stock of foreign direct investment (FDI) concurrently surges recorded by UNCTADSTAT (United Nations Conference on Trade and Development, Statistic). The rationale advocated by Jaiblai & Shenai (2019) is that FDI is an important factor in world economic development. For lacking capital countries, FDI inflows capital from foreign MNEs results in domestic capital accumulation and fosters jobs creation, local manufacturing and labor skills enhancement, and trade sectors improvement in host country. These can benefit to raise local production and exports capability, and further to improve infrastructure, enlarge the base of corporate tax revenues that stimulate host country's economic development and contribute to sustainable economic growth.

Dunning (1980) proposed the OLI (Ownership, Location, International) theory and divided the motivation of FDI into four categories: Efficiency-seeking, Resource-seeking, Market-seeking, and Strategic Asset-seeking". Porter (1990) submitted the phases of FDI from the perspective of national competitive development in four basic stages: The factor-driven stage, the investment-driven stage, the innovation-driven stage, and the wealth-driven stage. Base on Porter's national competitive theory. Ozawa (1992) combined Dunning's and Porter's theory and argued that FDI affects the national economic development stages. At the first factor-driven stage, resource-seeking or labor efficiency-seeking attracts inward FDI; at the second investment-driven stage, market-seeking attracts FDI in capital and intermediate goods industries; till the third innovation-driven stage, technology asset-seeking attracts FDI in technology-intensive industries. The traits of economic development in Taiwan seem to more follow the Porter's theory.

Inward FDI is acknowledged as a means of promoting economic development in Taiwan, particularly in high-tech industries, which have experienced rapid growth due to increased investment from MNEs. Retrospect the history of economic development in Taiwan, Taiwan had also experienced significant economic growth rate contributed from inward FDI. The growth of FDI has led to an increase in GDP, demonstrating its significant contribution to economic growth in Taiwan. Since 1981, the Manufacturing of Information and Electronic industry has been developing rapidly, this paper focuses on high-tech manufacturing, specifically on electronic parts and components and computers, electronic and optical products.

This paper tries to identify and rank the critical criteria for assessing the attracting determinants on inward FDI in Taiwan. The research findings may deliver recommendation to government to enhance the existing economic conditions and revise the current incentive policies, and finally can provide suggestion to those foreign MNEs who are willing to invest in Taiwan.

The research results show that both the Government Policies Group and the Cluster Driven Seeking Group have the strongest influence on the other groups. It reminds that MNEs managers will put higher weights on those two groups while engaging FDI in Taiwan's high-tech industries. On the contrary, the market size of Taiwan is relatively small, the main consideration of Market Seeking Group for MNEs managers is decided by the re-export opportunity of the FDI products.

For attracting inward FDI, this paper suggests that the government authorities must dedicate to sign Economic Cooperation Agreement (ECA) and Free Trade Agreement (FTA) with foreign



countries; launch more beneficial practices to the MNEs; put more effort to cultivate more new critical industries. The political stability, infrastructure facilities, and economic environment are well performed in Taiwan, the government authorities only pay attention to maintain current performance. The finding of this paper can also provide as the assessment baseline for the potential foreign investors who prepare to invest in Taiwan and help them to raise the probability of investment success and lessen the risk of fail investment.

The organization of his paper is arranged as follows: Section 2 reviews the past literature concerning about the attracting factors of FDI and extracts the criteria for determining the MNEs' decision making; Section 3 will portray the adopted research methodology; The research results are shown in Section 4; Section 5 expresses the conclusion of this paper.

## **2. Literature Review**

For investigating the determinants of MNEs invested in Taiwan, this section reviews past literature in the fields of the FDI determinants based on Dunning's OLI theory and considering the economic development in Taiwan, constructs the research structure. From literature survey, this paper extracts thirteen criteria and classifies them into five groups, namely Market Seeking Group, Efficiency Seeking Group, Cluster Driven Seeking Group, Government Policies Group, and Operation Environment Group.

### **2.1 Market Seeking Group**

Market seeking aims at penetrating the local markets in the host countries (Wadhwa & Reddy, 2011). Okafor, Piesse, & Webster (2015) denoted that the objectives of some MNEs' investment in host country are to serve the local market. Therefore, the raise of size in local market can be viewed as an attractor for entering host market (Asiedu, 2002). Nevertheless, there still exist some MNEs will exploit the resources of host country to produce products or services for re-exporting to other outside markets. In this paper, Market Seeking Group includes Market Size Criterion and Re-exports Opportunity Criterion.

1. Market Size Criterion: MNEs engage in FDI will consider the following market size indicators in host country such as population (Gabriel et. al., 2016), GDP (Grčić & Babić, 2003), GDP growth rates (Banga, 2003; Chen & Khan, 1997; Bhattacharya et al., 1997), GDP per capita (Goodspeed et al., 2006), GNP, or GNP per capita (Ali & Guo, 2005).
2. Re-Exports Opportunity Criterion: MNEs engage in FDI will consider (1) the facilities such as transport hubs (e.g., big harbors) (Rettab & Azzam, 2008) or export processing zones (e.g., industrial parks, & science parks) (Papadopoulos & Malhotra, 2007); (2) the possibility to avoid tariffs or infringe quotas set by the consuming countries government (Prakash & Chand, 2022) to facilitate re-exports opportunity.

### **2.2 Efficiency Seeking Group**

The efficiency seeking of MNEs is motivated by creating new sources of competitiveness and dedicate to search for the host countries with much lower production costs (Wadhwa & Reddy, 2011). In Efficiency Seeking Group, this paper discusses Infrastructure Criterion, Human Resource Criterion, and Operation Cost Criterion into Efficiency Seeking Group.

1. **Infrastructure Criterion:** MNEs engage in FDI will consider the infrastructure of host country, including power plants and electricity network (Sovacool, Gilbert, & Nugent, 2014), water supply (Sargentis et al., 2019), telecommunication facilities (Tang et al., 2022), railways and roads, air and sea ports (Kabiru, 2016; Vlahinić-Dizdarević & Biljan-August, 2005; Wadhwa & Reddy, 2011), sanitation (Wang, 2019; Lawhon et al., 2023), internet popularization (Briglauer et al., 2018; Paziienza & Vecchione, 2009; Wadhwa & Reddy, 2011) and their combination.
2. **Human Resource Criterion:** MNEs engage in FDI will consider the abundant of skilled labors and knowledge workers who are represented by technicians and professionals in a specific field, qualified domestic education systems (Shatakishvili, 2021), foreign skilled immigrants (Porter, 1990) in the host country, and the learning by working ability of employees and organizations (Tynjälä, 2008; Senge, 1990; Pedler, Boydell, & Burgoyne, 1991).
3. **Operation Cost Criterion:** MNEs engage in FDI may enjoy the operation costs reduction from lower tax rates (De Mooij & Ederveen, 2003), capital raising fee and interest rates (Rockefeller, 1998), utility expenditure (Róka-Madarász, 2016), and labor costs (Khachoo & Khan, 2012; Hamermesh, 1983) in host country. MNEs can also reduce operation cost via economy of scale and economy of scope (Kurtishi-Kastrati, 2013; Bonomi et al. 2012; Panzar & Willig, 1981; Saal et al., 2013).

### **2.3 Cluster Driven Seeking Group**

Many related industries or firms always tend to locate themselves in the close geographical proximity to form a cluster (Birkinshaw, 2000) for improving productivity. Productivity improving in the cluster mainly comes from enjoying common resources provided by the specific area or exploiting the unique abilities owned by a distinctive company. Under such perspective, the Cluster Driven Seeking Group consists with Industrial Clusters Criterion and Supply Chain Partnership Criterion.

1. **Industrial Clusters Criterion:** MNEs engage in FDI will concern about the gathering of specialized skills labors, knowledge workers, and infrastructure (Ketels & Memedovic, 2008), enjoying the benefit of common suppliers and exploit techniques and knowledge spillover effect (Tallman et al., 2004), and drawing on more specialized assets and suppliers to shorten reaction times (Porter, 2001) in an industrial cluster.
2. **Supply Chain Partnership Criterion:** The basis of supply chain is built by the workflow interdependence between partners (Capaldo & Giannoccaro, 2015). MNEs engage in FDI are to establish or join a supply chain to serve their international customers, support existing customers, or follow the globalization in their specific buyer-industries (Ivarsson & Alvstam, 2013).

### **2.4 Government Policies Group**

Host government policies focus mainly on providing incentives and removing restrictions for FDI. In this perspective, Governmental Incentives Criterion and Government Institution Criterion are discussed in Government Policies Group.

1. **Governmental Incentives Criterion:** MNEs engage in FDI will attract by the host government incentive policies, including tax incentives (e.g., capital allowances or preferential tax rates)

(Zee et al., 2002; Hubert & Pain, 2002), financial incentives (e.g., monetary grants) (Olubunmi & Skitmore, 2016; Shazmin, Sipan, & Sapri, 2016; Hubert & Pain, 2002; Curtin et al., 2017; Tasdoven et al., 2012), and non-financial measures (e.g., subsidized infrastructure likes ready-use industrial sites or preferential government contracts) (Hubert & Pain, 2002).

2. **Governmental Institutions Criterion:** MNEs engage in FDI will be affected by the host governmental institutions. For example, the government concludes the rigid formal codified rules, procedures, requirements, regulations, and laws to ensure contract enforcement (Ahlquist & Prakash, 2010), guarantee trade agreements execution (Corcoran & Gillanders, 2015), protect intellectual property rights (Jandhyala, 2013; Khoury & Peng, 2011; Seyoum, 1996), and promise minority investment (Choi, Lee, & Shoham, 2016).

## **2.5 Operation Environment Group**

Operation environment denotes the external factors that affect MNEs' performance while operating in host countries. Generally, operation environment is formed by governmental and non-governmental factors, it is complex and difficult to control. This paper focuses Operation Environment Group on Economic Environment Criterion, Trade Openness Criterion, Political Stability Criterion, and Geopolitical Risk Criterion.

1. **Economic Environment Criterion:** MNEs engage in FDI will consider the economic environment, including exchange rates (Tolentino, 2010), interest rates (Singhania et al., 2011), and inflation rate (Silajdzic & Mehic, 2022; Kersan-Skabic & Orlic, 2007) conditions in host country.
2. **Trade Openness Criterion:** MNEs engage in FDI will consider the host country's business climate, such as encourages inward FDI (Boateng et al., 2015), adopts the liberal trade policies (Azam & Lukman, 2010; Bissoon, 2012; Akin & Vlad, 2011), subtracts trade restrictions, allows the importation of intermediate and capital goods (Paus et al., 2003), has a high percent of the sum of imports and exports to GDP (Asiedu, 2006), can exchange capital, goods, and services easily (Edwards, 1992), and moves capital in or out of the country without constraint (Chakrabarti, 2001).
3. **Political Stability Criterion:** MNEs engage in FDI will concern about stable politics in host country (Shahzad et al., 2012), includes the change of regime, government intervention the economic environment (Frey & Schneider, 1979), ethnic tensions, and internal and external conflict (Howell, 2011).
4. **Geopolitical Risk Criterion:** MNEs engage in FDI will concern about stable politics in host country (Shahzad et al., 2012), includes the change of regime, government intervention the economic environment (Frey & Schneider, 1979), ethnic tensions, and internal and external conflict (Howell, 2011).

### **3. Research Methodology**

#### **3.1 Theoretical Background and Research Procedure**

This paper employs a DANP hybrid MCDM model originally proposed by Ou Yang et al. (2008). DANP combines DEMATEL with ANP to examine the factors that influence MNEs' investment decision making. DANP is a procedure to deal with the problems of criteria interdependence and feedback. The philosophy of DANP is to apply DEMATEL to calculate the degree of influence among Groups and weights to rectify the inadequate assumption of equivalent Group weight in ANP. In this section, the development and implementation of DANP will be elaborated.

This paper screens thirteen criteria from past literature as discussed in section 2, and classifies those criteria into five Groups. The “Description of MNEs Investing Determinants Criteria in Taiwan Hi-Tech Industry” is established as Table 1. In order to determine the degrees of influence and importance among the five Groups, this paper consults ten scholars and experts excellent in the related field, then interviews another ten senior managers in the Hi-Tech foreign companies invested in Taiwan to collect their real considerations while engage in FDI in Taiwan.

Table 1 The Description of MNEs Investing Determinants Criteria in Taiwan Hi-Tech Industry

Groups	Criteria	Description	Sources
(M) Market Seeking	(M1) Market Size	MNEs engage in FDI will consider the following market size indicators in host country, such as population, GDP, GDP growth rates, GDP per capita, GNP, or GNP per capita.	Gabriel et. al., 2016; Grčić & Babić, 2003; Banga, 2003; Chen & Khan, 1997; Goodspeed et al., 2006; Ali & Guo, 2005
	(M2) Re-Exports Opportunity	MNEs engage in FDI will consider (1) the facilities such as transport hubs (e.g., big harbors) or Technology Industrial Park (e.g., industrial parks, and science parks); (2) the possibility to avoid tariffs or infringe quotas set by the consuming countries government to facilitate re-exports opportunity.	Rettab & Azzam, 2008; Papadopoulos & Malhotra, 2007; Prakash & Chand, 2022; Scholar A
(E) Efficiency Seeking	(E1) Infrastructure	MNEs engage in FDI will consider the infrastructure of host country, including power plants and electricity network, water supply, telecommunication facilities, railways and roads, air and sea ports, sanitation, internet popularization and their combination.	Sovacool, Gilbert, & Nugent, 2014; Sargentis et al., 2019; Tang et al., 2022; Kabiru, 2016; Vlahinić-Dizdarević & Biljan-August, 2005; Wadhwa & Reddy, 2011; Wang, 2019; Lawhon et al., 2023; Briglauer et al., 2018
	(E2) Human Resource	MNEs engage in FDI will consider the abundant of skilled labors and knowledge workers who are represented by technicians and professionals in a specific field, qualified domestic education systems, foreign skilled immigrants in the host country, and the learning by working ability of employees and organizations.	Shatakishvili, 2021; Porter, 1990; Tynjälä, 2008; Senge, 1990; Pedler, Boydell & Burgoyne, 1991
	(E3) Operation Cost	MNEs engage in FDI may enjoy the operation costs reduction from lower tax rates, capital raising fee and interest rates, utility expenditure, and labor costs in host country. MNEs can also reduce operation cost via economy of scale and economy of scope.	De Mooij & Ederveen, 2003; Rockefeller, 1998; Róka-Madarász, 2016; Khachoo & Khan, 2012; Hamermesh, 1983; Kurtishi-Kastrati, 2013; Panzar & Willig, 1981; Saal et al., 2013
(C) Cluster Driven Seeking	(C1) Industrial Clusters	MNEs engage in FDI will concern about the gathering of specialized skills labors, knowledge workers, and infrastructure; enjoying the benefit of common suppliers; exploiting techniques and knowledge spillover effect; and drawing on more specialized assets and suppliers to shorten reaction times in an industrial cluster in host country.	Ketels & Memedovic, 2008; Tallman et al., 2004; Porter, 2001
	(C2) Supply Chain Partnerships	The basis of supply chain is built by the interdependent workflows between partners. MNEs engage in FDI are to establish or join a supply chain to serve their international customers, support existing customers, or follow the globalization in their specific buyer-industries.	Capaldo & Giannoccaro, 2015; Ivarsson & Alvstam, 2013
(G) Government Policies	(G1) Governmental Incentives	MNEs engage in FDI will attract by the host government incentive policies, including tax incentives (e.g., preferential tax rates), financial incentives (e.g., capital allowances or monetary grants), and non-financial measures (e.g., subsidized infrastructure likes ready-use industrial sites or preferential government contracts).	Zee et al., 2002; Hubert & Pain, 2002; Olubunmi & Skitmore, 2016; Shazmin, Sipan, & Sapri, 2016; Curtin et al., 2017
	(G2) Governmental Institutions	MNEs engage in FDI will be affected by the host governmental institutions. For example, the government concludes the rigid formal codified rules, procedures, requirements, regulations and laws to ensure contract enforcement, guarantee trade agreements execution, protect intellectual property rights, and promise minority investment.	Ahluquist & Prakash, 2010; Corcoran & Gillanders, 2015; Jandhyala, 2013; Khoury & Peng, 2011; Seyoum, 1996; Choi, Lee, & Shoham, 2016

Table 1 The Description of MNEs Investing Determinants Criteria in Taiwan Hi-Tech Industry (Con't 1)

Groups	Criteria	Description	Sources
(O) Operation Environment	(O1) Economic Environment	MNEs engage in FDI will consider the economic environment, including exchange rates, interest rates, and inflation rate in host country.	Tolentino, 2010; Singhania et al., 2011; Silajdzic & Mehic, 2022; Kersan-Skabic & Orlic, 2007
	(O2) Trade Openness	MNEs engage in FDI will consider the host country's business climate, such as encourages inward FDI, adopts the liberal trade policies, subtracts trade restrictions, allows the importation of intermediate and capital goods; has a high percent of the sum of imports and exports to GDP; can exchange capital, goods, and services easily; and moves capital in or out of the country without constraint.	Boateng et al., 2015; Azam & Lukman, 2010; Bissoon, 2012; Akin & Vlad, 2011; Paus et al., 2003; Asiedu, 2006; Edwards, 1992; Chakrabarti, 2001
	(O3) Political Stability	MNEs engage in FDI will concern about stable politics in host country, includes the change of regime, government intervention of the economic environment, ethnic tensions, and internal and external conflict.	Shahzad et al., 2012; Frey & Schneider, 1979; Howell, 2011
	(O4) Geopolitical Risk	MNEs will consider the host country's geopolitical risk before engage in FDI.	Gulen and Ion, 2016; Kim and Kung, 2017; Kim et al., 2019; Scholar C

### 3.2 Data Processing Steps

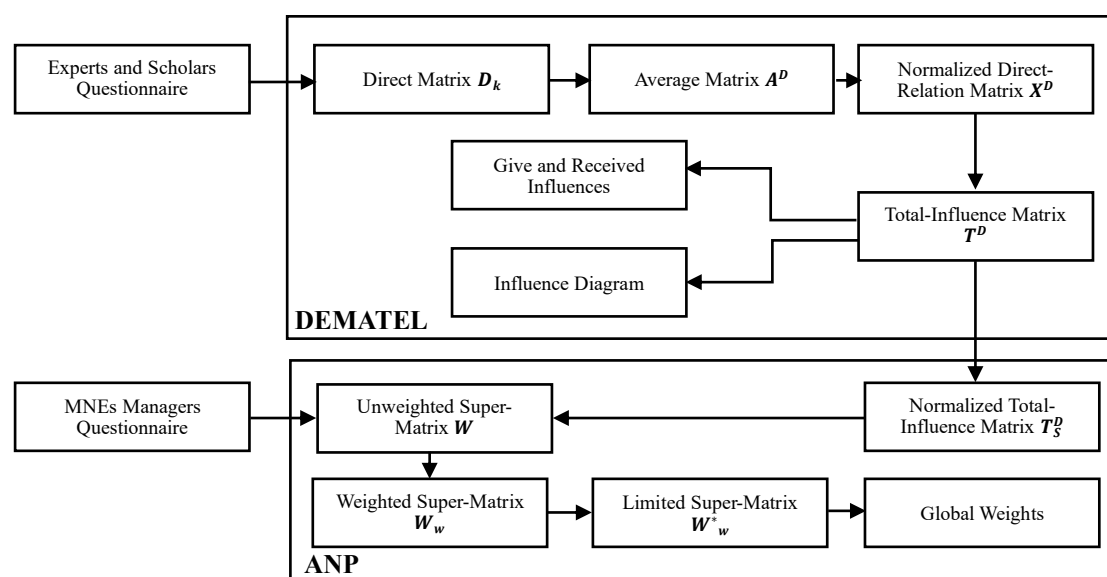


Fig. 1 The Flowchart of DANP Model (Source: Revised by This Paper)

This paper utilizes the data processing steps which were originally proposed by Ou Yang et al. (2008) and modified by Lee (2021). Fig. 1 illustrates the flowchart of DANP model. The detail steps are shown in the following subsections.

#### 3.2.1 Apply DEMATEL for Network Relationship

The steps of processing the received DEMATEL data are summarize as follows.

*Step D1: Calculate the direct relation matrix  $D_k$*

After collecting the questionnaire from experts/scholars, every direct matrix represents the opinions of an expert/scholar,  $D_k$ , where  $k = 1, 2, \dots, n$ , and  $n$  is the number of experts/scholars. The factors of  $D_k$ , denoted by  $d_{ij}^k$ , represents the initial direct effects that Group  $i$  impacts on and receives from Group  $j$ , shown as Eq. (1)

$$D_k = \begin{bmatrix} d_{11}^k & \dots & d_{1j}^k & \dots & d_{1n}^k \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ d_{i1}^k & \dots & d_{ij}^k & \dots & d_{in}^k \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ d_{n1}^k & \dots & d_{nj}^k & \dots & d_{nn}^k \end{bmatrix} \quad (1)$$

*Step D2: Averaging the direct-relation matrix  $A^D$*

The average matrix  $A^D$  represents the same factors in various direct matrices received from experts/scholars, is calculated by taking the mean of  $D_k$ . Each element in matrix  $A^D$ , represented as  $a_{ij}^D$ , is computed by Eq. (2).

$$a_{ij}^D = \sum_{k=1}^n d_{ij}^k / n \quad (2)$$

*Step D3: Normalizing the direct-relation matrix  $X^D$*

The direct-relation matrix  $X^D$  can be normalized by applying Eqs. (3) and (4) to matrix  $A^D$ , with all diagonal factors set to zero.

$$S^D = \min \left[ \frac{1}{\max \sum_{j=1}^n |a_{ij}^D|}, \frac{1}{\max \sum_{i=1}^n |a_{ij}^D|} \right] \quad (3)$$

$$X^D = S^D \times A^D \quad (4)$$

*Step D4: Deriving the total influence matrix  $T^D$*

Matrix  $T^D$  represents the direct and indirect influences from Group  $i$  to Group  $j$  and can be obtained by Equation (5), where  $I$  denote the identity matrix. The factors  $t_{ij}^d$  in  $T^D$  indicate the magnitudes of the direct and indirect influences from Group  $i$  to Group  $j$ , when  $\lim_{k \rightarrow \infty} X^{D^k} = [0]_{n \times n}$ , the total-influence matrix is listed as follows:

$$T^D = \lim_{k \rightarrow \infty} (X^D + X^{D^2} + X^{D^3} + \dots + X^{D^k}) = \lim_{k \rightarrow \infty} X^D (I - X^D)^{-1} \quad (5)$$

*Step D5: Analyzing the results of influences and relationships*

Vector  $r$  and vector  $c$  are defined respectively as the vector of row sums and the vector of column sums of the total relation matrix  $T^D$ . Vector  $r$  and vector  $c$  are given by Eqs. (6) and (7).

$$r = (r_i)_{n \times 1} = \left[ \sum_{j=1}^n t_{ij} \right]_{n \times 1} \quad (6)$$

$$c = (c_j)_{1 \times n} = (c_j)'_{1 \times n} = \left[ \sum_{i=1}^n t_{ij} \right]'_{1 \times n} \quad (7)$$

The  $i$  th row sum of the matrix  $\mathbf{T}^D$ , denoted as  $r_i$ , represents the total direct and indirect influences of Group  $i$  exerts on the other Groups. Similarly, the  $j$  th column sum of  $\mathbf{T}^D$ , denoted as  $c_j$ , represents the total direct and indirect influences of Group  $j$  received from the other Groups. If  $i=j$ ,  $(r_i + c_i)$  is the sum of the row sum and column sum of Group  $i$  which is called "prominence" and indicates the overall strength of Group  $i$ 's influence impacts on and received from the other Groups. A higher value of  $(r_i + c_i)$  indicates that Group  $i$  plays a central role and has stronger connections with the other Groups, and thus is assumed to have higher priority. Moreover,  $(r_i - c_i)$  is referred as "relation". If  $(r_i - c_i)$  is positive, Group  $i$  is affecting other Groups, and if  $(r_i - c_i)$  is negative, Group  $i$  is being influenced by the other Groups. A higher value of  $(r_i - c_i)$  indicates that Group  $i$  has a stronger influence on other Groups than it receives from them, and is assumed to have lower priority (Maqbool & Khan, 2020; Yazdi, 2020).

*Step D6: Setting an  $\alpha$ -cut as a threshold to filter the minor clusters*

Each element  $t_{ij}$  in  $\mathbf{T}^D$  provides information about the influence of Group  $i$  on Group  $j$ . For eliminating the Groups with minor influence, Ou Yang et al. (2008) recommended to set a threshold to eliminate the element of original value is less than  $\alpha$ , where  $\alpha = \sum_{i=1}^n \sum_{j=1}^n t_{ij} / n^2$ ,  $n$  is the number of Groups. This paper refers to the previous researches such as Shen et al., (2014), Chiu et al. (2013), and Hsu et al., (2013) to distinguish the strength of Group influence. If the element values in  $\mathbf{T}^D$  are less than  $\alpha$ , the element value will be signed a "\*" symbol to label it as a minor influence Group. The modified  $\alpha$ -cut total relation matrix is symbolized as  $\mathbf{T}_\alpha^D$ .

### 3.3.2 Priority Assessments by ANP

The processing steps about the received ANP data are summarized as follows.

*Step A1: Building the direct super matrix  $\mathbf{A}_k$*

By conducting interviews with ten senior managers from MNEs involved in FDI affairs and collecting real-world messages, this paper generates a direct matrix  $\mathbf{A}_k$ ,  $k = 1, 2, \dots, n$ , where  $n$  represents the number of respondents. By collecting the answers of each respondent, every element of  $\mathbf{A}_k$ , represented by  $a_{ij}^k$ , illustrates the initial direct effects that each criterion exerts on and receives from other criteria.  $\mathbf{A}_k$  is expressed as Eq. (8).



$$\mathbf{A}_k = \begin{matrix} & \begin{matrix} \mathbf{G}_1 & \mathbf{G}_2 & \dots & \mathbf{G}_n \end{matrix} \\ \begin{matrix} \mathbf{G}_1 \\ \mathbf{G}_2 \\ \vdots \\ \mathbf{G}_n \end{matrix} & \begin{matrix} e_{11} & \dots & e_{1m_1} & e_{21} & \dots & e_{2m_2} & \dots & e_{n1} & \dots & e_{nm_n} \\ \left[ \begin{matrix} a_{11}^k & a_{12}^k & \dots & a_{1n}^k \\ a_{21}^k & a_{22}^k & \dots & a_{2n}^k \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1}^k & a_{n2}^k & \dots & a_{nn}^k \end{matrix} \right] \end{matrix} \end{matrix} \quad (8)$$

Step A2: Averaging the direct matrix  $\mathbf{A}_k$

The average matrix  $\mathbf{A}^A$  is obtained by taking the mean of the corresponding elements from each of  $\mathbf{A}_k$ . Each element in the average matrix, denoted as  $a_{ij}^A$ , is calculated by Eq. (9).

$$a_{ij}^A = \frac{\sum_{k=1}^n a_{ij}^k}{n} \quad (9)$$

Step A3: Calculating the initial direct-relation matrix  $\mathbf{X}^A$

The direct-relation matrix  $\mathbf{X}^A$  is obtained by normalizing the  $\mathbf{A}^D$  by Eqs. (10) and (11), all diagonal elements in  $\mathbf{X}^A$  are zero.

$$\mathbf{S}^A = \min \left[ \frac{1}{\max \sum_{j=1}^n |a_{ij}^A|}, \frac{1}{\max \sum_{i=1}^n |a_{ij}^A|} \right] \quad (10)$$

$$\mathbf{X}^A = \mathbf{S}^A \times \mathbf{A}^A \quad (11)$$

Step A4: Deriving the total influence matrix  $\mathbf{T}^A$

The direct/indirect matrix  $\mathbf{T}^A$  can be obtained through Eq. (12), where  $\mathbf{I}$  is the identity matrix. The elements  $t_{ij}^A$  of  $\mathbf{T}^A$  represent the direct and indirect influence from criterion  $i$  to criterion  $j$ . When  $\lim_{z \rightarrow \infty} \mathbf{X}^z = [\mathbf{0}]_{n \times n}$ , the total-influence matrix is listed as follows:

$$\mathbf{T}^A = \lim_{k \rightarrow \infty} \left( \mathbf{X}^A + \mathbf{X}^{A^2} + \mathbf{X}^{A^3} + \dots + \mathbf{X}^{A^k} \right) = \lim_{k \rightarrow \infty} \mathbf{X}^A (\mathbf{I} - \mathbf{X}^A)^{-1} \quad (12)$$

Step A5: Normalizing the total influence matrix  $\mathbf{T}_N^A$

The normalized total influence matrix  $\mathbf{T}_N^A$  is presented by Eq. (13).

$$\mathbf{T}_N^A = \begin{matrix} & & \mathbf{G}_1 & \mathbf{G}_2 & \dots & \mathbf{G}_n \\ \mathbf{G}_1 & e_{11} & \begin{matrix} e_{11} \dots e_{1m_1} \\ T_N^{A^{11}} \end{matrix} & \begin{matrix} e_{21} \dots e_{2m_2} \\ T_N^{A^{12}} \end{matrix} & \dots & \begin{matrix} e_{n1} \dots e_{nm_n} \\ T_N^{A^{1n}} \end{matrix} \\ & \vdots & & & & \\ \mathbf{G}_2 & e_{21} & T_N^{A^{21}} & T_N^{A^{22}} & \dots & T_N^{A^{2n}} \\ & \vdots & & & & \\ \vdots & e_{n1} & \vdots & \vdots & \ddots & \vdots \\ \mathbf{G}_n & e_{nm_n} & T_N^{A^{n1}} & T_N^{A^{n2}} & \dots & T_N^{A^{nn}} \end{matrix} \quad (13)$$

The calculation of  $T_N^{A^{11}}$  is illustrated by Eqs. (14) and (15).

$$b_{ei}^{11} = \sum_{j=1}^{m_1} t_{eij}^{A^{11}}, i = 1, 2, \dots, m_1 \quad (14)$$

$$\mathbf{T}_N^{A^{11}} = \begin{bmatrix} t_{11}^{A^{11}}/b_{e1}^{11} & t_{12}^{A^{11}}/b_{e1}^{11} & \dots & t_{1m_1}^{A^{11}}/b_{e1}^{11} \\ t_{21}^{A^{11}}/b_{e2}^{11} & t_{22}^{A^{11}}/b_{e2}^{11} & \dots & t_{2m_1}^{A^{11}}/b_{e2}^{11} \\ \vdots & \vdots & \vdots & \vdots \\ t_{m_11}^{A^{11}}/b_{em_1}^{11} & t_{m_12}^{A^{11}}/b_{em_1}^{11} & \dots & t_{m_1m_1}^{A^{11}}/b_{em_1}^{11} \end{bmatrix} \\
 = \begin{bmatrix} t_{N11}^{A^{11}} & t_{N12}^{A^{11}} & \dots & t_{N1m_1}^{A^{11}} \\ t_{N21}^{A^{11}} & t_{N22}^{A^{11}} & \dots & t_{N2m_1}^{A^{11}} \\ \vdots & \vdots & \vdots & \vdots \\ t_{Nm_11}^{A^{11}} & t_{Nm_12}^{A^{11}} & \dots & t_{Nm_1m_1}^{A^{11}} \end{bmatrix} \quad (15)$$

*Step A6: Acquiring the unweighted super-matrix W*

The unweighted super-matrix  $W$  is obtained by transposing the matrix  $T_N^A$ , shown as Eq. (16).

$$\mathbf{W} = \begin{matrix} & & \mathbf{G}_1 & \mathbf{G}_2 & \dots & \mathbf{G}_n \\ \mathbf{G}_1 & e_{11} & \begin{matrix} e_{11} \dots e_{1m_1} \\ W_{11} \end{matrix} & \begin{matrix} e_{21} \dots e_{2m_2} \\ W_{12} \end{matrix} & \dots & \begin{matrix} e_{n1} \dots e_{nm_n} \\ W_{1n} \end{matrix} \\ & \vdots & & & & \\ \mathbf{G}_2 & e_{21} & W_{21} & W_{22} & \dots & W_{2n} \\ & \vdots & & & & \\ \vdots & e_{n1} & \vdots & \vdots & \ddots & \vdots \\ \mathbf{G}_n & e_{nm_n} & W_{n1} & W_{n2} & \dots & W_{nn} \end{matrix} \quad (16)$$

*Step A7: Acquiring the normalized total-influence matrix T<sup>D</sup><sub>N</sub>*

Normalized the total-influence matrix  $T^D$  by utilizing different Group weights established from DEMATEL. The resulting normalized total-influence matrix is  $T_N^D$ , which is obtained by Eqs. (17) and (18).

$$\mathbf{T}^D = \begin{bmatrix} t_{11}^D & \dots & t_{1j}^D & \dots & t_{1n}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{i1}^D & \dots & t_{ij}^D & \dots & t_{in}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{n1}^D & \dots & t_{ni}^D & \dots & t_{nn}^D \end{bmatrix}, d_i = \sum_{j=1}^n t_{ij}^D \quad (17)$$

$$T_N^D = \begin{bmatrix} t_{11}^D/d_1 & \dots & t_{1j}^D/d_1 & \dots & t_{1n}^D/d_1 \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{i1}^D/d_i & \dots & t_{ij}^D/d_i & \dots & t_{in}^D/d_i \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{n1}^D/d_n & \dots & t_{nj}^D/d_n & \dots & t_{nn}^D/d_n \end{bmatrix} = \begin{bmatrix} t_{N11}^D & \dots & t_{N1j}^D & \dots & t_{N1n}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{Ni1}^D & \dots & t_{Nij}^D & \dots & t_{Nin}^D \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{Nn1}^D & \dots & t_{Nnj}^D & \dots & t_{Nnn}^D \end{bmatrix} \quad (18)$$

Step A8: Acquiring the weighted super-matrix  $W_w$

By multiplying the transpose of the normalized total-influence matrix by the unweighted super-matrix  $W$ , the weighted super-matrix  $W_w$  can be produced, that is  $W_w = T_N^{D'} \times W$ , shown as Eq. (19).

$$W_w = \begin{bmatrix} t_{N11}^D \times W_{11} & \dots & t_{N1j}^D \times W_{1j} & \dots & t_{N1n}^D \times W_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{Ni1}^D \times W_{i1} & \dots & t_{Nij}^D \times W_{ij} & \dots & t_{Nin}^D \times W_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{Nn1}^D \times W_{n1} & \dots & t_{Nnj}^D \times W_{nj} & \dots & t_{Nnn}^D \times W_{nn} \end{bmatrix} \quad (19)$$

Step A9: Acquiring the limited super-matrix  $W_w^*$

The DANP weights are obtained from the limited super-matrix  $W_w^*$ , which is produced by raising the weighted super-matrix  $W_w$  to a large enough power until it converges to a long-term stable state.

$$\lim_{k \rightarrow \infty} W_w^k \quad (20)$$

Step A10: Ranking the global weights

The global weights are determined by ranking based on the global priority vector obtained from the limited super-matrix  $W_w^*$ .

#### 4. Research Results

Following the data processing steps, this paper firstly analyzes the datum collected from ten scholars/experts by DEMATEL to examine the impact of relationships among groups, then employs the interview outcomes from the ten senior MNE managers to determine the priority of criteria for MNEs while making FDI decisions.

##### 4.1.1 Calculating the Average direct-relation Matrix $A^D$

In DEMATEL stage, from the ten scholars/experts questionnaires, establishes ten direct-relation matrixes. Averaging the ten direct-relation matrixes by Eq. (2), receive the average direct-relation matrix  $A^D$ . Normalizing  $A^D$  by Eqs. (3) and (4), the normalized direct-relation matrix  $X^D$  is obtained as Table 2.

By Eq. (5), the total influence matrix  $T^D$  is shown as Table 3. Adopting Eqs. (6) and (7), computes the values of  $r_i + c_i$  and  $r_i - c_i$  to obtain the given and received influences of the five groups, which are presented in Table 4.

**Table 2 The Direct-Influence Matrix  $X^D$**

Group	M	E	C	G	O
M	0	0.16522	0.1913	0.15652	0.16522
E	0.21739	0	0.24348	0.14783	0.22609
C	0.28696	0.28696	0	0.24348	0.18261
G	0.21739	0.2	0.22609	0	0.24348
O	0.22609	0.2	0.22609	0.23478	0

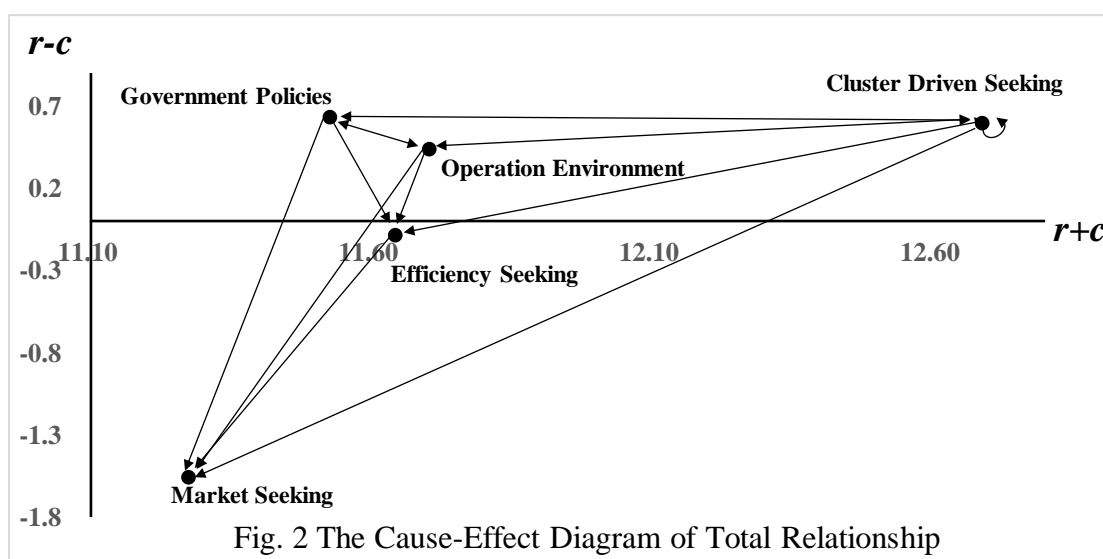
**Table 3 The Total Influence Matrix  $T^D$**

Group	M	E	C	G	O
M	0.93347	0.99534	1.03918	0.92823	0.96024
E	1.28942	1.01546	1.24170	1.07370	1.15687
C	1.49900	1.38923	1.20139	1.27514	1.27421
G	1.34578	1.23348	1.28422	0.99229	1.22081
O	1.34989	1.23181	1.28250	1.18065	1.02318

**Table 4 The Gives and Received Influences of the Five Groups**

Group	$r_i$	$c_i$	$r_i + c_i$	$r_i - c_i$
M	4.85647	6.41755	11.27	-1.56
E	5.77716	5.86533	11.64	-0.09
C	6.63898	6.04899	12.69	0.59
G	6.07656	5.45002	11.53	0.63
O	6.06803	5.63532	11.70	0.43

Based on the information of Table 4, the cause-effect diagram of the total relationship is illustrated as Fig. 2.



**Fig. 2 The Cause-Effect Diagram of Total Relationship**

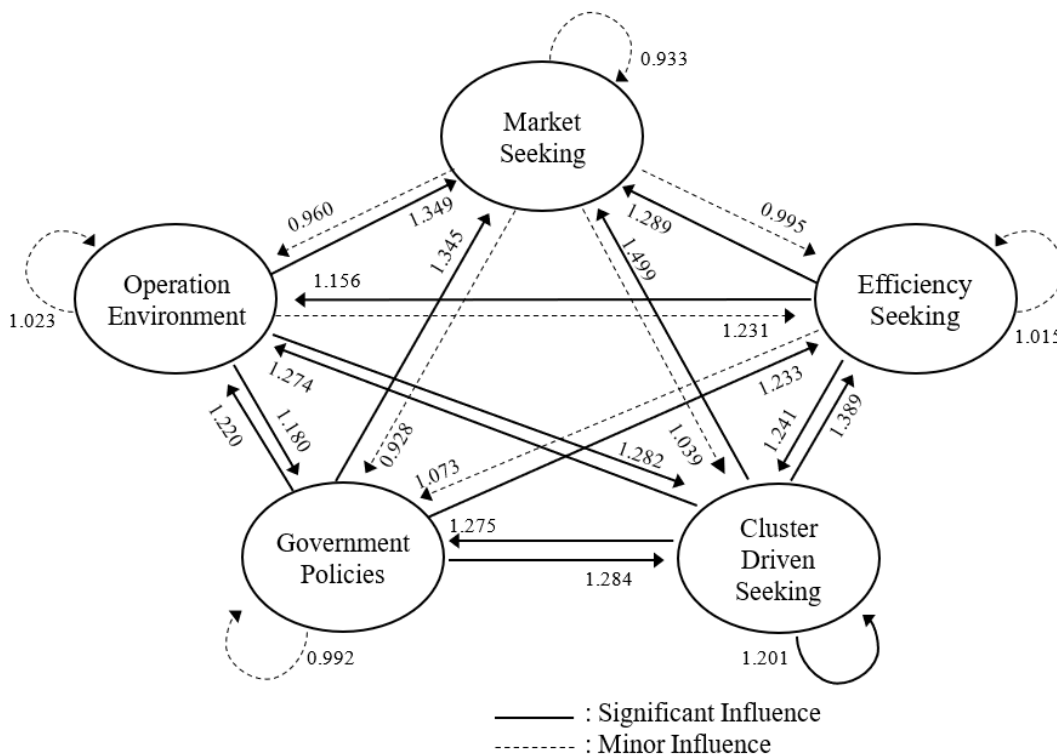
Observing Fig. 2, it shows that the Government Policies Group has the highest positive value of  $(r_i - c_i = 0.63)$  and nearly follows by the Cluster Driven Seeking Group  $(r_i - c_i = 0.59)$

posited at the second place among the five groups. It indicates that Government Policies Group and Cluster Driven Seeking Group exercise the strong influence on the other groups and can be regarded as the "main causal factor". This result implies that Government Policies Group and the Cluster Driven Seeking Group play the central role for the decision makers of MNEs when engaging in the decision makings of investing in Taiwan's high technology industry. On the other hand, Market Seeking Group has the lowest negative value of  $(r_i - c_i = -1.56)$ , which infers that it receives the most influence from the other groups and can be regarded as the "main effect factor" among the groups. Spotting at the Cluster Driven Seeking Group, it has the highest  $(r_i + c_i)$  value and the second highest positive  $(r_i - c_i)$  value, which demonstrates that Cluster Driven Seeking Group has significant relationships with other groups at the same time. Finally, the Market Seeking Group has the lowest negative  $(r_i - c_i)$  value, it expresses that the managers of MNEs do not focus on promoting market share while they decide to invest in Taiwan.

A threshold value  $\alpha$  is established to distinguish the significant and minor influences among clusters in matrix  $T^D$ . The resulting matrix is the  $\alpha$ -cut total influence matrix  $T^D_\alpha$ , presented as Table 5. The influence diagram of the five clusters is depicted as Fig. 3 based on the information of  $T^D_\alpha$ .

**Table 5 The Total Influence Matrix  $T^D_\alpha$**

Group	M	E	C	G	O
M	0.93347*	0.99534*	1.03918*	0.92823*	0.96024*
E	1.28942	1.01546*	1.24170	1.07370*	1.15687*
C	1.49900	1.38923	1.20139	1.27514	1.27421
G	1.34578	1.23348	1.28422	0.99229*	1.22081
O	1.34989	1.23181	1.28250	1.18065	1.02318*



**Fig. 3 Influence Diagram of the Five Groups**

Fig. 3 illustrates that Government Policies Group and the Cluster Driven Seeking Group emit the significant influences to all the other groups, while Market Seeking Group absorbs the significant influences from all the other groups. These results indicate that Government Policies Group and the Cluster Driven Seeking Group play as the “source nodes” and reveal the facts that the initiation for MNEs to invest in Taiwan’s high-tech industries arises from Taiwan government’s favorable policies and their own strategies to integrate into Taiwan’s high-tech industrial cluster. On the other hand, Market Seeking Group performs as a “sunk node”, it suggests that to raise the market share in Taiwan is not the major attention for those MNEs’ investment consideration.

### 4.2 Apply ANP to Measure the Priority of Criteria

In ANP stage, the data is collected by face to face interviewing ten senior MNEs managers who are in the high-tech MNEs invested in Taiwan to collect their real considerations while engage in FDI in Taiwan. The ANP methodology is employed to evaluate the relative importance of each pair of criteria by the pair-wise comparison questionnaire.

From the ten pair-wise comparison questionnaires, results in the direct super matrixes  $A_k, k=1, 2, 3, \dots, 10$ . By Eq. (9), receive the average direct super matrix  $A^A$ . By Eqs. (10) and (11), the initial direct-influence matrix  $X^A$  is shown as Table 6.

Table 6 The Direct-Influence Matrix  $X^A$  (n=10)

	M1	M2	E1	E2	E3	C1	C2	G1	G2	O1	O2	O3	O4
M1	0.021	0.058	0.042	0.092	0.114	0.123	0.114	0.067	0.019	0.027	0.096	0.058	0.040
M2	0.010	0.021	0.018	0.042	0.081	0.102	0.092	0.012	0.009	0.020	0.047	0.021	0.027
E1	0.017	0.037	0.021	0.067	0.096	0.121	0.114	0.047	0.020	0.017	0.083	0.029	0.026
E2	0.005	0.019	0.008	0.021	0.034	0.085	0.078	0.026	0.009	0.009	0.050	0.019	0.018
E3	0.004	0.006	0.005	0.028	0.021	0.052	0.055	0.021	0.006	0.007	0.022	0.008	0.010
C1	0.004	0.005	0.004	0.006	0.019	0.021	0.013	0.013	0.006	0.006	0.019	0.009	0.010
C2	0.004	0.012	0.005	0.009	0.019	0.046	0.021	0.021	0.011	0.015	0.023	0.015	0.013
G1	0.008	0.042	0.015	0.045	0.029	0.080	0.067	0.021	0.009	0.008	0.055	0.029	0.031
G2	0.038	0.052	0.026	0.056	0.079	0.087	0.080	0.060	0.021	0.030	0.092	0.065	0.065
O1	0.043	0.045	0.040	0.054	0.069	0.096	0.080	0.060	0.023	0.021	0.087	0.055	0.061
O2	0.005	0.016	0.005	0.018	0.030	0.035	0.034	0.018	0.005	0.006	0.021	0.014	0.013
O3	0.010	0.040	0.026	0.037	0.065	0.078	0.065	0.037	0.008	0.016	0.040	0.021	0.026
O4	0.018	0.029	0.026	0.040	0.058	0.074	0.065	0.030	0.008	0.016	0.044	0.025	0.021

By Eqs. (12) and (13), the total influence matrix  $T^A$  and the normalized total influence matrix  $T_N^A$  are calculated respectively as Table 7. Transposing  $T_N^A$  obtain the unweighted super-matrix  $W$  as Table 8.

Table 7 The Normalized Total Influence Matrix  $T_N^A$  (n=10)

	M1	M2	E1	E2	E3	C1	C2	G1	G2	O1	O2	O3	O4
M1	0.277	0.723	0.163	0.364	0.473	0.526	0.474	0.760	0.240	0.124	0.432	0.248	0.196
M2	0.326	0.674	0.135	0.310	0.555	0.531	0.469	0.663	0.337	0.161	0.416	0.195	0.228
E1	0.312	0.688	0.125	0.360	0.515	0.523	0.477	0.711	0.289	0.117	0.497	0.200	0.186
E2	0.245	0.755	0.135	0.338	0.527	0.529	0.471	0.734	0.266	0.109	0.491	0.203	0.196
E3	0.366	0.634	0.110	0.466	0.424	0.506	0.494	0.753	0.247	0.140	0.450	0.198	0.212
C1	0.386	0.614	0.146	0.266	0.588	0.582	0.418	0.686	0.314	0.133	0.432	0.215	0.220
C2	0.287	0.713	0.163	0.309	0.527	0.634	0.366	0.671	0.329	0.193	0.372	0.228	0.208
G1	0.206	0.794	0.164	0.442	0.394	0.543	0.457	0.714	0.286	0.090	0.439	0.231	0.240
G2	0.387	0.613	0.160	0.349	0.491	0.530	0.470	0.740	0.260	0.124	0.384	0.247	0.246
O1	0.432	0.568	0.212	0.339	0.449	0.543	0.457	0.725	0.275	0.106	0.403	0.237	0.254
O2	0.260	0.740	0.120	0.339	0.541	0.523	0.477	0.765	0.235	0.124	0.399	0.242	0.234
O3	0.236	0.764	0.189	0.310	0.501	0.544	0.456	0.786	0.214	0.147	0.402	0.209	0.242
O4	0.364	0.636	0.190	0.332	0.478	0.535	0.465	0.763	0.237	0.142	0.419	0.234	0.205

**Table 8 The Unweighted Super-Matrix  $W$**

	M1	M2	E1	E2	E3	C1	C2	G1	G2	O1	O2	O3	O4
<b>M1</b>	0.277	0.326	0.312	0.245	0.366	0.386	0.287	0.206	0.387	0.432	0.260	0.236	0.364
<b>M2</b>	0.723	0.674	0.688	0.755	0.634	0.614	0.713	0.794	0.613	0.568	0.740	0.764	0.636
<b>E1</b>	0.163	0.135	0.125	0.135	0.110	0.146	0.163	0.164	0.160	0.212	0.120	0.189	0.190
<b>E2</b>	0.364	0.310	0.360	0.338	0.466	0.266	0.309	0.442	0.349	0.339	0.339	0.310	0.332
<b>E3</b>	0.473	0.555	0.515	0.527	0.424	0.588	0.527	0.394	0.491	0.449	0.541	0.501	0.478
<b>C1</b>	0.526	0.531	0.523	0.529	0.506	0.582	0.634	0.543	0.530	0.543	0.523	0.544	0.535
<b>C2</b>	0.474	0.469	0.477	0.471	0.494	0.418	0.366	0.457	0.470	0.457	0.477	0.456	0.465
<b>G1</b>	0.760	0.663	0.711	0.734	0.753	0.686	0.671	0.714	0.740	0.725	0.765	0.786	0.763
<b>G2</b>	0.240	0.337	0.289	0.266	0.247	0.314	0.329	0.286	0.260	0.275	0.235	0.214	0.237
<b>O1</b>	0.124	0.161	0.117	0.109	0.140	0.133	0.193	0.090	0.124	0.106	0.124	0.147	0.142
<b>O2</b>	0.432	0.416	0.497	0.491	0.450	0.432	0.372	0.439	0.384	0.403	0.399	0.402	0.419
<b>O3</b>	0.248	0.195	0.200	0.203	0.198	0.215	0.228	0.231	0.247	0.237	0.242	0.209	0.234
<b>O4</b>	0.196	0.228	0.186	0.196	0.212	0.220	0.208	0.240	0.246	0.254	0.234	0.242	0.205

Adopting the five groups' weights in DEMATEL to normalized the  $T^D$  matrix by Eqs. (17) and (18), obtains the normalized total-influence matrix  $T_N^D$  as Table 9. By Eq. (19), the weighted super-matrix  $W_w$  is shown as Table 10.

**Table 9 The Normalized Total Influence Matrix of the Five Groups  $T_N^D$**

Group	M	E	C	G	O
M	0.192	0.204	0.213	0.191	0.197
E	0.223	0.175	0.214	0.185	0.200
C	0.225	0.209	0.180	0.192	0.191
G	0.221	0.202	0.211	0.163	0.200
O	0.222	0.203	0.211	0.194	0.168

**Table 10 The Weighted Super-Matrix  $W_w$**

	M1	M2	E1	E2	E3	C1	C2	G1	G2	O1	O2	O3	O4
<b>M1</b>	0.053	0.063	0.070	0.055	0.082	0.087	0.065	0.046	0.086	0.096	0.058	0.053	0.081
<b>M2</b>	0.139	0.130	0.154	0.168	0.142	0.139	0.161	0.176	0.136	0.126	0.165	0.170	0.141
<b>E1</b>	0.034	0.028	0.022	0.024	0.019	0.031	0.034	0.033	0.033	0.043	0.024	0.038	0.039
<b>E2</b>	0.075	0.064	0.063	0.059	0.082	0.056	0.065	0.090	0.071	0.069	0.069	0.063	0.067
<b>E3</b>	0.097	0.114	0.091	0.093	0.074	0.123	0.110	0.080	0.100	0.091	0.110	0.102	0.097
<b>C1</b>	0.113	0.114	0.112	0.114	0.109	0.105	0.115	0.115	0.112	0.115	0.111	0.115	0.113
<b>C2</b>	0.101	0.100	0.103	0.101	0.106	0.076	0.066	0.097	0.099	0.097	0.101	0.096	0.098
<b>G1</b>	0.145	0.127	0.132	0.136	0.140	0.132	0.129	0.117	0.121	0.141	0.149	0.153	0.148
<b>G2</b>	0.046	0.064	0.054	0.049	0.046	0.060	0.063	0.047	0.042	0.053	0.046	0.042	0.046
<b>O1</b>	0.025	0.032	0.023	0.022	0.028	0.025	0.037	0.018	0.025	0.018	0.021	0.025	0.024
<b>O2</b>	0.085	0.082	0.099	0.098	0.090	0.083	0.071	0.088	0.077	0.068	0.067	0.068	0.071
<b>O3</b>	0.049	0.039	0.040	0.041	0.040	0.041	0.044	0.046	0.050	0.040	0.041	0.035	0.039
<b>O4</b>	0.039	0.045	0.037	0.039	0.043	0.042	0.040	0.048	0.049	0.043	0.039	0.041	0.035

Finally, applying Eq. (20), the limited super-matrix  $W_w^*$  is calculated and presented as Table 11.

Table 11 The Limited Super-Matrix  $W_w^*$ 

	M1	M2	E1	E2	E3	C1	C2	G1	G2	O1	O2	O3	O4
<b>M1</b>	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066
<b>M2</b>	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
<b>E1</b>	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
<b>E2</b>	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070
<b>E3</b>	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
<b>C1</b>	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112
<b>C2</b>	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
<b>G1</b>	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133
<b>G2</b>	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
<b>O1</b>	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026
<b>O2</b>	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
<b>O3</b>	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
<b>O4</b>	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042

### 4.3 Ranking the Criteria

Based on  $W_w^*$ , the weights and rankings of criteria can be determined by ranking the global weights. Then, the local weights of each group can be obtained by summing up the global weights of each criterion within the group. By dividing the local weights by a criterion within the group, the local weight of that criterion can be determined. Table 12 displays the weights and ranks of criteria. The global weights of the criteria indicate their priority as determinants of MNEs investing in Taiwan's high-tech industries within the entire evaluation system, while the local weight of a criterion reflects its relative importance within the concerned group.

Table 12 Weights and Ranks of the Evaluation Criteria

Group	Criterion	Local Weights	Global Weights	Rank
Market Seeking	(M1) Market Size	0.30610	0.06629	8
	(M2) Re-Exports Opportunity	0.69389	0.15027	1
	The sum of the Global weights	<b>0.21656</b>		
Efficiency Seeking	(E1) Infrastructure	0.14933	0.02976	12
	(E2) Human Resource	0.34934	0.06962	7
	(E3) Operation Cost	0.50132	0.09991	4
	The sum of the Global weights	<b>0.19929</b>		
Cluster Driven Seeking	(C1) Industrial Clusters	0.54322	0.11210	3
	(C2) Supply Chain Partnerships	0.45677	0.09426	5
	The sum of the Global weights	<b>0.20636</b>		
Government Policies	(G1) Governmental Incentives	0.71807	0.13339	2
	(G2) Governmental Institutions	0.28192	0.05237	9
	The sum of the Global weights	<b>0.18576</b>		
Operation Environment	(O1) Economic Environment	0.13404	0.02574	13
	(O2) Trade Openness	0.42576	0.08176	6
	(O3) Political Stability	0.21923	0.04210	11
	(O4) Geopolitical Risk	0.22095	0.04243	10
	The sum of the Global weights	<b>0.19203</b>		

Table 12 displays the priority of the thirteen determinants ranked by MNEs' managers. From the local weights in Table 12, the most important criterion in each group is described as follows: Re-Exports Opportunity Criterion in Market Seeking Group; Operation Cost Criterion in Efficiency Seeking Group; Industrial Clusters Criterion in Cluster Driven Seeking Group; Governmental Incentives Criterion in Government Policies Group; and Trade Openness Criterion in Operation Environment Group.

Further observe the rank of global weights in Table 12, this paper shows the relative five important criteria and lists as follows:



1. Re-Exports Opportunity Criterion with a weight of 0.15027 has the highest priority among all determinants, indicating that MNEs invest in Taiwan primarily focus on Taiwan's role as a regional transportation hub, providing convenient industrial parks, and the possibility to avoid tariffs or to infringe quotas set by consuming countries government to facilitate the operation for re-exports. This also implies that investing in Taiwan will benefit MNEs in expanding to other countries in the future.
2. Governmental Incentives (0.13339) is ranked the second, shows that Taiwan government's incentive policies, including tax incentives, financial incentives, and non-financial measures are important for MNEs.
3. The third determinant is Industrial Clusters Criterion (0.1121), means that MNEs consider the industrial cluster in Taiwan can offer appropriate prospect for them to access specialized skills labors, knowledge workers, infrastructure, common suppliers, exploiting techniques and knowledge spillover, and drawing on more specialized assets and suppliers to shorten reaction times for market change.
4. Operation Cost Criterion (0.09991) is ranked the fourth, indicating that MNEs engage in FDI to reduce operation costs from lower tax rates, capital raising fees and interest rates, utility expenditure, and labor costs in Taiwan. MNEs can also achieve cost reduction via economy of scale and scope.
5. The fifth determinant is Supply Chain Partnerships Criterion (0.09426), expressing that it is essential for MNEs to invest in Taiwan for establishing or joining a supply chain to serve their international customers, support existing customers, or following the globalization trend in specific buyer-industries.

## 5. Conclusion

Taiwan is an isolated island located in the Southeast Asia and is suffered from scarce natural resources and insufficient local capital accumulation. Retrospect the history of economic development, inward FDI played the most important role to surge the economic growth under such disadvantageous conditions. In nowadays, Taiwan's export-oriented economy still heavily relies on inward FDI. Therefore, how to attract MNEs to invest in Taiwan is always a desirable task for the policy makers in Taiwan. In addition, high-tech industries are the major pillars to support Taiwan economic development in recent decades, this paper aims to explore the determinants of MNEs investing in Taiwan's high-tech industries.

The research results show that both the Government Policies Group and the Cluster Driven Seeking Group have the strongest influence on the other groups. It reminds that MNEs managers put higher weights on those two groups while engaging FDI in Taiwan's high-tech industries. On the contrary, due to the market size of Taiwan is relatively small, the main consideration of Market Seeking Group for MNEs managers is decided by the re-export opportunity for the FDI products.

For attracting inward FDI, the suggestions of this paper are narrated as follows. From the top three priority criteria ranked by MNE managers reveal that MNEs invest in Taiwan concern mostly on the re-export opportunity for their products produced in Taiwan. The Taiwan government authorities must dedicate to sign ECA/FTA with foreign countries or territories. The second priority criterion is governmental incentives, it indicates that the government authorities may consider to launch some more beneficial practices to the MNEs. Finally, the

third priority criterion is industrial clusters, it means that many MNEs invest in Taiwan are attracted by a key industry and play as peripheral products/services providers or a member of its supply chain. Therefore, the government authorities have to put more effort to cultivate more new critical industries. As for the last three priority criteria, it reflects the facts that the political stability, infrastructure facilities, and economic environment are well performed in Taiwan from the perspective of MNEs, the government authorities have only to pay attention to maintain current performance.

The finding of this paper can also provide as the assessment baseline for the potential foreign investors who are evaluating the feasibility to invest in Taiwan. The assessment criteria may help them to raise the probability of investment success and lessen the risk of fail investment.

Even Taiwan contemporary faces the severe geopolitical tension with mainland China, yet, MNE managers still rank the Geopolitical Risk Criterion at the tenth priority, this result seems beyond the intuition and violate the discussion in section 2.5.4. The explanation of this paper is that all the interviewees come from the MNEs who have already invested in Taiwan, and may just adopt the “wait and see” strategy in the status quo. Further researchers might try to interview the potential foreign investors abroad and a different conclusion may be expected to conclude.

## References

- Ahlquist, J. S., & Prakash, A. (2010). FDI and the costs of contract enforcement in developing countries. *Policy Sciences*, 43, 181-200.
- Akin, M. S., & Vlad, V. (2011). The relationship between education and foreign direct investment: Testing the inverse U shape. *European Journal of Economic & Political Studies*, 4(1), 27-46.
- Alesina, A., & Perotti, R. (1996). Income distribution, political instability, and investment. *European Economic Review*, 40(6), 1203-1228.
- Ali, S., & Guo, W. (2005). Determinants of FDI in China. *Journal of Global Business & Technology*, 1(2), 21-33.
- Asiedu, E. (2002). On the determinants of foreign direct investment to developing countries: Is Africa different? *World development*, 30(1), 107-119.
- Asiedu, E. (2006). Foreign direct investment in Africa: The role of natural resources, market size, government policy, institutions and political instability. *World Economy*, 29(1), 63-77.
- Azam, M., & Lukman, L. (2010). Determinants of foreign direct investment in India, Indonesia and Pakistan: A quantitative approach. *Journal of Managerial Sciences*, 4(1), 31-44.
- Banga, R. (2003). Impact of government policies and investment agreements on FDI inflows. *Indian Council for Research on International Economic Relations, Working Paper No. 116*. New Delhi.
- Bhattacharya, A., Montiel, P. J., & Sharma, S. (1997). Private capital flows to sub-saharan Africa: An overview of trends and determinants. In: Iqbal, Z. & Kanbur, R. (eds), *External finance for low-income countries*. International Monetary Fund, Washington, DC.
- Birkinshaw, J. (2000). Upgrading of industry clusters and foreign investment. *International Studies of Management & Organization*, 30(2), 93-113.
- Bissoon, O. (2012). Can better institutions attract more foreign direct investment (FDI)? Evidence from developing countries. *Journal of European Economy*, 11, 39-61.
- Boateng, A., Hua, X., Nisar, S., & Wu, J. (2015). Examining the determinants of inward FDI: Evidence from Norway. *Economic Modelling*, 47, 118-127.
- Bonomi, F., Milito, R., Zhu, J., & Addepalli, S. (2012). Fog computing and its role in the internet of things. In *Proceedings of the first edition of the MCC workshop on mobile cloud computing*, 13-16.

- Briglauer, W., Cambini, C., & Grajek, M. (2018). Speeding up the internet: Regulation and investment in the European fiber optic infrastructure. *International Journal of Industrial Organization*, 61, 613-652.
- Capaldo, A., & Giannoccaro, I. (2015). How does trust affect performance in the supply chain? The moderating role of interdependence. *International Journal of Production Economics*, 166, 36-49.
- Chakrabarti, A. (2001). The determinants of foreign direct investments: Sensitivity analyses of cross-country regressions. *Kyklos*, 54(1), 89-114.
- Chen, Z., & Khan, M. M. S. (1997). Patterns of capital flows to emerging markets: A theoretical perspective. *International Monetary Fund, IMF Working Paper*. Washington D. C.
- Chiu, W. Y., Tzeng, G. H., & Li, H. L. (2013). A new hybrid MCDM model combining DANP with VIKOR to improve e-store business. *Knowledge-Based Systems*, 37, 48-61.
- Choi, J. J., Lee, S. M., & Shoham, A. (2016). The effects of institutional distance on FDI inflow: General environmental institutions (GEI) versus minority investor protection institutions (MIP). *International Business Review*, 25(1), 114-123.
- Corcoran, A., & Gillanders, R. (2015). Foreign direct investment and the ease of doing business. *Review of World Economics*, 151, 103-126.
- Curtin, J., McInerney, C., & Gallachóir, B. Ó. (2017). Financial incentives to mobilise local citizens as investors in low-carbon technologies: A systematic literature review. *Renewable & Sustainable Energy Reviews*, 75, 534-547.
- Daniels, J. D., Radebaugh, L. H. & Sullivan, D. P. (2002). *Globalization and business*. Upper Saddle River, New Jersey, Prentice Hall.
- Dunning, J. H. (1980). Toward an eclectic theory of international production: Some empirical tests. *Journal of International Business Studies*, 11(1), 9-31.
- Edwards, S. (1992). Trade orientation, distortions and growth in developing countries. *Journal of Development Economics*, 39(1), 31-57.
- Frey, B. S., & Schneider, F. (1979). An econometric model with an endogenous government sector. *Public Choice*, 29-43.
- Gabriel, O. M., Chigozie, A. O., & Eke, F. A. (2016). Foreign direct investment in Nigeria: Reassessing the role of market size. *International Journal of Academic Research in Business & Social Sciences*, 6(2), 95-104.
- Goodspeed, T., Martinez-Vazquez, J., & Zhang, L. (2006). Are other government policies more important than taxation in attracting FDI? *Andrew Young School of Policy Studies, Research Paper Studies, Working Paper 06-28*.

- Grčić, B., & Babić, Z. (2003). The determinants of FDI: Evaluation of transition countries attractiveness for foreign investors. In *5th International Conference Enterprise in Transition. Tučepi*.
- Hamermesh, D. S. (1983). New measures of labor cost: Implications for demand elasticities and nominal wage growth, In: Triplett, J. E. (Ed.), *The Measurement of Labor Cost* (pp. 287-308). Chicago, University of Chicago Press.
- Howell, L. D. (2011). *International country risk guide methodology*. East Syracuse, NY, PRS Group.
- Hsu, C. W., Kuo, T. C., Chen, S. H., & Hu, A. H. (2013). Using DEMATEL to develop a carbon management model of supplier selection in green supply chain management. *Journal of Cleaner Production*, 56, 164-172.
- Hubert, F., & Pain, N. (2002). Fiscal incentives, European integration and the location of foreign direct investment. *The Manchester School*, 70(3), 336-363.
- Ivarsson, I., & Alvstam, C. G. (2013). Embedded internationalization: How small-and medium-sized Swedish companies use business-network relations with Western customers to establish own manufacturing in China. *Asian Business & Management*, 12, 565-589.
- Jaiblai, P., & Shenai, V. (2019). The determinants of FDI in sub-Saharan economies: A study of data from 1990–2017. *International Journal of Financial Studies*, 7(3), 1-31.
- Jandhyala, S. (2013). Property rights and international investment in information technology services. *Strategic Management Journal*, 34(7), 877-889.
- Kabiru, S. A. (2016). Socio-economic infrastructure and national development: An analytical assessment from Nigerian perspective. *IOSR Journal of Humanities & Social Science*, 21(10), 36-42.
- Kersan-Skabic, I., & Orlic, E. (2007). Determinants of FDI inflows in CEE1 and Western Balkan countries (Is accession to the EU important for attracting FDI?). *Economic and Business Review*, 9(4), 333-350.
- Ketels, C. H., & Memedovic, O. (2008). From clusters to cluster-based economic development. *International Journal of Technological Learning, Innovation & Development*, 1(3), 375-392.
- Khachoo, A. Q., & Khan, M. I. (2012). Determinants of FDI inflows to developing countries: A panel data analysis. *MPRA Paper 37278*. Germany, University Library of Munich.
- Khoury, T. A., & Peng, M. W. (2011). Does institutional reform of intellectual property rights lead to more inbound FDI? Evidence from Latin America and the Caribbean. *Journal of World Business*, 46(3), 337-345.
- Kurtishi-Kastrati, S. (2013). Impact of FDI on economic growth: An overview of the main theories of FDI and empirical research. *European Scientific Journal*, 9(7), 56-77.

- Lawhon, M., Nsangi Nakyagaba, G., & Karpouzoglou, T. (2023). Towards a modest imaginary? Sanitation in Kampala beyond the modern infrastructure ideal. *Urban Studies*, 60(1), 146-165.
- Lee, D.-X. (2021). Apply DANP to investigate the investment evaluation criteria on startups for venture capitalists. Unpublished Master Thesis, National University of Kaohsiung, Taiwan.
- Maqbool, A., & Khan, N. Z. (2020). Analyzing barriers for implementation of public health and social measures to prevent the transmission of COVID-19 disease using DEMATEL method. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(5), 887-892.
- Moosa, I. A. (2002) *Foreign direct investment: Theory, evidence and practice*. Great Britain, Palgrave Macmillan.
- Okafor, G., Piesse, J., & Webster, A. (2015). The motives for inward FDI into Sub-Saharan African countries. *Journal of Policy Modeling*, 37(5), 875-890.
- Olubunmi, O. A., Xia, P. B., & Skitmore, M. (2016). Green building incentives: A review. *Renewable & Sustainable Energy Reviews*, 59, 1611-1621.
- Ou Yang, Y. P., Shieh, H. M., Leu, J. D., & Tzeng, G. H. (2008). A novel hybrid MCDM model combined with DEMATEL and ANP with applications. *International Journal of Operations Research*, 5(3), 160-168.
- Ozawa, T. (1992). Foreign direct investment and economic development. *Transnational Corporations*, 1(1), 27-54.
- Panzar, J.C. & Willig, R.C. (1981). Economies of scope. *American Economic Review*, 71, 268-272.
- Papadopoulos, N., & Malhotra, S. (2007). Export processing zones in development and international marketing: An integrative review and research agenda. *Journal of Macromarketing*, 27(2), 148-161.
- Paus, E., Reinhardt, N., & Robinson, M. (2003). Trade liberalization and productivity growth in Latin American manufacturing, 1970-98. *The Journal of Policy Reform*, 6(1), 1-15.
- Pazienza, P., & Vecchione, V. (2009). Preliminary investigation of the determinants of FDI distribution in Italy. *Journal of Business Economics & Management*, 10(2), 99-107.
- Pedler, M., Boydell T., & Burgoyne, J. (1991). *The learning company (2nd ed.)*. London, McGraw-Hill.
- Porter, M. E. (1990). *The competitive advantage of nations*. New York, Free Press.
- Porter, M. E. (2001). *Council of competitiveness and monitor group, clusters of innovation initiative: Regional foundations of US competitiveness*. Washington, DC: Council on Competitiveness.

- Prakash, A., & Chand, P. (2022). The potential of re-exports: A probability for Fiji's trade growth. *Asian Journal of Economics & Empirical Research*, 9(1), 52-58.
- Rettab, B., & Azzam, A. (2008). Re-export intensity and trade costs: Port facilities and services. *Maritime Economics & Logistics*, 10, 229-242.
- Rockefeller, J. D. (1998). *Titan: The life of John D. Rockefeller, Sr.* In: Chernow, R., (Ed), New York, Random House.
- Róka-Madarász, L., Mályusz, L., & Tucza, P. (2016). Benchmarking facilities operation and maintenance management using CAFM database: Data analysis and new results. *Journal of Building Engineering*, 6, 184-195.
- Saal, D. S., Arocena, P., Maziotis, A., & Triebs, T. (2013). Scale and scope economies and the efficient vertical and horizontal configuration of the water industry: A survey of the literature. *Review of Network Economics*, 12(1), 93-129.
- Sargentis, G. F., Ioannidis, R., Karakatsanis, G., Sigourou, S., Lagaros, N. D., & Koutsoyiannis, D. (2019). The development of the Athens water supply system and inferences for optimizing the scale of water infrastructures. *Sustainability*, 11(9), 1-18.
- Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. New York, Doubleday Currency.
- Seyoum, B. (1996). The impact of intellectual property rights on foreign direct investment. *The Columbia Journal of World Business*, 31(1), 50-59.
- Shahzad, A., Mithani, D. A., Al-Swidi, A. K., & Fadzil, F. H. (2012). Political stability and the foreign direct investment inflows in Pakistan. *British Journal of Arts & Social Sciences*, 9(2), 199-213.
- Shatakishvili, D. (2021). Skilled labor force as a cornerstone of entrepreneurial economic development-international experience for Georgia. *Journal of World Economy: Transformations & Transitions*, 1(2), 1.
- Shazmin, S. A. A., Sipan, I., & Sapri, M. (2016). Property tax assessment incentives for green building: A review. *Renewable and Sustainable Energy Reviews*, 60, 536-548.
- Shen, K. Y., Yan, M. R., & Tzeng, G. H. (2014). Combining VIKOR-DANP model for glamor stock selection and stock performance improvement. *Knowledge-Based Systems*, 58, 86-97.
- Silajdzic, S., & Mehic, E. (2022). How effective is tax policy in attracting foreign direct investments in transition countries? *Central European Business Review*, 11(1), 19-39.
- Singhania, M., & Gupta, A. (2011). Determinants of foreign direct investment in India. *Journal of International Trade Law & Policy*, 10(1), 64-82.

- Sovacool, B. K., Gilbert, A., & Nugent, D. (2014). An international comparative assessment of construction cost overruns for electricity infrastructure. *Energy Research & Social Science*, 3, 152-160.
- Tallman, S., Jenkins, M., Henry, N., & Pinch, S. (2004). Knowledge, clusters, and competitive advantage. *Academy of Management Review*, 29(2), 258-271.
- Tang, C., Xue, Y., Wu, H., Irfan, M., & Hao, Y. (2022). How does telecommunications infrastructure affect eco-efficiency? Evidence from a quasi-natural experiment in China. *Technology in Society*, 69, 101963.
- Tasdoven, H., Fiedler, B. A., & Garayev, V. (2012). Improving electricity efficiency in Turkey by addressing illegal electricity consumption: A governance approach. *Energy Policy*, 43, 226-234.
- Tolentino, P. E. (2010). Home country macroeconomic factors and outward FDI of China and India. *Journal of International Management*, 16(2), 102-120.
- Tynjälä, P. (2008). Perspectives into learning at the workplace. *Educational research review*, 3(2), 130-154.
- Vlahinić-Dizdarević, N., & Biljan-August, M. (2005). FDI performance and determinants in southeast European countries: Evidence from cross-country data. *The International Conference on Enterprise in Transition*, 3(2), 519-524.
- Wadhwa, K., & Reddy, S. S. (2011). Foreign direct investment into developing Asian countries: The role of market seeking, resource seeking and efficiency seeking factors. *International Journal of Business & Management*, 6(11), 219-226.
- Wang, X. (2019). FDI and infrastructure improvement of ASEAN. *International Journal of Economics & Finance*, 11(10), 140-147.
- Yazdi, M., Khan, F., Abbassi, R., & Rusli, R. (2020). Improved DEMATEL methodology for effective safety management decision-making. *Safety Science*, 127, 1-17.
- Zee, H. H., Stotsky, J. G., & Ley, E. (2002). Tax incentives for business investment: A primer for policy makers in developing countries. *World Development*, 30(9), 1497-1516.

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***Evaluate the Correlation Between Online Learning Motivation and Learning Effectiveness  
for Students Enrolled at the Taiwan Institute of Technology  
During the COVID-19 Pandemic***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

During the COVID-19 pandemic, following the policy of “Learning Never Stops,” schools of all levels in Taiwan adopted a flexible and interdisciplinary approach to maintain educational continuity, and online teaching became one of the main methods of achieving this goal. Our research used the ARCS model to evaluate any correlation between online learning motivation and the learning performance of students enrolled at the Taiwan Institute of Technology during the pandemic. Our objectives are: (1) to evaluate the level of online learning motivation of students enrolled at the Taiwan Institute of Technology during the pandemic; (2) to evaluate the online learning effectiveness of the students enrolled at the Taiwan Institute of Technology during the pandemic; (3) evaluate the correlation between online learning motivation and learning effectiveness for the students enrolled at the Taiwan Institute of Technology during the pandemic. The subjects are all students enrolled at an Institute of Technology in Taiwan. A research instrument was developed using the ARCS model of Motivation, coupled with a literature review. The study was conducted via questionnaire investigation. After the collection and analysis of the data, our conclusions were: (1) the students’ level of online learning motivation was average; (2) online learning was effective in the case of these students.

Keywords: Institute of Technology, Online Learning, Learning Motivation, Learning Effectiveness

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## **1. Introduction**

### **1.1 Research background and motivation**

In Taiwan, under the impact of the COVID-19 pandemic, schools at all levels adopted online learning and teaching activities in a diverse and flexible manner, with teachers teaching through video livestreams or by arranging asynchronous digital instructional materials for students' autonomous learning (K-12 Education Administration, MOE, 2021; Centers for Disease Control, Ministry of Health and Welfare, 2021).

In Taiwan, the development of the Internet and Web 2.0 in recent years has actively promoted online learning and enabled teachers to use synchronous online teaching methods during the pandemic. Therefore, this study was motivated to investigate the correlation between online learning motivation and the learning effectiveness of students in the institute of technology in Taiwan during the COVID-19 pandemic.

### **1.2 Research purposes**

Based on the above background and motivation, the specific purposes of this study were as follows:

- (1) To investigate the online learning motivation of students in the institute of technology in Taiwan during the pandemic
- (2) To examine the online learning effectiveness of students in the institute of technology in Taiwan during the pandemic

### **1.3 Research scope and limitations**

There are many different types of courses that use online learning, but the research scope of this study focused on using online learning for course design, and its findings are therefore not suitable for generalization to other forms of online learning.

## **2. Literature Review**

### **2.1 Current development of online learning**

Online learning refers to teaching and learning through the Internet, where teachers and students are not subject to physical or distance limitations, and the content is delivered over the Internet to enhance learning and interactivity in synchronous and asynchronous environments (Singh & Thurman, 2019). The United Nations Educational, Scientific and Cultural Organization (UNESCO) has developed the *Education 2030 Framework for Action* to address digital teaching methods such as online learning, hoping to achieve equity in education through technological advances and thereby compensate for the unequal distribution of educational resources (UNESCO, 2015). Safibullaevna et al. (2020) argued that online learning significantly increases students' interest in educational materials and affects learning effectiveness. In addition, Triyason et al. (2020) suggested that the use of information technology to work or study in unrestricted areas will become a new pattern in the future due to the impact of the COVID-19 pandemic. In Taiwan, in response to the impact of COVID-19, the government announced a plan titled *Implementing Measures for Distance Learning at the Junior College Level or Above*, to increase students' opportunities for digital learning at home due to the pandemic (Kuo, 2020).

## **2.2 ARCS motivation model**

Keller (1983) explored the mutual impacts among learning motivation, instructional design, and learning effectiveness by examining the instructional system model and integrating the psychological theory of motivation with the instructional design model. Later, Keller found that personal and environmental factors influence students' behavioral performance and learning effectiveness. Personal factors include learning motivation, self-expectation, and knowledge, while environmental factors include motivation strategies and design of learning effectiveness; these factors generate interactive impacts on each other and create a systemic cycle. Keller (1984, 2010) proposed the ARCS motivation model, which is consisted of four major dimensions, namely attention, relevance, confidence, and satisfaction. Attention aims to capture learners' interest and stimulate curiosity for learning; relevance aims to satisfy learners' personal needs/goals and make them develop positive attitudes; confidence aims to help learners believe that they will succeed and can control their success; and satisfaction aims to reinforce a sense of accomplishment with rewards. The ultimate goals are to enhance the learner's attention to the course through a systematic motivational design, make the learner feel that the content is relevant, and give the learner the confidence and ability to learn through guidance, thereby giving the learner a sense of accomplishment by completing the course (Keller, 1987). The four key elements of the ARCS motivation theory also need to be considered by teachers when designing courses.

## **3. Research Design**

A questionnaire survey method was used to collect the data on students' learning motivation and learning effectiveness related to using online learning in an institute of technology in Kaohsiung City to understand the correlation between learning motivation and the learning effectiveness of using online learning. The specific research structure, research subjects, research tools, data processing and analysis are described below.

### **3.1 Research structure**

According to the research purpose of this study, the ARCS motivation model was used to investigate the relationship between the online learning motivation and effectiveness of students in the institute of technology in Taiwan during the pandemic.

### **3.2 Research subjects**

This study searched the EBSCOhost international journal database to find relevant studies, and the results of the studies related to the use of online teaching from 2015 to the present showed that few studies have focused on issues related to the institutes of technology. Therefore, the institutes of technology were taken as the object of this study. A total of 48 junior students from the College of Design at an institute of technology in Kaohsiung City were selected as the sample for this study through the convenience sampling method.

Since this group of juniors had experienced the changes in teaching and learning during the COVID-19 pandemic, they had personal experience and insight into the differences between online teaching and traditional face-to-face courses, which enabled this study to understand the correlation between the motivation and effectiveness of online learning among the students of the institute of technology in Taiwan during the pandemic.

### 3.3 Research tools

#### *(1) Online learning motivation questionnaire*

This study adopted the questionnaire survey method. After compiling the data from the literature review, we chose the Motivation Strategies for Learning Scale proposed by Pintrich (1991) and the Instructional Materials Motivation Survey (IMMS) designed by Keller (1987) as the basis for the development of the questionnaire. We also considered the factors affecting online teaching and learning motivation in the literature review to finally develop the first version of the questionnaire on online learning motivation. The questionnaire dimensions were simplified via revising the items in the first version as indicated by an expert review. The questionnaire was then developed into a formal online learning motivation survey.

The online learning motivation questionnaire consisted of 20 questions addressing the four dimensions of attention, relevance, confidence, and satisfaction. Each dimension had five questions scored according to a Likert five-point scale, with answers ranging from 1 (strongly disagree) to 5 (strongly agree), with a higher score indicating higher student learning motivation.

A total of 48 questionnaires were collected and eight invalid questionnaires were excluded, resulting in a total of 39 valid questionnaires (a response rate of 81%). The Cronbach's  $\alpha$  value was 0.938 according to the reliability analysis after the questionnaires were returned and met the reliability criterion of 0.7 or above, indicating that the questionnaires had a certain degree of reliability. Additionally, the Cronbach's  $\alpha$  values of all deleted items were lower than the original 0.938, which indicated that the remaining items in the questionnaire were necessary. Finally, the validity of the questionnaire was confirmed by academic experts.

#### *(2) Assessment of learning effectiveness*

The assessment of learning effectiveness was based on the final exam score of the online course, which was graded by the instructor (out of 100 points).

### 3.4 Data processing and analysis

The questionnaire survey results of this study were compiled and processed in Excel, and then analyzed using SPSS for Mac version 26.0 statistical software. The Cronbach's  $\alpha$  coefficient was used to check the reliability of the questionnaire, and descriptive statistics were used to present the mean and standard deviation of each question as well as summarize the sample profile. The data were sorted from the highest to the lowest mean of the students' learning motivation. Then, the students' learning effectiveness scores were analyzed by one-way ANOVA to understand the correlation between learning motivation and the learning effectiveness of online learning of students in the institute of technology.

## 4. Research Results

The purpose of this study was to investigate the correlation between the learning motivation and learning effectiveness of online learning among students of the institute of technology. The questionnaire data obtained were analyzed by descriptive and inferential statistics, and the research results were as follows.

Thirty-nine questionnaires were collected from the junior students in the College of Design of the institute of technology, of which 13 were male and 26 were female.

The total mean score of the 39 questionnaires was 3.289, and all questions received a score above 3, except for Question 13. This mean was in the middle and upper range, indicating the students had some degree of motivation to learn online. Among the questions, Question 10 and Question 18 had a mean score of 3.56, which was the highest mean score, while Question 13 had a mean score of 2.97, which was the lowest mean score.

Question 10, "In online digital teaching, I am motivated to use the online digital learning materials because they link to content I have already learned" and Question 18 "Online digital teaching with digital instructional materials can be one of my instructional materials for revision" received the highest scores because, with online learning, systematic content can be used as a learning node, and it is possible for individuals to identify their own weaknesses through the online learning platform and use the online digital instructional materials as a material for repeated review. This result coincided with that of Moore and Kearsley (2012), who suggested that online learning-based instructional materials can help students repeatedly study and query through online materials and make it easier for them to preview or review material, as students may pause at any time when they do not understand to look up data online. This result showed that online learning-based instructional materials can be used as teaching materials for students to use when reviewing their courses later.

The reason for the low score (2.97) for Question 13: "Using online digital teaching with online digital instructional materials can increase my confidence in taking exams" was that even with online learning and digital instructional materials, the students continued to have additional concerns about the exam. In addition, the study also found that Question 2, "Changing classroom teaching to online digital teaching is livelier than using textbooks alone" was more frequently given a negative score (i.e., disagree, strongly disagree) than the other questions. This result showed that online learning classrooms do not become livelier with the use of multimedia, and that traditional classrooms are livelier and have more interpersonal interactions. In the past, foreign scholars conducted studies on the real-time feedback discussion system of online learning, and the results showed that although the establishment of online discussion forums is helpful for students to ask questions in an anonymous manner, it can easily lead to poor-quality questions or questions being ignored, resulting in low teacher-student interaction, ineffective classroom performance, and dull and uninteresting course (Wu, 2015; Qin & Fu, 2017).

## **5. Conclusion**

The purpose of this study was to investigate the correlation between the learning motivation and learning effectiveness of online learning among students at the institute of technology in Taiwan during the COVID-19 pandemic. The research findings discussed below were summarized according to the research purposes and results of this study.

(1) From the literature review, we found that online learning has entered a mature stage in Taiwan. From the development of digital learning-related policies 20 years ago to the promotion of online learning integration in schools at all levels nowadays, it is evident that Taiwan is paying more attention to online learning, which is becoming more popular in the education field and is increasingly being used as a method of learning for students.

(2) The literature and fieldwork revealed some discrepancies regarding the motivation for online learning of the students in the institute of technology in Taiwan; however, this result did not mean that students in the institute of technology in Taiwan could not accept online

learning as a learning method. There may be more factors that were not considered in this study, such as the length of the course and the type of teaching course.

### **Acknowledgements**

This study is part of a research project (MOST111-2410-H-003-059-) supported by the National Science Council. The authors would like to thank the experts for contributing their professional opinions, which allowed the study to be completed smoothly.

## References

- Centers for Disease Control, Ministry of Health and Welfare (May 19, 2021). *The Central Epidemic Command Center has raised the national pandemic alert to Level 3 from now until May 28 in response to the continuing seriousness of the local pandemic [press release of Centers for Disease Control, Ministry of Health and Welfare]*. Retrieved from: <https://www.cdc.gov.tw/Category/ListContent/EmXemht4IT-IRAPrAnyG9A?uaid=aBdtRS-xzztQeAchjX9fqw>
- Chan, H. W., Chang, F. C. (2014). A Study of Factors Affecting Learning Achievement of Junior High School Students. *Journal of National Taichung University: Education*, 28(1). p.49-76.
- Chen, L. C. (2008). A Study of the Influence on the Accommodation and Learning Results of Hospitality Students' Internship-The Example of National Penghu University Department of Hospitality. *Journal of Kaohsiung Hospitality College*, 10(1), 41-46.
- Chen, So-Chen, Yang, Stephen J. H., & Hsiao, Chia-Chang. (2016). Exploring student perceptions, learning outcome and gender differences in a flipped mathematics course. *British Journal of Educational Technology*, 47(6), 1096-1112. doi:10.1111/bjet.12278
- Department of Information and Technology Education, MOE (2017). *Program of Ministry of Education for Digital Learning Promotion in Primary and Secondary Schools*. Retrieved on September 2, from: <https://dlearning.ncku.edu.tw/plan/target>
- Executive Yuan (2002). *Challenge 2008: National Development Priorities Plan* (version of May 31, 2002).
- Hsiao, C. C. (2017). Correlation between students' learning motivation and academic achievements: The multilevel moderated mediation of creative teaching. *Bulletin of Special Education*, 42(1), 79-111. doi: 10.6172/BSE.2017.03.4201004
- K-12 Education Administration, MOE (2021). *Flexible and Diversified Approach to Online Learning in Response to Pandemic in Schools below Senior High Schools*. Retrieved on May 26, from: [https://cpd.moe.gov.tw/page\\_two.php?id=34840](https://cpd.moe.gov.tw/page_two.php?id=34840)
- Keller, J. M.(1983). *Motivational design of instruction*.
- Keller, J. M.(1984). The use of the ARCS model of motivation in teacher training. *Aspects of educational technology*, 17, 140-145.
- Keller, J. M. (1987). *IMMS: Instructional materials motivation survey*. Florida State University.
- Keller, J. M. (2010). The Arcs Model of Motivational Design. In *Motivational Design for Learning and Performance: The ARCS Model Approach* (pp. 43-74). Springer US. [https://doi.org/10.1007/978-1-4419-1250-3\\_3](https://doi.org/10.1007/978-1-4419-1250-3_3)

- Ku, C. H., & Chen, W. C. (2010). *Exploring The Students' Attitude, Motivation And Self Efficacy In Physics Learning: A Study In The Universities Of Technology In Taiwan*. In 2010 Annual Conference & Exposition (pp. 15-565).
- Li, Y. H. (2017). The Relationships between Learning Motivation, Learning Strategy, and Learning Performance of E-learning. *Journal of Management and Operations*, 14.
- Ministry of Education (2021). *Digital Learning Deepening Program*. Retrieved on October 5, from: <https://tweloe.org/>
- Moore, M. G., & Kearsley, G. (2012). *Distance education: A systems view of online learning (3rd ed.)*. Belmont, CA: Wadsworth Publishing Company.
- Pintrich, P. R. (1991). *A Manual for the Use of the Motivated Strategies for Learning Questionnaire (MSLQ)*. Qin, J. R., Fu, G. S. (2017). Study of Social Interaction in MOOC Course Discussion Forum: Case Study of <Modern Educational Technology> Course on MOOC Platform of Chinese Universities. *The Chinese Journal of ICT in Education*, 23(5), 20-24.
- Safibullaevna, A. O., Karamtdin Kizi, J. M., Engalichev, M. I., & Safibullaevna, B. S. (2020). *Online-learning organization methodology as component of it technologies at students of technical universities*. 2020 International Conference on Information Science and Communications Technologies, ICISCT 2020.
- Singh, V., & Thurman, A.(2019).How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018).*American Journal of Distance Education*,33(4), 289-306. doi: 10.1080/08923647.2019.1663082
- Strogetskaia, E. V., Kazarinova, N. V., & Pashkovsky, E. A. (2021). *Russian and Foreign Postgraduate Students in a Technical University: Problematic Fields of Online Learning*. Proceedings of the 2021 Communication Strategies in Digital Society Seminar, St. Petersburg, Russia, 2021, pp. 181-184, <https://doi.org/10.1109/ComSDS52473.2021.9422843>
- Sung, H. Y., & Hwang, G. J. (2013). A collaborative game-based learning approach to improving students' learning performance in science courses. *Computers and Education*, 63, 43-51. <https://doi.org/10.1016/j.compedu.2012.11.019>
- Sung, Y. T. (2012). *Research Methodology for e-Learning (First Version)*. Taipei City: Higher Education.
- UNESCO. (2015). *Incheon Declaration and SDG4*. Retrieved from <https://en.unesco.org/themes/education2030-sdg4>
- Wang, F. S. (2002). *Digital Education and E-learning Programs*. Retrieved from: [https://www.teldap.tw/Introduction/introduction\\_2\\_6.html](https://www.teldap.tw/Introduction/introduction_2_6.html)



- Wang, H. L., Shen, C. S. (2013). Effects of Cooperative Learning Teaching Strategy on College Students' Learning Effectiveness and Attitude: An example of Child Developing Evaluation and Guidance. *Journal of National Taichung University: Education*, 27(1), p.57-76.
- Wu, C. S. (2012). *Mastering Student Learning MP3*. September 18, 2012, Retrieved from: [https://epaper.naer.edu.tw/index.php?edm\\_no=48&content\\_no=1339&preview](https://epaper.naer.edu.tw/index.php?edm_no=48&content_no=1339&preview)
- Wu, R. (2015). When "discussion" is moved to "online platform" - Exploring the incentive mechanism of "online discussion" in the J-course teaching network of Peking University. *Modern Educational Technology*, 25(3), 115-121.

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***ASEAN – Canada Strategic Partnership:  
Progress, Element of National Interest, Prospects and the Role of Viet Nam***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

ASEAN is a prestigious regional organization and an important partner of many countries around the world. While global multilateral institutions have constantly been facing difficulties and challenges, ASEAN has succeeded in maintaining its stable operations and its' central role in the regional cooperative structure. A variety of its' partners has expressed the desire to deepen and promote their relationship with ASEAN, among which Canada just announced its Indo-Pacific Strategy focusing on the partnership expansion in the Indo-Pacific region and strengthening Canada's ties with ASEAN, joining the East Asia Summit (EAS) and ASEAN Defense Ministers Meeting (ADMM) Plus. Being affected by theories of middle power, Canada's diplomats have pursued multilateral diplomacy. However, Canada's efforts do not necessarily match with ASEAN's habit of approaching a bilateral Canada – ASEAN Strategic Partnership, and it might take a longer way for both parties to meet each other's ends. Our research looks into theories of national interests and middle power, followed by the progress of this bilateral cooperation towards their Strategic Partnership along with the challenges keeping Canada, despite its multiple efforts, not yet becoming a participant in a selection of ASEAN's central events. In addition, our research also aims to explain the origins of such challenges by considering both sides' national interests as the vital element. By the end, we expect to visualize the developing path of ASEAN-Canada relations in the upcoming period and provide suggestions on the role of Vietnam in strengthening Canada's cooperation with ASEAN.

Keywords: ASEAN, Canada, Strategic Partnership

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## **Introduction**

In recent years, the escalating tension in the major powers' balance of power has created space and opportunities for rising middle powers and regional institutions to take their positions in international issues and involvement in other regions. Among these significant risers, Canada has actively shown its dedication to acclaiming a deserving position in international affairs, far from being recognized as just a backyard neighbor of the US. In the Asia Pacific, China's intensifying power and the US's interference in the region have signified the role and position of the Association of Southeast Asian Nations (ASEAN) as a regional key player, an increasingly important partner of many countries around the world. In recent times, both ASEAN and Canada have been showing and creating concrete development in their bilateral relations concerning various cooperating fields. The ASEAN – Canada relationship has been influenced by the element of national interest from both sides. Canada maintains its national interest to pursue the position of a middle power with the characteristic of prioritizing multilateral diplomacy, while ASEAN aims to preserve its member's self-deciding capability and strengthen its leading position in maintaining regional stability, especially in the time of major powers balancing.

## **Theories of National Interest**

Within the field of international relations, the national interest has frequently been assumed to comprise the pursuit of power, security, and wealth. Neorealist and liberal institutionalist scholars tend to define the national interest as revolving around security and power. Liberal scholars see national interests as an aggregation of the preferences of domestic political groups. Constructivist scholars reject that states' national interest is static and can be assumed a priority; rather, they argue that states' preferences are shaped through social interactions and are changeable.

However, the most common approach to the concept of national interest is a finite set of national objectives which, by possessing a large measure of the formal attributes by which the national interest is defined, are considered its proper subsets.

## **Theories of Middle Power**

After World War II, it can be said that Canadian diplomats such as Hume Wrong (Canada Ambassador to the US 1946-1953), Norman Robertson (Deputy Secretary of State 1941), Lester Pearson (Secretary of State for Foreign Affairs 1948-1957, Prime Minister 1963-1968), John W. Holmes (Assistant Deputy Secretary of State for Foreign Affairs 1953) were those influenced by international relations theories of a middle power in the shaping its foreign policy.

Realism evaluates the “middle power” according to its hierarchical position and influence on the system, and the middle power is considered to locate the highest position of the middle order, only following the great powers, in the top of the 20 to 30 most powerful countries in the world, not to be confused with other middle countries in the power order of more than 200 countries. Meanwhile, liberalism identifies the middle power based on function, specialization, and expression of multilateralism.

John W. Holmes (1984) argued that the motivation for implementing the foreign policy of the middle powers is the national interest, in the case of Canada, the national interest is to

protect the Canadian people and bring prosperity to the country (p.369). Canada believes that the country's position in the international community will be enhanced if it is a middle power. Canada is geographically located next to the United States, to be unable to compete in either economy or military with the United States, somewhat being eclipsed by the United States, but still wants to be properly recognized by the world. Canada's role as a middle power can help to gain its national interest, to develop a stronger country, while maintaining its position in international politics by participating in multilateral institutions wherever and whenever to meet its demand.

With such awareness, Canadian governments have deployed orientations in foreign policy commensurate with the status and identity of a middle power, prioritizing multilateral diplomacy. In the Asia-Pacific, Canada has committed to play an important role in the region by building partnerships with countries, strengthening economic networks, and providing official development assistance (ODA). Canada has actively participated in important institutions with common interests in the region such as ASEAN. The economic and trade cooperation between Canada and countries in South East Asia has made an important contribution to Canada's economy.

### **Progress of the ASEAN - Canada Cooperation Towards a Strategic Partnership**

ASEAN is a prestigious regional organization and an important partner of countries around the world. In the context of global multilateral institutions facing difficulties and challenges, ASEAN has succeeded in maintaining operations, and maintaining its central role and position in the regional cooperation structure. Many partners, including Canada, have expressed their desire to promote and deepen the partnership with ASEAN.

Following the strategy of a middle power by multilateral diplomacy, Canada has recognized the central role of ASEAN as strengthening cooperation with multilateral institutions and mechanisms in the region. The two sides established ties in 1977. Canada became one of the founding members of the ASEAN Regional Forum (ARF) in 1994. This country wishes to soon complete the necessary process to become a Strategic Partner of ASEAN. Canada considers ASEAN to be an important market, the largest politically influential organization in Asia, shaping the regional institutional structure.

However, the cooperation between Canada and ASEAN remains some limitations as follows. Firstly, despite its efforts, Canada has not yet become a member of the important ASEAN meetings including the East Asia Summit (EAS) and the ASEAN Defense Ministers' Meeting Plus (ADMM+). ASEAN has established a strategic partnership with China (2003), South Korea (2010), India (2012), Australia (2014), the United States (2015), New Zealand (2015), Japan (2015), Russia (2018), and the EU (2020). Which, China, Australia, the US, and India are the four comprehensive strategic partners of ASEAN. These countries are all members of EAS and ADMM+. Therefore, joining these mechanisms seems to be the priority condition for Canada towards an ASEAN-Canada Strategic Partnership. Secondly, although bilateral trade is the main cooperation, the two sides have not yet signed the ASEAN-Canada Free Trade Agreement. Thirdly, the Trudeau Administration mainly focused on the economy without other substantive cooperation in the area of defense and security. There are many areas suitable for the needs of the two sides such as counter-terrorism, violent extremism, transnational crime, cybersecurity, the response to nature disasters, etc. These are potential areas for the two sides to further promote cooperation. The success and limitations of the

ASEAN – Canada relationship have been influenced by the element of national interest from both sides.

### **The Element of National Interest**

*Canada's national interest is based on two main factors including the implementation of the foreign policy of a middle power and the priorities of different Canada Prime Ministers.*

Firstly, Canada has steadily implemented the foreign policy of a middle power, prioritizing multilateral diplomacy. Canada has actively participated in ASEAN mechanisms that enhance Canada's position in the Asia-Pacific region, developing its economy. This country has established a political network, having diplomatic representation in all 10 ASEAN member states. In 2011, the two sides adopted the Canada-ASEAN Joint Declaration on Trade and Investment, which provides a platform for regular exchanges of information on opportunities to promote trade and investment between Canada and ASEAN (Government of Canada, 2023). Minister of International Trade Edward D. Fast addressed at the Ceremony in Jakarta that Canada is one of ASEAN's longest dialogue partners, the two sides have achieved many successes together over the years, and the declaration is an important milestone, creating new jobs and open new doors of opportunity for Canadians (Government of Canada, 2011). ASEAN and Canada both benefit from close cooperation in trade and investment. In 2021, bilateral merchandise trade increased by 17.5%, Canadian investment in ASEAN increased by 9.3%, and ASEAN investment in Canada increased by 4.6 % as compared to those of the year 2020 (ASEAN, 2022).

Canada has initially succeeded in showing a more active role in the region, enhancing Canada's image and role in ASEAN. Canada has increasingly assisted ASEAN in building a people-oriented, people-centered community through programs that encourage the development of various human capacities. From 2016 to 2024, Canada cooperated with the International Labour Organization (ILO), providing USD 7.2 million to implement final projects and protect the labor rights of immigrants, especially women, through TRIANGLE in ASEAN (International Labour Organization, 2023). During the COVID-19 pandemic, Canada contributed CAD 3.5 million to the COVID-19 ASEAN Response Fund, providing more than 10 million items of personal protective equipment (PPE) to ASEAN (ASEAN, 2022). Those contributions to ASEAN have created a premise for Canada to enhance relations between the two sides towards a Strategic Partnership, consolidating Canada's national interest in multilateral diplomacy of a middle power. However, in comparison with other middle powers such as Australia, the development assistance of Canada to ASEAN is modest, for example, Australia's ODA to ASEAN and Mekong Program 2021-2022 is USD 74.2 million (Australian Department of Foreign Affairs and Trade, 2023). In sum, based on the policy of a middle power, Canada has promoted its national interest in South East Asia and ASEAN nations, favoring its position and securing the prosperity and integrity of the state.

Secondly, Canada's national interests are also based on priorities in the foreign policy of different Canadian Prime Ministers, between Conservative and Liberal Governments, and between Minority and Majority Governments. The Liberals have emphasized Canadian values and international responsibilities towards peace and security, while the Conservatives have focused on defending Canadians and Canada's national interests (Chapnick & Kukucha, 2016). In the case of international trade, the Conservative government defined the national interest not only in economic terms but also based on the government party's electoral

calculus (Chapnick & Kukucha, 2016). Canada's national interest seems to be variable in the case of ASEAN. The minority Paul Martin (the Liberals) and Stephen Harper Government (the Conservatives) missed the opportunity to participate in ASEAN's important mechanisms at the early stage such as EAS, ADMM+, signing the ASEAN-Canada Free Trade Agreement (FTA), while Australia – as same as a middle power – all be a part of EAS in 2005, ADMM+ in 2010, Australia and New Zealand signed the AANZFTA Agreement in 2009. Canada is currently the only major economy in the Asia-Pacific region that is not a member of the EAS. The Trudeau government's long-term commitment to the region was also questioned when Canada unexpectedly announced its withdrawal from the Trans-Pacific Partnership (TPP) negotiations on the sidelines of APEC in Da Nang at the last minute in November 2017. Until December 2018, Canada actively participated in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and became its member. Recently, the minority Trudeau Government has launched the Indo-Pacific Strategy (IPS), leaving a legacy for his third term, marking an important milestone in Canada's foreign policy in the area.

The IPS, published on November 27, 2022, reflects Canada's foreign policy of a middle power in the region, ensuring its national interests, and supporting a free, open, and inclusive Indo-Pacific. The IPS has contributed to promoting, supplementing, and consolidating the implementation of Canada's foreign policy to maintain the world order in which Canada holds the position of a middle power within other countries. In particular, the IPS strengthens the cooperation with multilateral institutions and mechanisms in the region. Recognizing the central role of ASEAN, Canada is wishing to establish a Strategic Partnership with ASEAN, becoming a member of the East Asia Summit (EAS) and the ASEAN Defense Ministers' Meeting Plus (ADMM+), signing Free Trade Agreement (FTA) between ASEAN and Canada. The two sides hold a Summit to celebrate the 45th anniversary of ASEAN-Canada relations in Cambodia in November 2022, and the 20<sup>th</sup> ASEAN-Canada Dialogue in Malaysia in May 2023. At present, Canada considers ASEAN to be an important market, an organization in Asia that has the largest political influence, shaping the institutional structure in the region. Assistant Deputy Minister for Asia – Pacific of Global Affairs Canada Weldon Epp at the Dialogue conveyed Canada's unwavering support for ASEAN Community-building efforts, assistance towards the region's recovery from the COVID-19 pandemic, and commitment to ASEAN Centrality through its active participation in ASEAN-led mechanisms (VNA, 2023). The study revealed that ASEAN-Canada FTA would yield substantial economic benefits, including a remarkable boost of USD 39.4 billion (1.6%) to ASEAN's GDP and USD 5.1 billion (0.3%) to Canada's. However, negotiating and upgrading the relations recently with ASEAN is an arduous task with challenges.

*For ASEAN, its “national”, or rather, regional interest surrounds preserving the grounding principle of ASEAN, often referred to as the “ASEAN way”, based upon key factors: informality; consultation and consensus; and non-interference.*

Throughout their lengthy history of being divided and colonized by foreign powers, the Southeast Asian states have spent their fair share of time without their ability for self-decision. Even after all the member state advances their independence, the Southeast Asian region has been continuing to be in an unstable and competitive environment, witnessing years of balancing power between major states. Despite continuous challenges and initial low expectations of any possible success as a regional institution (Acharya, 2017, p. 30), ASEAN has earned the recognition it deserves along with a position in world politics, for both its economic development and contribution to regional security balance, maintaining a significant level of cohesion in handling issues both outside and within the region.

54 years since its humble birth in 1967, ASEAN has come a long way. As of 2019, ASEAN's combined merchandise trade volume is US\$2.8 trillion and its share of the world nominal GDP is 3.7%, equivalent to the 5th largest economy in the world. Over half of ASEAN's population of 655.9 million people are enjoying their middle-class status with sustainable growth in a well-connected system of travel and trade. The member countries now have fulfilled the establishment of the ASEAN Community in 2017 (ASEAN Secretariat, 2021). Politically and security-wise, "the Balkans of Asia" has grown to become a credible platform for consultations and exchanges, between not only its member countries but also major powers interested in the stability and prosperity of the area (Pitsuwan, 2017, p. 19). Hence, ASEAN's interests mainly surround the preservation of its grounding principle often referred to as the "ASEAN way", based upon key factors: informality; consultation and consensus; and non-interference.

### **A. Informality**

Most ASEAN member states have histories of being colonies of former imperial powers. Even after the time of colonialization, this area has continuously been in the middle of great powers' competition. In addition to that, these member states have highly varied cultural and traditional heritage. Forms of political institutions and political stability in Southeast Asia are widely spread among the members. They work closely, preferably informally, with each other on mutual matters affecting the sustainability and stability of the region. Informality is now a well-known tradition of ASEAN members and has been a productive approach to the organization's development. Generally, a formal meeting is a time and place to officially talk, negotiate, and conclude on issues that bother involved members. This formality helps the involved parties understand the demands and expectations that they have for each other. However, the collision between different interests often makes it difficult for parties to find a mutual agreement, especially among such a diverse group as ASEAN.

Informality, on the other hand, not only helps the negotiating party to have an opportunity to better capture the roots of their interests but also brings the people directly involved in meeting and negotiating closer to each other through exchanging personal views. ASEAN leaders consider that to be an effective and necessary way to work better together. Frequent informal working breakfasts, lunches, and dinners subsequently lead to retreats. In some cases, "ASEAN Foreign Ministers find their retreat more interesting", in the way that it encourages more interaction and deeper talk on "longer-term issues facing ASEAN" (Chalermphanupap, 2017, p. 79-91). Informality laid down the groundwork for ASEAN's method of decision-making. On and off the record, both the official parties and the personal individuals have the chance to put in their opinions on mutual issues. Such flexibility created by informality provides member states and officials a comfortable atmosphere and mentality to progressively work on differences and enhance mutual interests, which strengthens the regional status of sustainability.

### **B. Consultation and Consensus**

The mentality of ASEAN is the same as that of a village, in which members join in and try to resolve rising problems, "as part of their shared responsibility of belonging to the same village" (Chalermphanupap, 2017, p. 79-91). Similar to the people of a village, ASEAN member states are expected to equally and respectfully take part in the work of the organization. To do so, they must be "willing to make some national or domestic adjustment of policy and attitude to facilitate a consensus decision. It is complex to measure consensus



and consultation when it comes to decision-making. And ASEAN does require decision-making by a two-thirds majority vote if there is no consensus (ASEAN Secretariat, 2021).

However, so far, voting has never been a preferable choice for ASEAN members. That does not mean that ASEAN has always been able to find a mutual voice. Decision-making based solely on consensus and consultation is not usually the most effective way for any group to advance the best possible solution. Rather, it creates an open door for every member to get along and find one way or another to develop suitably. Concluded decisions would not leave room for any possible sharp division between two contrasting parties. Consensus and consultation further support the ASEAN Way's motivation to build a cohesive Southeast Asian community. Even though one can argue that complete consensus and consultation are highly difficult to achieve, they are highly suggestive and encouraging for the stability of the community, assuring member states that their independent interests would be as valuable as the groups' shared concerns.

### **C. Non-interference**

ASEAN has worked hard to ensure stable regional development by affirming that its members' voices are equally heard, and no state is left behind in the development of the whole region. However, consensus and consultation do not mean growing together at all costs. Since the 1967 Bangkok Declaration – ASEAN's founding document, the organization has included the principle of non-interference. Yet the conduction of an official decision or announcement requires complete consensus of all member states. These values have been the main focus of the organization from the very beginning. Most ASEAN member states have histories of being colonies of former imperial powers. In addition to that, these member states have highly varied cultural and traditional heritage. Forms of political institutions and political stability in Southeast Asia are widely spread among the members. Hence, non-interference is as important to them as consultation and consensus.

Despite its accomplishments and long-termed promises, ASEAN has always been criticized for its limited institutionalization and legislation, its lack of conflict-resolving mechanisms, and its distance from the "one identity" that it has been claiming for. Their interdependence is not living up to its promising potential. Intra-ASEAN trade is only a quarter of its total global trade. Many member states' products are identical, compete directly in the global market, and cannot compensate for each other in the intra-regional market (ASEAN, 1995). These are the key factors claimed to be holding back even further and stronger ASEAN's development compared to its potential. Yet, if the last decade was a rough journey for Western states and supposedly more successful multilateral organizations, ASEAN's growth and sustainability have maintained relatively stable, even under the impacts of the COVID-19 Pandemic.

ASEAN and its mechanism have worked as an official forum not only to connect the member states, but also to provide the platform for outer states interested in the area to come, discuss, and get involved with the members. With this way of connection, the member states expect to use ASEAN as a mutual ground to help outer states better understand them and to avoid being directly involved in the balance of power between greater states. On the other hand, in mutual disputes with any of the members, outer powers are expected to have to work with the group as a whole to find a mutual voice. This decreases the level of disadvantages for smaller states, as well as encourages greater powers to work multilaterally in resolving bilateral issues. Some examples of this approach are the Declaration on Conduct of Parties in the South China Sea (DOC), and the Code of Conduct (COC). These have been the key

mechanism for ASEAN members to work with parties both within and outside the organization in resolving the South China Sea dispute matters. Despite China's consistent mentality to bilaterally work on territorial disputes with states directly concerned, ASEAN has still managed to keep South China Sea disputes as multilateral issues for ASEAN to work together.

Besides being the guiding principle for behaviors among ASEAN members, the ASEAN Way also represents the level of mutual understanding that these members share in underlying the core interests of this regional institution. These interests should be seen as vital for ASEAN's existence and position in regional and international politics. ASEAN is an economic security community first expected to provide its member with a sustainable and peaceful environment to develop independently. Though the mark of the ASEAN Community establishment in 2017 shows the progress of moving forward to a more interdependent society, its original interests have still stood strong. At its core, ASEAN members are mostly developing states who still highly appreciate a sense of independent security while working their way up the economic ladder.

### **The Role of Vietnam**

Vietnam welcomes Canada's further cohesion with ASEAN, contributing to peace and prosperity in the region. Vietnam has affirmed its position in the region through the role of ASEAN Chair in 2020, helping ASEAN overcome the difficulties of coping with the COVID-19 pandemic. Based on its prestige, Vietnam can play an important role in enhancing Canada's cooperation with ASEAN. Recently, Assistant Deputy Minister for Asia – Pacific of Global Affairs Canada Weldon Epp only chose Viet Nam to visit on his trip to South East Asia to attend the 20<sup>th</sup> ASEAN-Canada Dialogue in Malaysia in May 2023, in the context of the 50<sup>th</sup> anniversary of diplomatic relations between Viet Nam and Canada.

Firstly, Vietnam can become a gateway for Canada to strengthen its economic ties with ASEAN, connecting Canada's trade and investment activities in the region. Vietnam established a comprehensive partnership with Canada in 2018 and has become Canada's largest trading partner in ASEAN. Canada is also Vietnam's third trading partner in the Americas region, after the United States and Mexico. In 2022, the total trade exchange between Vietnam and Canada reached 7 billion USD, increasing 16.5% compared to 2021 (Bao Thoa & Can Dung, 2023). However, the two sides economies are currently facing many difficulties and challenges due to the worldwide economic recession, caused by the COVID-19 pandemic and the war in Ukraine. The two-way trade turnover between Vietnam and Canada in the first four months of 2023 reached only USD 1.9 billion, decreasing 16,3% in comparison to the same period in 2022 (Bao Thoa & Can Dung, 2023). To increase the FDI investment of Canadian enterprises in Vietnam in the post-COVID-19 period, Vietnam needs to prepare well conditions in terms of investment and business environment to attract investment efficiency from Canada to Vietnam.

Secondly, Vietnam can assist Canada in understanding and accessing ASEAN's criteria for ensuring regional peace and security. In November 2022, the 17<sup>th</sup> East Asia Summit focused the collaboration on advancing women's economic empowerment, strengthening energy cooperation, and promoting volunteerism for sustainable development in addressing new and emerging issues and challenges, towards a comprehensive post-COVID-19 pandemic recovery (Summit Charman, 2022). While Canada's Indo-Pacific Strategy outlines five strategic objectives: first, promoting peace, resilience, and security; second, expanding trade,

investment, and supply-chain resilience; third, investing in and connecting people; fourth, building a sustainable and green future; and fifth, positioning Canada as an active and engaged partner in the Indo-Pacific (Government of Canada, 2022). Although Canada has a comparative advantage and achievements at multilateral forums such as the United Nations, the Commonwealth, and the Francophonie in the field of comprehensive peacekeeping and security, Canada should learn how to apply these advantages in the specific mechanisms of ASEAN. Meanwhile, Vietnam is a founding member of the ASEAN Regional Forum (ARF), which has been selected as a training ground for United Nations peacekeeping forces in Southeast Asia. In 2021, Canada first established a permanent Defense Attaché Office in Vietnam, visiting the Vietnamese peacekeepers, sharing the same view to strongly support peacekeeping, gender equality, and women's empowerment.

Thirdly, Viet Nam has a reputation for its ability to handle crises, therefore, Vietnam can advise effective solutions to Canada to enhance cooperation with ASEAN in supporting the response to major disasters in the region. ASEAN is under pressure to be a centrality and often copes with crises in the region, such as the COVID-19 pandemic recently. Canada can take this opportunity to leverage its advantages in health care to support ASEAN countries. The Trudeau Government highly appreciated Vietnam's strong and proactive measures against the COVID-19 epidemic, considering Vietnam as a model in responding to the pandemic. In discussions with Viet Nam, Canadian officials often affirm the desire to continue working closely with Vietnam on issues of mutual concern at regional and international forums.

Fourthly, Viet Nam towards become a developed, high-income country by 2045, attracting many other middle countries to collaborate in the region, and having good relationships with superpowers and influence small countries. Recently, Australian Prime Minister Anthony Albanese and South Korean President Yoon Suk Yeol visited Viet Nam for the first time in their new position. Australian Prime Minister Anthony Albanese announced assistance of 105 million Australian dollars for the cooperation with Viet Nam in responding to climate change, energy transition, and infrastructure (Government of Viet Nam, 2023). President Yoon Suk Yeol said that Vietnam is a key partner in the implementation of its Indo-Pacific strategy and South Korea-ASEAN Solidarity Initiative for freedom, peace, and prosperity, affirmed that Korea will cooperate and exchange more closely with Vietnam (Minh Nhat, 2023). As a middle power, Canada should take advantage of the relations with Viet Nam in the context of the 50th anniversary of diplomatic relations in 2023.

## **Conclusion**

Both ASEAN and Canada recognize the importance of working together in multi areas. Canada is looking forward to the adoption of a joint statement to establish Canada's new status as a strategic partnership of ASEAN at the ASEAN - Canada Ministerial Meeting expected in September 2023. In such progress, Viet Nam, as one of the top growing countries in ASEAN and the region with a Comprehensive Partnership with Canada, can further promote and improve its bilateral relation with Canada. Among subjects of cooperation, it is suggestively crucial for Viet Nam to attach its interests to ASEAN, while Canada considers Viet Nam in the broader picture of ASEAN and a bridge for Canada to ASEAN, Canada's relationship with Viet Nam as the base ground for its future stronger cooperation with ASEAN.

*Note:* Pham Thuy Trang and Nguyen Phu Hai are working at Ministry of Foreign Affairs of Viet Nam. Their research only reflects the personal views and does not represent the relevant agencies and organizations.

## References

- Acharya. Amitav (2017). ASEAN@50: Reflections on Its Past, Present and Future. *ASEAN Future Forward Anticipating the Next 50 Years, Institute of Strategic and International Studies (ISIS) Malaysia*, p.30.
- ASEAN (2022), “ASEAN – Canada 45<sup>th</sup> Anniversary Commemorative Summit Joint Statement”, *Association of Southeast Asia Nations*, November 13, 2022, <https://asean.org/asean-canada-45th-anniversary-commemorative-summit-joint-statement/>
- ASEAN. The Treaty on the Southeast Asia Nuclear Weapon-Free Zone (SEANWFZ). 1995.
- ASEAN Secretariat (2021), ASEAN Key Figures 2020. *The ASEAN Secretariat*, [https://www.aseanstats.org/wp-content/uploads/2020/11/ASEAN\\_Key\\_Figures\\_2020.pdf](https://www.aseanstats.org/wp-content/uploads/2020/11/ASEAN_Key_Figures_2020.pdf)
- Bao Thoa & Can Dung. Thu truong Do Thang Hai tiep va lam viec voi Thu truong Bo Cac van de toan cau Canada. *Congthuong.vn*, <https://congthuong.vn/thu-truong-do-thang-hai-tiep-va-lam-viec-voi-thu-truong-bo-cac-van-de-toan-cau-canada-256600.html>
- Chalermphanupap. Termsak (2017). Deciphering ASEAN. *ASEAN Future Forward Anticipating the Next 50 Years, Institute of Strategic and International Studies (ISIS) Malaysia*, p. 79-91.
- Chapnick, Adam & Kukucha, Christopher J. (2016). The Harper Era in Canadian Foreign Policy: Parliament, Politics and Canada’s Global Posture, UBC Press, p. 86.
- Fast. Ed (2011). Address by Minister Fast at Ceremony to Adopt ASEAN – Canada Joint Declaration on Trade and Investment. *Government of Canada*, [https://www.international.gc.ca/media\\_commerce/comm/speeches-discours/2011/2011-032.aspx?lang=eng](https://www.international.gc.ca/media_commerce/comm/speeches-discours/2011/2011-032.aspx?lang=eng)
- Government of Australia (2023). ASEAN and Australia. *Department of Foreign Affairs and Trade, Australian Government*, <https://www.dfat.gov.au/geo/southeast-asia/asean-and-australia>
- Government of Canada (2023). Canada and the Association of Southeast Asian Nations (ASEAN). *Government of Canada*, [https://www.international.gc.ca/world-monde/international\\_relations-relations\\_internationales/asean/index.aspx?lang=eng](https://www.international.gc.ca/world-monde/international_relations-relations_internationales/asean/index.aspx?lang=eng)
- Government of Canada (2022). Canada's Indo-Pacific Strategy. *Government of Canada*, <https://www.international.gc.ca/transparency-transparence/indo-pacific-indo-pacifique/index.aspx?lang=eng>
- Government of Viet Nam (2023). Thu tuong Uc cong bo khoan ho tro hang tram trieu dollar voi Viet Nam. *Viet Nam Government News*, <https://baochinhphu.vn/thu-tuong-australia-cong-bo-khoan-ho-tro-hang-tram-trieu-dollar-voi-viet-nam-102230604122222124.htm>.

Holmes. John (1984). Most safely in the middle. *International Journal* 39 (2), 369.

International Labour Organization (2023). Promoting and Protecting the Rights of ASEAN Migrant Workers (ASEAN TRIANGLE II). *International Labour Organization*, <https://www.ilo.org/DevelopmentCooperationDashboard/#a3rjqic>

Minh Nhat (2023). Viet Nam la doi tac trong tam trien khai Chien luoc An Do Duong – Thai Binh Duong va sang kien Doan ket Han Quoc – ASEAN. *The World and Viet Nam Report*, <https://baoquocte.vn/viet-nam-la-doi-tac-trong-tam-trien-khai-chien-luoc-an-do-duong-thai-binh-duong-va-sang-kien-doan-ket-han-quoc-asean-232014.html>

Nugroho. Syryo (2023). ASEAN and Canada must seek common ground to finalize Free Trade Agreement. *The Diplomat*, <https://thediplomat.com/2023/05/asean-and-canada-must-seek-common-ground-to-finalize-free-trade-agreement/>

Pitsuwan. Surin (2017). Diagnosis of the Past and Prognosis for ASEAN after 50: A Personal Perspective. *ASEAN Future Forward Anticipating the Next 50 Years, Institute of Strategic and International Studies (ISIS) Malaysia*, p. 19.

Summit Chairman (2022). Advancing Women’s Economic Empowerment, Strengthening Energy Cooperation for a Comprehensive Post-COVID-19 Recovery, and Promoting Volunteerism for Sustainable Development. *ASEAN 17<sup>th</sup> East Asia Summit (17<sup>th</sup> EAS)*, [https://eastiasummit.asean.org/storage/eas\\_statements\\_file/Fwm4V3dB5Y7jQiPvtqi9nKTeFbWbmjp9qeUA09Sl.pdf](https://eastiasummit.asean.org/storage/eas_statements_file/Fwm4V3dB5Y7jQiPvtqi9nKTeFbWbmjp9qeUA09Sl.pdf)

VNA (2023). ASEAN, Canada vow to bolster longstanding partnership relations. *Vietnamplus.vn*, <https://en.vietnamplus.vn/asean-canada-vow-to-bolster-longstanding-partnership-relations/253932.vnp>

***The Development and Challenges of the Old Age Allowance Program in Thailand  
After the Policy Reformation in 2009***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

The phenomenon of an aging society is being observed worldwide, and according to the World Bank, Thailand is expected to transition from an aged society to a super-aged society, with older individuals comprising 20 percent of the total population by 2035. Understanding aging policies is crucial for effectively addressing the future challenges posed by an aging society in Thailand. The implications of an aging society extend to various aspects, such as the labor force, economic development, and education planning. In 2009, the Thai government successfully expanded the social pension system for older individuals who were not eligible for other pension schemes, such as the Civil Servant Pension, by implementing a non-contributory pension program. This study aims to provide an overview of the social pension system and analyze the problems and challenges that have emerged after the policy transformation in 2009. The study adopts a qualitative approach, utilizing document analysis as the primary method. Before 2009, the Old Age Allowance program only provided benefits to older individuals classified as poor. However, after the reform in 2009, the program extended its coverage to over 5,652,893 older persons, encompassing 80 percent of the older population in Thailand. In conclusion, the social pension program underwent significant reforms and redesign in 2009 and beyond. Nevertheless, numerous challenges and problems have arisen within government organizations and among the program beneficiaries.

Keywords: Social Pension, Old Age Allowance, Aging Society

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## 1. Introduction

The phenomenon of an aging society is observed worldwide, presenting new challenges, particularly for government budgets supporting social pension systems, especially in countries with lower social welfare budgets, like those in Southern and Southeast Asia. Consequently, older individuals and their families face increased financial pressure during retirement. Recognizing the significance of this issue, the Thai government launched a welfare program in 1993 to address the aging population's needs. The Old Age Allowance (OAA) Program is a non-contributory program specifically tailored for the elderly population in Thailand. Initially, the program targeted individuals classified as poor, with eligibility criteria determined by local governments. However, in 2009, the program underwent reforms, transitioning to a universal approach that expanded coverage to a broader group of beneficiaries.

This study takes a qualitative approach to examine the development of the Old Age Allowance (OAA) program in Thailand from its inception in 1993 to 2022. The primary objective is to identify the problems and challenges that have arisen since the program's reform in 2009. The research comprises five sections: an introduction, methodology and literature review, a comprehensive analysis of the program's development over time, an exploration of the problems and challenges encountered during implementation, and a conclusion.

## 2. Methodology and Literature Review

This study adopted a qualitative approach to examine the development of the Old Age Allowance (OAA) program in Thailand, from its inception in 1993 until 2022. The focus was on identifying the problems and challenges that emerged after the program's reform in 2009. The research design encompassed the utilization of documentation as the primary data source, allowing for an exploration of the program's timeline and an examination of implementation issues following the reform. The methodology employed various components, including data collection, document analysis, data validation, ethical considerations, and data analysis.

To gather relevant information, a comprehensive review was conducted using official documents, newspapers, academic articles, pamphlets, acts, and ministerial regulations. The collected data underwent coding and were analyzed using qualitative content analysis techniques. This analysis identified themes and patterns in the documentation to address the research questions. To ensure data validity, the researcher cross-referenced multiple sources and consulted experts in the field. It is important to note that the study has limitations, particularly regarding the official documents, which may only provide information on the policy as it was implemented during that specific period. Numerous studies have highlighted the problems and challenges associated with the OAA program. One significant challenge consistently addressed in these studies is the need for clear program guidelines. Suwanrada and Kamwachirapitak (2007) identified inadequate budget allocation for older individuals and inconsistent criteria used by local government organizations for beneficiary screening as major issues. Similarly, Satidporn et al. (2017) emphasized the need for transparent and fair regulations and specifications to ensure the effective implementation of social welfare policies. They also emphasized the importance of stakeholder participation in policy determination to reduce disparities in access to government assistance programs.



In conclusion, the ambiguity surrounding program guidelines, particularly within the targeting approach, can be mitigated by transitioning to a universal approach. Suwanrada and Wesumperuma (2012) proposed that adopting a universal approach can address several drawbacks of the previous targeting approach, such as corruption and challenges in the beneficiary selection process. However, the study's findings also indicate that the new universal approach presents a significant challenge in corruption due to double registration in Thailand. After the reform from targeting to a universal approach, new problems, and challenges have emerged, distinct from those observed in previous studies. The study aims to shed light on the problems and challenges between 2009 and 2022 following the reform.

### 3. The Development of the Old Age Allowance Program in Thailand

This section covers three main topics. Firstly, it provides an overview of the social protection plans for retirees in Thailand, highlighting the differences based on the individual's career. Secondly, it delves into the details and concepts of the Old Age Allowance (OAA) program, offering comprehensive information. Lastly, the study addresses the development of the Old Age Allowance from 2009 and discusses the following timeline until 2022.

#### 3.1 The Social Protection Plans for Retirees in Thailand

Thailand has implemented a comprehensive array of social protection plans to safeguard the welfare of retirees in their later years, primarily focused on ensuring post-retirement financial security. These plans encompass three fundamental components: the government pension, the Social Security pension, and the Old Age Allowance program.

Program	Type	Eligibility
Pension (1902-present)	Contributory	Government officials/ Civil Servants
Social Security program (1991-present)	Contributory	Private sector employee
Old Age Allowance (1993-present)	Non-contributory	All Thai citizens excluded from the pension and social security program

**Table 1:** The Social Protection Plans in Thailand

The government pension holds a notable distinction as Thailand's inaugural pension program, with its inception dating back to 1902, when it was initially devised for civil servants. Historical evidence substantiates the continued existence and consistent provision of pension benefits to eligible recipients throughout the program's history. In contrast, the Social Security pension was established in 1991 to cater to employees in the private sector. This pension scheme serves as a dedicated vehicle for delivering retirement benefits to this particular workforce segment. Lastly, the Old Age Allowance program has been formulated to extend support to all Thai citizens who are ineligible for government pensions. By its non-contributory nature, this program grants older Thai citizens access to a pension regardless of their employment history. Notably, the Old Age Allowance program enjoys widespread

participation among the elderly population in Thailand, serving as a testament to its significance and its profound impact on the financial well-being of retirees.

### **3.2 The Old Age Allowance Program**

The Old Age Allowance Program, or the "Elderly Allowance Program," is a social welfare initiative in Thailand designed to financially support citizens aged 60 years and above. Established in 1993 by the Thai government, the program specifically addresses the unique needs and challenges the aging population faces. As a cash transfer program, it focuses on assisting elderly individuals who are not covered by the civil servant pension scheme. The main objective of the Old Age Allowance (OAA) is to offer social pensions to elderly citizens who lack alternative sources of income.

Eligibility for the program is determined by two criteria: being 60 years or older and holding Thai citizenship. Once enrolled and approved, beneficiaries receive monthly financial assistance from the government, depending on age brackets. For instance, individuals between 60 and 69 receive 600 baht, those between 70 and 79 receive 700 baht, and those aged 90 and above receive 800 baht. However, it is essential to note that the monthly allowance, ranging from 500-1,000 baht (equivalent to US\$18-30), falls below half of the poverty line.

The Ministry of Social Development and Human Security in Thailand administers the Old Age Allowance Program, oversees its implementation, manages applications, and disburses monthly allowances to eligible recipients. The program encountered new challenges when the government shifted its approach from targeting specific individuals to implementing a universal program to include a more significant number of elderly citizens. This strategic shift necessitated adjustments in program scope and implementation. Overall, Thailand's Old Age Allowance Program is vital in providing much-needed financial support to elderly citizens. However, addressing the program's limitations and adapting to the evolving needs of the aging population will be essential for its continued effectiveness.

### **3.3 The Development of the Old Age Allowance from 2009**

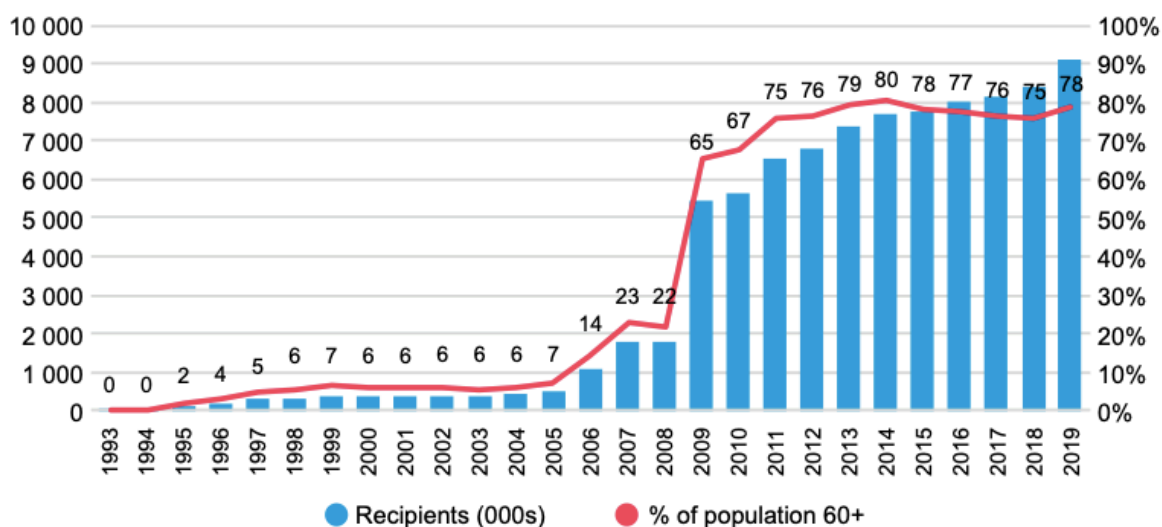
The Old Age Allowance program was established in 1992 under the government of Mr. Chuan Leekpai, who served as Prime Minister for two terms between 1992 and 1995. It is a social welfare initiative that financially supports individuals aged 60 years and above.

Initially, the distribution of living allowances for the older beneficiaries varied depending on the policies of each government. Local government organizations followed their guidelines, resulting in different approaches. In the early stages, there were delays in transferring the budget, prompting local administrations to utilize existing savings to pay the allowances. A guideline book was issued to address this issue, allowing the local government to use their savings temporarily. Once the funds were received, they were replenished as before.

Since 2002, the responsibility for paying the old age allowance has been transferred from the Department of Social Development and Welfare, Ministry of Social Development and Human Security, to the Department of Local Administration, Ministry of Interior. Municipalities and sub-district administrative organizations play a crucial role in the program by handling registration, verifying the eligibility of the older beneficiaries, and disbursing the living allowance. The old age allowance is a monthly payment of 500 baht per person,

intended for elderly individuals who are economically disadvantaged, abandoned, or without caregivers.

In 2009, the government introduced the universal allowance policy, except for older people who already receive welfare or other benefits from government agencies. Under the leadership of Mr. Abhisit Vejjajiva, the program's eligibility was expanded from a poverty-targeted scheme to a universal scheme. This change significantly increased the coverage, with approximately 80 percent of older people in Thailand now receiving the benefit. Data from Figure 1 indicates that in 2019, 78 percent of individuals aged 60 and above received the Old Age Allowance.



**Figure 1:** The Coverage of OAA from 1993-2019

**Source:** National Economic and Social Development Council (NESDC), Department of Local Government Promotion, Bangkok and Pattaya Municipality

In October 2011, the Cabinet of Thailand approved a tiered monthly allowance system specifically designed for elderly individuals. Under this system, individuals aged 60-69 would receive 600 baht per month, those aged 70-79 would receive 700 baht per month, individuals aged 80-89 would receive 800 baht per month, and those aged 90 and above would receive 1,000 baht per month.

Moving forward to 2022, the Cabinet again took action by allocating funds from the mid-2022 budget to provide special assistance to senior citizens. Approximately 8,300 million baht was set aside to benefit a significant number of individuals, specifically 10.9 million people aged 60 years and above.

Under the approved plan, these eligible senior citizens would receive a monthly allowance ranging from 100 to 250 baht per person. This financial support would be provided for six months. The specific monthly amounts are outlined below:

Individuals aged 60-69 would receive an old-age allowance of 600 baht per month and an additional 100 baht per month as special assistance, resulting in a total of 700 baht per month. Individuals aged 70-79 would receive an old-age allowance of 700 baht per month and extra assistance of 150 baht per month, totaling 850 baht per month. Individuals aged 80-89 would

receive an old-age allowance of 800 baht per month and an additional 200 baht per month as special assistance, amounting to 1,000 baht monthly. Finally, individuals aged 90 and above would receive an old-age allowance of 1,000 baht per month, supplemented with a special assistance amount of 250 baht per month, resulting in 1,250 baht per month.

In 2023, Thailand is scheduled to hold an election, which will bring about a new government that aims to implement a fresh policy direction. The incoming government's priorities and decisions will determine the policy's specific path. Several political parties have put forth proposals to increase the monthly allowance amount. However, it is crucial to carefully consider this matter, given its direct impact on the government's budget and revenue.

#### **4. Problems and Challenges of the Old Age Allowance Program**

The introduction of non-contributory social pensions has gained momentum in several Asian countries in recent years. For example, Myanmar successfully implemented a universal social pension in 2017, showcasing its commitment to providing financial support to its elderly population. In contrast, Indonesia lacks a comparable program that extends to non-government officials, revealing a notable gap in social protection measures. Scholarly studies have shed light on common obstacles these initiatives face, including corruption and insufficient budget allocation. The primary objective of the social pension is to cater to older individuals who do not fall within the scope of existing Social Security Pension and Civil Servant Pension schemes. This inclusivity implies that even prosperous elderly individuals are eligible to receive benefits under the program, raising crucial considerations concerning equity and resource allocation. While the Old Age Allowance Program has undeniably proven its worth in delivering financial aid to elderly citizens in Thailand, it also confronts specific challenges and considerations that require careful attention. These challenges encompass various aspects, including program design, eligibility criteria, benefit adequacy, and long-term sustainability. Addressing these issues will ensure the program's effectiveness and ability to meet the evolving needs of Thailand's aging population. The study categorizes these challenges into two sections: the governmental perspective and the beneficiaries' perspective.

##### **4.1 Governmental Perspective**

The OAA program faces various challenges from the government's perspective, including budgetary constraints, program sustainability, and the impact of new government policies. Firstly, the budget is of utmost importance in implementing policies. The program underwent reforms in 2009, expanding to include more beneficiaries. However, transitioning from a targeted to a universal approach has limited the budget. Accommodating a more significant number of beneficiaries requires a more lavish budget allocation, which raises concerns due to reliance on tax financing. As the aging population grows, the government must allocate an increased budget to support the program's expanded initiatives.

Secondly, ensuring the long-term financial sustainability of the program is crucial when faced with budgetary constraints and reliance on tax funding, especially considering the growing number of elderly individuals. Demographic changes have an impact on the fiscal sustainability of the old age allowance policy, necessitating a reevaluation of budget allocation to accommodate these changes. Considering the dimension of public debt when increasing expenditures on the old age allowance is crucial. If the government cannot generate sufficient revenue, it may result in a long-term increase in public debt.

Thirdly, introducing new government policies following Thailand's election in May 2023 brings about political instability and uncertainty regarding policy orientations. Respected economists like Ari Aisen and Francisco Jose Veiga (2010) have acknowledged that political uncertainty in several countries adversely affects economic performance. Jong-a-Pin (2009) also found a correlation between heightened political instability and diminished economic growth. These concerns arise during policy implementation, mainly when there is a change in political power. If the newly elected government supports welfare initiatives, there is potential for increased benefits to be disbursed through the OAA program.

#### **4.2 Beneficiaries Perspective**

From the perspective of the beneficiaries, the OAA program encounters several challenges, including insufficient monthly allowance for daily living expenses, issues of inclusivity, and low program awareness.

Firstly, the current benefit amount provided by the program (18-30 US dollars per month) is inadequate for sustaining a decent standard of living. As mentioned earlier, this amount serves as an additional income, but for many older Thai individuals, it constitutes their primary source of income. This poses a significant problem for elderly individuals without family support, as the monthly benefit is equivalent to just two days of minimum wage. The meager amount can be a barrier to maintaining a healthy lifestyle for older people, especially those living alone. In countries with insufficient retirement systems, such as Thailand, Meier and Werding (2010) suggest increasing pension generosity and expanding coverage.

Secondly, the eligibility criteria for the program are unclear, leading to the exclusion of many older individuals. Furthermore, those without proper identification cards are unable to participate. This exclusionary aspect of the program results in many older Thai people being left out. It is crucial to address the specific needs of vulnerable and marginalized elderly groups, including those residing in remote areas or with disabilities. The government should ensure consistency across different pension schemes and establish a clear and coherent system. Additionally, proactive communication with prospective beneficiaries is vital to provide them with a comprehensive understanding of the program's criteria.

Thirdly, program awareness is deficient among older individuals living in remote areas. Efforts should be made to increase awareness and knowledge about the program and its benefits. Ensuring that eligible individuals are well-informed and can access the required support is essential. Public campaigns, targeted outreach programs, and community engagement initiatives can enhance program awareness.

In conclusion, addressing the challenges faced by the OAA program from the beneficiaries' perspective requires addressing the issue of insufficient monthly allowance, improving inclusivity by clarifying eligibility criteria and considering the specific needs of vulnerable groups, and implementing strategies to raise program awareness among older individuals, especially those in remote areas.

#### **5. Conclusion and Recommendation**

Aging is affecting all parts of the world but to varying degrees. The phenomenon of an aging society is a global concern that necessitates proactive measures to address the challenges it presents. The burden on government budgets to support social pension systems is particularly

evident in regions like Southern Asia and Southeast Asia. This place added financial pressure on older individuals and their families during retirement. The Old Age Allowance program initially targeted individuals classified as poor. Later, the OAA Program underwent significant reforms in 2009, transitioning to a universal approach that expanded coverage to a broader group of beneficiaries. After the program reformed and redesigned in 2009, many challenges and problems occurred from the government organization and the beneficiaries as previous mentioned. By shedding light on the successes and obstacles faced by the OAA Program after its reform, it is necessary for the policymakers and stakeholders striving to improve and address the welfare of the aging population in Thailand.

## References

- Aisen, A. & Veiga, F. J. (2013). How Does Political Instability Affect Economic Growth? *European Journal of Political Economy*, 29, 151-167.
- Jong-A-Pin, R. (2009). On the measurement of political instability and its impact on economic growth. *European Journal of Political Economy*, 25 (1), 15-29.
- Meier, V., & Werding, M. (2010). Ageing and the welfare state: securing sustainability. *Oxford Review of Economic Policy*, 26(4), 655–673.
- Satidporn, W., Thananithichot, S., Laiprakobsup, T., & Chorkaew, S. (2017). The creation of social justice through social welfare policy: The case study of the access to and acquiring benefits from the elderly allowance program. *Journal of Thai Ombudsman*, 24(1), 50-79.
- Suwanrada W. & Wesumperuma, D. (2012). Chapter 6: Development of the Old-Age Allowance System in Thailand: Challenges and Policy Implications. In Wening Handayani, S. & Babajanian, B. (Eds.) (2012). *Social Protection for Older Persons Social Pensions in Asia*, Philippines, ADB.
- Suwanrada, W. & Kamwachirapitak, A. (2007). Current Situation Analysis of the Old-Age Allowances System in Thailand, Research Report submitted to Thailand Research Fund (Project Number: PDG5030208), August 2007.

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## *The Constructed Meaning of Thai Laborer by the State*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

### **Abstract**

Most studies on labor control in Thailand primarily focus on the state's oppressive and suppressive actions against the labor movement. These studies examine how the state utilizes violence and direct power to render laborers powerless in bargaining. However, a significant and often overlooked question seeks to explain why laborers are considered to have a low social status in Thai society and why the middle class lacks pity or sympathy for them. This study explores the dynamics of pity and sympathy among the middle class towards laborers when the state suppresses them. Despite feeling pity, the middle class still tends to align with the state due to the state's construction of meaning regarding laborers. The state portrays laborers as individuals with low education and knowledge, associating labor movements with potential danger. The state shapes the perception of laborers and the labor movement in two distinct ways: the ideological portrayal of laborers and the labor movement and the real-world representation in Thai society, where they are often depicted as aggressive, irrational, and manipulated by politicians. By examining the construction of the laborer's image and the state's portrayal of the labor movement, this study sheds light on the factors influencing societal perceptions and the middle class's alignment with the state's perspective.

Keywords: Labor Control, Constructed Meaning, State Oppression

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## 1. Introduction

Labor control in Thailand encompasses the regulations, policies, and practices enforced by the government to ensure fair working conditions, protect workers' rights, and regulate employment relationships. While existing studies on labor control in Thailand primarily focus on the state's oppressive actions against the labor movement, this article aims to shed light on the meanings of key terms as a preliminary step. Understanding the term "laborer" is crucial in this context. This article primarily refers to unskilled workers, particularly those employed in the industry and construction sectors. It also encompasses labor unions and the broader labor movement. The concept of the "state" in this study refers to the power elite. It highlights how those who govern the state often differ from the political parties that win elections. Instead, the power elite comprises soldiers and government officials who have attained authority through coup d'état scenarios. Lastly, the term "labor control" originates from Marxist studies. It signifies the endeavors of capitalists to generate and retain surplus value from employment and the production process for their benefit. By clarifying these key terms, this article sets the stage for a comprehensive exploration of labor control in Thailand, moving beyond the prevailing focus on the state's oppressive actions against the labor movement.

## 2. Concept of Labor Control

The concept of labor control requires a thorough understanding of its fundamental elements. A key question arises: why does the state, despite not being capitalist itself, seek to exert control over labor? The answer is quite straightforward: the state aims to uphold the elite's social status and ensure the continuity of the capitalist mode of production.

Commonly, when discussing labor control by the state, people tend to associate it with acts of violence, such as the arrest of labor leaders or the implementation of laws against cooperative unions. However, labor control extends beyond mere repression. It encompasses a range of methods that go beyond the use of power and violence, focusing on justifying such repressive actions. The state fundamentally seeks to justify its suppression of individuals seen as insurgents or threats to society as a whole. As a result, the state actively shapes societal perceptions of laborers and the labor movement in two distinct ways. Firstly, it presents an idealized image of virtuous laborers and commendable labor movements. Secondly, it portrays labor and the labor movement negatively, highlighting perceived issues and challenges that purportedly exist within Thai society. The state often characterizes the labor movement in Thailand as aggressive, irrational, and driven by political motives, thereby legitimizing its crackdown on such unions.

Nonetheless, the state pursues specific objectives, including economic stability, growth, and securing votes from the population. While the state frequently intervenes in conflicts between capital and labor, there are instances where it may adopt policies that favor labor as a whole, benefiting the overall economy and garnering support from voters. However, the state never overlooks the necessity of maintaining control over labor as a means to achieve its goals.

The second question addresses how the state regulates labor. Expanding on the previous content, the answer encompasses the state's use of both repressive mechanisms involving power and violence and ideological mechanisms that shape workers' perceptions, justifying the exercise of power to suppress them for societal peace.

In his work "Ideology and the Ideological State Apparatus," Louis Althusser argues that the state regulates labor through two main avenues: repressive force and ideological apparatus. This aligns with Somsak Samakheetham's perspective in the article "The Tripartite System and the Building of Industrial Peace" (1989), which examines labor control. In the Thai context, labor regulation by the state takes three forms:

1. Control through violence, including the arrest of labor leaders.
2. Political and legal control involving appointments to political positions.
3. Ideological control, where labor bargaining is portrayed as violent or causing social chaos. Workers are encouraged to make responsible decisions, avoiding recklessness influenced by individuals with harmful intentions towards the country. The state portrays workers' demands as detrimental to the economy.

Most studies on state control of labor in Thailand, conducted by labor leaders, master's degree students, or labor scholars, tend to focus on control mechanisms employing violent methods such as arresting labor leaders, non-registration of unions, and abolishing labor laws. Although some studies touch on ideological control, particularly examining the state's use of a tripartite system to regulate labor, research delving into the use of ideological mechanisms to shape the perception of laborers for labor control remains limited.

Sipim Sornbanlang (2012) sheds light on creating images or narratives to instill fear and distrust of workers and labor movements in society. This research explores explicitly the portrayal of migrant laborers as a state security concern. It reveals that the Thai state seeks to control Burmese workers by fostering societal mistrust and suspicion, thereby justifying restrictions on their rights in various areas. The state employs methods such as news releases and interviews with government officials and civil servants. Mass media, particularly newspapers, often employ fear-inducing headlines using terms like "illegal labor," "brutal Burma," "Burma Occupation," and similar expressions.

### **3. Thainess and National Culture**

Previous studies on state labor control have primarily concentrated on examining the utilization of violent mechanisms as a means of exerting control. However, a significant gap in research exists regarding the understanding of the Thai middle class's perspectives, awareness, and sentiments toward laborers. Investigating the middle class's perception of laborers would yield valuable insights into their attitudes and behaviors concerning laborers and their participation in labor movements. By delving into this aspect, a more comprehensive understanding of the middle class's stance and engagement with labor movements can be achieved.

In order to understand how the middle class perceives and feels about the laborers, it is essential to examine the value system that the middle class embraces. However, to fully grasp this value system, it becomes necessary to trace its roots back to the national culture and the long-established traditional Thai culture that has been nurtured and inherited since the time of the absolute monarchy. By delving into these historical and cultural factors, we can gain valuable insights into the fundamental beliefs and attitudes that shape the middle class's perspective on laborers.

Saichol Satyanurak (2008) sheds light on the difficulties faced by economically disadvantaged individuals in fully embracing Thai identity and culture. The concept of Thai national culture officially recognized and often tied to financial resources like education,

appropriate attire, and participation in Thai arts, poses a significant challenge for those with limited means and free time. Thainess and national culture are crucial in determining one's position within Thailand's centralized social structure.

Laborers, representing a marginalized segment of society characterized by poverty, often lack access to Thai identity and national culture. This exclusion further reinforces their marginalized status. As a result, individuals with low social status face barriers to obtaining the legitimacy and opportunities needed to negotiate and improve their socioeconomic standing. The lack of access to Thai identity and national culture perpetuates the marginalization experienced by laborers and restricts their ability to navigate and transcend their socioeconomic circumstances.

#### **4. The Meaning of Labor Created by the State**

This section is comprised of three subsections: "Laborers are those with Low Labor Productivity," "Laborers in Thailand Face Limitations in their Ability to Form Independent Organizations and Advocate for their Rights through Negotiations," and "Laborers have been Observed to Have Demanding and Aggressive Bargaining Positions."

##### **4.1 Laborers are those with Low Labor Productivity**

The Thai state consistently maintains that workers' wages are sufficient for their living expenses and commensurate with their productivity levels. According to the state's perspective, low wages result from workers' limited knowledge and skills. Even scholars critical of state policies often cite studies indicating that the state's industrial promotion policies reduce the necessity of knowledgeable or skilled labor from the viewpoint of capital owners. Consequently, uneducated and unskilled laborers face challenges when demanding higher wages.

Thailand's investment promotion policy prioritizes protecting and privileging capitalists, reducing the incentive for capital owners to enhance labor productivity. As a result, workers who benefit from this policy have little motivation to acquire new knowledge or develop their skills. Those lacking knowledge or skills encounter difficulties in improving their abilities or advocating for higher wages. Additionally, the education received by the Thai labor force has historically been limited, with a majority having completed only primary school. This restricted educational background leaves workers ill-prepared for semi-skilled jobs, thereby keeping their wages at the minimum standards. While these perspectives may initially seem sympathetic towards underpaid laborers, they also highlight that workers bear responsibility for their low wages due to their perceived lack of knowledge, competence, and labor productivity.

##### **4.2 Laborers in Thailand Face Limitations in their Ability to Form Independent Organizations and Advocate for Their Rights through Negotiations**

The state consistently depicts workers as lacking competence, which extends to their incapacity to establish strong labor unions without outside assistance. Instead, the state emphasizes that politicians typically organize **influential unions**. In Thailand, political parties and politicians often carry a negative reputation due to their perceived dishonesty and involvement in corrupt practices. Consequently, Thai labor laws explicitly restrict labor

unions from engaging in political activities. This grounds the state to dissolve militant labor movements, citing alleged political entanglements.

However, the state's role goes beyond simply dismantling trade unions. It selectively supports certain unions to demonstrate that it only suppresses labor movements that fail to meet its requirements. Compliance with state expectations and obedience leads to the state providing care and protection through the enactment of labor protection laws.

A Director-General of the Department of Labor highlighted the historical support that labor movements received from the administration and academics. Workers often remained in the background, but they have become more visible in recent years. Despite this increased visibility and a favorable democratic environment for labor leaders, they have not taken advantage of the opportunity to advocate for the reinstatement of labor laws revoked since the time of Field Marshal Sarit. This statement underscores the notion that workers cannot independently form organizations and negotiate with employers or the state. Consequently, it becomes the state's responsibility to safeguard and support workers, preventing their exploitation and deception by employers.

These dynamics exemplify the state's efforts to establish a narrative that Thai laborers lack a leading role and significant influence in demanding negotiations, particularly regarding major national issues, due to their perceived lack of knowledge and competence. Instead, government officials and academics have played vital roles in advocating for laborers. Paradoxically, the strength of workers' movements and trade unions is attributed to politicians' involvement rather than the laborers' inherent capabilities.

### **4.3 Laborers have been Observed to Have Demanding and Aggressive Bargaining Positions**

While the state has occasionally encouraged laborers to form organizations to enhance their bargaining power with employers, there have also been instances where the state has portrayed laborers' demands as unreasonable and accompanied by violence, particularly from 1974 through 1975. A prominent Director-General of the Department of Labor noted in his book, "Following failed negotiations, workers resorted to severe attacks on employers," and "Towards the end of 1974 and throughout 1975, workers' behavior turned violent. They often disregarded government advice and openly canceled previously agreed-upon arrangements. There were even threats to use force." In the case of the Standard Garment incident in 1975, laborers accused the police of overreacting and causing injuries. However, the state explained that the police response was necessary due to the violent actions of the laborers. The state asserted that the police had to regain control of the situation, which unfortunately led to worker injuries.

These instances highlight the complex nature of laborer demands and their interactions with the state. While the state has sometimes encouraged laborers to organize and strengthen their bargaining power, it has criticized laborers for employing aggressive tactics and resorting to violence during negotiations. The Standard Garment incident serves as an example where laborers and the state have differing perspectives on the events that transpired and the appropriate responses to maintain order.

In conclusion, analyzing labor control in Thailand reveals several key findings. Firstly, the Thai state consistently argues that low wages result from workers' limited knowledge and

skills, reinforcing the notion that laborers have low labor productivity. Secondly, laborers in Thailand face limitations in their ability to form independent organizations and advocate for their rights through negotiations. The state's portrayal of laborers as lacking competence and restrictions on unions' political activities further hinder their ability to assert their demands. Thirdly, laborers have been observed to have demanding and aggressive bargaining positions, which has resulted in conflicts and tensions with the state during negotiations. These findings highlight the complex dynamics between laborers and the state, with the state's construction of meaning regarding laborers and labor movements shaping societal perceptions and influencing the middle class's alignment with the state's perspective. Understanding these dynamics is crucial in comprehending the challenges and power dynamics involved in labor control in Thailand.

## **5. Conclusions**

In order to uphold the elite's status and preserve the capitalist mode of production, the state employs various strategies to legitimize labor control. One such strategy involves shaping the societal understanding and perception of labor, whereby the state influences how labor is viewed and accepted by society at large. The state's depiction of labor can be summarized as follows: Firstly, the state portrays laborers as uneducated individuals with low labor productivity. As a result, laborers have limited employment options and are compelled to work diligently despite receiving low wages. While the state may express sympathy for the plight of laborers, it cannot provide substantial assistance due to their perceived lack of knowledge and competence. Secondly, the state presents the concept of Western trade unions as highly significant and beneficial for labor administration. However, the state asserts that Thai trade unions differ from Western ones. The state emphasizes that Thai trade unions often encounter political interference and are led by self-interested individuals. Worker rallies are depicted as irrational, aggressive, and prone to violence.

## References

Althusser, L. (2014). *On the Reproduction of Capitalism: Ideology and Ideological State Apparatuses*, trans. and ed. G.M. Goshgarian, Verso.

Samakheetham, S. (1989). *Tripartite system and the building of industrial peace*. AromPongpangan Foundation.

Sattayanurak, S. (2008). *Nationalism Culture and Conflict*. The Regional Center for Social Science and Sustainable Development, Faculty of Social Sciences, Chiangmai University.

Sornbanlang, S. (2012). *Securitization of migrant workers: a case study of Burmese workers in Thailand*. [Doctoral thesis, Chulalongkorn University]. Chulalongkorn University Intellectual Repository.

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***Support Required of Healthcare Professionals to Prevent Filicide and  
Abandonment After Isolated Childbirth  
– Consideration of Intentions and Actions That Contradict the Intent to Commit a Crime***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

This study reviews data from the trials on filicide and abandonment after isolated delivery intentions and on actions contrary to the intention to commit a crime in order to understand the situation of mothers. The study aimed to consider the support required of healthcare professionals from intentions and actions that contradict with the intent to commit a crime. The legal database was searched from April 1 to June 30, 2022, using the keywords “birth,” “abandonment,” “guilt,” and “judgment date 2012–2021.” Among the trials investigated, four cases were included in a study in which the findings of fact specifically indicated intentions and actions that contradicted the intent of filicide and abandonment after isolated birth. These precedents were examined by compiling information about the newborn’s father, the time of conception and delivery, and the newborn. In some cases, mother’s willingness to take care of their children and hesitation to kill them for a moment by seeing their children were indicated.

The following issues were suggested.

- 1) If healthcare professionals are aware of the pregnancy, they should be continuously involved.
- 2) Healthcare professionals should recognize and support mothers’ feelings in the process of imagining their lives with their children.
- 3) Further information on the feelings of mothers at the time of the crime should be accumulated.
- 4) Regarding the poverty issue that exists in the background, social security should be considered.

Keywords: Abandonment, Childbirth, Criminal Suit, Filicide, Isolated Prevention

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## Introduction

Worldwide, the protection of children from abuse has become one of the most important measures (Global Partnership to End Violence Against Children, 2021). In Japan, the Administration for Children and Families was established in 2023. The main focus of this new agency is to provide seamless and comprehensive support for various complex issues that children and families face. Behind these measures is the reality that the number of child abuse arrests has been increasing yearly, which recently reached a record high. In 2021, the number of child abuse arrests increased to 2,174 (National Police Agency, 2021). Arrested cases are handled as criminal cases. An overview of actual child abuse criminal cases reveals that the types of abuse and direct causes of injury vary widely (Hayashi, 2015).

Among them, neonatal homicide differs in terms of its characteristics. In many cases, neonatal homicide was committed by unwed mothers not wanting to give birth. Additionally, there are many cases in which the perpetrator was found to have planned and maliciously committed the crime, such as planning to kill the baby after it was born and even before the birth, which differs from cases of child murder due to maternal abuse (Taguchi, 2007). Among neonatal homicide cases, isolated post-birth murder and abandonment cases are considered to be due to the mother's mental and social problems; thus, preventive measures are being considered (Kariya, 2018; Kitamura, et al, 2019; Kawasaki, 2017). However, the 17th Report on the Results of the Verification of Deaths from child abuse (Ministry of Health, Labor and Welfare, 2021) also reported several similar cases. Many of these cases were considered criminal cases and being reported by the mass media, thereby having a significant social impact. However, many cases reported in this way tend to focus on the circumstances of the arrest and punishment imposed, and there are few opportunities to learn the details of the case, such as what the court actually found to be true. The difficulty in dealing with murder and abandonment cases after isolated childbirth can be understood from the current situation in which similar cases are repeatedly filed. Hence, examining preventive measures with knowledge from multiple perspectives is necessary. It is considered important to take a criminal case from a broader perspective and analyze the case by tracing back to the circumstances and the involvement of various organizations (Committee on the Rights of the Child, Japan Federation of Bar Associations, 2021) (p. 309). This is because criminal procedures provide information about the history of the accused parents, which is revealed only because they are being confronted of their crimes. This is an important source of information about the mothers who had committed murder and abandonment after an isolated birth. Among other things, knowing facts, such as the intention to commit the crime and conflicting intentions and actions, can provide an opportunity to decipher the mother's situation, which cannot be understood solely from the perspective of a selfish and gruesome crime. However, until now, only a few studies have examined this important detail from the perspective of medical personnel involved in childbirth. Therefore, the present study aimed to analyze the mothers' intention to commit a crime and the conflicting intentions and actions revealed in court cases of murder and abandonment after an isolated childbirth.

This study reviews data from the trials on filicide and abandonment after isolated delivery intentions and on actions contrary to the intention to commit a crime in order to understand the situation of mothers. In addition, it aims to address the associated issues to prevent crime from the perspective of healthcare professionals involved in childbirth. The study aimed to consider the support required of healthcare professionals from intentions and actions that contradict with the intent to commit a crime.

## Methods

The legal database (TKC Law Library, 2022) was searched from April 1 to June 30, 2022, using the keywords “birth,” “abandonment,” “guilt,” and “judgment date 2012–2021.” Among the trials investigated, four cases were included in a study in which the findings of fact specifically indicated intentions and actions that contradicted the intent of filicide and abandonment after isolated birth. These precedents were examined by compiling information about the newborn’s father, the time of conception and delivery, and the newborn.

However, since it is unclear whether these court cases led to the finalization of judgments (i.e., no appeals and so on), there is a possibility that they include cases in which judgments were later changed. Additionally, this study uses data that were revealed only during the criminal trial process, in which parents face abuse. For this reason, the item of “support system to facilitate post-crime reintegration into society” was added because it is important to retrospectively examine how the support system for reintegration into society after the incident was certified by the trial court.

In Japan, trials are open to the public (Article 82 of the Constitution), and case records are disclosed (Article 91 of the Code of Civil Procedures), so there is no ethical provision for case citation. However, measures were taken to ensure that individuals were not identifiable in this study. The retrieved cases summarized the background of the cases, provided chronologically ordered status maps, and detailed the facts found by the court.

### *Definition of Terms*

In this study, murder and/or abandonment after an isolated birth is defined as a case in which a pregnant mother gives birth alone without consulting anyone, at home or elsewhere without medical care, and then murders and/or abandons her newborn baby.

## Results

The subsections below provide an overview of the case law of the four court cases (Table 1).

### *Information of the newborns’ father*

In all cases, the father of the newborn could not be identified.

### *Circumstances at the time of pregnancy and delivery*

Two women were in the 20s (case nos. 1,3) and one was in the early 30s (case no. 4). Three women were first-time mothers (case nos. 1,2,3) and one woman who had given birth multiple times (case no. 4). In one case (case no. 1), the mother was unsure of her pregnancy, but in the other cases, all women had reached the day of delivery without consulting anyone about their pregnancies. All the cases had a parent or other cohabitant. In one of the cases (case number 4), in which the intention to commit the crime of murder and abandonment was indicated from the time of conception, the mother had had a similar experience in the past (case number 4). All of the births took place at home; in one case (case no. 3), the mother’s roommate was at home, and immediately after the birth, she acted impulsively in committing the crime to avoid being noticed. For case 2, the mother went through approximately 11 hours of labor. The duration of labor for the primipara was considered normal for a first-time mother.

*Situation of newborns*

There was one case (case number 3) with apparently weak respiration, but all cases were confirmed alive.

*Support system for social reintegration after the case*

There were three cases (case nos. 1, 2, and 3) in which support after reintegration by family, workplace, or rehabilitation support plan was expected.

*Intention to commit the crime of murder and abandonment of a newborn child, and conflicting intentions and actions*

In two cases, the newborns were intentionally left behind (case nos. 1 and 2), whereas in the two cases, the newborns were suffocated to death by covering their noses and mouths with the mothers' hands (case nos. 3 and 4).

	Judgment	Information on newborns' fathers	Information during pregnancy and childbirth		Intentions and actions that contradict the intent to commit a crime
	Judge's sentence		Newborn information	Information during pregnancy	
	Criminal record				Information during childbirth
No. 1	<p>November 27, 2020 Nagano District Court</p> <p>3 years in prison (suspended for 5 years)</p> <p>Left unattended after childbirth and died (late 20s)</p>	<p>Unknown</p> <p>None noted</p>	<p>The criminal was not certain that she was pregnant until after the birth.</p> <p>She did not want those around her to know that she had given birth to a child whose father could not be identified.</p>	<p>Toilet at home (lives with his mother)</p> <p>She gave birth unexpectedly.</p> <p>About an hour after the birth, she left him in a room with the heater off and went out.</p>	<p>She immediately took the child from the toilet, put him on the bed and covered him with a blanket. She took other steps to prevent his immediate death.</p> <p>Her mother, who lives with her, made it clear that she intends to continue to help her and live with her.</p>
No. 2	<p>July 22, 2020 Otsu District Court</p> <p>3 years in prison (suspended for 4 years)</p> <p>Left unattended after childbirth and died (age unknown)</p>	<p>She had sexual relations with several men she met on a dating site and suspected she was pregnant because she had not had her period since then.</p> <p>She thought her newborn was having difficulty breathing, so she picked up her cell phone and was about to call an ambulance, but she decided to leave the baby alone because she did not want anyone to know her situation and she wanted the baby to die.</p>	<p>The criminal was convinced she was pregnant when she felt fetal movements. She was ashamed that she was pregnant with a child whose father could not be identified, and she was afraid that her father, who lived with her, would find out and reprimand her; thus, she could not talk to anyone about it.</p> <p>Hoping for a miscarriage or stillbirth, she dared to continue her physically demanding job. The people around her did not even notice that she was pregnant.</p>	<p>Room at home (lives with his father)</p> <p>After working as scheduled, she went home and delivered the baby in her room (approximately 11 hours of labor and delivery).</p> <p>Approximately 20 minutes after the delivery, she started communicating with a man she met on a dating site.</p>	<p>She noted that her newborn was breathing but with weak hand movements.</p> <p>When she checked on her baby the second time, she felt sorry for her, cut the umbilical cord, wiped her whole body with a bath towel, wrapped her in a towel, and picked her up.</p> <p>However, she still wanted the baby to die, so she searched for "infant abandonment" and "stillbirth" on her cell phone.</p> <p>She did not intend to abandon the baby before its birth.</p> <p>She lost her mother early to illness and had no one to talk to. The people around her was unaware of her pregnancy.</p> <p>Her father is taking actions to improve his relationship with her by also facing the case.</p> <p>The relatives have created an environment in which he can consult with them and promised to provide future supervision and support for his rehabilitation.</p> <p>Her supervisor rehired her and expressed willingness to assist with her rehabilitation.</p>

	Judgment	Information on newborns' fathers	Information during pregnancy and childbirth		Intentions and actions that contradict the intent to commit a crime
	Judge's sentence		Information during pregnancy	Place of delivery	
	Criminal record	Newborn information		Information during pregnancy	Information during childbirth
No. 3	Oct 21, 2019 Tokyo District Court  3 years in prison (suspended for 5 years)  Murder, abandonment (Early 20s)	Unknown  None noted	It was an unwanted pregnancy and the criminal never discussed it with anyone.	Toilet at home (roommate is at home)  She covered the newborn's nose and mouth with her hands and suffocated him to death because she did not want her roommates to know about it. She placed the newborn in a plastic bag and abandoned him in a closet in her home.	While contemplating the murder, she was researching facilities where mothers and children could live together. After giving birth, she hesitated to commit the crime at one point.  She grew up in an abusive environment. The people around her were not kind to her. When she ran away from home to escape the abuse, she was taken back to her parents' home by the police. A support plan has been created and a supportive environment has been established for her rehabilitation.
No. 4	January 15, 2016 Matsuyama District Court  7 years in prison  Murder, abandonment (early 30s)	After her divorce, she engaged in unprotected prostitution to support her family. She gave birth and placed the dead body in her shed several times, but continued to prostitute without contraception.  None noted	She did not even consider abortion, let alone murdering her newborn.	Bathroom at home (lives with father, brother, and son)  She covered the newborn's nose and mouth and suffocated it. She wrapped the baby in a nylon bag and abandoned him in a closet in her home.	She had committed similar crimes several times in the 7 years prior to the present crime.  When she saw the newborn baby, she hesitated for a moment before killing him, but the judge found that her intent to kill was strong.  None noted

Contrarily, in two cases (case nos. 2 and 3), the pregnant mother indicated her intention to support the child. In one case (case no. 1), the mother took steps to prevent the child from dying immediately. Finally, in one case (case no. 4), upon seeing the child, the mother hesitated for a moment before killing him.

## Discussion

In Japan, according to the criminal statistics (National Police Agency, 2020), there were 17 cases of infanticide. Although there has been a downward trend since the 143 cases in 1980 (Ministry of Justice, 2012), the number of cases still reached >12 in the recent years, and similar cases have been occurring repeatedly. Many mothers in these cases were first-time

mothers, and their backgrounds, such as not being able to identify the father, were consistent with those reported in previous studies (Taguchi, 2007). They also did not discuss their pregnancies with anyone. Contrarily, despite the fact that there are many cases with cohabitants, there are no precedents in which the pregnancy was suspected by others were noted. It is believed that there are some facts that were not disclosed in the written judgment, as these cases cannot be considered as “unnoticed” by others. However, some mothers who kill their newborns make a conscious decision to conceal their pregnancy by minimizing social contact, wearing loose clothing, and avoiding contact with family, friends, and medical personnel who may have noticed the pregnancy (Razali, et al, 2019). It is presumed that they will behave in this manner, especially if they have the intention to commit the crime of murder or abandonment from the time of conception. Moreover, in some cases, such as in case no. 4), the murder or abandonment was repeated without any contact with the medical institution, as the first case was not discovered. Therefore, it is important for those around these women to be aware of such cases and stay involved to prevent their occurrence. In one case, the child's life was in danger (case no. 2). Birth facilities include hospitals, clinics, and midwifery centers. In Japan, such medical facilities account for 99.9% of all births. On the other hand, unassisted childbirth have become a social problem, forcing medical institutions to conduct high-risk deliveries and so on. It is desirable to have contact with medical institutions prior to delivery whenever possible. However, to save the lives of the mother and child, it is also necessary to provide information through a request for emergency care after delivery.

Mothers involved in neonatal homicide are often described as “insane” or “evil” by the general public and media, but later, they may feel feelings of guilt or remorse (Noonan, 2022). According to our investigation, the prison sentences in this case study ranged from 3 to 7 years, and many of the cases were expected to receive support after reintegration into society. The results suggest that these mothers need psychological support after the case, not only to “serve out the sentence.” In some cases in which the will to support the child was shown, the defendant showed a “process of imagining life with the child,” which conflicted with the will to commit the crime, such as investigating facilities where the mother and child could live together while thinking of killing the child. Rubin (1984) states that women acquire motherhood by imagining what it would be like to be a mother. In fact, the court did not make any concrete preparations for the child’s birth, but rather, she escaped from the reality of the situation. However, it may be important to note that such feelings were developing and link them to support. Contrarily, in a previous report, a juvenile who committed an infanticide and entered a juvenile classification home felt that her pregnancy was “shameful” and strongly feared that she would be severely reprimanded, disappoint her parents, or be abandoned if she confided her pregnancy (Kondo, 2008); such a similar case (case no. 2) occurred in one of our cases. The mother in this case stated that she felt ashamed that she was pregnant with a child whose father could not be identified, and that she could not talk to anyone about it for the fear that her father, who lived with her, would find out and reprimand her.

A “clandestine birth” is a case in which a pregnant woman, for some reason or another, wishes to give birth but revealing her identity to only a few people at the medical institution, and the medical institution accepts the request.

In Japan, the Ministry of Health, Labor, and Welfare and the Ministry of Justice prepared the first guidelines for confidential births in 2022 (<https://www.mhlw.go.jp/content/000995585.pdf>). This measure is being considered in

response to the issues raised regarding the right to know one's origins, family registers, and on. However, it seems important to understand the mother's wishes behind her desire not to be known, and to ensure that the safety of the mother's and child's lives is fulfilled. Regarding the motives for committing infanticide (National Police Agency, 2020), few mothers are suspected of having mental disorders, which are commonly due to worries about child rearing. Based on the abovementioned data, we believe that if medical personnel could notice the mothers who are imagining life with their children and provide them with some support, the incidents of infanticide could be avoided.

Moreover, in case no. 4, the mother hesitated for a moment to kill the child upon seeing him, indicating that the mother's emotions at the time of the crime were “conflicting feelings of desire and rejection of the child” and she could not ask for help (Vellut, et al, 2012). Although it was impossible to determine from the written judgment why the mother hesitated for a moment to kill her child upon seeing him or her, further data accumulation is needed. In other countries, the low socioeconomic status of mothers who commit infanticide is considered an issue, and it is necessary to examine this issue from the perspective of social security systems as well.

#### *Study Limitations*

The main limitation of this study is that the cases included are only those listed in the legal database (TKC Law Library, 2022), and we were unable to ascertain the entirety of the trials of the homicide and abandonment cases after the isolated births. As mentioned previously, it is conceivable that later changes in court decisions and so on may have altered the facts. However, we believe that this study is significant, as we were able to present a new perspective on case prevention based on the facts revealed in the course of the criminal proceedings in the isolated post-homicide and abandonment cases.

#### **Conclusion**

This study examined the issues needed to prevent crime from murder and abandonment trials after isolated births. The following issues were suggested.

- 1) If healthcare professionals are aware of the pregnancy, they should be continuously involved.
- 2) Healthcare professionals should recognize and support mothers' feelings in the process of imagining their lives with their children.
- 3) Further information on the feelings of mothers at the time of the crime should be accumulated.
- 4) Social security should be considered when poverty issue exists in the background.



## References

- Global Partnership to End Violence Against Children. (2021). Prohibiting all corporal punishment of children: laying the foundations for non-violent childhoods. Retrieved February 15, 2023, from: <https://endcorporalpunishment.org/resources/global-report-2021/>
- Hayashi, H. (2015). Some child abuse cases in Japanese courts. Departmental Bulletin Paper, 121(11-12), 599-644.
- Japan Federation of Bar Associations Committee on the Rights of the Child. (2021). Child abuse prevention and legal practice manual. Akashi Bookstore, Japan (6th ed.). 309.
- Kariya, A. (2018). Discourses over neonaticides: from maintenance of order in community to self-responsibility. *Studies in The Humanities and Sciences*, 58(2), 89-102.
- Kitamura, T., Minamiya, M., Ohashi, Y. (2019). Opinions on postpartum depression, child abuse, and infanticide. Retrieved November 12, 2022, from: <https://www.institute-of-mental-health.jp/perinatal/pdf/J2-3.pdf>
- Kondo, H. (2008). Neonaticides committed by female juveni. *Japanese Journal of Sociological*, 33, 157-176.
- Ministry of Health, Labor and Welfare. (2021). The 17th report on the results of the verification of deaths from child abuse. Retrieved November 12, 2022, from: <https://www.mhlw.go.jp/content/11900000/000825392.pdf>
- Ministry of Justice. (2012). Research Department Report 45. Retrieved November 12, 2022, from: <https://www.moj.go.jp/content/000098462.pdf>
- National Police Agency. (2022). Juvenile delinquency. child abuse and sexual damage to children. Retrieved November 12, 2022, from: <https://www.npa.go.jp/bureau/safetylife/syonen/pdf-r3-syonehikoujyokyo.pdf>
- National Police Agency. (2020). The Criminal statistics in 2020. Retrieved November 12, 2022, from: [https://www.npa.go.jp/toukei/soubunkan/R02/pdf/R02\\_ALL.pdf](https://www.npa.go.jp/toukei/soubunkan/R02/pdf/R02_ALL.pdf)
- Rubin, R. (1984). *Maternal identity and the maternal experience*. Springer Pub Co, America.
- Taguchi, H. (2007). Maternal filicide in Japan: analyses of 96 cases and future directions for prevention. *Psychiatria et neurologia Japonica*, 109 (2), 110-127.
- TKC Law Library. (2022). Retrieved June 30, 2022, from: <https://www.tkc.jp/law/lawlibrary/company/>
- Vellut N., Cook J.M., Tursz A. (2012). Analysis of the relationship between neonaticide and denial of pregnancy using data from judicial files. *Child Abuse & Neglect*, 36(7-8), 553-563.



***Implementatin of the Undergraduate Coastal Program for Students at Risk of Dropping Out of School: Case Study at Kutai Kartanegara, East Kalimantan***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

Bachelor of Costal Education is a mentoring activity for children with a lower middle-class economy in coastal villages who wish to continue their education at tertiary institutions. The purpose of this study is to describe the use of coastal undergraduate mentoring in reducing dropout rates. The research was conducted using a descriptive-qualitative approach with the case study method. The research subjects were 53 high school students in coastal villages. The research was conducted for 3 years in 4 coastal villages in Kutai Kartanegara, East Kalimantan. The results showed that this assistance was well received by the community, as evidenced by the enthusiasm of the community in the second and third years of the program. Furthermore, the success of implementing this program can contribute to reducing the dropout rate because it has enabled children who were threatened with dropping out of school to continue their tertiary education. With details, namely, in the 1st year, there were 8 people; in the 2nd year, there were 8 people; and in the 3rd year, there were 26 people who went on to college with scholarships from the government and BUMN. Program integration is carried out through academic, motivational, and technical assistance periodically for 6 months. However, the implementation of the program should not only focus on students who are continuing their studies at tertiary institutions but also provide other skills for those who are more interested in working directly so that they still meet standards in the labor market.

Keywords: Education, Coastal Villages, and School Dropout Indonesia

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## Introduction

Indonesia will experience a golden age in 2045, at the age of 100 years since Indonesia's independence. In the series towards the golden age, Indonesia is also predicted to experience a demographic bonus. According to Bank Indonesia (2020), a demographic bonus is a condition where there are benefits that can be enjoyed by a country from the large proportion of the productive age population in the 15-64 year range. The Organization for Economic Cooperation and Development of Developed Countries (OECD) also predicts that in 2045 Indonesia's finances will reach US\$ 8.89 trillion, making it the 4th largest economy in the world. This is based on the description of the composition of Indonesia's population, which in 2030–2040 will be dominated by people of productive age, accounting for as much as 64% of the total population of around 297 million people. Under these conditions, Indonesia has a strategic strength, which is to become one of the largest active markets in the world. Demographic bonuses are like a coin that has two sides. If human resources are managed properly, the things that have been predicted above will happen. However, if management is not implemented effectively and efficiently, it will create new problems, namely unemployment, which results in reduced purchasing power for the people. When that happens, poverty will increase; the situation is like a cycle of poverty that is difficult to complete.

Of all that, the main key to success in welcoming the demographic bonus is how to manage human resources properly and appropriately. Education is a sector that has a vital role in preparing human resources who will later serve in other life-support fields. This is reinforced by the preamble of the 1945 Constitution, which explicitly states how intelligent individuals and social life are very important. However, the available data shows that there is a significant disparity. First, data from the Ministry of Education, Culture, Research, and Technology for the 2020–2021 school year shows that there are around 83,700 thousand children who have dropped out of school across Indonesia. From the elementary level, there were 44,516 people: 11,378 junior high school students, 13,879 high school students, and 13,950 vocational high school students. This number is calculated both publicly and privately. Second, the Higher Education Gross Enrollment Rate is still low; in 2019, it was 30.28, in 2020 it was 30.85, and in 2021 it was around 31.19. Third, according to the Central Statistics Agency, the number of unemployed in 2020 will still be high, reaching 6.88 million people, dominated by vocational high schools, or SMKs. According to additional data from the Ministry of Manpower, there are 2.8 million people affected by COVID-19. Particularly in the Kutai Kartanegara area, where this study was conducted, the dropout rate for the last five years has reached more than 6,000 people. This is sad considering that Kutai Kartanegara is one of the districts that contributes the most to the economy in East Kalimantan Province.

Since the study was conducted, the dropout rate for the last five years has reached more than 6,000 people. This is sad considering that Kutai Kartanegara is one of the districts that contributes the So far, the government has implemented several programs, such as the Family Hope Program (PKH), School Operational Assistance (BOS), Poor Student Assistance Program (BSM), Community Health Insurance Program (JAMKESMAS), Rice Program for Poor Families (RASKIN), People's Business Credit (KUR), and the latest, the Smart Indonesia Card (KIP), which is intended for elementary, secondary, and tertiary schools. However, in reality, it is still not able to bring significant changes to the Indonesian nation. Whether we realize it or not, so far, the approach taken by the government has tended to only focus on the concept of an economic approach. Indeed, in the short term, the provision of

assistance is economically beneficial. However, if in the long run the poverty alleviation scheme is still like this, it will not be able to solve the problem completely but will create people's dependence on the government. Therefore, what the community needs is not just physical assistance but also the ability to use this assistance in an appropriate manner.

## **Observation**

Observing these conditions and problems, the Coastal Undergraduate Program for Students (PSPBS) is a community initiative run by non-governmental organizations (NGOs) and State-Owned Enterprises (BUMN) in areas around the coast that have difficulty accessing affordability. This program is a mentoring activity with a focus on helping students from the lower middle class continue their education up to the undergraduate level. According to Eero (2019), education is one of the best paths a person can take to live a decent life. This assistance is carried out both academically, motivationally, and technically in relation to university admissions and government scholarships. Based on the explanation above, the purpose of writing this article is to find out how collaboration is carried out by NGOs and SOEs in managing human resources so that they can reduce dropout rates in order to take advantage of the demographic bonus momentum. Furthermore, it is hoped that this article can serve as reference material for making strategies to improve the quality of Indonesian society.

## **Conclusion**

Education is a fundamental right of every individual that offers a clear path to sustainable economic and social growth (Gretchenko et al., 2018). We will achieve zero welfare if there are still many people who do not have an education and the majority of their children do not go to school. In line with the opinion of Geven and Hasan's (2020) in their research, which states that inequality in society increases due to the unavailability of equal education. For people who come from the lower middle class economy, education is the only hope for a better life so as to guarantee socio-economic progress. However, in the development of this concept, it did not run ideally, there were many things that made students not focus in school until they experienced dropping out at the extreme stage. Dropping out of school itself is a multifactorial phenomenon that is complex and has become an emergency social and economic problem in many countries (Srairi, 2021). Several researchers classify dropouts based on certain conditions and criteria, including firstly students who do not attend school, secondly students who drop out of school before the official school age, not because they die or are accepted at another school (Mughal, 2020). Shuja et al. (2021) in his research revealed that financial conditions, the effects of isolation, ways of learning, government policies, fear of death, the souls of parents, socio-cultural effects, the role of teachers and administrators are the reasons students drop out of school. Furthermore, Davies and Guppy (1997) explain the prolonged effect of dropping out of school, which is marked by simple financial barriers and donations from social backgrounds with a moderate rate.

Among the ways to deal with dropping out of school are to encourage a change in the mindset of parents, build the will so that their children do not drop out of school, and stimulate an increase in the role of teachers and school administration in understanding individuals in depth (Shuja, 2021). Personalization is a fundamental function in studying analytical research and applications (Papamitsiou & Economides, 2014; Siemens & Baker, 2012), where this method is able to help teachers and those involved in understanding students comprehensively so as to be able to develop appropriate solutions to help students who are vulnerable to dropping out of school. Middle-class students who get preparation for

tertiary education, including assistance with scholastic talents, interests, and socio-economic backgrounds, are more successful than those who do not get this preparation. This success is seen in the aspects of values obtained, intellectual characteristics, citizenship in the college community, and the achievement of personal goals (Beckner and Cornett, 1972). The majority of the factors that cause students to drop out of school so that they do not intend to continue their education to a higher level are economic conditions. Students who have their advantages are safer in getting an education than students who are less fortunate. Socioeconomically advantaged students in the United States are able to invest their budgets in "shadow education," which is meant for college preparatory courses or tutoring. The goal is to get high college entrance test scores in order to guarantee access to higher education, especially elite institutions (Buchmann et al., 2010).

Furthermore, based on previous research studies, many explain the causes and effects of dropping out of school. Dropping out of school is a big problem with various factors, both internal and external. These factors include the financial condition of a household and the economy of a country, the effects of isolation, ways of learning, government policies, fear of death, the soul of parents, socio-cultural effects, the role of teachers and administrators, and gender. With research results showing that males drop out of school more than females, this is due to differences in psychological and biological factors and characteristics that correlate with achievement. In addition, institutional factors also contribute to dropping out of school; the higher the teaching quality performance at the institution, the lower the tendency of students to drop out of school. However, there is a finding that reveals that students from good economic backgrounds are far less likely to drop out of school despite having experienced academic failure than students who are less fortunate. These results also apply to high-achieving high school graduates. This emphasizes the importance of taking into account the interaction between social origin and academic achievement during higher education to reduce dropout behavior. In reducing dropouts, this can be done by making predictions and then giving special personalized attention to students who are prone to dropping out of school (Herbaut, 2020; Xing and Du2, 2018; Shuja, 2022; Srairi, 2021).

Based on the research objectives that describe the benefits of implementing the Coastal Undergraduate Program for Students (PSPBS) carried out by NGOs together with the community in tackling students who are threatened with dropping out of school due to socio-economic consequences in Anggana District, Kutai Kartanegara Regency, East Kalimantan, it can be explained through several facts as follows:

1. The role of the assistant in the implementation of the Undergraduate Coastal Program for Students (PSPBS)
  - Facilitative roles and skills. The role of the companion of the Coastal Undergraduate Program for Students (PSPBS), based on the concept of the role of the community worker put forward by Habibullah (2011), is the role and skills of facilitating, which is a role related to providing motivation, opportunities, and support for the community. In carrying out this role, one of the supporting actors, namely NGOs, remembers that they have more optimal facilitation abilities than other supporting actors, as evidenced by their experience and participation in various pieces of training related to facilitation. This actor acts as a project leader who has the duty to provide facilitation guidelines for the parties involved in the assistance. This guide aims to support the ability of other supporting actors to be able to carry out effective assistance with certain training facilities that have been adapted to the needs of program implementation. The following supporting actors

are involved in the facilitator: 1) alumni students participating in coastal undergraduates; 2) local teachers; 3) selected students; and 4) village strategic parties.

- Roles and skills as educators, Roles, and skills in educating, Facilitators play an active role in providing positive and guiding input based on their knowledge and experience, sharing ideas with the knowledge and experience of the community they support, increasing community awareness, and providing information and training to community organizers. This is in accordance with the goals of social work expressed by Damanik (2008), which state that the purpose of social work is to improve a person's ability to solve problems, deal with difficulties, and deal with life's tasks effectively. To achieve this goal, social workers overcome barriers that limit clients' ability to fulfill their life goals. Executing this role consists of teachers and students who have the ability and experience in the field of written examinations so that they are able to provide material assistance in accordance with national exam standards set by the government so that the academic quality of students will increase.
- Role and skills As a community representative, this role is related to the companion's relationship with outsiders who represent the interests of the community they assist. Facilitators carry out their role as community representatives by visiting several places that support the smooth running of this mentoring program, such as the education office, schools, or universities. Activities that can be carried out include searching for information, confirming and validating information or sources, and establishing partnerships or networks that will assist in anticipating or minimizing program failures. In the end, what this assistant does will have an impact on the smooth process of community assistance (Hermawati, 2001).
- Roles and technical skills; registration of participants to enter tertiary institutions assisted by teachers and facilitators so that they are able to register coastal undergraduate participants independently so that they can take part in the first selection, namely the invitation route, which is held nationally by the government; then the writing track; and the second track, namely the selection independently carried out by each campus. Fourth, work with facilitators and core communities, such as village heads and village secretaries, in order to accelerate the collection of scholarship files.

## 2. Change of agent due to the assistance of the Undergraduate Coastal Program for Students (PSPBS)

- Unconscious motives or cognitions  
Unconscious motives or cognitions are desires or needs that have the potential to direct action. Most of the agents' daily actions are not directly motivated by any particular motivation. At this stage, the assisted families do not yet understand the importance of investing in their children's education, so they assume that college is only for people with an upper-middle-class economy.
- Practical awareness  
Practical awareness refers to aspects of knowledge that cannot always be defined. What do actors know or believe about social conditions, especially about the conditions of their own actions? But actors cannot express it logically. In this second phase, the assisted families already understand the investment in education and have the mindset that college is not only for those with upper middle incomes but for anyone who is serious and is one of the ways to improve family life.

- Discursive awareness  
Discursive awareness is the capacity of assisted families to reflect and provide detailed explanations of their actions regarding their verbal expression skills, social conditions, and relation to the conditions of their own actions. Simply put, the awareness of this stage is an awareness that has a discursive form. The application is where students and their families share the same understanding of education and the benefits of mentoring. They are also always at the stage of being able to motivate not only their children but other families to be open about educational investments that contribute to creating student well-being for their children.
3. This program already has 3 batches, namely in 2020, where there are 8 children from coastal villages who have studied at PTN East Kalimantan, with 4 of them using KIP-College scholarships and 2 using PHM scholarships. Then in the second wave, namely in 2021, there will also be 8 children from coastal villages, 5 of whom will receive KIP-K scholarships. Then, in the third year of 2022, there were 51 candidates for "Bachelor of Coastal Studies #3" who registered, and 38 participants passed for us to accompany. Participants who pass are those who have fulfilled the mentoring requirements properly and correctly and those who really have the motivation to continue their higher education. To carry out this assistance, it requires a work plan that has been adjusted to the needs in the field. Supporting actors such as local teachers, students outside the program, students as program alumni, village governments, and NGOs are social workers or community workers. They are people who, through education, have acquired expertise and experience in administering various social services. A companion is a key party that bridges beneficiaries with other parties involved. Ministry of Social Affairs (2009) states that assistance is the process of providing facilities provided by partners for customers to identify needs and solve problems and encourage the growth of initiatives in the decision-making process so that customer independence can continue to be realized.

Based on these conclusions, there are several recommendations that can be made in this study, namely that for the government, it is hoped that the methods and forms of intervention carried out by NGOs and the community can inspire and serve as a reference that carrying out a movement to push for a policy does not have to be top-down. Furthermore, students who have successfully participated in this program should not forget the noble goal of making limitations extraordinary so that they can contribute to the implementation of the next program. As well as for other communities, they can continue to work, serve, and innovate in implementing their programs so that villages, especially in the 3T (underdeveloped, frontier, and outermost) areas, can improve the quality of their human resources in order to realize educational equity.

### **Acknowledgments**

I would like to thank the Education Fund Management Institute / **Lembaga Pengelola Dana Pendidikan (LPDP)** from the Ministry of Finance of the Republic of Indonesia for providing scholarships and supporting this research.



## References

- Ali, Mohammad. (2014). *Memahami Riset dan Perilaku Sosial*. Jakarta: PT Bumi Aksara.
- Banks, J.A. (2006). *Cultural diversity and education (5th ed.)*. Boston: Allyn & Bacon.
- Bogdan, R.C., and Biklen, S.K. (1982). *Qualitative Research for Education: An Introduction To Theory and Methods*. Boston, MA: Allyn and Bacon, Inc.
- Buchmann C, Condron DJ and Roscigno VJ .(2010). *Shadow education, American style: Test preparation, The SAT and college enrollment*. *Social Forces* 89(2): 435–461.
- Cushner, K.H. (2006). *Human diversity in action* (3rd ed.). New York: McGraw-Hill.
- Damanik, J. (2008). *Pekerjaan sosial*. Jakarta: Direktorat Pembinaan Sekolah Menengah Kejuruan, Direktorat Jenderal Manajemen Pendidikan Dasar dan Menengah Departemen Pendidikan Nasional.
- Davies S and Guppy N. (1997). *Fields of study, college selectivity, and student inequalities in higher education*. *Social Forces* 75(4): 1417–1438.
- Departemen Sosial. (2009). *Bimbingan teknis PKH*. Jakarta: Departemen Sosial Republik Indonesia.
- Diaz, C.F., Pelletier, C.M., & Provenzo, E.F. (2006). *Touch the future...Teach!*. Boston: Allyn&Bacon.
- Giddens, A. 1984. *The Constitution of Society-Outline Of The Theory Of Structuration*, Polity Press.
- Geven, K., & Hasan, A. (2020). *Learning losses in Pakistan due to COVID-19 school closures*. World Bank. <https://openknowl-edge.worldbank.org/handle/10986/34659> License: CC BY 3.0 IGO.”
- Gretchenko, A. I., Nikitskaya, E. F., Valishvili, M. A., & Gretchenko, A. A. (2018). Role of higher education institutions in developing HR potential in a forming innovation economy. *Revista Espacios*, 39(21), 13.
- Habibullah. (2011). Peran pendamping pada program keluarga harapan kabupaten karawang. *Jurnal Informasi (Kajian Permasalahan Sosial Dan Usaha Kesejahteraan Sosial)*, 16(2), 101–116.
- Hébert C., Ng-A-Fook, N., Ibrahim, A., & Smith, B. (Eds.). *Internationalizing Curriculum Studies: Histories, Environments, Critiques*. Palgrave, MacMillan.
- Herbaut, Estelle. (2020). *Overcoming failure in higher education: Social inequalities and compensatory advantage in dropout patterns*. *Acta Sociologica*, 1-20.

- Karhwohl, D.R. (1997). *Methods of Educational & Social Research: An Integrated Approach*. New York, NY: Addison-Wisley Educational Publishers, Inc.
- Koppelman, K. (2005). *Understanding human differences*. Upper Saddle River, NJ: Prentice Hall.
- Lincoln, Y.S., and Guba, E.G. (1985). *Naturalistic Inquiry*. Beverly Hills, CA: Sage Publications.
- Mughal, A. W. (2020). Secondary school students who drop- out of school in rural Pakistan: The perspectives of fathers. *Educational Research*, 62(2), 199–215.
- Papamitsiou, Z., & Economides, A. A. (2014). Learning analytics and educational data mining in practice: A systematic literature review of empirical evidence. *Journal of Educational Technology & Society*, 17(4), 49.
- Ropo, Eero. (2019). *Curriculum for Identity: Narrative Negotiations in Autobiography, Learning, and Education*.
- Sheets, R.H. (2005). *Diversity pedagogy*. Upper Saddle River, NJ: Prentice-Hall.
- Shuja, Anita, et al. 2022. Perspectives on the Factors Affecting Students' Dropout Rate During COVID-19: A Case Study From Pakistan. *SAGE Open*. 2022, Vol. I, 15.
- Siemens, G., & Baker, R. S. (2012). Learning analytics and educational data mining: Towards communication and collaboration. *Proceedings of the 2nd international conference on learning analytics and Knowledge* (pp. 252–254). New York, NY: ACM.
- Spradley, J.P. (1980). *Participant Observation*. New York, CA: Holt, Rinehart, and Winston.
- Srairi, Samir. (2021). An Analysis of Factors Affecting Student Dropout: The Case of Tunisian Universities. *International Journal of Educational Reform*. 2021, Vol. I, 19.
- Xing, Wanli and Du, Dongping. (2018). Dropout Prediction in MOOCs: Using Deep Learning for Personalized Intervention. *Journal of Educational Computing Research*. 2018, Vol. I, 24.

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## *Awareness of Cooperative Insurance in Turkey*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

### **Abstract**

Cooperative insurance is a model in which partners come together to form a company. Aiming to help each other, this model is funded by stakeholder contributions and managed by the company. The individual who wants to insure his/her commodity becomes the policy customer as well as the partner of the cooperative. Unlike conventional insurance companies, cooperative insurance companies adopt an approach that prioritizes the interests of the insured. The awareness of cooperative insurance is lower compared to private insurance companies. It is also evident that scientific studies on the subject are rare. However, in recent years, seeing cooperative insurance as an option, especially in small groups and communities, is an important step. This type of insurance not only improves the bond, solidarity and sense of belonging among its members, but also prioritizes the sharing of risks. It reduces the financial risks of the members. In this context, cooperative insurance is a sustainable insurance option. The aim of our study is to raise awareness about cooperative insurance in the society and to measure social awareness. The research will be applied online and face-to-face survey and snowball sampling method throughout Turkey. After the survey, it is expected that important findings will be given on which branches and sales channels of cooperative insurance are the most prioritized and which marketing activities will be more effective in Turkey. The results of the research will not only give an idea to the market regulators in the sector, but also contribute to the academic literature.

Keywords: Insurance, Cooperative Insurance, Mutual System Insurance

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## Introduction

Cooperatives, which ensure that the needs that cannot be met by life alone are met in mutual relations and emerge as a result of living together, have become the basis of cooperation, solidarity activities and some organizations (Tasdelen & Ozudogru, 2017).

The cooperatives that started to be established after the Industrial Revolution, by preserving the local elements, providing integration with agriculture, industry and development, moving from small scales to the growth trend, taking the voluntary basis rather than obligation, and opening up new windows for itself rather than being a commercial establishment (İNGEV, 2021).

Considering the distribution of existing cooperatives in Turkey in the tenth World Cooperative Monitoring Report (2021), prepared by the International Cooperatives Union (ICA) and the European Cooperative and Social Enterprises Research Institute (EURICSE); housing structure, agricultural development and motor carriers cooperatives, and the types of cooperatives according to their fields of activity; production, consumption, credit, structure and other private, legal and international organizations (World Cooperative Monitoring Report, 2022).

When we evaluate these cooperatives in different structures from a holistic perspective, it is seen that there is a common and autonomous union or a human-centered joint structure. It is noteworthy that some cooperatives approach conventional insurance with suspicion due to their internal values, autonomous structure and high religious sensitivities and that they fulfill their insurance needs by observing religious principles. Takaful, which is expressed as insurance that does not contain elements that are contrary to the principles of Islamic commercial law such as interest, excessive uncertainty and gambling, is a system established based on establishing a fund and meeting their losses from this fund, in case of possible damage or loss (Aslan & Durmus, 2015).

Many cooperatives in Turkey work with insurance/finance companies under the name of participation or with alternative interest-free insurance practices. These financial companies offer three different services: intermediary service, social assistance and narrow-scope insurance activity. Thus, their savings turn into finance. In fact, there are insurance cooperatives established to meet the insurance needs of cooperatives in this field (Ülev & Caliskan, 2022).

In the report "Strong Cooperatives for the Social Solidarity Economy" prepared by the Human Development Foundation (İNGEV), it is stated that according to the statistics of 2020, there are 60 thousand cooperatives of nearly 40 types in Turkey, and that these cooperatives have a total of 6.6 million members. INGEV, Sabancı University Istanbul Policy Center (IPC), the 3rd Study of the ActHuman Social Policy Initiative, "Strong Cooperatives for the Social Solidarity Economy" report, provides the opportunity to compare the current situation and examples of cooperatives across the world and Europe and their comparison with Turkey. Insurance cooperatives, which are a type of cooperatives, are seen to be a method that has become widespread in the USA and then in Europe since the 1800s (İNGEV, 2021).

It is noteworthy that there is not enough empirical study on the awareness of cooperative insurance in our country. It was concluded that a survey and field research should be done to

measure this issue quantitatively. Awareness on the subject should be measured due to the fact that the subject is up-to-date with this aspect and its increasing importance as a type preferred by those who have religious sensitivities about insurance in Turkey. Thus, in line with the findings and results obtained, it will be possible to make suggestions for relevant institutions and increase awareness.

## Conceptual Framework

### Cooperative Insurance

Currently, 67 companies operate in the Turkish insurance sector, including 42 non-life, 6 life, 15 life pension and 4 reinsurance companies. In the last three years, 8 new companies have joined the sector. While an increase was observed in non-life and reinsurance branches, it is striking that life and pension branches remained stable. 4 of the companies operating in the insurance sector are among the cooperative insurance companies. On the other hand, there were two insurance cooperatives operating in the Turkish insurance sector in 2017. One of them was established in 2013 as a branch of a company headquartered abroad, and the other insurance cooperative started its operations in 2014. These are the S.S. Koru Insurance Cooperative and S.S Doğa Insurance Cooperative. Both insurance cooperatives operate in the field of non-life insurance by issuing insurance contracts only with their members (Tasdelen & Ozudogru, 2017).

In addition, two more companies were established under the name of TMT Sigorta and Atlas Mutuel Sigorta by merging with All Motor Carriers Cooperatives in 2015, and the number of companies operating in the field of cooperative insurance has reached 4.

Current global research shows that in the 14 years since the onset of the financial crisis (2007 to 2021), premium revenue for the global mutual and cooperative insurance industry has increased by 48% compared to 36% of total global growth. As a result, the global market share of mutual and cooperative insurers increased from 24.5% in 2007 to 26.7% in 2021 (ICMIF, 2023).

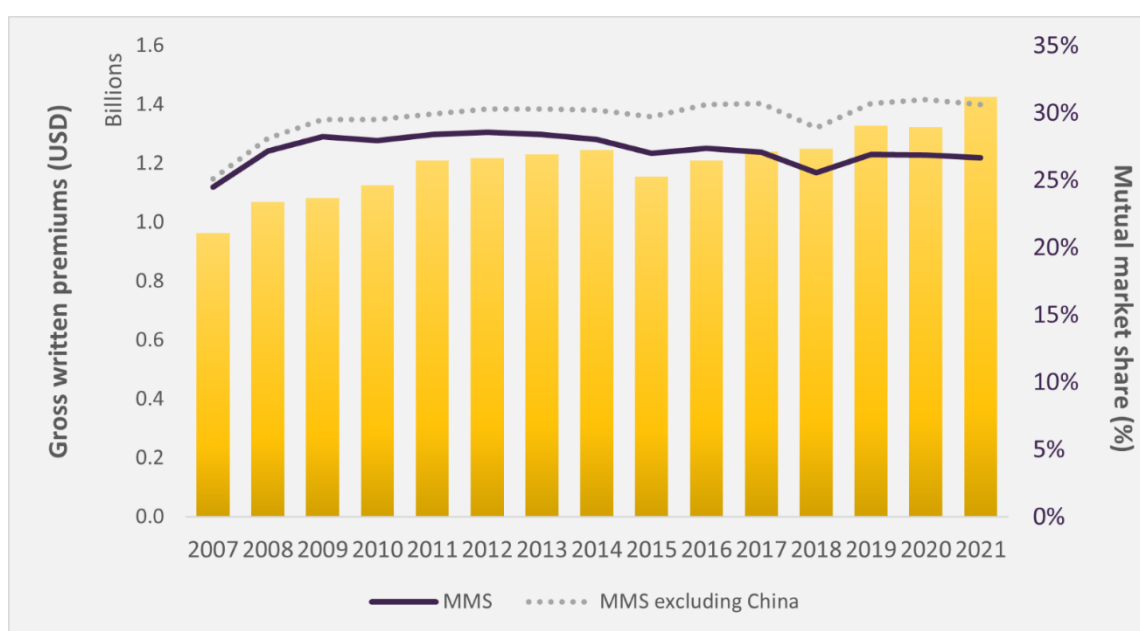


Figure 1: Total Global User Bonuses and Market Share (2007-2021) ICMIF, 2023

### ***Raising Awareness on Cooperative Insurance***

After the insurance companies have chosen the target audience, it is seen that they try to raise awareness in order to promote their programs to the cooperatives. However, despite all efforts, it is clear that it is not at the desired level. In this direction, insurance companies hold meetings and print brochures for the promotion of their programs. However, creating awareness through more intense awareness activities will increase participation in cooperative insurance. It is expected that the regulatory authority and practitioners in Turkey will include different models within the scope of cooperative insurance (Aslan & Durmus, 2015).

Again, in connection with the subject, with the regulation in the 3rd article of the Insurance Law No. 5684, which entered into force in 2007, it was possible for the cooperatives to carry out insurance transactions (Official Gazette, 2007). Insurance cooperatives, which have entered our legislation within the framework of the program of harmonization with the European Union, are at the stage of development in our country. It is assumed that with the encouraging support of this regulation and the press and media organizations, cooperative insurance awareness will increase, its advertisement will expand, and thus the system will gain more momentum. Thanks to this awareness, policyholders or stakeholders act with the awareness of unity, and solidarity as a requirement of being a cooperative. The thought is that it will take place in this system more confidently and more economically, and it will increase the trust in the cooperative system. (Taşdelen & Özudogru, 2017). One of the most important features of cooperative insurance is that it allows members to support each other and share risks, both reducing the financial risks of the members and helping the community to grow in a sustainable way.

General information about the participants participating in this study is given in Table 1. According to the table, 171 people participated in the study, of which 67.8% were male and 32.2% were female. 37.4% of the participants are 46 years old and over. Looking at their marital status, 77.2% are married and 22.8% are single. 41.5% of the participants were civil servants and 50.3% had undergraduate education. Income levels show a density of 33.3%, between 15,501-20,000 TL and 20,000 TL. In addition to this information, participants were asked whether they had heard of cooperative insurance before. As a result, it was revealed that 86.5% of the participants had never heard of cooperative insurance before. In this context, increasing the awareness of cooperative insurance will raise awareness for the sector.

<b>I obtained it due to its compulsory nature</b>	<b>Frequency</b>	<b>Percent</b>
<b>Yes</b>	113	66,1
<b>No</b>	58	33,9
<b>Total</b>	171	100,0

Table 1: Reason for Insurance Policy Demand

When the participants were asked about the reasons for having a policy, it was revealed in the analysis results that 66.1% of them had a policy because it was compulsory. The results show that individuals who request a policy take out the insurance because it is compulsory rather than necessary. It should not be expected from a segment that has compulsory insurance even with conventional insurance to have sufficient knowledge about cooperative insurance.

<b>I don't have sufficient knowledge about cooperative insurance</b>	<b>Frequency</b>	<b>Percent</b>
<b>I don't entirely agree</b>	34	19.9
<b>I don't agree</b>	16	9.4
<b>I'm undecided</b>	23	13.5
<b>I agree</b>	26	15.2
<b>I entirely agree</b>	72	42.1
<b>Total</b>	171	100,0

Table 2: Participants' Knowledge of Cooperative Insurance

When the knowledge level of the participants about cooperative insurance was measured, it was seen that 42.1% of the participants definitely agreed with the statement that I do not have enough information. 15.2% of the participants stated that they did not agree. As a result, 57.3% thought that their knowledge level was insufficient, while 13.5% abstained. Considering these results, the level of knowledge about cooperative insurance is quite insufficient.

<b>Conducting information campaigns through advertising increases awareness.</b>	<b>Frequency</b>	<b>Percent</b>	
	<b>Yes</b>	99	57.9
	<b>No</b>	72	42.1
	<b>Total</b>	171	100,0

Table 3: Ways to Raise Awareness of Cooperative Insurance

According to the results of the analysis, it is believed that advertisements made through informative campaigns are more effective in raising awareness about cooperative insurance, and 57.9% of the participants indicate this option. This question tested how we can increase awareness of cooperative insurance among survey participants.

<b>Discussions on television programs contribute to increasing awareness.</b>	<b>Frequency</b>	<b>Percent</b>
<b>Yes</b>	93	54.4
<b>No</b>	78	45.6
<b>Total</b>	171	100.0

Table 4: Ways to Raise Awareness of Cooperative Insurance

It has been revealed that discussions on television programs will be effective as another way to increase awareness of cooperative insurance. 54.4% of the participants found that the topic of cooperative insurance in the discussion programs on television was effective in terms of raising awareness.

### **Conclusion and Recommendations**

Based on the analysis of the data we obtained from our survey, it did not yield significant results in terms of the impact of demographic factors on cooperative insurance, but the hypothesis of low awareness of cooperative insurance showed significance. In addition, the analysis revealed that a significant portion of the population in Turkey took insurance

primarily because of necessity in some branches that were made compulsory by the government. Society is not expected to have a high awareness of co-operative insurance because there is a tendency that society generally buys traditional insurance out of necessity. This study showed that the level of awareness about cooperative insurance was significantly low.

Today, cooperative insurance practices are common in the world. In our country, a large number of cooperative insurance can be encouraged for domestic investors. In this context, it is useful to try to raise awareness for the importance and spread of the issue by both investors and cooperative managers.

The roadmap to be created by academic research teams on cooperative insurance is of great importance for the sector, investors and even stakeholders.

Multi-layered, multi-participatory symposiums that will be organized by bringing together people from different sectors and experts from different disciplines will increase the level of awareness. Intertwined issues should be discussed by experts in the field and solutions should be sought for problems. Important steps should be taken by organizing training, seminar, symposium and workshop activities on the subject hosted by institutions such as the Insurance and Reinsurance Association of Turkey (TSB) and the Turkish Insurance Institute Foundation (TSEV).

Raising awareness in the field of cooperative insurance and increasing this awareness will provide meaningful added value for both the stakeholders and the sector. As cooperatives have an important role in the establishment of the insurance system in the world, the cooperative system has also contributed to the insurance sector. It should not be denied that insurance cooperatives are behind some of the strongest insurance companies in the world. Thanks to the awareness to be created based on this fact, the acceptance by the society, its contribution to the social structure, its economic results and the voice of the insurance cooperatives in Turkey in international organizations should not be ignored.



## References

- Aslan, H., & Durmus, M. E. ( 2015). Islamic Insurance (Takaful): Türkiye Practice from Managers' Perspective.*International Congress on Islamic Economics and Finance*, 17-29.
- ICMIF. (2023, January 01).*Global Mutual Market Share 2022*. Retrieved from International Cooperative and Mutual Insurance Federation: <https://www.icmif.org/global-mutual-market-share-2022-executive-summary/>
- INVEST. (2021).*Strong Cooperatives for Social Solidarity and Economy*. İstanbul: Act Human.
- Official newspaper*. (2007, June 14). [www.resmigazete.gov.tr](http://www.resmigazete.gov.tr): Retrieved from <https://www.resmigazete.gov.tr/eskiler/2007/06/20070614-2.htm>
- Tasdelen, E., & Ozudogru, H. (2017). The Place of Cooperative Insurance in the Insurance Sector.*Third Sector Social Economy*, 102-112.
- Ülev, S., & Caliskan, M. B. (2022).*Non-Bank Islamic Financial Institutions*. Ankara: Orion Akademi.
- World Cooperative Monitoring Report*. (2022, April 27). Social Economy: Retrieved from <https://socialekonomi.org/2021-dunya-kooperatif-izleme-raporu/>

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*The Development of a Malay Language Pretend Play Assessment Kit for  
Assessing Malaysian Children's Pretend Play*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

Pretend play involves representation of objects or individuals as another for amusement seeking and one of the multifaceted play activities that children engage in for fun, yet promotes a myriad of skills development and learning including cognitive, language, social, and emotional skills. Children across gender, geographical and cultural backgrounds engage in pretend play, however, there is still limited information available about Malaysian children's pretend play. It could be attributed to limited pretend play assessment available in the Malay language, or suitable for usage in Malaysian culture. Therefore, this study aimed to develop a Malay-language pretend play assessment kit to be used for assessing Malaysian children's pretend play. The study adopted the mixed method study guided by the Design and Development Research (DDR) approach. Phase I determined 115 early childhood education (ECE) educators' and 85 parents' needs for a pretend play assessment kit through an online survey. In Phase II, the assessment protocol and kit were designed based on the online survey, the Taxonomy of Pretend Play, and children's play observation. The final protocol and kit were developed through Nominal Group Technique (NGT) process with five experts comprises of an observation protocol and suggested play materials. The usability of the developed protocol and kit was conducted with an ECE educator and parents of young children in Phase III. The pretend play assessment kit is valid, reliable and deemed usable to assess children's general pretend play skills, but needs to be interpreted with caution due to the absence of age-affiliated scores.

Keywords: Pretend Play, Assessment, Malaysia, Observation, Development Study

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## Introduction

Play is the main activity for children, they spend most of their time engaging in various play activities including object play, social play and pretend play. It is one of children's right (UN General Assembly, 1989). Children engaged in play activity for fun, but unbeknown to them, it is also promoting their development and learning (Catalano, & Campbell-Barr, 2021; Shamsudin, 2021). This reflects the definition of play as something fun, intrinsically motivated, flexible and imagination inducing activity (Schlesinger et al., 2020; Zosh et al., 2018). One of the multifaceted and most complex type of play is pretend play, benefiting children's cognitive, language, social and emotional skills (Hashmi et al., 2020; Hutagalung et al., 2020; Lillard, 2017).

## Pretend play

Pretend play is a type of play involving representation of objects or individuals as another for amusement seeking (Fein, 1982; Lillard, 2015; Whitebread, & O' Sullivan, 2012). The main component of pretend play is the nonliteral behaviour or the 'as if' behaviour, also known to be the symbolic behaviour, which is the most complex play behaviour (Fein, 1981). Children engaging in pretend play engaged in at least one of these complex skills – '*decentration*', '*decontextualization*' and '*integration*'. '*Decentration*' is the ability to direct play actions outside of themselves, onto something or someone else, '*decontextualisation*' refers to the play actions of substituting an object or individual for another, taking it outside of its original context, and '*integration*' that is typically present in a more complex pretend play, is the ability to organize play into patterns and/or sequences (Casby, 1992; Fenson, 1986; Hughes, 2010; Rubin, 1986). Often pretend play behaviour is accompanied with vocalization from children to explain or to confirm the pretend play behaviour of the player or toys involved (Barton, 2010; Barton, & Wolery, 2008) which also indicates a more complex pretend play. Typically, children start engaging in pretend play on their own, later progress into pretend playing with other children or adult, recognized as social pretend play, the most complex form of pretend play.

## Categories of pretend play

There is lack of unified category of pretend play (Barton, 2010; Barton & Wollery, 2008), however scholars in the field recognizes three essential elements of pretend play. These elements sometimes referred to as the categories of pretend play, that are substitution, assigning attribute, and referring to an absent object (Lewis, & Boucher, 1997). Similarly, Taxonomy of Pretend Play proposed by Barton (2010) outlines two categories of pretend play– (i) functional play with pretence (FPP) and (ii) substitutions. The first category, FPP involves playing or using objects or toys with its intended function without the reality-based outcome (i.e., the pretence behaviour), characterized by involvement of functional use of objects, showing of nonliteral behaviour, and might not be symbolic in nature. The second category, substitution involves actual objects or absent objects or person for another. Substitution encompasses of three sub-types, that are object substitution (OS), imagining absent objects (IAO), and assigning absent attributes (AAA). OS can be characterized by substituting actual objects or individuals for something or someone else that are similar in shape and size, or different shape and size. IAO involves children making the action or sound referring to an absent object or person that is related to the play activity, and AAA involves assigning objects or person an attribute that is not present at the time (Barton, 2010). These types of pretend play can sometimes occur in sequences where more than one type of pretend

play is observed at the same time relating to the same play theme, indicating a more complex pretend play. In the context of this study, the taxonomy proposed by Barton (2010) guided the four types of pretend play used, that are – FPP, OS, AAA, and IAO.

### **Benefits of pretend play**

A myriad of development is promoted when children engage in pretend play activities including cognitive, language, social, communication, emotional and learning (Barton, 2010; Catalano, & Campbell-Barr, 2021; Gmitrova, Podhajecka, & Gmitrov, 2009; Hong, Ko, & Lee, 2019; Hutagalung et al., 2020; Lillard, 2017; Pearson, Russ, & Spannagel, 2008; Saracho, 2002). Everyday life routine behaviour is typically involved in children's pretend play and this helps shape children's behaviour and functional skills (Shamsudin, 2018). Representation is the main element of pretend play, they imagine, interpret, express and transform the play ideas and behaviour beyond themselves using words, images and also actions. This reflects an integration of cognitive, language, physical, social and even emotional developments in a child, all in one pretend play activity (Piaget, 1962, Russ, & Wallace, 20013; Stagnitti et al., 2020; Vygotsky, 1966).

### **Pretend play assessment**

A number of pretend play assessment is available used by professionals and researchers in the field of play. The assessment is used to measure children's play abilities including Child-Initiated Pretend Play Assessment (ChIPPA; Stagnitti, 2007), Test of Pretend Play (ToPP; Lewis, & Boucher, 1997), Affect in Play Scale – Preschoolers (APS-P; Fehr, & Russ, 2009), and Play in Early Childhood Evaluation System (PIECES; Kelly-Vance, & Ryalls, 2005). All these assessment tools were developed in the context of western countries and available in English language and some other language except Malay language. Since the assessment tools were developed in western countries, some of the items are not climate and culturally-appropriate to be used in the Malaysian context since pretence behaviour has been noted to be highly context dependent (Barton & Wollery, 2008; Shamsudin, 2018). These reasons warrant the development of a pretend play assessment kit in this study that is based on the Malaysian context.

Therefore, the objective of the study is to develop a Malay-language pretend play assessment kit and to test its usability.

### **Methodology**

This mixed method study is guided by the Design and Development Research (DDR; Richey, & Klein, 2007) approach for the systematic process of developing and evaluating the pretend play assessment kit. Phase I involved online needs survey of 200 early childhood education (ECE) educators and parents of young children aged two to six years old. Following the needs for the development of pretend play assessment kit, Phase II commenced with the design of pretend play assessment kit based on the surveys output, available pretend play assessment and the Taxonomy of Pretend Play (Barton, 2010). A pretend play observation protocol and observation form were form and validated through a focus group discussion (FGD) followed suit after the observation of pilot pretend play recordings. The FGD discussed the issues noted by the three blinded raters when rating pilot pretend play recordings. Meanwhile, the reliability of the observation rating was determined using Fleiss Multirater Kappa (Fleiss, 1971; Fleiss et al., 2003). A nominal group techniques (NGT)

process took place in the development of the pretend play assessment kit involving five experts to reach a consensus on issues noted from the previous FGD. The reliability of the observation rating once again established from the observation of 48 video recordings completed by three blinded raters. The developed pretend play assessment kit consists of recording protocol, observation protocol, observation form and sets of play materials were evaluated its usability in Phase III involving an ECE educator and parents of young children. Quantitative data collected in each phase was analyzed descriptively (mean, standard deviation, frequencies, percentage) or inferentially using the Fleiss Multirater Kappa (Fleiss, 1971; Fleiss et al., 2003). Meanwhile, qualitative data was analyzed using quantitative content analysis (Krippendorff, 2004).

## **Conclusion**

Through the systematic and rigorous process, a Malay-language pretend play assessment kit has been developed and evaluated its usability. The assessment kit comprises of a recording protocol guiding the user about the setting, condition and duration of the recording to be taken; an observation protocol and observation form that includes the instruction for rating the pretend play and description of all indicators (types of pretend play, types of vocalizations, etc.); and play materials that includes both toys and non-toys objects) to be presented during the pretend play recording. Based on the three blinded inter-rater ratings Kappa values showed that the rating of the revised and final version of the observation rating ranged from poor to moderate indicated that it is reliable. Children's pretend play can be recorded for five minutes and rated using the observation form where raters will rate the pretend play behaviour as presence or absence during the 30-seconds time interval. The play materials include non-toys objects such as handkerchief, pencils, and cellophane tape, and toys such as doctors set and cooking sets are to be presented to children when recording their pretend play to elicit pretend play, however, it is not compulsory to be used.

The pretend play assessment kit found to be reliable and usable. However, only the absence of age-affiliated scores limits the interpretation of the scores obtained from the observation of pretend play using the developed assessment kit. Interpretation of the scores need to be made with caution, the scores describe the general pretend play skills of the children observed.

## **Acknowledgments**

This paper is based on the research project entitled 'Pretend Play of Preschool Children in Malaysia: The Development of Pretend Play Assessment and Pretend Activities Guidelines' funded by National Child Development Research Centre (NCDRC), Sultan Idris Education University (2020-0023-107-04). The authors would like to extend their gratitude to everyone involved in the study directly and indirectly.

## References

- Barton, E. E. (2010). Development of a taxonomy of pretend play for children with disabilities. *Infants & Young Children, 23*(4), 247-261.
- Barton, E. E., & Wolery, M. (2008). Teaching pretend play to children with disabilities: A review of the literature. *Topics in Early Childhood Special Education, 28*(2), 109-125.
- Casby, M. W. (1992). Symbolic play: Development and assessment considerations. *Infants and Young Children, 4*(3), 43-48.
- Catalano, H., Campbell-Barr, V. (2021). The occurrence of pretend play in early childhood education in Romania – an investigative study. *Early Child Development and Care, 191*(3), 349-359.
- Fehr, K. K., & Russ, S. W. (2014). Assessment of Pretend play in preschool-aged children: Validation and factor analysis of the Affect in Play Scale-Preschool version. *Journal of Personality Assessment, 96*(3), 350-357.
- Fein, G. (1981). Pretend play in childhood: An integrative review. *Child Development, 52*, 1095-1118.
- Fenson, L. (1986). The developmental progression of play. In A. W. Gottfried & C. Brown (Eds.), *Play interactions: The contribution of play materials and parental involvement to children's development* (pp. 53-66). Lexington Books.
- Fleiss, J. L. (1971). Measuring nominal scale agreement among many raters. *Psychological Bulletin, 76*(5), 378-382.
- Fleiss, J. L., Levin, B., & Paik, M. C. (2003). *Statistical methods for rates and proportions* (3rd ed.). Hoboken, NJ: Wiley.
- Gmitrova, V., Podhajecka, M., & Gmitrov, J. (2009). Children's play preferences: Implications for the preschool education. *Early Child Development and Care, 179*(3), 339-351.
- Hashmi, S., Vanderwert, R. E., Price, H. A., & Gerson, S. A. (2020). Exploring the benefits of doll play through neuroscience. *Frontiers in Human Neuroscience*.  
<https://doi.org/10.3389/fnhum.2020.560176>
- Hong, J., Ko, D., & Lee, W. (2019). Investigating the effect of digitally augmented toys on young children's social pretend play. *Digital Creativity, 30*(3), 161-176.
- Hughes, F. P. (2010). *Children, play and development*. Sage Publications Inc.
- Hutagalung, F., Liyan, L., & Adams, D. (2020). The effects of dramatic play on vocabulary learning among preschoolers. *Journal of Nusantara Studies, 5*(1), 294-314.

- Knox, S. (1997). Development and current use of the Knox Preschool Play Scale. In L. D. Parham & L. S. Fazio (Eds.), *Play in occupational therapy for children* (pp. 35-51). Mosby/Year Book.
- Krippendorff, K. (2004). *Content analysis: An introduction to its methodology* (2nd ed.). Thousand Oaks.
- Lewis, V., & Boucher, J. (1997). *The test of pretend play*. Psychological Corporation.
- Lillard, A. (2017). Why do the children (pretend) play? *Trends in Cognitive Sciences*, 21(11), 826-834.
- Pearson, B. L., Russ, S. W., & Spannagel, S. A. C. (2008). Pretend play and positive psychology: Natural companions. *Journal of Positive Psychology*, 3(2), 110-119.
- Piaget, J. (1962). *Play, dreams and imitation in childhood*. Norton.
- Richey, R., & Klien, J. (2007). *Design and development research: method, strategies and issues*. Erlbaum.
- Rubin, K. H. (1986). Play, peer interaction, and social development. In A. W. Gottfried & C. C. Brown (Eds.), *Play interactions: The contribution of play materials and parental involvement to children's development* (pp. 163-174). Lexington Books.
- Russ, S. W., & Wallace, C. E. (2013). Pretend play and creative processes. *American Journal of Play*, 6(1), 136-148.
- Saracho, O. N. (2002). Young children's creativity and pretend play. *Early Child Development and Care*, 172, 431-438.
- Schlesinger, M. A., Hassinger-Das, B., Zosh, J. M., Sawyer, J., Evans, N. & Hirsh-Pasek, K. (2020). Cognitive behavioral science behind the value of play: Leveraging everyday experiences to promote play, learning and positive interactions. *Journal of Infant, Child and Adolescent Psychotherapy*, 19(2), 202-216.
- Shamsudin, I. D. (2018). *The impacts of parent-mediated home-based DIR/Floortime® intervention on children with Autism Spectrum Disorder and their parents in the Malaysian context: A preliminary mixed methods investigation*. Monash University.
- Stagnitti, K. (2007). *Child-Initiated Pretend Play Assessment*. Coordinates Publishing.
- United Nations General Assembly. (1989). *The Convention on the Rights of the Child*. United Nations.
- Vygotsky, L. S. (1966). Play and its role in the mental development of the child. *Soviet Psychology*, 5(3), 6-18.
- Whitebread, D., & O'Sullivan, L. (2012). Preschool children's social pretend play: Supporting the development of metacommunication, metacognition and self-regulation. *International Journal of Play*, 1(2), 197-213.



Zosh, J. M., Hirsh-Pasek, K., Hopkins, E. J., Jensen, H., Liu, C., Neale, D., Solis, L. S., & Whitebread, D. (2018). Accessing the inaccessible: Redefining play as a spectrum. *Frontiers in Psychology*, 9.

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***Assessing the Impact of Empowerment Policies on the South African  
Urban Legal Cannabis Market***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

Following an international wave of legalizing cannabis for medical, recreational and economic reasons, South African national government have been encouraging entrepreneurs to participate in related cannabis technology and innovation. The gap is in the urban customer perceptions towards the legal cannabis industry to assist in aligning existing policies with the government's cannabis industry goals. The purpose of this study is to assess urban customer perceptions towards the legal cannabis industry to assist in aligning policy with the government's cannabis industry goals. This study follows a pragmatism research design and makes use of both quantitative and qualitative approaches to achieve the purpose of the study. Data is extracted from the Google database and documents. A total of 51 stores were identified on google maps. Google Maps capture provides data regarding customer reviews and store ratings. Data were analysed using Microsoft Excel. Findings show that customers have useful views that would assist policymakers to align new South African cannabis policies with those of successful urban developed countries. It is recommended that policymakers should consider the views of legal cannabis customers when passing policies meant to ignite entrepreneurial innovation needed to meet both customer's needs and the cannabis industry. The contribution of the article is in its use of literature review and Institutional theory to suggest policymaking processes that would benefit both cannabis customers and local communities.

**Keywords:** Empowerment Policies, Economic Goals, Cannabis, Legalization, Perception, Policymaking Processes, Urban Local Communities

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## **Introduction**

There are different conflicting narratives as to where cannabis came from or who was the first in the world or Africa to use it for medicinal, recreational, economic or as part of the food (Gwala, 2023; Almqvist, 2020; Samuel and Edward, 2015). Nevertheless, following an international wave of legalizing cannabis for medical, recreational and economic reasons, South African national government have been encouraging entrepreneurs to participate in related cannabis technology and innovation (Mashau and Farisani, 2023). Farisani (2023) corroborate and assert that entrepreneurs owning Small Medium and Micro Enterprises (SMMEs) are seen by the South African government as agents of job creation, growing the economy and ending the inequality largely seen in South African urban cities. The South African government has also proceeded to start a process to align the country's policies, laws and regulations to allow cannabis products to be manufactured and sold legally by entrepreneurs. The legal move is the 2018 Constitutional Court ruling and the latest being the Cannabis for Private Purposes Bill which has been undergoing the consultation stage led by the national parliament until May 2023.

Ssekitoleko and du Plessis (2021); Mahadea and Kaseeram, (2018) posit that the well-established challenge for the South African government is the implementation of empowerment policies meant for job creation, growing the economy and ending inequality. Farisani (2022) and Mazibuko (2013) concur and argue that nowhere is inequality more visible than in urban cities like eThekweni Municipality where the design of Apartheid laws remains largely intact and disadvantaging certain races while benefitting others. Amongst the citizen empowerment policies that have been and continue to be hard to implement are the National Strategy for the Development and Promotion of Franchising in SA (2000), Black Economic Empowerment, the Industrial Policy Action Plan and the Industrial Policy Action Framework (2007). All these policies have not empowered all entrepreneurs and SMMEs as anticipated by the government i.e. they had not solved the almost two-decade-long challenges of job creation, growing the economy and ending the inequality that is most visible in urban areas.

Just like all other bills in South Africa, Cannabis for Private Purposes Bill is following the same processes used to pass other empowerment policies that have largely failed to empower the intended communities. The objective of this study is to assess urban customer perceptions towards the legal cannabis industry to assist in aligning policy with the government's cannabis industry goals. To achieve this, we draw from the Institutional Theory and the Sustainable Livelihoods Framework. We draw to suggest that attention be given to important aspects (race of local urban dwellers, fear of customers and price of cannabis end products), resources (such as infrastructure/physical, human resources and financial) and partners or stakeholders (local) that would ensure the policies indeed empower the cannabis entrepreneurs and SMMEs.

## **Literature Review**

### ***Institutional Theory***

Institutional Theory's three pillars are the regulative, normative and cultural-cognitive pillars (Palthe, 2014; Scott, 2013). For this study, we will unpack how regulative and cultural-cognitive pillars assist in understanding urban citizens' perspectives to inform policies, laws and regulations that could empower them (see Table 1 below). Empower customers,

entrepreneurs and SMMEs alike in line with the South African government's goal to create jobs, grow the economy and reduce inequality through the Cannabis for Private Purposes Bill. Cultural-cognitive pillar shed light on the culture, beliefs and values of the citizens (Farisani, 2023; Scott, 2008). Through this light, we are then able to understand the race of the local urban cannabis customers, the fear of cannabis customers and the price of cannabis end products customers are willing to pay.

Table 1: Comparison between regulative, normative and cultural-cognitive elements of Institutional Theory (adopted from Palthe, 2014)

Elements	Regulative	Normative	Cognitive
Legitimacy	Legal systems	Moral and ethical systems	Cultural systems
Central Rudiments	Policies, legislation, and rules	Work role, habits and norms	Values, beliefs, and assumptions
System Transformation Drivers	Legal obligation	Moral obligation	Transformation values are internalized
System Transformation Sustainers	Fear and coercion	Duty and responsibility	Social identity and personal desire
Behavioural Reasoning	Have to	Ought to	Want to

By knowing the race of the customers, we will be able to understand better their culture and be wiser on how much customers can be made to value the cannabis products they seek. Cannabis products they seek be it medical, recreational or food. El-Khoury et al. (2022) point out that various businesses and countries (such as those in the Arab world) have relaxed certain policies, laws or regulations to attract certain customers. El-Khoury et al. (2022) further elaborate on the significance: "The Arab world has traditionally been conservative when it comes to all drugs-related policies. Cannabis is largely demonized with heavy sentences served to anyone suspected of using, selling, let alone planting cannabis" (p1). Thus, knowing customers' race and culture might assist in understanding their beliefs.

Farisani (2023) assert that the cultural cognitive pillar allows us to understand the urban citizen's beliefs and therefore their fears concerning cannabis. Fears may drive sales of products up or down. Kavousi et al. (2022) affirm and highlight the role of local urban authorities or Local Government. Kavousi et al. (2022) elaborated in this way "Local governments increasingly are using land use and police power authority, taxation, investment, and programming to shape how their residents engage with cannabis." Medical products such "shape" knowledge by the local government might have a big impact on the sales and sustainability of SMMEs. Therefore, policies, laws and regulations that assist customers to understand that certain products are safe could assist innovative entrepreneurs with their novice products and urban SMMEs selling legal cannabis products. Thus, local urban government regulations can allay the fears around new products and stabilize the prices of such products.

According to El-Khoury et al. (2022) and Farisani (2023); cultural cognitive culture shed light on what citizens value and how different communities from the same country in different localities may value the same thing differently. If citizens value a product they are willing to pay more. Local regulators can assist the local urban SMMEs by ensuring there are

compelling regulations to keep the city clean and safe for customers to want to hang around the vicinity and pay more for the environment that they value as they enjoy their cannabis product of choice. To understand the resources that urban city managers or Local Government may avail to ensure the Cannabis for Private Purposes Bill is not like other policies meant to empower the citizens but end up being impractical and hard to implement we draw from the Sustainable Livelihoods Framework.

### Sustainable Livelihoods Framework

Khomo, Farisani and Mashau (2023) as well as Smyth and Vanclay (2017) posit that Sustainable Livelihoods Framework (see Figure 1) give us insight into what kind of resources are needed and which structures should act to ensure that the empowerment policies impact the urban citizens as intended. Drawing from Sustainable Livelihoods Framework we can understand what resources and which partners are needed to ensure the Cannabis for Private Purposes Bill impact urban entrepreneurs, SMMEs and cannabis customers positively.

A great place to start is in understanding the resources (see Figure 1's livelihood assets/resources) needed so that we are better informed to suggest relevant institutions (see transforming structures and processes in Figure 2) to provide such resources. Five types of resources are listed in Figure 2 human, natural, financial, physical and social.

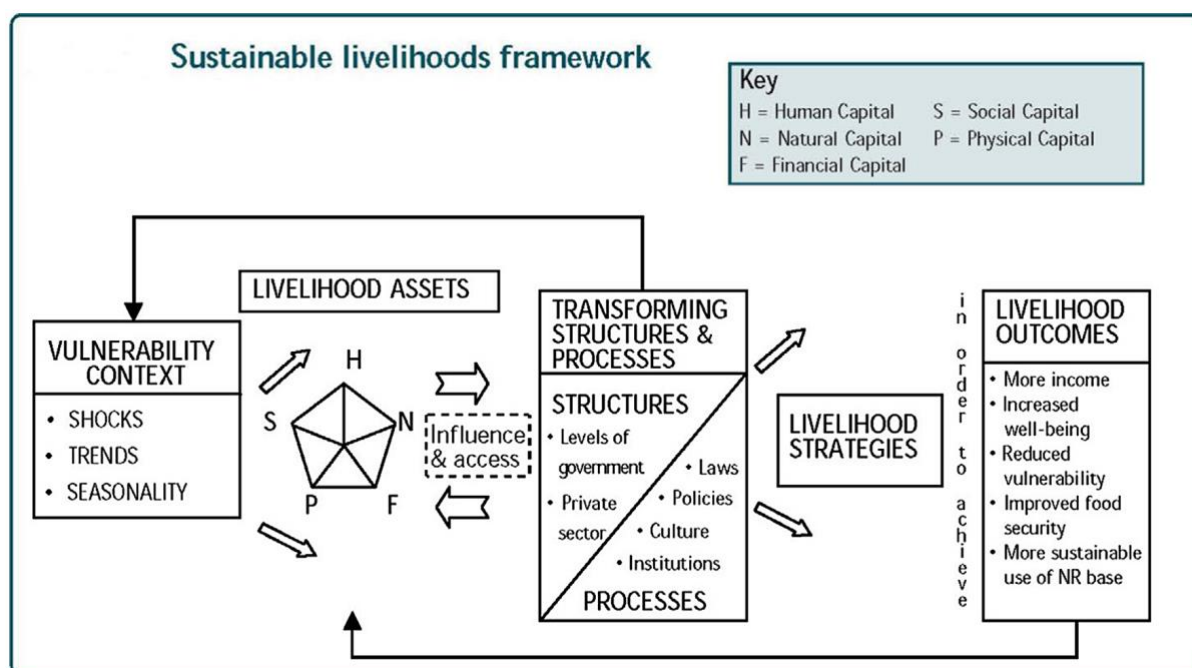


Figure 1: The Sustainable Livelihoods Framework  
Source: DFID (1999-2001)

Different groups (i.e. entrepreneurs, SMMEs and customers) of urban dwellers will need different resources or the same resources but with different quantities to successfully benefit from the Cannabis for Private Purposes Bill. Entrepreneurs with innovative ideas without businesses might need the financial resources that established SMMEs need from the same available institutions but in differing quantities. On the other hand, customers might just need social resources (such as product safety assurance from the local municipality or assurance and peace of mind that their favourite cannabis products are not illegal) to benefit from the Cannabis for Private Purposes Bill.

The Sustainable Livelihoods Framework educate us that structures or institutions both in government and the private sector could be useful in availing resources that lead to the successful implementation of policies and sustainable local businesses and livelihoods (see Figure 1). Thus, structures such as Local Government (LG), law enforcement agencies, local business groups, Non-Governmental Organizations (NGOs) and Institutions of higher learning are all responsible. Responsible for ensuring that urban entrepreneurs, SMMEs and cannabis customers are assisted with relevant resources. Relevant resources to benefit from the empowerment policies such as the National Strategy for the Development and Promotion of Franchising in SA (2000), Black Economic Empowerment, the Industrial Policy Action Plan and the Industrial Policy Action Framework (2007) as well as the Cannabis for private Purposes Bill.

Meehan et al. (2020) posit that structures such as Local Government (LG) can assist with resources such as affordable infrastructure for cannabis businesses to rent and for customers to feel safe as they enjoy their chosen cannabis products. Martiroysan (2017) affirm and asserts that LG will need to work with law enforcement agencies such as metropolitan police and national police units operating in the city. On the other hand, Plakias et al (2021) and Fersko et al. (2018) contend that local business groups such as banks can assist by ensuring that entrepreneurs and SMME owners who need financial resources are assisted even though they might have challenges here and there. Non-Governmental Organizations (NGOs) are believed by authors such as Bartlett (2021) and Hodgson (2021) to be in a better position to assist with Social Resources by voicing their support for legal cannabis in areas where cannabis legal products are highly stigmatized. The role of Institutions of higher learning to use their human resources knowledge to educate entrepreneurs on the latest technology needed to process the products safely and at affordable prices is advocated by Farisani (2023); Ganjier (2021) and Musakuro and De Klerk (2021).

## **Methodology**

This study was conducted during the Covid 19 pandemic and therefore, the research design and approach were chosen with not only the objective of the study but the prevailing conditions in mind. Mpofu and Mpofu (2023) corroborate pointing to the difficulties of conducting research during the pandemic. This study takes a pragmatic view towards integrating theoretical knowledge (i.e. literature review) with practical ideas of customers (online reviews) of cannabis products. Pragmatism was chosen for this study. Clark and Ivankova (2015); Creswell, Fetters, Plano-Clark and Morales (2009) are among the researchers that posit the suitability of pragmatism when the researcher intends to use both qualitative and quantitative data. Integrating theoretical knowledge and Google online reviews will avail both qualitative and quantitative insights that will assist to achieve the objective of this study. The objective of this study is to understand the impact of cannabis customer perceptions towards the legal cannabis SMMEs situated in South Africa's eThekweni municipality with the view to contribute to its sustainability. Mpofu and Mpofu (2023); Blaikie (2018); Fetters, Curry and Creswell (2013) are amongst those who assert that pragmatism allows for innovative ways to find solutions to problems such as sustainability.

The data used to study cannabis stores' perceptions is collected from both Google online reviews and literature reviews. Google reviews are accessible through google maps, it allows customers of cannabis stores to review the store by leaving comments that detail their experiences and also rate the service thereafter. The data is reliable as customers participate willingly to assist further customers. This study uses customer reviews and ratings to

determine customers' perception of cannabis stores in the greater area of eThekweni Municipality. A total of 51 stores were identified on google maps, and the researcher was able to verify 30 stores scattered in 20 locations (eThekweni suburbs) by driving to these locations. The 30 verified stores were sampled to be part of the study (all store reviews and ratings are included in this study) i.e. the selected 30 stores in 20 suburbs received 571 reviews (see Table 1, figures 2,3 and 4 for demographics). The data was extracted from Google in July 2022.

Content analysis was chosen to enable both qualitative and quantitative data analysis. Microsoft Soft Excel software was used to categorize qualitative data from all the store reviews into themes which inform the analyses. The quantitative ratings were also captured in Excel. Thus, content analysis's approach to both qualitative and quantitative data was observed during categorization, coding, analysis and presentation, thereby enabling the emergence of useful themes and sub-themes presented in the results and discussion sections (Mubiru, Kombe and Limbumba, 2022).

This study complied with the University of KwaZulu Natal's ethical clearance policy (UKZN Ethics Review application no 00020475) that applies to online data collection. Triangulation was used in this study to ensure reliability and validity i.e. the findings from Google online reviews in this study were checked against the findings presented by other researchers discovered as part of the literature review. The approach of using the findings of one tool against the other to ensure reliability and validity is consistent with Bougie and Sekaran (2009). Lincoln and Guba (1985) corroborate and further magnify the strong and significant relationship between reliability and dependability in that a protest of credibility in research confirms dependability.

## Findings and Analysis

The findings and analysis section are presented in line with the research objective and cover the survey conducted online and the information from the literature review. The survey provides key information about the respondents such as race, fear, and their view of legal cannabis price in the eThekweni municipality urban areas to determine policy-making and implementation direction that would benefit all the stakeholders i.e. the prospective entrepreneurs, cannabis SMMEs and customers. Documents such as the eThekweni municipality website and related literature are analysed to further understand the policy implementation challenges and its relationship between race, fear and prices.

## Demographics of Participants

Below are key demographics that have important information to assist in understanding the findings better:

The selected 30 stores in 20 suburbs received 571 reviews by the time of data collection from the reviewers of the following gender demographic:

Table 2: Reviewers' gender

Reviewers Gender n=571		
Female	Male	Unknown
30%	50%	20%

Source: Researchers' analysis



Reviews on Google are mostly given by citizens of white ethnic groups, followed by Indians.

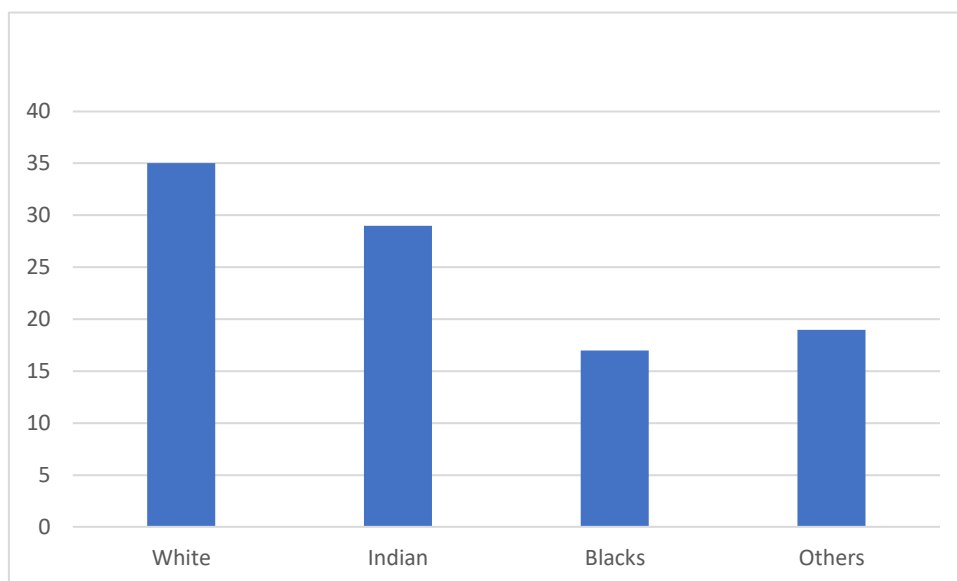


Figure 2: Racial groups  
Source: Researchers' analysis

35% of the reviewers are whites and the Indians make up 29% of the reviewers. Blacks comprise the largest eThekweni municipality population; however, only 17% of the reviewers are identified as blacks. These findings show that Cannabis is primarily stigmatized amongst black people in South Africa.

The diagram below shows the concentration of sampled cannabis stores in eThekweni, South Africa.

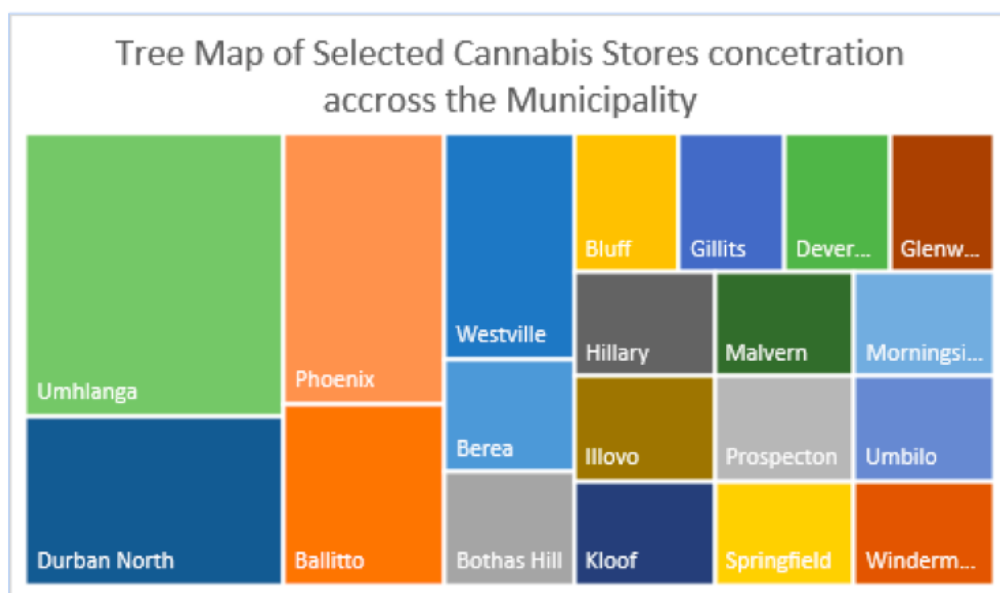


Figure 3: Treemap of sampled cannabis stores in eThekweni, South Africa  
Source: Researchers' analysis

Cannabis stores in the year 2022 are largely concentrated in the northern part of the municipality. The above diagram shows that most stores are located in Umhlanga, followed

by Durban North. It is also important to note that the cannabis stores are spread across all sides of the municipality, as indicated in the diagram above. The results also show that most cannabis stores are in white and Indian-dominated Umhlanga suburbs.

The diagram below shows the mode of sales for cannabis stores in Durban.

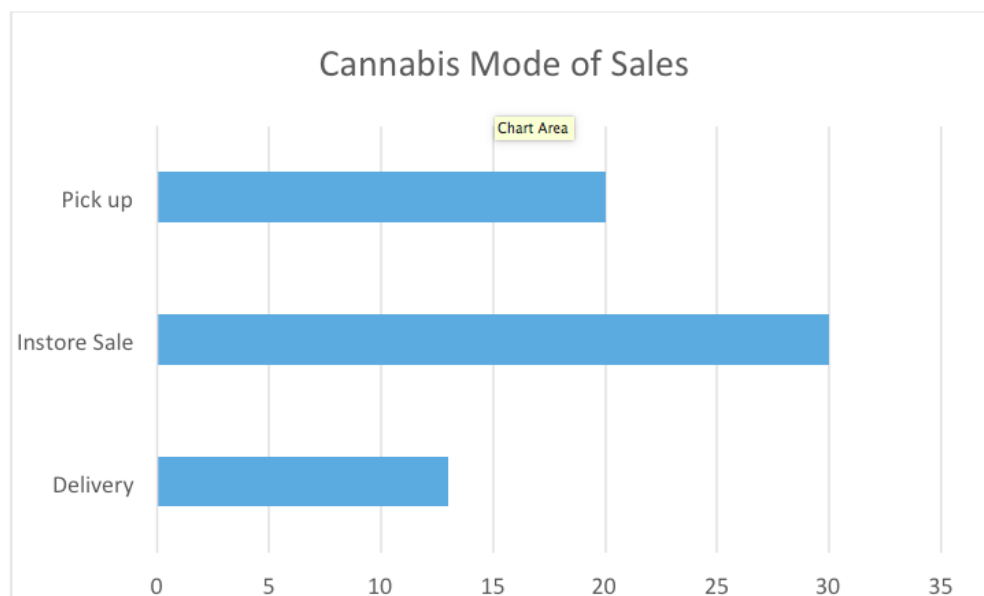


Figure 4: Cannabis mode of sales  
Source: Researchers' analysis

All cannabis stores in Durban offer in-store purchasing options, with 13 of 30 sampled stores open for delivery and 20 of 30 stores open to purchase and pick-up services (all cannabis stores cited in this study have cannabis-only licenses and hence sell cannabis-related products only). The findings reveal that the coronavirus pandemic accelerated none contact mode of buying and most stores across sectors offered delivery options. Below are the key findings in line with the aim of the research starting with the perceptions of cannabis product quality.

### ***Summary of the Findings and Analysis Between Perceptions and Policymaking***

Table 3 below provides a summary of the findings and analysis of the links between eThekweni customers' perceptions and the impact on the cannabis policymaking process. The summary presents responses from the three biggest races at eThekweni targeted areas and did not include other minority groups to ensure results are focused. The summary presents the customers' perceptions and the impact of such impact on policymaking by linking the cultural systems to the actions of customers in terms of support in the form of resources. Resources customers are willing to commit to supporting the cannabis industry.

Table 3: Summary of the findings and analysis on the links between eThekweni customers' perceptions and the impact on the cannabis policymaking process

<b>Race</b>	<b>Cultural Systems: Assumptions, Belief and Value</b>	<b>Action and Resource Support</b>	<b>Impact on the Cannabis Bill</b>
Black	Assumptions: The cannabis industry is dirty. Little knowledge of the diversity of products Belief: Cannabis products are illegal Value: Cannabis products bring no tangible value	Weak financial and social resources support	Negative
White	Assumptions: The cannabis industry is diverse with useful clean products. Belief: Cannabis products are legal. Value: Cannabis products are valuable to individuals and society	Strong financial, social, human and physical resource support	Positive
Indian	Assumptions: The cannabis industry is new and interesting. Belief: Cannabis products are legal. Value: Cannabis products are valuable to individuals and society	Average financial, social, human and physical resource support	Positive

### **Discussion of the Findings and Analysis**

The discussion of the findings and analysis starts with the Cultural Systems: Assumptions, Beliefs and Values; then to Action and Resource Support; and finally the Impact of Institutions and their resources on the Cannabis Bill.

### **Cultural Systems: Assumptions, Belief and Value**

The findings section reveal that South African eThekweni urban areas have three dominant races i.e. Blacks (majority), White and Indian. Figure 2 shows suburban areas where data was collected and the analysis presented in the racial composition of the cannabis customers there shows that the majority of the citizens and therefore customers remain to be whites. Analyses of the racial composition of the urban citizens in the identified suburban areas show that these

three races still largely live in line with the race separation policies of the Apartheid system with few exceptions. The status quo has remained due to financial challenges that remain today amongst different races in South African urban areas (Mazibuko, 2013; Mahadea and Kaseeram, 2018) i.e blacks still find it hard to own suburban houses because they remain poor even in the new democratic dispensation. Farisani (2022); Ssekitoleko and du Plessis (2021) corroborate and point out that poverty and financial difficulties have an impact on their education, employability and social life. The results presented in Table 3 further show that the difference in cannabis assumptions, beliefs and values amongst eThekweni citizens reflect that. Whites and Indians who are better off economically and educationally seem to have well-informed cannabis-related assumptions, and beliefs and understand the economic and social value of cannabis products. The understanding of economic and social value has a direct impact on the resources support of the cannabis stores and the cannabis bill. The findings are consistent with Institutional Theory's cultural cognitive element and Scott's (2013) arguments that customers will only support products that align with their assumptions, beliefs or where they derive value.

### **Action and Resource Support**

The findings and analysis of the support by race to the cannabis stores show that the black majority of eThekweni is not only staying away from those stores socially but they are not providing their financial resources i.e. they are not buying the cannabis products. The Sustainable Livelihoods Framework provide insight into how a lack of social and financial resources from key groups or structures can have an impact on the sustainability of the product and stores that depend on such resource support. Smyth and Vanclay (2017) affirm and argue that for sustainability to be achieved, the asset base (i.e. the resource base that includes the financial, social, physical, human and natural aspects) has to be vibrant. Vibrant in the sense that resources that are needed are supplied by relevant structures or groups to ensure the sustainability of products and the relevant industry. Khomo, Farisani and Mashau (2023) echo Smyth and Vanclay (2017) and went on to link financial resources to the successful implementation of policies. Farisani (2022) and Palthe (2014) point out that the implementation of policies relies on the entire cycle of policymaking and policy implementation i.e. from policy situational analysis, policy planning, policy implementation, policy monitoring and policy evaluation.

### **Impact of Institutions and Their Resources on the Cannabis Bill**

The findings presented in Table 3 show that indeed resources have a direct impact on the cannabis bill policymaking and implementation. Where the key resources such as financial, social or physical have not been provided by key structures or racial groups the impact is negative. Meehan et al. (2020) affirm and argue that structures such as Local Government (LG) can assist with resources to ensure both cannabis stores and local urban citizens benefit. Plakias et al (2021) and Fersko et al (2018) affirm and further assert that all local structures with relevant resources are responsible for successful policy planning, and implementation in one way or another. Farisani (2022) echoes Plakias et al (2021) and points out that while different structures, institutions or stakeholders are needed more than others in various stages of policymaking and implementation, all stakeholders should remain engaged and informed throughout the process. The variation of the need for the presence of institutions, structures or stakeholders is necessitated by the four different stages that are otherwise connected. The stages are policy situational analysis, policy planning, policy monitoring and policy evaluation. i.e. while various local urban community groups and structures might be needed

to physically contribute in most stages of the policy-making, they might not all possess the qualifications to physically monitor or evaluate the policy implementation of various technical processes. Thus, relevant structures that can provide necessary human resources should be tasked with such specific monitoring and evaluation aspects of policy making and implementation. The positive impact of the Cannabis Bill will therefore be dependent on the proper allocation of resources by relevant institutions, structures and stakeholders in urban areas. The positive impact of the Cannabis Bill in South Africa is what is needed by the South African government to enable them to reach their urban goals. Their urban goals are to create jobs, reduce inequality and grow local economies.

## **Conclusions**

The objective of this study was to assess urban customer perceptions towards the legal cannabis industry to assist in aligning policy with the government's cannabis industry goals. To achieve the objective of the study, the discussion of the collected online data and literature review were evaluated with the assistance of Institutional theory and SLF. Such was done to suggest policymaking processes that would benefit both cannabis customers and local communities.

The findings show that different racial groups hold different perspectives that are closely associated with their race. The findings further show that existing and potential customers from all urban racial groups have useful views that would assist policymakers to align new South African cannabis policies with those of successful urban developed countries. It is recommended that the policymakers should take the views of all (i.e. all races including urban blacks who have shown little support so far) urban legal cannabis customers into consideration when passing policies meant to ignite entrepreneurial innovation needed to meet both customer's needs and the cannabis industry. The contribution of the article is in its use of literature review and Institutional theory to suggest policymaking processes that would benefit both cannabis customers and local communities.

## References

- Almqvist, I. (2020). *Medicine of the Imagination: Dwelling in Possibility: An Impassioned Plea for Fearless Imagination*. John Hunt Publishing.
- Bartlett, J.(2021,May 11). Smokescreen. The Boston Business Journal.  
<https://www.bizjournals.com/boston/news/2021/05/11/smokescreen-a-lack-of-transparency-in-the-money-c.html>
- Blaikie, N. (2018). Confounding issues related to determining sample size in qualitative research. *International Journal of Social Research Methodology*, 21(5), 635-641.
- Bougie, R., & Sekaran, U. (2009). *Research Methods for Business: A Skill-Building Approach*. 5th edition. Hoboken, New Jersey: John Wiley and Sons, Ltd, Publication.
- Clark, V. L. P., & Ivankova, N. V. (2015). *Mixed methods research: A guide to the field* (Vol. 3). Sage publications.
- Creswell, J. W., Fetters, M. D., Plano Clark, V. L., & Morales, A. (2009). Mixed methods intervention trials. *Mixed methods research for nursing and the health sciences*, 161-180.
- El-Khoury, J., Bou Khalil, R., Nemer, A., & Richa, S. (2022) Legalizing medical cannabis in Lebanon: The complex interface between medicine, law, ethics, and economics. *Cannabis and Cannabinoid Research*. 7(2),119-21.
- Farisani, T. R., (2023). Empowering South African Rural Stakeholders to Participate in the Legal Cannabis Market: A Sustainable Livelihoods Approach. In P. Mashau, & J. Nyawo (Eds.), *Rapid Innovation and Development in the Global Cannabis Market* (pp. 139-158). IGI Global.
- Farisani, T.R. (2022). Assessing the impact of policies in sustaining rural small, medium and micro enterprises during COVID-19 pandemic in South Africa. *Southern African Journal of Entrepreneurship and Small Business Management* 14(1), a505.
- Fataar, F., Goodman, S., Wadsworth, E. & Hammond, D. (2021). Consumer perceptions of 'legal' and 'illegal' cannabis in US states with legal cannabis sales. *Addictive behaviours*, 112, 106563.
- Fersko, J. (2018, May). The business of marijuana. ACREL News & Notes.  
[https://cdn.ymaws.com/acrel.site-ym.com/resource/resmgr/news\\_and\\_notes/May/2018-05\\_Fersko\\_-\\_Cannabis\\_Ar.pdf](https://cdn.ymaws.com/acrel.site-ym.com/resource/resmgr/news_and_notes/May/2018-05_Fersko_-_Cannabis_Ar.pdf)
- Ganjier. (2021). Become a master of cannabis service: Cannabis sommelier certification.  
<https://www.ganjier.com/certified-ganjier-cannabis/>
- Gwala, R. S. (2023). The Legalisation of Cannabis in South Africa: Proposing an Economic Value Chain Model for South Africa. In P. Mashau & J. Nyawo (Eds.), *Rapid Innovation and Development in the Global Cannabis Market* (pp. 98-122). IGI Global.

- Hodgson, M. (2021, April 16). Santa Barbara County supervisors spend cannabis tax funds on expansion requests. Lompoc Record. [https://lompocrecord.com/news/local/govt-and-politics/santa-barbara-county-supervisors-spend-cannabis-tax-funds-on-expansion-requests/article\\_42d8c7a1-110f-5479-86f7-391e0\\_a5cbd39.html](https://lompocrecord.com/news/local/govt-and-politics/santa-barbara-county-supervisors-spend-cannabis-tax-funds-on-expansion-requests/article_42d8c7a1-110f-5479-86f7-391e0_a5cbd39.html)
- Khomo, S.M., Farisani, T.R. and Mashau, P. (2023). The financial legislative role and capacity of municipal councilors at Ulundi Municipality. *Africa's Public Service Delivery and Performance Review* 11(1), a691.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.
- Mahadea, D. & Kaseeram, I. (2018). Impact of unemployment and income on entrepreneurship in post-apartheid South Africa: 1994–2015. *Southern African Journal of Entrepreneurship and Small Business Management*, 10(1), 1–9.
- Martiroysan, S. (2017). The Decriminalization of Recreational Cannabis in California: Commercial Cultivation Could Cost Growers an Arm, a Leg, and Their Freedom. *San Joaquin Agricultural Law Review*, 27(2), 187–208.
- Mashau, P and Farisani, T.R (2023). Manuscript title: The Impact of cannabis customer perceptions on Its Sustainability in South Africa's eThekweni Municipality. *International Journal of Social Sciences Research and Review*. (Accepted for publication, awaiting publication date).
- Mazibuko, S. (2013). Understanding underdevelopment through the sustainable livelihoods approach. *Community Development*, 44(2), 173-187.
- Meehan, B., Rusko, C., & Frank Stephenson, E. (2020). (Pot)heads in beds: The effect of marijuana legalization on hotel occupancy in Colorado and Washington. *Journal of Regional Analysis & Policy*, 50(1), 46–53.
- Mpofu, F. Y., & Mpofu, A. (2023). The Covid-19 Pandemic and Digital Transformation in Zimbabwean State Universities: Opportunities, Challenges, and Implications for the Transition to Online Learning. *International Journal of Social Science Research and Review*, 6(3), 64-88.
- Mubiru, M. B., Kombe, W., & Limbumba, T. M. (2022). “No Woman is an Island”: The Housing Market Access Strategies by Female-Headed Households in Kampala. *International Journal of Social Science Research and Review*, 5(6), 17-34.
- Musakuro, R.N., & De Klerk, F. (2021). Academic talent: Perceived challenges to talent management in the South African higher education sector. *SA Journal of Human Resource Management/SA Tydskrif vir Menslikehulpbronbestuur*, 19(0), a1394.
- Palthe, J. (2014). Regulative, normative, and cognitive elements of organizations: Implications for managing change. *Management and organizational studies*, 1(2), 59-66.

Plakias, Z., Jodlowski, M., Giamo, T., Kavousi, P., & Taylor, K. (2021). Pot of money: Characterizing agricultural lending and banking in the California cannabis industry. *Agricultural Finance Review*, 82(2), 214-246.

Samuel, A. G., & Edward, B. (2015). The marijuana factor in a university in Ghana: A survey. *Журнал Сибирского федерального университета. Гуманитарные науки*, 8(11), 2162-2182.

Scott W., 2013, *Institutions and Organizations: Ideas, Interests, Identities*. Sage, Thousand Oaks.

Scott, W. R., 2008, *Institutions and Organizations: Ideas and Interests*, (Third ed.). Thousands Oaks: Sage.

Smyth, E & Vanclay, F. (2017). The Social Framework for Projects: a conceptual but practical model to assist in assessing, planning and managing the social impacts of projects. *Impact Assessment and Project Appraisal*, 35 (1), 65-80.

Ssekitoleko, P., & du Plessis, Y. (2021). Unravelling the makings for entrepreneurial success: A case study of the Maponya business in South Africa. *The Southern African Journal of Entrepreneurship and Small Business Management*, 13(1), 10.

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***The Conceptual Framework Development of Internationalization Process Model of Thai Small and Medium Enterprises (SMEs) in Emerging Markets: A Study of Brazil, Russia, India, China, and South Africa (BRICS)***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

The phenomena of internationalizing business to emerging markets has resulted from the internationalization of both public and private enterprises, according to modern organization theory. An enterprise cannot survive in an open system and highly dynamic environment. In response to radical changes in the political, legal, and socio-cultural contexts of emerging markets, inter-organizational networks have been established to link associated groups or groups of organizations that voluntarily exchange news and information, resources, or participate in activities together in order to respond to different demands and achieve organizational objectives and survive. The study's aims were as follows: 1) to determine the internationalization process and entry mode strategies utilized by Thai SMEs for their operations in BRICS; and 2) to make recommendations for Thai SMEs wishing to internationalize their business to BRICS and for the Thai government sector to design management networks to promote investment and provide support for Thai enterprises to internationalize there. This will enable for the internationalization of SME processes. The next phase of research will explore and assess the theoretical model by collecting primary data from Thai SMEs and employing the ATLAS.ti (The qualitative data analysis and research software) method for hypothesis testing.

Keywords: Internationalization Process Model, Thai Small and Medium Enterprises, BRICS

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## Introduction

Thailand has been engaged in international trade and investment with China and India as business partners for longer than the other three nations. Ayutthaya was a Siamese kingdom that existed from 1351 to 1767 and was welcoming to foreign merchants, including those from China and India (Trading Economics, 2022). This implies that Thailand has maintained trade ties with China and India for up to 600 years. This history of Thailand's trade and investments in China and India demonstrates their longstanding relationship, which has resulted in a mature internationalization.

Russia, South Africa, and Brazil have only recently established trade relationships with Thailand. The first contact between Siam (as Thailand was formerly known) and Russia occurred on February 19, 1863, when two Russian ships anchored at the Chao Phraya River port in Bangkok. During the reign of King Rama the fifth, foreign relations between Siam and Russia were maintained with an emphasis on international politics to combat the aggressive expansion of imperialism. The two nations had positive relations with one another. The Russian-Siamese Declaration of Jurisdiction, Trade, and Navigation was subsequently signed in Bangkok on June 23, 1899 (Embassy of the Russian Federation, Thailand, 2022). However, Thailand and Russia had a brief pause in their bilateral relations following the 1917 Russian Revolution, when the absolute monarchy was replaced by socialism. In March 1941, Thailand and the Soviet Union once again established diplomatic relations. Later, upon the dissolution of the Soviet Union in 1991, the Russian Federation held that relations between Thailand and Russia should continue uninterrupted, and this has been the case to this day (Wattana Koonwong, 202).

On April 17, 1959, Brazil and Thailand established diplomatic relations (Royal Thai Embassy, Brazil, 2013). In 2011, Brazil ranked first in Thai-Latin American commerce, but there were few foreign direct investments between the two nations. Investing in Brazil posed a number of hazards to Thai businesses, including complex rules and regulations, a lack of infrastructure, and language issues (Portuguese) (Thailand's Board of Investment, 2021).

Regarding South Africa, Thailand's first official contact with South Africa occurred in March 1992 when consular relations were established. In September 1992, the South African Consulate-General was established in Bangkok, and in October 1992, the Thai Consulate-General was established in Johannesburg. Thailand and South Africa established complete diplomatic relations on December 9, 1993, and Consulates General were upgraded to embassies (South African Embassy, Thailand, 2022). Thailand and South Africa have maintained their diplomatic relations to the present day. Consequently, trade and investment between the two nations have increased, as will be discussed in the following section. This is a concise summary of Thailand's relations with the BRICS nations.

Two mechanisms relate international commerce to internationalization: 1) trade — the sale and shipment of products and services from one nation to another; and 2) direct investment — the construction of or acquisition of productive assets in another nation (Grant, 2011: 371-372). Despite the fact that BRICS are intriguing, as stated previously, it is evident that few Thai companies have invested in BRICS. The majority are multinational corporations (MNCs) or multinational enterprises (MNEs), which have facilities and other assets in at least one country other than their native country, engage in production or service activities through their own affiliates, and conduct business with a global outlook.

According to the related documents and documents obtained from the government and the private sectors, focusing on Thai PCLs on the SET 100 index, China was the first among the countries with which most Thai (Public) companies internationalized their business in BRICS, (all 8 enterprises), followed by India (4 enterprises), Russia (2 enterprises but later one company's operation was suspended), South Africa (2 enterprises), and Brazil (2 enterprises), respectively.

According to related documents and documents obtained from the government and the private sector, focusing on Thai PCLs on the SET 100 index, China was the country with which the most Thai (Public) companies internationalized their business in BRICS (8 enterprises), followed by India (4 enterprises), Russia (2 enterprises, but later one company's operation was suspended), South Africa (2 enterprises), and Brazil (2 enterprises), in that order. The Thai Government, under the direction of the Ministry of Industry and the Ministry of Commerce, has endeavored to promote foreign trade and investment in an effort to internationalize its business in BRICS. Despite the government's support for Thai SME exports to BRICS countries, few Thai firms have sought out to BRICS. In addition, the majority of internationalization studies employed quantitative methods and lacked a comprehensive understanding of the phenomenon and its other dimensions. Therefore, it is interesting to study Thai SMEs that have decided to seriously internationalize their business in BRICS in order to gain a comprehension of the factors that led to their decision, as well as the traits and strategies Thai enterprises have employed in BRICS.

By learning from the experiences of Thai pioneers, this study can make recommendations for Thai SME executives to use appropriate internationalization strategies and for the Thai government on how to design the foreign direct investment outflow policy to assist Thai enterprises in achieving success in BRICS, thereby making a significant contribution to the future development of the Thai economy.

### **Research Objectives**

- 1) to determine the internationalization process and entry mode strategies utilized by Thai SMEs for their operations in BRICS; and
- 2) to make recommendations for Thai SMEs wishing to internationalize their business to BRICS and for the Thai government sector to design management networks to promote investment and provide support for Thai enterprises to internationalize there.

### **Literature Review**

Internationalization is a significant issue that has attracted numerous researchers in the fields of strategic management, international business, and entrepreneurship (Pham, 2008: 52). Internationalization is defined by Deresky (2011, p. 458) as "the gradual transformation of a company in response to the imperatives of international competition, domestic market saturation, the desire for expansion, new markets, and diversification." Moreover, internationalization presents both a hazard and an opportunity. It is a threat because domestic markets are accessible to foreign competitors, but it is also an opportunity because it enables firms with modest domestic markets to become global leaders. Internationalization is the strategic outward movement of a single company or larger corporations across international borders (Jones & Van de Ven, 2013; Piercy, 1981 cited in Pham, 2008: 52; Grant, 2011: 371).

Internationalization is a continuous process that occurs when a company enters international markets (Johanson and Vahlne, 1977, cited in Pham, 2008: 55). According to Toulan (1997, cited in Henon, 2010, p. 188), the internationalization process is a continuum between short-term and long-term internationalization. Long-term internationalization is a combination of tangible and intangible internationalization, with a stronger commitment by the firm to become competitive at the international level (Henon, 2010: 188). In contrast, a short-term strategy depends on factors external to the firm, such as economic and socio-political factors.

Internationalization is the gradual transformation of a company in response to the imperatives of international competition, the saturation of the domestic market, the desire for expansion, entry into new markets, and diversification through trade and investment in a foreign country.

The "Generic Internationalization Strategies of Emerging-Market Multinational Enterprises" was proposed by Ramamurti (2008). He describes the prerequisites for an Emerging-Market Multinational Enterprise (EMNE) to be successful abroad. First, the company must possess Firm-Specific Advantages (FSAs) and products suited for emerging markets, production and operational excellence, privileged access to resources and markets, adversity advantage, and valuable and imitable traditional intangible assets. Second, firms must have home-country advantages or country-specific advantages (CSAs) in order to compete globally.

### Research Framework

The researcher intends to construct a model regarding the operation of SMEs based on the findings of the literature review. The construct variable consists of a BRICS Context and Inter-Organizational Networks (IONS). Figure 1 depicts the variable that corresponds to each component.

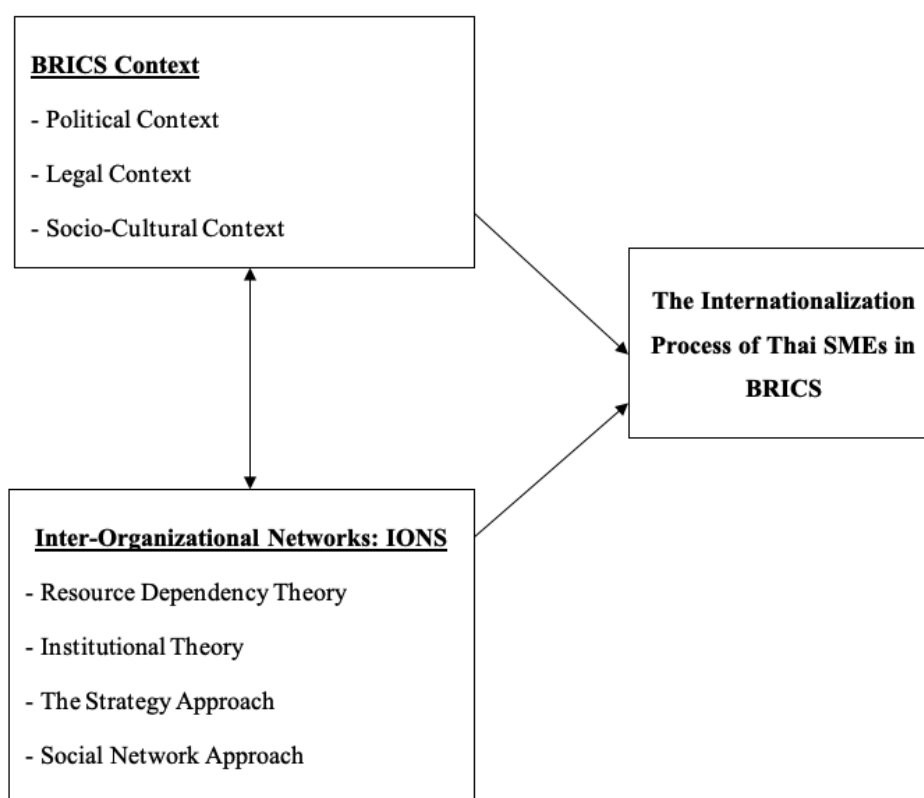


Figure 1: Research Framework

## **Research Design**

In this study, the researcher employed a sequential exploratory methodology, commencing with qualitative research and then ATLAS.ti. The program relied on the interview to obtain the necessary data to answer the research questions. This study was conducted methodically by collecting qualitative data sequentially, indicating that sequential qualitative data collection and analysis techniques were employed. The qualitative research method was crucial to the success of this study. Only quantitative data can reveal the pattern and magnitude of the relationship between variables, and results may vary depending on the circumstances. The qualitative data analysis results supported the quantitative results' hypotheses and conclusions and helped to clarify their phenomena. The qualitative method consisted of data acquisition through semi-structured interviews with Thai SME Entrepreneurs in order to investigate the phenomenon and characterize and validate the findings. For the purpose of enhancing the study's findings, conclusions, conclusion, and discussion, qualitative research was used to investigate empirical phenomena based on a set of governing principles and concepts. Face-to-face and telephone interviews were conducted to capture data from a sample of SME representatives using the technique of in-depth interviews.

## **Population and Sample Selection**

This investigation employed the technique of purposive sampling. Entrepreneurs of small and medium-sized enterprises (SMEs) whose annual product or service sales exceeded 30 million Thai Baht were the primary respondents for the qualitative study. The selection criteria for the key informants required them to be SME Entrepreneurs who were willing to answer inquiries and provide their opinions, were actively involved in the performance of the SMEs, and had direct experience coordinating or working with their subordinates. In addition, the snowball sampling technique was used to acquire more relevant data in this study. Existing research subjects recruit additional subjects from among their superiors, colleagues, and subordinates. The researcher ultimately conducted interviews with forty-eight small and medium-sized enterprises (SMEs).

## **Data Collection**

Additionally, data was gathered via semi-structured interviews. The structure of the quantitative research queries was modified based on the degree of the high-performance work system and its influencing factors. The objective of the interview was to gain a deeper understanding of the SME entrepreneur's perspectives on policy formulation, implementation, application, human resource management, and organization growth. The interview covered three topics, including the context of BRICS, inter-organizational networks, and the internationalization of Thai SMEs in BRICS. The collected data would help define the connections and direct and indirect effects of these significant factors on the performance of Thai SME's. The interview schedule was based on the availability of each significant source. The vast majority of face-to-face interviews were conducted at SMEs in Bangkok and other provinces where the researcher had strong relationships with SME proprietors and/or key informants and was able to secure outstanding cooperation from each company. In addition, the majority of SME telephone interviews took place outside Bangkok. The majority of critical informants were available for telephone interviews, while the remainder were available for 40- to 60-minute in-person interviews. Conversations were recorded using a digital voice recorder and/or a mobile phone, with the primary informant's

permission. The success of the interview sessions was largely attributable to the steadfast support of the SME Entrepreneurs and the outstanding cooperation of each key informant.

## **Data Analysis**

Three primary processes composed the qualitative data analysis: 1) data arrangement, 2) data display, and 3) data conclusion, interpretation, and verification. After each interview with a key informant was concluded, the recorded conversation was transcribed and categorized. After finishing the translation of the debates, the inductive reasoning conclusion was reached. Following are detailed descriptions of each primary procedure. This procedure involved segregating the gathered data into two distinct categories. (1) the physical aspect, consisting of data recording, data revising, data conclusion, and data storage; and (2) the content aspect, consisting of determining the meaning of each sentence in the gathered data to facilitate data classification and data coding. This was a method for presenting the gathered data. The majority of them were reorganized in accordance with the coded data and presented in narrative format with links to the classified data. The original words, sentences, or statements of the key informants were expressed and referred to in order to validate the raw data's source, emphasize the raw data's relevance and interest, and convey the key informants' emotions and opinions. 3) Conclusion, interpretation, and verification: This procedure involved identifying the conclusion and interpretation, then determining their validity. The researcher utilized triangulation to determine the authenticity and dependability of the unprocessed data. Triangulation was used to collect primary data and information through in-depth interviews and focus group discussions. Data triangulation was also employed by comparing the collected data from multiple raw data sources, such as SME-related locations and SME-entrepreneurial key informants, to determine if they were identical. The original data gathered by conducting in-depth interviews with SME entrepreneurs. This was done to demonstrate the consistency and connection between the evidence and the data obtained from the data analysis in response to the research questions regarding the reasonableness and acceptability of the subject. Before analyzing the data, the researcher managed the data by transcribing and archiving each interview as an electronic file, placing the data in a folder, and creating a physical backup copy of the data. ATLAS.ti was utilized for data analysis, beginning with data coding and progressing to initial coding. In the ATLAS.ti software, this process is referred to as open coding, and it is the researcher who generates the themes. During the course of the study, the researcher also recovered textual codes and data, progressed to more theoretical categories, and continued to generate mind mapping-based notes.

## **Conclusion**

This study's primary objective is to develop an internationalization process model and assessment framework that can serve as a guide for the creation of an efficient internationalization process implementation strategy for Thai SMEs. Despite the fact that previous research has successfully identified and implemented internationalization process practices, the literature on the investigation of the relationship between the BRICS context, inter-organizational networks, and the internationalization process in the context of Thai SMEs in BRICS is in its infancy. Accordingly, the present study aims to contribute to the development of a conceptual framework and research paradigm for Thai SMEs in particular. As stated previously, this study has examined in depth the BRICS context indicators, inter-organizational networks, and the internationalization process. On the basis of this review, a research model has been developed to investigate the impact of the incorporation of a BRICS

context and inter-organizational networks on the internationalization of Thai SMEs. From this paradigm, two study objectives and two hypotheses were derived. Future research will entail data collection and empirical analysis in order to assess hypotheses regarding the extent of implementation and connections among Thai SMEs. The presence of these internationalization process concepts is anticipated to correlate positively with the qualitative performance of the firms. Using a method capable of evaluating such a model, it would be fascinating to evaluate the provided theoretical model.

Future applications of ATLAS.ti (The software for qualitative data analysis and research) could include the generation of correlation matrices and the validation of correlations using diagrams. This study can be expanded to include other private sectors in the future, and exhaustive research can be conducted on various aspects of the internationalization process, such as sustainability, knowledge management, and organization strategy, to incorporate the flexibility of the BRICS context and inter-organizational networks in relation to the internationalization process of Thai SMEs.

### **Acknowledgement**

The purpose of the study was to enhance the business sector capabilities of SMEs (Small and Medium Enterprises, typical of Thailand). The researcher expresses gratitude to Srinakharinwirot University for the research grant and to those who assisted during the research process.

## References

- Deresky, H. (2011). *International management: Managing across borders and cultures*. Englewood Cliff, NJ: Pearson Education.
- Embassy of Russian Federation, Thailand. (2022). *History of bilateral relations*. Retrieved from [http://www.thailand.mid.ru/Win\\_work/korol\\_eng.htm](http://www.thailand.mid.ru/Win_work/korol_eng.htm)
- Grant, R. M. (2011). *Contemporary strategy analysis* (7th ed.). West Sussex: John Willey & Son.
- Henon, C. K. (2010). *The internationalization of small and medium-sized enterprises from Argentina*. (Doctoral dissertation). McGill University, Montreal.
- Jones, S., & Van de Ven, A. (2013). *Interorganizational networks*. In E. Kessler (Ed.), *Encyclopedia of management theory*. Thousand Oaks, CA: Sage.
- Pham, Thi K. N. (2008). *Strategies for Internationalization: A Comparative Study of Thai and Vietnamese Companies in Two Industries*. (Doctoral Dissertation). University of Fribourg, Fribourg.
- Ramamurti, R. (2008). *What have we learn about emerging–market MNEs?: insight from a multi-country research project*. Presentation at the Conference on Emerging Multinationals: Outward FDI from Emerging and Developing Economies. Denmark: Copenhagen Business School. 1–38.
- South African Embassy, Thailand. (2022). *South Africa/Thai bilateral relations*. Retrieved from <http://www.dirco.gov.za/bangkok/bilateral.html>
- Thailand's Board of Investment. (2021). *Opportunities and threats of trade and investment in Brazil*. Retrieved from [http://www.thaiembassybrazil.com/index.php?option=com\\_content&view=article&id=176:2012-08-02-09-19-18&catid=41:2010-04-13-13-52-35&Itemid=95](http://www.thaiembassybrazil.com/index.php?option=com_content&view=article&id=176:2012-08-02-09-19-18&catid=41:2010-04-13-13-52-35&Itemid=95)
- Trading Economics. (2022). *Thailand balance of trade*. Retrieved from <http://www.tradingeconomics.com/thailand/balance-of-trade>
- Wattana Koonwong. (2022). *Thailand-Russia and CIS relationships: Historical relationships*. Retrieved from <http://th.thaiembassymoscow.com/info/?section=d1&artid=46>

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***Reinforcing Pancasila Student Profiles: The Ideal Frameworks of Project-Based Learning in Secondary Schools in Indonesia***

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The Asian Conference on the Social Science 2023  
Official Conference Proceedings

**Abstract**

Students in Indonesia are expected to be capable of being useful members of society and becoming great human beings in the twenty-first century. Critical thinking skills and character building are among the characteristics necessary to attain the Pancasila student profiles. Project-based learning is being used in schools in an effort to enhance Pancasila students' profiles. This study aimed to describe the ideal frameworks in reinforcing the Pancasila student profiles by using project based learning in secondary school in Indonesia. This study employed a qualitative approach. The findings from the data collection were documented, processed, and presented descriptively. The results showed that the ideal frameworks of Project Based Learning for reinforcing the Pancasila student profiles are focusing on specific goals and dimensions, providing questions, scaffolding and guidance, prioritizing collaboration, communication, critical and creative thinking, producing authentic projects, reflecting and revising, and demonstrate projects on topic. Some of these elements become an important framework in the effort to realize students with Pancasila values in Indonesia.

Keywords: Reinforcing, Pancasila Student Profiles, Project-Based Learning

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## Introduction

The Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia introduced a new curriculum known as the prototype curriculum for the 2021/2022 academic year. This curriculum has been implemented in 2500 driving schools as a solution to address the learning loss challenges caused by the COVID-19 pandemic. Schools now have the option to choose between the old curriculum, namely the 2013 curriculum, the emergency curriculum (a simplified version of the 2013 curriculum), or the prototype curriculum (an independent curriculum). The choice of curriculum depends on each school's readiness and preference. To guide the implementation of the curriculum and support independent learning, the Ministry issued Decree No. 56/M/2022. This decree provides guidelines for internal education units to implement the prototype curriculum or develop their own independent curriculum. It allows schools to create their own curriculum, teaching tools, and learning principles, giving them more autonomy in shaping their educational programs.

Overall, The Ministry of Education, Culture, Research, and Technology aims to address the challenges brought about by the pandemic by providing schools with flexible curriculum options. The introduction of the prototype curriculum and the allowance for schools to develop their own independent curriculum reflect the efforts to adapt and tailor education to specific needs and circumstances.

The existence of this independent learning is mentioned in the regulations as the wrong one of their uniqueness and excellence in the curriculum. P5 stands for Project Strengthening Pancasila Student Profile. According to Kemendikbudristek, the Pancasila student profile strengthening project is an activity project-based co-curricular designed to strengthen efforts to achieve competence and character according to the Pancasila student profile prepared based on Competency Standards Graduate. This Pancasila student profile consists of Indonesian students who are lifelong learners, competent, and behave in accordance with Pancasila values.

Pancasila encompasses noble character traits such as diversity, global awareness, independence, cooperation, critical reasoning, and creativity. These elements not only contribute to the strengthening of emerging 21st-century skills but are also integrated into the stages of the 2013 curriculum. The Pancasila student profile stands out by providing opportunities for learners to engage in non-formal learning situations, flexible learning structures, interactive activities, and direct involvement with the surrounding environment. This approach aims to strengthen various competencies within the Pancasila student profile by integrating contextual and community-based education units that address the needs of learners.

Implementing a project-based learning model offers several benefits, including enhancing learner motivation, problem-solving skills, active engagement in complex problem-solving, fostering a collaborative climate, improving communication skills, developing resource management abilities, providing experiential learning opportunities, and facilitating hands-on learning experiences that align with real-world scenarios. This approach emphasizes learner involvement and adaptability, promoting holistic growth and development (Nurfitriyani, 2016).

Ideally, when introducing a new program like P5, the ministry of education culture research and technology should provide clear guidelines and models for its implementation in schools.

This ensures that there is a standardized understanding of the implementation concept and prevents schools from interpreting it differently. Additionally, it is essential for the Ministry to outline the expected competencies and roles of teachers in guiding and facilitating the P5 project. By providing clear guidelines and models, the Ministry can offer a framework that supports consistent and effective implementation of the P5 project across different educational institutions. This helps to align the understanding and expectations of all stakeholders involved, including teachers, students, and school administrators.

Moreover, detailing the competencies required of teachers in guiding the P5 project is crucial. This information enables educators to develop the necessary skills, knowledge, and pedagogical strategies to effectively support student learning within the framework of the P5 project. Clear descriptions of teacher competencies can also assist in the design of relevant professional development programs and resources to enhance teachers' capabilities in implementing the P5 project. Overall, by providing clear guidelines, models, and defining teacher competencies, the Ministry of Education and Culture can establish a common understanding and ensure consistency in the implementation of the P5 project across schools. This promotes a more effective and standardized approach to strengthening the Pancasila student profile and facilitates successful outcomes in line with the objectives of the program.

In the academic year 2022/2023, SMA 1 and most public high schools in Bone will adopt the Independent Curriculum (IKM) implementation. Given this context, there is a need for research to describe the planning, organization, implementation, and evaluation of the learning projects aimed at strengthening the Pancasila student profiles. The purpose of this research is to provide valuable insights and serve as input for all stakeholders involved in the development of future project programs that reinforce the Pancasila student profile at the high school and equivalent levels.

The research will focus on exploring and documenting the various aspects of implementing the Pancasila student profile strengthening projects. This includes studying the planning phase, which involves setting goals, designing project frameworks, and aligning the projects with the desired Pancasila student profile outcomes. The organization phase will examine how resources, support systems, and collaborations are established to facilitate project implementation. The implementation phase will delve into how the projects are carried out, including the strategies, methods, and activities employed to promote student engagement and learning. Lastly, the evaluation phase will assess the effectiveness and impact of the projects in terms of achieving the intended Pancasila student profile outcomes.

By conducting this research, valuable information and insights will be generated to guide the development of future project programs that aim to strengthen the Pancasila student profile at the high school and equivalent levels. This research will serve as a foundation for all stakeholders involved, including educators, administrators, policymakers, and curriculum developers, enabling them to make informed decisions and improvements in their efforts to reinforce the Pancasila student profiles within their respective educational units. Overall, the research will contribute to the ongoing development and enhancement of project programs that foster the growth of students with strong Pancasila values, providing valuable input to all stakeholders involved in strengthening the Pancasila student profiles at the high school and equivalent levels.

The research method employed in this study is descriptive research with a qualitative approach. This approach aims to explore and understand the meanings, beliefs, attitudes, and

behaviors of individuals or groups related to social problems. It allows for an in-depth interpretation and exploration of specific aspects of human experiences and perspectives. The research was conducted at SMA Negeri 1 Bone, a school that has implemented the independent curriculum for five years, starting from the 2021/2022 academic year. Two batches of students, namely grade 10 and grade 11, have already undergone the implementation of this independent curriculum.

The research instruments utilized in this study include in-depth interviews, observations, and documentation studies. In-depth interviews were conducted to gather rich and detailed insights from key stakeholders, such as the school principal, deputy head of curriculum, and five teachers. Observations were made to directly observe and understand the implementation of the project strengthening the Pancasila student profiles. Documentation studies involved analyzing school documents such as project guidelines, operational curricula, and project report cards. These documents provide valuable information about the curriculum and the implementation of the Pancasila student profile projects at SMA Negeri 1 Bone.

By employing this research method and using multiple data collection techniques, the study aims to provide a comprehensive understanding of the implementation of the independent curriculum and the project strengthening the Pancasila student profiles at SMA Negeri 1 Bone. The findings from this research will contribute to the knowledge base and serve as a reference for further development and improvement of the curriculum and project programs aimed at reinforcing Pancasila student profiles.

In selecting the teacher respondents for the study, a purposive sampling technique was employed. This technique involved selecting teachers representing various subjects, including compulsory subjects, science elective subjects, social studies elective subjects, language elective subjects, and local content subjects. The selection aimed to ensure a diverse representation of teachers who are involved in the implementation of the independent curriculum and the project strengthening the Pancasila student profiles. Additionally, questionnaires were distributed to all teachers to gather further insights and serve as guides for the research activities, involving a total of 32 participants.

The study utilized three instruments: in-depth interviews, observations, and questionnaires. These instruments were employed to collect data and information that complemented each other, providing a comprehensive understanding of the research topic. The data collected consisted of field notes, pictures, documents, reports, and results from Google Forms.

Once the data was collected, it underwent several stages of analysis. This included activities such as data grouping, data cleaning, data transformation, and creating a data model to identify significant information from the collected data. The analysis followed an inductive approach, moving from specific themes to general themes. The researchers interpreted the data and drew conclusions based on the insights gained from the interview data.

By using a purposive sampling technique and employing multiple data collection instruments, the study aimed to capture a range of perspectives and gather comprehensive data for analysis. The findings from the data analysis will contribute to understanding the implementation of the independent curriculum and the project strengthening the Pancasila student profiles, enabling researchers to draw meaningful conclusions and provide valuable insights for further improvement and development of these programs.

## Evaluation of Project-Based Learning Implementation

School management plays a crucial role in determining the success of any program implemented by the school. Management, in essence, encompasses various activities aimed at achieving goals. According to George R. Terry, management involves individuals contributing their best efforts through predetermined actions to accomplish desired objectives. These actions are typically guided by the functions of planning, organizing, and controlling

Planning is a crucial aspect of school management, as it involves defining the actions and steps necessary to achieve educational goals. It serves as a tool for outlining the specific activities and strategies to be undertaken. Effective planning involves estimating future requirements and considering various factors that may impact the implementation of the program (Darwisah, et al., 2021).

The planning process typically begins with the creation of a plan, followed by the translation of that plan into actionable steps. This includes operational planning, executing the plans, monitoring progress, and conducting a study or evaluation of the plans (Daft, Richard L., 2006). In the context of this study, the researchers focused on assessing the school's readiness in terms of planning projects aimed at strengthening the Pancasila student profile.

The aspects of school readiness in planning projects include teacher involvement in the planning process. Teachers play a critical role in developing and shaping the project plans. Their input and expertise contribute to the effectiveness and relevance of the project in reinforcing the Pancasila student profile. Additionally, the preparation of guidelines is important to provide clear directions and instructions for implementing the project. These guidelines help ensure consistency and alignment with the desired outcomes.

Moreover, teacher competencies play a significant role in the planning process. Teachers need to possess the necessary skills, knowledge, and understanding to develop appropriate and engaging project plans that effectively reinforce Pancasila values. Enhancing teacher competencies through professional development and training programs can greatly contribute to the quality of the planning process.

Table 1. Research Results on Planning Aspects

Planning aspect	Percentage
The readiness of the teacher in carrying out the project	96% (ready)
The teacher's understanding of the project objectives	94% (understood)
Teacher involvement in project planning	46% (involved)
The clarity of the project manual	84% (clear)

Based on the presented data, it can be inferred that schools and teachers, in general, are prepared and capable of understanding and implementing the project aimed at strengthening the Pancasila student profile. The use of Instructional Help Tools (IHT) by the school assists teachers in comprehending the project. Moreover, since SMAN 1 Bone has already been implementing the independent curriculum since 2021, the teachers have prior experience in managing this project.

Findings from interviews with five teachers who served as project supervisors indicate their satisfaction with the project activities. They highlighted that the project not only encourages

students to gain new experiences but also helped them gain a deeper understanding of the objects of wisdom. It is important to note that Bone is located in both the City and Regency areas, suggesting the widespread impact and reach of the project.

However, survey data revealed a potential area for improvement. It was found that many schools did not involve a significant number of teachers and learning committees in the planning of this project. Approximately 46% of supervising teachers reported not being involved in determining project themes, techniques, activity concepts, implementation time, and project assessment system plans.

This indicates a gap in involving a broader range of teachers and learning committees in the planning process. In order to enhance the implementation of the project and ensure a more inclusive approach, it would be beneficial for schools to actively involve a wider range of stakeholders in the planning stage. This can help harness the diverse perspectives and expertise of teachers, leading to a more comprehensive and effective project design.

In summary, while schools and teachers are generally prepared and enthusiastic about implementing the project aimed at strengthening the Pancasila student profile, there is room for improvement in terms of involving more teachers and learning committees in the planning process. By promoting greater collaboration and inclusion, schools can further enhance the effectiveness and impact of the project.

Based on interview findings with the curriculum management team, it was confirmed that the planning process for the project aimed at strengthening the Pancasila student profile did not involve everyone. Instead, it was conducted by a small team consisting of the vice principal of curriculum and select curriculum staff. The organizing principles involved in this process include determining the purpose of the project, dividing the tasks and responsibilities, assigning individuals to specific roles, delegating authority, and ensuring accountability.

The data presented below represent the research findings on the aspects of organizing and implementing activities related to the project.

Table 2. The outcomes of organizing and implementing activities

Planning aspect	Percentage
The readiness of the teacher in carrying out the project	96% (ready)
The teacher's understanding of the project objectives	94% (understood)
Teacher involvement in project planning	46% (involved)
The clarity of the project manual	84% (clear)

SMA 1 Bone has implemented a block system for planning the implementation timetable of the P5 project. In this system, the school collects and condenses the implementation of theme-based projects into a single period of time. During this designated period, all educators collaborate to teach the P5 project on a daily basis, focusing solely on the project without engaging in routine classroom learning. This approach allows students to work on the project both within and outside of school, giving them the flexibility to dedicate their time and attention to the project without being concerned about other subjects.

The announcement of the implementation time for the P5 project at SMA 1 Bone is typically made in September 2022, which falls in the middle of the odd semester. Two themes are selected for implementation. One of the themes focuses on exploring and showcasing local

wisdom. Within this theme, students have the option to choose from several objects of study, including: exploration of the potential (both physical and non-physical) found in the unique environment surrounding the area, developing concepts for regional development based on the area's unique characteristics, such as ecotourism, cultural villages, village tours, or thematic villages, creating new product concepts that highlight the region's uniqueness, researching and documenting local wisdom, as well as preserving traditional knowledge., and investigating local wisdom that is currently at risk of being lost in threatened areas.

By selecting these themes and objects of study, the P5 project at SMA 1 Bone aims to provide students with opportunities to explore and appreciate local wisdom, foster creativity and innovation, and contribute to the preservation of cultural heritage.

In summary, the implementation timetable of the P5 project at SMA 1 Bone follows a block system, allowing educators to focus on teaching the project during a specific period of time. The themes and objects of study for the project are announced in September, with one of the themes centered around local wisdom and offering various options for student exploration and engagement.

In the second theme of the project, which focuses on engineering and technology, each group is required to publish the research results from the first theme in the form of a blog. With 36 groups, this translates to a demand for 36 student group blogs. The blogs should include comprehensive activity reports, allowing everyone to access and view the local wisdom present in the City and District of Bone.

The project supervisors, who are teachers assigned to a class of three people, guide each group of ten to thirteen students. Survey data from 32 teacher-supervisor respondents indicate that the determination of research objects is more collaborative between supervisors and students, accounting for 46.9% of responses. Meanwhile, the curriculum determines 21.9% of the research objects, students determine 25%, and teachers/supervisors determine 6%. Therefore, the choice of research objects varies greatly depending on how the supervising teacher guides and directs the group of students under their supervision.

The teachers provide appropriate guidance to the students according to the agreed-upon schedule. Although not all mentors accompany students to the research observation site, the supervisors provide clear instructions regarding the technical tasks that students must complete in groups at the observation site. According to the survey data, 96% of teachers actively participate in the study site, while 4% do not attend. This indicates that teachers typically engage in, participate in, and direct student activities in the field.

Throughout the project, each student is required to fill out an attendance list while adhering to school rules, such as wearing uniforms and following the school schedule from 7 a.m. to 3:45 p.m. However, the survey data reveals that 35% of students were not active during guidance, 41% were not active in report writing, and overall student engagement stood at 65%.

In summary, the project's second theme involves students publishing their research results in the form of blogs. The project supervisors, who are teachers, guide the students in groups and collaborate with them to determine research objects. While not all supervisors accompany students to the research site, they provide clear instructions for the tasks to be completed.

Most teachers actively participate in the field activities, and students are expected to adhere to school rules and maintain attendance throughout the project.

Management and supervision play significant roles in shaping the performance of teachers and principals and ultimately impact the overall educational quality. School supervisors, in accordance with their duties, functions, and authorities, can provide assistance, guidance, motivation, and direction to improve teachers' abilities in the learning process (Astuti, R., & Dacholfany, M. I, 2016).

Supervisors in educational units have an active role in evaluating profile projects, aligning with their responsibilities as supervisors of educators and educational units. They can assist teachers by facilitating reflective discussions on completed profile projects. Through various reflective questions, supervisors can stimulate educators' understanding, thoughts, and creative ideas, thus promoting self-development and enhancing future profile project implementation.

The school principal and school committee also play crucial roles in school administration. However, according to the findings of interviews and surveys, there appears to be a lack of support and involvement from school administrators and committees in the implementation of the P5 program. Approximately 67% of respondents reported a lack of involvement from supervisors. It is important for school supervisors to provide guidance and support to improve the success of each school program, including the P5 program.

Additionally, the supervising teacher closely monitors and supervises the activities of each group on a daily basis. The school principal and the curriculum team oversee the overall supervision process. The supervising teacher collects and sends daily activity reports and student attendance lists. The work of grade 10 students is typically conducted in the final week of activities, culminating in a presentation of each group's research results. The presentations are assessed by another supervising teacher and conclude with a combined presentation by each class in a hall, witnessed by all students and teachers. The evaluation process encompasses students' activities in developing the six-dimensional personality of the Pancasila student profile, using criteria such as developing, developing, and not yet developing.

In summary, effective management and supervision are vital in fostering teacher and principal performance and improving educational quality. School supervisors should actively engage in supporting teachers and guiding the implementation of programs like P5. The supervising teacher's role in daily monitoring and reporting, along with the involvement of the school principal and curriculum team, contributes to a comprehensive supervision process. Evaluations focus on students' activities in developing the Pancasila student profile, using specific criteria to assess their progress.

### **The Ideal Frameworks Project Based Learning in Secondary School**

Here's an explanation of each point related to the ideal frameworks of Project Based Learning (PBL) for reinforcing the Pancasila student profiles:



### ***Focusing on specific goals and dimensions***

PBL should have clearly defined goals and dimensions related to the development of Pancasila student profiles. This includes emphasizing the understanding and application of Pancasila values such as democracy, social justice, religious harmony, and national unity. By incorporating specific goals and dimensions related to Pancasila values such as noble character, global diversity, independent, cooperative, critical thinking, and creative into PBL, educators can provide a structured framework for students to understand and apply these values in their projects and daily lives. This approach helps shape students with a strong Pancasila student profile, equipped with the knowledge, skills, and attitudes necessary to contribute positively to Indonesian society.

### ***Providing questions, scaffolding, and guidance***

PBL should involve posing thought-provoking questions that challenge students to think critically about Pancasila principles and their application in real-life situations. Scaffolding and guidance should be provided to support students in their learning journey and help them navigate complex concepts. Providing questions, scaffolding, and guidance is an essential aspect of implementing Project Based Learning (PBL) to reinforce Pancasila student profiles. Additionally, educators should encourage students to ask their own questions and seek answers, promoting inquiry-based learning. This helps students develop their problem-solving skills and promotes a deeper understanding of Pancasila principles. By providing thought-provoking questions, scaffolding, and guidance, educators create an environment that supports students' exploration of Pancasila principles and their application in real-life contexts. This approach fosters critical thinking, independence, and a deeper understanding of the values embedded in Pancasila, enabling students to develop their Pancasila student profiles effectively.

### ***Prioritizing collaboration, communication, critical and creative thinking***

PBL should foster collaborative environments where students work together to solve problems, discuss ideas, and express their thoughts. It should encourage effective communication skills, such as active listening and respectful dialogue. Furthermore, PBL should promote critical thinking by encouraging students to analyze and evaluate information, as well as creative thinking by encouraging innovative approaches to project development. Prioritizing collaboration, communication, critical thinking, and creative thinking in Project Based Learning (PBL) is crucial for the development of Pancasila student profiles. By prioritizing collaboration, communication, critical thinking, and creative thinking in PBL, educators create a dynamic learning environment that fosters the development of well-rounded Pancasila student profiles. These skills are not only important for project completion but also prepare students to effectively engage with complex issues, contribute positively to society, and apply Pancasila values in their personal and professional lives.

### ***Producing authentic projects***

PBL projects should be designed to mirror real-world scenarios and challenges. This authenticity provides students with opportunities to apply Pancasila values in practical and meaningful ways, fostering a deeper understanding and appreciation of these values. Producing authentic projects is an essential aspect of Project Based Learning (PBL) for reinforcing Pancasila student profiles. By incorporating authentic projects into PBL,

educators provide students with opportunities to apply Pancasila values in practical and meaningful ways. These projects promote deeper understanding, skill development, and engagement, ultimately reinforcing Pancasila student profiles and preparing students to become active, responsible, and values-driven members of society.

### ***Reflecting and revising***

PBL should incorporate reflection and revision as integral components of the learning process. Students should have opportunities to critically evaluate their projects and their understanding of Pancasila values, allowing them to make improvements and refine their work based on feedback and self-assessment. In Project Based Learning (PBL), reflecting and revising are vital components that contribute to the growth and development of students' understanding of Pancasila values. By incorporating reflection and revision into PBL, educators promote metacognitive skills, self-assessment, and a deeper understanding of Pancasila values. Students become actively involved in their own learning process, develop a sense of ownership, and refine their projects based on feedback and critical evaluation. This reflective practice enhances the effectiveness of PBL in reinforcing Pancasila student profiles and fostering a greater understanding and appreciation of Pancasila values.

### ***Demonstrating projects on topic***

PBL should culminate in the presentation or demonstration of students' projects. This serves multiple purposes, including showcasing their understanding of Pancasila values, fostering public speaking skills, and encouraging accountability for the quality of their work. The culmination of Project Based Learning (PBL) through the demonstration or presentation of students' projects is an important element that serves various purposes in reinforcing Pancasila student profiles. By culminating PBL with project demonstrations, students have an opportunity to display their understanding of Pancasila values, develop public speaking skills, take accountability for their work, receive feedback, and enhance teamwork abilities. These experiences contribute to the reinforcement of Pancasila student profiles, fostering confident, articulate, and responsible individuals who can effectively communicate and apply Pancasila values in various contexts. By incorporating these elements into the framework of PBL, educators can effectively reinforce the Pancasila student profiles and support the development of students with strong Pancasila values in Indonesia.

### **Conclusions**

The following conclusions can be drawn from the research: SMA Negeri 1 Bone's project planning was excellent. Organizing activities include determining student groups, student group mentors, structure in student groups, and research objects. Implementation project to raise the profile of Pancasila students at SMA Negeri 1 Bone City in a block scheme, carrying out student activities independently by observing, group discussions, preparing reports, blogging, and harvesting works. Internal supervision is carried out by supervisors and the school management team to ensure the successful implementation of each student's activities. The involvement of supervisors and other elements is required to support the program's success and external supervision. The results showed that the ideal frameworks of Project Based Learning for reinforcing the Pancasila student profiles are focusing on specific goals and dimensions, providing questions, scaffolding and guidance, prioritizing collaboration, communication, critical and creative thinking, producing authentic projects,

reflecting and revising, and demonstrate projects on topic. Some of these elements become an important framework in the effort to realize students with Pancasila values in Indonesia.

### **Acknowledgements**

The author wishes to express his heartfelt gratitude to the Center for Higher Education (BPPT), Education Financing Service Center (Pusat Layanan Pembiayaan Pendidikan) The Ministry of Education, Culture, Research, and Technology, and Lembaga Pengelola Dana Pendidikan (LPDP/Indonesia Endowment Fund for Education) for providing financial support for this publication.

## References

- Anderha, R. R., & Maskar, S. (2021). Pengaruh kemampuan numerasi dalam menyelesaikan masalah matematika terhadap prestasi belajar mahasiswa pendidikan matematika. *Jurnal Ilmiah Matematika Realistik*, 2(1), 1–10. Retrieved from <https://doi.org/10.33365/jimr.v2i1.774>
- Astuti, R., & Dacholfany, M. I. (2016). Pengaruh supervisi pengawas sekolah dan kepemimpinan kepala sekolah terhadap kinerja guru SMP di Kota Metro Lampung. *Jurnal Lentera Pendidikan Pusat Penelitian LPPM UM METRO*, 1(2), 204-217. <http://dx.doi.org/10.24127/jlplppm.v1i2.295>
- Badan Standar, Kurikulum, dan Asesmen Pendidikan (2022). *Panduan Pengembangan Projek Penguatan Profil Pelajar Pancasila*, Jakarta: Kemendikbudristek
- Badarudin, B., Muslim, A., & Sadeli, E. H. (2022). Model Problem Based Learning Berbasis Literasi Untuk Meningkatkan Kemampuan Berpikir Kritis Dan Kemandirian Belajar Siswa Kelas Iv Mi Muhammadiyah Kramat Kembaran. *Khazanah Pendidikan*, 16(1), 154-163.
- Darwisyah, D., Imron Rosadi, K., & Ali, H. (2021). Berfikir Kesisteman Dalam Perencanaan Dan Pengembangan Pendidikan Islam. *Jurnal Manajemen Pendidikan Dan Ilmu Sosial*, 2(1), 225237. <https://doi.org/10.38035/jmpis.v2i1.444>
- Daft, R. L. (2006). *Manajemen*, Edisi 6. Jakarta: Salemba Empat
- Mahendra, I. W. E. (2017). Project based learning bermuatan etnomatematika dalam pembelajar matematika. *JPI (Jurnal Pendidikan Indonesia)*, 6(1), 106-114. <https://doi.org/10.23887/jpiundiksha.v6i1.9257>
- Keputusan Menteri Pendidikan, Kebudayaan, Riset, dan Teknologi Nomor 56/M/2022 tentang Pedoman Penerapan Kurikulum dalam Rangka Pemulihan Pembelajaran Kurikulum Merdeka pada Pendidikan Anak Usia Dini, Pendidikan Dasar, dan Pendidikan Menengah
- Larmer, J., and John R. Mergendoller. (2010). Seven essentials for project-based learning. *Educational leadership*, 68(1) 34-37.
- Musa, F., et al. (2012). Project-based learning (PjBL): Inculcating soft skills in 21 century workplace. *Procedia-Social and Behavioral Sciences* 59 (2012): 565-573.
- Nainggolan, D., Pontororing, H. F., & Tinus, D. (2021). The Implementation of Project Based Learning to Improve Student Learning Outcomes in Study About "Pengantar Pancasila". *Educouns Journal: Jurnal Pendidikan dan Bimbingan Konseling*, 2(2), 132-138. <https://doi.org/10.53682/educouns.v2i2.3478>
- Nugrahani, F. (2014). *Metode penelitian kualitatif*. Solo: Cakra Books 1.
- Nurfitriyanti, M. (2016). Model Pembelajaran Project Based Learning terhadap Kemampuan Pemecahan Masalah Matematika. *Formatif*, 6(2), 149-160. <http://dx.doi.org/10.30998/formatif.v6i2.950>

- Rusnaini, R., dkk (2020). Intensifikasi Profil Pelajar Pancasila dan Implikasinya Terhadap Ketahanan Pribadi Siswa. *Jurnal Ketahanan Nasional*, 27 (2), 230-249.  
<https://doi.org/10.22146/jkn.67613>
- Sari, N. Y., & Sinthiya, I. A. P. A. (2022). Strategi Penguatan Profil Pelajar Pancasila Di Sma Negeri 2 Gadingrejo. *JMPA (Jurnal Manajemen Pendidikan Al-Multazam)*, 4(2), 50-59. <https://dx.doi.org/10.54892/jmpa.v4i2.141>
- Shalikha, P. A. A. (2022). Implementasi Projek Penguatan Profil Pelajar Pancasila Sebagai Upaya Menumbuhkan Jiwa Kewirausahaan. *Jurnal Pendidikan Ekonomi*, 15(2), 86-93. <https://dx.doi.org/10.17977/UM014v15i22022p86>
- Shofa, N. A. (2021) Strengthening The Profile Of Pancasila Students Through ProjectBased Learning in Learning History. In *Prosiding Seminar Nasional & Internasional*.
- Sukarna. (2011). *Dasar-Dasar Manajemen*. Bandung: CV. Mandar Maju.
- Susilawati, E., dkk. (2021). Internalisasi Nilai Pancasila Dalam Pembelajaran Melalui Penerapan Profil Pelajar Pancasila Berbantuan Platform Merdeka Mengajar. *Jurnal Teknodik* : 155-167. <https://doi.org/10.32550/teknodik.v25i2.897>
- Sugioyono.(2005). *Memahami Penelitian Kualitatif*. Bandung: Alfabeta.
- Supyadi, Susanti, dkk. (2021). *Panduan Pengembangan Projek Penguatan Profil Pelajar Pancasila Jenjang Pendidikan Dasar dan Menengah (SD/MI, SMP/MTs, SMA/MA*. Jakarta. Pusat Asesmen dan Pembelajaran Badan Penelitian dan Pengembangan dan Perbukuan Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.
- Yin. R.K (1987) *Studi Kasus, Desain dan Metode*. Terjemahan oleh M Dzaki Mudzakir. Jakarta. Raja Grafindo Persada.

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*Identification of Teacher Competence Moral Elements for Becoming Principals as Learning Leaders*

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The Asian Conference on the Social Science 2023  
Official Conference Proceedings

**Abstract**

The principal has a central impact on enhancing the education unit and a strategic role in developing school resources. The principal has a crucial role to play in realizing a superior school as a learning leader. This study aimed to describe the moral competencies that a teacher must possess in order to serve as the school's head. This study employed a systematic literature review to explore articles, books, and prior research findings that are relevant to the research topic by using Bandara's conceptual framework, namely through five phases. Each phase is carried out sequentially starting from the process of selecting sources to the process of analysis and preparation of the final report. The findings from the data collection were documented, processed, and presented descriptively. The results of the study showed that the moral values of prospective school principal teachers have a crucial role in forming effective and responsible leadership in schools. Some of the moral elements in the personality competencies of prospective principal teachers include personality elements of being virtuous, having integrity, fairness, empathy, courage, and discipline, being responsible, having social sensitivity, having an open personality, and having good self-control. By combining and developing these moral elements, prospective principal teachers can form moral leadership that has a positive impact in creating a quality learning environment, building student character, and establishing strong relationships with all members of the school community.

Keywords: Teacher Competence, Morality, Principals

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## Introduction

The process of instilling values in schools is of course also inseparable from the role of the teachers in this case the teacher has an important role, especially in helping students to build a positive attitude in learning, arousing curiosity, encouraging independence and accuracy of intellectual logic, and creating conditions -conditions for success in learning. The main task of a teacher is to provide guidance and direct students in learning activities (Sudrajat, 2020; Warif, 2019).

The success of an organization, such as a school, in achieving the vision, implementing the mission, and achieving learning objectives, is highly dependent on the integrity of the principal as a leader. Conversely, an organization can be destroyed if it is led by someone with no integrity in managing it. Leadership has a strong influence on the behavior of other people in achieving certain goals, and this is an indicator of the success of a leader (Feska Ajepri, 2016; Kocolowski, 2010). One challenge faced by aspiring school principals today is achieving effective learning leadership. The main responsibility of a school principal is to improve the quality of learning and achieve success for all participants (Lunenburg, 2010). In addition, educators must have morals that become a reference for students (Kirby, 2022). Morality is a very important aspect of education, especially in the context of the educator's role. Moral values not only help in shaping individual character but also become the foundation for the development of ethics, responsibility, and a positive attitude in social interactions.

Teachers and principals have an important role in shaping character, providing education, and creating a safe environment for students {Formatting Citation}. However, unfortunately, several immoral cases involving teachers and school principals in Indonesia have rocked the country's education system. These cases involve actions that are contrary to moral and ethical principles, harm students, and undermine the integrity of education. Examples include extortion, violence against students, sexual harassment, misappropriation of school funds, sale of exam answers, discrimination, abuse of authority, and so on. Even though these cases do not reflect the behavior of all teachers and school principals in Indonesia, they do show the need for ethical enforcement and continuing preventive measures so that every child can get a decent and quality education.

Based on the research conducted, the data shows the importance of morals for educators. According to research conducted by Lapsley and Narvaez (2005), educators who are sensitive to moral values and apply in their educational practices can have a positive influence on students. In another study conducted by Berkowitz and Bier (2005), it was found that educators who pay attention to and integrate the teaching of moral values in the curriculum can help improve students' moral abilities and provide them with a strong ethical foundation.

Based on a study conducted by Rest et al. (1999), educators who demonstrate a commitment to moral values have a positive impact on students' social and emotional development. They can model good behavior, guide students in dealing with difficult moral situations, and provide moral encouragement in their efforts to do good. In addition, educators who focus on morality also have an important role in helping students understand and appreciate cultural diversity, and build an inclusive environment. In research conducted by Killen and Smetana (2015), it was found that educators who promote tolerance, respect for differences, and social justice can help students develop a better understanding of diverse moral values in society.



According to research conducted by Lickona (1991), educators who pay attention to moral values and integrate them into everyday education can have a positive influence on the moral and ethical development of students. This research shows that educators who instill moral values in their teaching can assist students in understanding the difference between right and wrong, considering the consequences of their actions, and developing responsible and ethical attitudes. Based on research conducted by Borba (2017), educators who focus on morality and moral values can help students develop empathy, tolerance, and understanding of other people's perspectives. Through moral education, students can learn to respect diversity, resolve conflict in a constructive way, and interact in an ethical way in a social environment. In addition, according to research conducted by Rest et al. (1999), educators who demonstrate a commitment to moral values and integrity have a significant impact on students' character development. This research highlights the importance of educators as models and moral role models for students. In a learning environment led by educators who have integrity, students can learn from the positive behavior and ethical attitudes exhibited by these educators.

Educators who focus on morality also have a key role in helping students understand and overcome complex moral dilemmas. Research conducted by Kohlberg (1981) emphasizes that educators who are able to teach students about moral values and provide guidance in dealing with complex moral situations can help students develop more complex and mature moral thinking. In conclusion, data from various studies show the importance of morals for educators. An educational approach centered on moral values can have a positive impact on the development of students' character, ethics, and social attitudes. Educators who pay attention to and apply moral values in their educational practices can form individuals who are responsible, empathetic, and have high integrity.

Some of the previous studies described how teachers as prospective principals must be sensitive and adaptive to moral values in their activities as educators and prospective principals. This research will identify the moral values of teachers to become principals as learning leaders.

## **Method**

This study uses a literature study based on a conceptual framework because a conceptual framework is a good foundation in a literature study. The process of implementing this research was carried out by searching for and collecting data and information related to and related to research. The stages carried out in this study were adapted to the Bandara, Miskon, & Fiel (2011) framework, namely through five phases. Each phase is carried out sequentially starting from the process of selecting sources to the process of analysis and preparation of the final report. In the first phase, the writer chooses a topic of interest and is in accordance with the author's study through various relevant sources. The results of the selection of topics that are of interest to the author then lead to two important points, namely the principal as a learning leader and the moral values of the teacher. In the second phase, the selection of this topic then leads to the moral values of prospective school principals so that the sources that are used as references by the author are mostly obtained from research results published in international book chapters and international journals that specifically discuss the moral values of prospective school principals. The process of identifying the source that the author refers to can be done by looking at the title, abstract, and keywords of each research result which contains the author's two topic points.

The third phase, is coding the research data and the literature sorting process which is considered effective and efficient in this study. This is done in order to be able to describe specifically. The fourth phase is the process of reviewing literature data. This means that the quality of the data obtained must be ensured, the focus and concept of the study, as well as proper synthesis. The fifth phase is the process of analyzing the study data to be presented in this paper.

Table 1. Research framework

No.	Phase	Step
1	Source selection	Interesting topic selection. Identify relevant sources for the chosen topic
2	Search Strategy	Identify key search terms Search Strategy Identify key search terms Iteration 1: Identify search sources, identify papers that contain any keywords in 'title', 'abstract' or 'keywords'. Iteration 2: Undertake a detailed review of the abstracts and keywords of the initial batch of papers
3	Coding Scheme	Determines what to retrieve from the data
4	Review Process	Read the data source and retrieve the necessary data
5	Process Analysis and reports	Analysis of the data obtained and compiling research findings

(Bandara et al., 2011)

### **The Urgency of Teacher's Moral Values as Principal Candidates**

The moral values possessed by prospective principal teachers play an important role in shaping quality and effective leadership in the educational context. These moral values reflect the principles of ethics, integrity and honesty which form the basis of their actions and behavior (Winch, 2020). Principal prospective teachers who have high moral values will show strong integrity with consistency between words and actions. They will act in accordance with applicable ethical principles, uphold honesty, and uphold fairness in making decisions. In addition, their strong moral values are also reflected in their commitment to education. Principal prospective teachers who have good moral values will show a high commitment to student development, focus on student interests, and try to create a learning environment that is safe, inclusive, and supports students' academic and social growth. They will also have an empathetic attitude, respect differences, and assist students in overcoming the challenges they face. Overall, the moral values of prospective principal teachers form a solid foundation for fair, objective, and responsible leadership, and have a positive impact on relationships with students, staff, and parents.

The moral values of prospective school principal teachers play a very important role in forming effective leadership and having a positive impact on schools and their communities (Wang, 2022). The following is a long argument that supports the importance of the moral values of prospective school principals: Teacher prospective principals with strong moral values can become leaders who are able to shape and strengthen a dignified school culture. Through good examples, they inspire students and staff to respect important ethical and moral values. This creates a learning environment that is positive, inclusive and values diversity. Principal teacher candidates play an important role in forming effective educational leadership. Teacher

candidates for principals with strong moral values are able to form a dignified school culture, become a moral model for students, make decisions based on ethical principles, build positive relationships, create a safe learning environment, uphold professional ethics, and develop student character. Therefore, investing in developing the moral values of prospective principal teachers is very important to create a quality educational environment, have a positive impact on students, and advance the future of education.

### **Identification of Teacher Candidate Moral Elements for Principals**

The following is an identification of the relevant moral elements for prospective principal teachers along with an explanation for each element:

#### ***Honesty***

The value of honesty is a very important moral element for prospective principal teachers. Honesty reflects consistency between words and actions, as well as a commitment to speak and act honestly in all aspects of life and leadership. Principal prospective teachers who have a high value of honesty will set a good example for students and staff. They will communicate honestly and openly, not withhold important information, and not engage in manipulation or deception. The honesty of aspiring principal teachers creates a climate filled with integrity and trust, which in turn helps build strong relationships with students, staff, and parents.

In addition, honesty also plays a role in decision making. Honest teacher candidates for principals will make decisions based on facts, data, and ethical considerations, not on the basis of personal interests or bias. They will maintain integrity in every decision they make, safeguarding fairness and the interests of the entire school community. Honesty is also important in the face of challenges or mistakes. Honest prospective teacher principals will admit and take responsibility for their mistakes, and take steps to correct and learn from the situation. They will set a good example for students about the importance of facing failure honestly and responsibly.

Overall, the value of honesty of prospective principal teachers is an important foundation in forming moral and effective leadership. Honesty builds trust, inspires integrity, and sets a good moral example for students and staff. By appreciating and implementing the value of honesty, prospective principal teachers can create a learning environment filled with integrity, fairness, and positive growth.

#### ***Justice***

Justice includes a fair and objective attitude in treating all individuals in the school environment. Equitable teacher candidates for principals will consider the interests of all parties involved, maintain equality, and make decisions based on the principle of fairness. The value of justice is one of the important moral values for prospective principal teachers. Fairness reflects a fair, objective and impartial attitude in treating all individuals in the school environment.

As teacher candidates for school principals, the value of fairness is important in various aspects of their leadership. First, a fair prospective teacher principal will ensure that every student is treated equally, regardless of their background, creed, or ability. They will provide fair opportunities to learn, participate and develop to their full potential. Equitable prospective

principal teachers will ensure that there is no discrimination or unfair treatment of students in any case.

In addition, the value of justice is also important in decision making. Equitable prospective principal teachers will consider all relevant factors, listen to multiple perspectives, and make decisions based on objective considerations. They will ensure that the decisions they make are not based on personal preference or bias, but based on the principles of fairness and the greater good. Teacher candidates for principals who prioritize the value of justice will also maintain a fair and orderly school environment. They will enforce rules and procedures consistently, without taking sides or giving anyone special treatment. They will provide equal opportunities for students and staff to participate in school activities, obtain needed resources, and receive proper recognition for their achievements. By applying the value of justice, teacher candidates for school principals can create an inclusive, safe, and fair school environment. Fairness ensures that every individual is valued, treated fairly, and has equal opportunities to grow and develop. Principal teachers who have strong values of justice will become fair leaders, inspire students and staff to value fairness and create an inclusive and equitable learning environment for all members of the school community.

### *Empathy*

Empathy is the ability to understand and feel the emotions and perspectives of others. Aspiring principal teachers who have a high level of empathy will be able to relate to students, staff, and parents in a caring, understanding, and supportive way. The value of empathy is one of the most important moral values for a prospective principal teacher. Empathy reflects the ability to understand and feel the emotions and needs of others. As educational leaders, prospective principal teachers who value high empathy are able to form strong relationships with students, staff, and parents.

Principal teachers who have good empathy will listen attentively and respect students' feelings and experiences. They will seek to understand students' perspectives, acknowledge the challenges and difficulties they face, and provide genuine support. Empathetic teacher candidates will create a friendly, warm, and supportive environment, where students feel heard, accepted, and cared for.

In addition, the value of empathy is also important in relationships with staff and parents. Empathetic teacher aspiring principals will pay attention to the needs and concerns of staff, and seek to understand the perspectives and challenges they face in their work. They will create a collaborative work environment, provide support, and encourage staff professional growth. To parents, empathetic teacher candidates will listen empathetically, respond to their concerns, and work together to support children's development. By practicing the value of empathy, prospective principal teachers can inspire kindness, build positive relationships, and create a caring and inclusive school climate. The value of empathy strengthens connections between individuals, pays attention to differences, and respects the emotional and social needs of each individual in the school community. By prioritizing the value of empathy, prospective principal teachers can become empathetic leaders, support students' personal and academic development, and build strong and meaningful relationships with staff and parents.

### ***Courage***

Courage is a necessary moral value in facing challenges and taking risks necessary to advance education. Principal teachers who have the courage to take innovative steps, dare to speak out on important issues, and stand up for justice even in difficult situations.

### ***Discipline***

Discipline reflects the ability of prospective principal teachers to self-regulate and respect the rules that apply. They will be an example to students in self-discipline, teach the importance of obedience, and maintain order in the school environment.

### ***Faithfulness***

Loyalty refers to a high commitment to the school's values, goals, and mission. Loyal aspiring principal teachers will maintain their commitment to education, build a strong school culture, and support the school's vision and goals with consistency.

### ***Responsibility***

The sense of responsibility includes an awareness of the obligations and duties as a prospective principal teacher. They will be responsible for student development, resource management, and achieving educational goals with dedication.

### ***Openness***

Openness includes the willingness of prospective principal teachers to accept feedback, learn from experience, and admit mistakes. Aspiring teacher principals who are open will respect the perspectives of others, adapt to change, and promote a culture of continuous learning.

### ***Commitment to Collaborative Leadership***

Principal teacher candidates who have a commitment to collaborative leadership will involve all members of the school community in decision making and building a shared vision. They will create an empowering environment, facilitate collaboration between students, staff and parents, and encourage active participation in the school's learning and development process.

### ***Appreciate Diversity***

Principal teachers who value diversity will recognize and respect differences in culture, religion, race, and the backgrounds of students and staff. They will build an inclusive environment, promote tolerance, and encourage intercultural cooperation.

### ***Social Responsibility***

Teacher candidates for principals with high social responsibility will understand the importance of the school's involvement and contribution in society. They will encourage students to get involved in community service activities, social projects, and run programs that improve social conditions around the school.

### ***Modesty***

Humility is a moral value that reflects humility, respect for the contributions of others, and self-determination. A humble teacher-to-be principal will encourage teamwork, reward collective achievement, and recognize success as the result of teamwork.

### ***Professional Ethics***

Professional ethics is a key component in the morality of prospective school principal teachers. They will comply with a professional code of ethics in the field of education, maintain student privacy, carry out tasks with integrity, and avoid conflicts of interest that could harm the interests of students and the school.

### ***Sensitivity to Special Needs***

Sensitivity to special needs includes understanding and caring for students with special educational needs or other special needs. Sensitive teacher aspiring principals will provide appropriate support, ensure the inclusion of students with special needs, and create a welcoming environment for all students.

### ***Character Building***

Principal teacher candidates with a focus on character building will prioritize the development of students' moral and social values. They will bring values such as integrity, honesty, responsibility, and cooperation into the school curriculum and activities to form strong student character.

### ***Inspiring and Encouraging Potential Students***

Principal teachers with this moral element will encourage and inspire students to reach their full potential. They will provide encouragement, provide appropriate challenges, and generate motivation in students to achieve academic success and their personal development. The prospective principal teacher will create an environment that supports talent exploration, provides constructive feedback, and provides opportunities for students to develop in a variety of fields, be it academics, arts, sports, or leadership. By inspiring and encouraging students' potential, aspiring teachers play an important role in shaping successful futures for students and making a positive contribution to society.

### ***Manage Conflict Wisely***

Teacher candidates for principals with good moral values will manage conflict wisely and peacefully. They will promote open dialogue, listen to multiple perspectives, and work towards win-win solutions. The prospective principal teacher will teach students how to deal with conflict constructively, build harmonious relationships, and create a peaceful school climate.

### ***Respect Privacy and Trust***

Principal teachers with this moral element will protect the privacy of students, staff and members of the school community. They will treat personal information with confidentiality, respect the trust placed by individuals, and maintain the confidentiality expected of each

individual within the school environment. Principal teacher candidates who respect privacy and trust will build strong relationships and maintain integrity in information management.

### ***Effective Communication***

Principal teachers with this moral element will develop effective communication skills. They will listen carefully, communicate clearly, and respect the opinions of others. The prospective principal teacher will create an open communication environment, facilitate collaboration, and ensure that appropriate and important information is properly conveyed to students, staff, and parents.

### ***Commitment to Professional Growth***

Aspiring principal teachers with good moral values will be committed to their own professional growth as well as the growth of the staff they lead. They will continue to develop their knowledge and skills through training, further study and participation in the professional community. The prospective principal teachers will also encourage their staff to pursue professional development, acquire new knowledge, and improve the quality of their teaching and leadership.

By paying attention to and developing the moral elements mentioned above, teacher candidates for principals can create an educational environment that is responsible, inclusive and ethical. These moral values form the basis for effective leadership, provide guidance in meeting challenges, and shape culture.

### **Conclusion**

Based on the results and discussion that has been described, it can be concluded that the moral values of prospective school principal teachers have a crucial role in forming effective and responsible leadership in schools. When teachers of aspiring principals practice and develop these moral elements, they create a dignified, inclusive and ethical environment.

Integrity, fairness, empathy, courage, and discipline are the basic moral elements in building strong and trusted leadership. Openness, commitment to collaborative leadership, and respect for diversity strengthen relationships and promote the active participation of all members of the school community. Social responsibility, humility, and professional ethics make prospective principal teachers as moral role models who have a positive influence on the environment and the surrounding community.

Awareness of sensitivity to students' special needs, character building, and the ability to inspire and encourage student potential creates an environment that supports student development holistically. The ability to manage conflict wisely, respect privacy and trust, and communicate effectively reinforces good communication, harmonious relationships, and trust within the school. And, the commitment to professional growth reflects the aspiring principal teacher's dedication to continuously improving himself and inspiring staff to do the same.

By combining and developing these moral elements, prospective principal teachers can form moral leadership that has a positive impact in creating a quality learning environment, building student character, and establishing strong relationships with all members of the school community. Through the implementation of these moral values, teachers aspiring principals

can play an important role in shaping a bright future for students and contributing to better social development.

### **Acknowledgements**

The author wishes to express his heartfelt gratitude to the Center for Higher Education (BPPT), Education Financing Service Center (Pusat Layanan Pembiayaan Pendidikan) The Ministry of Education, Culture, Research, and Technology, and Lembaga Pengelola Dana Pendidikan (LPDP/Indonesia Endowment Fund for Education) for providing financial support for this publication.



## References

- Bandara, W., Miskon, S., & Fielt, E. (2011). A systematic, tool-supported method for conducting literature reviews in information systems. In 19th European
- Berkowitz, MW, & Bier, MC (2005). What works in character education: A research-driven guide for educators. Washington, DC: Character Education Partnership.
- Conference on Information Systems, ECIS 2011. Helsinki, Finland
- Feska Ajepri. (2016). Effective Leadership In School Based Management. *Al-Idah: Journal of Islamic Education* , 6 , 135.
- Killen, M., & Smetana, JG (2015). Handbook of moral development. New York, NY: Psychology Press.
- Kirby, N. (2022). Institutional Integrity: Its Meaning and Value. In *Ethical Theory and Moral Practice* (Vol. 25, Issue 5, pp. 809–834). Springer Science and Business Media LLC. <https://doi.org/10.1007/s10677-022-10330-8>
- Kocolowski, MD (2010). Shared leadership: Is it time for a change. *Emerging Leadership Journeys* , 3 (1), 22–32.
- Lapsley, DK, & Narvaez, D. (2005). Moral psychology at the crossroads: New directions for child and adolescent development. San Francisco, CA: Jossey-Bass
- Lunenburg, FC (2010). The Principal as Instructional Leader: An Evolving Role. *National Forum of Educational and Supervision Journal* , 27 (4). <https://doi.org/10.1177/019263658506948107>
- Menno, J. (2022). A Good Moral Teacher Must Be A Good Pre-Moral Teacher: On the Pedagogical Limits of US Constitutional Law. In *Journal of Moral Theology* (Vol. 11). The Journal of Moral Theology, Inc. <https://doi.org/10.55476/001c.39713>
- Rest, JR, Narvaez, D., Thoma, SJ, & Bebeau, MJ (1999). DIT2: Devising and testing a second version of the Defining Issues Test. *Journal of Educational Psychology*, 91(4), 746-761
- Sudrajat, J. (2020). Teacher competency during the COVID-19 pandemic. *Journal of Economics and Business Research* , 13 (1), 100–110.
- Wang, C. -L. (2022). Teacher as Moral Model. In *Encyclopedia of Teacher Education* (pp. 1735–1740). Springer Nature Singapore. [https://doi.org/10.1007/978-981-16-8679-5\\_265](https://doi.org/10.1007/978-981-16-8679-5_265)
- Warif, M. (2019). Class Teacher Strategies in Dealing with Students who are Lazy to Learn. *TARBAWI: Journal of Islamic Religious Education* , 4 (01), 38–55.
- Winch, P. (2020). Moral Integrity. In *Ethics and Action* (pp. 171–192). Routledge. <https://doi.org/10.4324/9781003051138-9>

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***The Problem and Satisfaction of Lecturers Towards the Independent Study:  
Case Study in Indonesia***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

The aim of this research is to describe the achievement and satisfaction of teachers as users of the Independent Study or Merdeka Belajar Kampus Merdeka (MBKM) program in Indonesia. Additionally, this study reveals problems related to implementation, including the benefits, obstacles, and expectations of teachers towards improving future execution of the Independent Study program. Simple statistics were used for data processing and presented through descriptive analysis. The data was collected through questionnaire dissemination and literature review. The questionnaire was randomly distributed through an online g-form to 45 state and private university lecturers in Indonesia, while literature review sources included journal articles, Independent Study guidelines, online news, and other internet sources. The results of the data analyzed showed that out of 45 respondents, approximately 56% responded positively, with the achievement of the program categorized as good and a satisfaction rate of 73%. However, around 27% were dissatisfied, revealing problems related to system obstacles and suboptimal program management. This research is important for program managers and government policymakers, as it provides input towards improving Indonesia's education quality and serves as an example of Independent Study program implementation in other countries.

Keywords: Problem, Satisfaction, Lecturers, Independent Study

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## Introduction

The implementation of the Independent Study curriculum has been launched in 2020. The Independent Study curriculum poses a real challenge for every university to provide a positive response to this new curriculum. To support this program, development is needed at each university (Rohiyatussakinah, 2021). The concept of independent learning has become a widely discussed issue in education. The concept, which advocates for freedom in learning, is carried out in an effort to prepare graduates of both public and private universities to face the rapid development and changes of the times. The implementation of government policies in the field of education will automatically affect the curriculum management that supports Independent Study optimally at every level of education (Zuhrohtun et al., 2021).

Academic communities must understand the Independent Study policy within study programs that have courses related to Independent Study programs, and entrepreneurship activities have been underway to support Independent Study (Sintiawati et al., 2022). Study programs must be able to develop adaptive curricula and provide more practical experiences, and students have the right to learn outside the campus (Kodrat, 2021). The design of Independent Study programs, concepts, and models, including planning, learning processes, assessment, and evaluation, seeks to be a strategy that can be used to prepare graduates as future outstanding leaders, in order to achieve the vision of study programs at the national and international levels (Krisnanik et al., 2021; Marjan Fuadi, 2022; Baharuddin, 2021).

Some Independent Study programs include: 1) student exchange programs, 2) internships/work placements, 3) teaching in educational institutions, 4) village projects, 5) research projects, 6) entrepreneurship activities, 7) independent study/projects, and 8) humanitarian projects. Private universities in Indonesia have implemented several programs, including student exchange programs between study programs within universities and student exchange programs between universities, as well as teaching programs in educational institutions and internships supported by ministry funding (Fuadi & Aswita, 2021).

The involvement of the community aims to prepare outstanding students who uphold human values in carrying out their duties based on faith, morality, and ethics. Students proactively educate and help communities and the government solve their social problems (Krishnapatria, 2021). Students' knowledge about the Independent Study program policy is already good, but their detailed knowledge about the Independent Study program is still relatively low and adequate. Furthermore, students' readiness to participate in Independent Study activities is also good enough (Setyawati et al., 2022). The Independent Study program, particularly the internship/work placement activities, provides direct learning experiences and opportunities with the hope of obtaining the hard and soft skills needed in the world of work (Aswita, 2022).

Substantially, in accordance with Independent Study, which has been implemented since 2017, it has had an impact on achieving partner campus satisfaction indicators towards the obedience to rules, ethics, as well as students' personality and social abilities, which are already good (Riyadi et al., 2022). Students already have inherent characters from universities that can satisfy school partners. The ethics, personality, and social abilities of students can facilitate the implementation of the teaching campus program. Students, as participants in the teaching campus, are not only involved in learning activities but also play a role in helping schools in educational support activities needed by partners, such as library improvements, school drama events, and literacy strengthening (Suastika et al., 2022).

Implementation of Independent Study through their respective tasks, although most staff are not yet aware of how many semesters and credits can be equated in the Independent Study program, staff believe that there is an improvement in the quality of lecturers, students, and staff themselves in the implementation of Independent Study in higher education. Staff participate fully in the implementation of Independent Study because it is perceived as beneficial for improving the quality of graduates and will recommend to students to follow the Independent Study program according to their interests (Banda et al., 2022).

The implementation of Independent Study can provide improvements in both hard and soft skills for students. Especially the internship program, which is the most dominant program under Independent Study, is highly sought after by students because it is related to their future employment after graduation (Meke et al., 2021). The Independent Study program also has an impact on social skills for students. This can be seen from the difference in the level of social skills between students who participate in campus teaching activities and those who do not attend Campus Teaching (Sumani et al., 2022). In addition, students who participate in the Independent Study program have slightly higher average soft skills than non-Independent Study students, with a significant difference in leadership competencies (Kuncoro et al., 2022). Through Independent Study activities, students also feel more flexible towards the learning process, gain experiences with the community, and prepare for their future careers, as well as becoming a real forum that can guide students about diversity (Laga et al., 2021; Pamungkas & Sudigdo, 2022).

In terms of benefits, students gain real-world experiences outside of campus and learn through experiential learning. In addition, lecturers can increase their capacity as educators (Kholik et al., 2022). However, there is also research indicating that students who participate in Independent Study activities feel stressed. Specifically, the greatest level of stress is caused by pressure from learning and unfulfilled self-expectations (Hakim et al., 2022).

The main obstacles faced by private universities in implementing the Independent Study program include: 1) adapting the KKNi curriculum to the Independent Study program, 2) limited partner campuses, 3) collaboration between private universities in Indonesia and external parties such as companies, state-owned enterprises, regional-owned enterprises, and even the government is still very minimal, 4) management of funds by foundations that have not budgeted for Independent Study, and 5) the quality and productivity of lecturer and student human resources (Fuadi & Aswita, 2021). In addition, other obstacles faced include limited funding, suboptimal academic information systems, inadequate human resources, and lack of information about the Independent Study program (Sintiawati et al., 2022). Another challenge in implementing the Independent Study program, particularly in granting students the right to study for three semesters outside of their major, is in the aspects of curriculum adjustment, funding, exploration of partners, and academic information adjustment (Kholik et al., 2022).

Given the above problems related to the implementation of the Independent Study program, it is necessary to conduct further research on the extent of quality achievement and the level of satisfaction of lecturers as users of the Independent Study program in implementing the policies within it. This research is different from previous studies, which mainly focused on the impact and perceptions of students regarding the Independent Study program. This study focuses on the perceptions of teaching staff (lecturers) regarding the quality and level of satisfaction with the implementation of Independent Study so far. This study also investigates the extent to which lecturers perceive the benefits and challenges of the Independent Study program towards education implementation in Indonesian higher education.

## Research Methods

This research was conducted in October 2022, in the first semester of the academic year 2022/2023. The approach used was a descriptive qualitative approach. The primary data was collected through direct interviews with several faculty members who received the Independent Study program and through online questionnaire distribution. Secondary data was obtained through literature studies by collecting Independent Study data sourced from national and international journal articles, books, Independent Study guideline documents, online news, and other internet sources that discuss Independent Study.

The focus of the study was on the implementation of the Independent Study program in higher education. To obtain data on this study, researchers randomly sampled 45 faculty members who were implementing the Independent Study program from various public and private universities in Indonesia who are currently pursuing their S3 studies at the State University of Malang. The questionnaire was prepared based on evaluation indicators for the implementation of the Independent Study program. Furthermore, research analysis was conducted descriptively and data collection sources were triangulated. The respondent data in this study are as follows:

Table 1. Data of Respondents as State and Private University Lecturers as Practitioners of Community Service Program in Indonesia

No. Resp	Institution	MBKM Program	No. Resp	Institution	MBKM Program
Resp. 1	Univ. Muhammadiyah Bengkulu	Pertukaran Pelajar	Resp. 24	Univ. PGRI Silampari	Kampus Mengajar
Resp. 2	Institut Kesehatan Prima Nusantara	Kampus Mengajar	Resp. 25	Univ. Muhammadiyah Ponorogo	Kampus Mengajar
Resp. 3	Univ. Negeri Gorontalo	Pertukaran Pelajar	Resp. 26	Univ. Negeri Manado	Pertukaran Pelajar
Resp. 4	Univ. Negeri Malang	Kampus Mengajar	Resp. 27	Institut Teknologi Nasional Malang	Dosen Magang
Resp. 5	Univ. Jember	Kampus Mengajar	Resp. 28	Univ. Sultan Ageng Tirtayasa	Pertukaran Pelajar
Resp. 6	Univ. Negeri Malang	Hibah Penelitian	Resp. 29	Univ. Trunojoyo Madura	Hibah Penelitian
Resp. 7	STKIP PGRI Nganjuk	Kewirausahaan	Resp. 30	Univ. Galuh	Kampus Mengajar
Resp. 8	Univ. Jember	Kampus Mengajar	Resp. 31	Univ. Trunojoyo Madura	Pertukaran Dosen
Resp. 9	IKIP PGRI Bojonegoro	Kampus Mengajar	Resp. 32	Univ. Brawijaya	Pertukaran Pelajar
Resp. 10	Univ. Katolik Widya Mandala Madiun	Pertukaran Pelajar	Resp. 33	Univ. Bengkulu	Kampus Mengajar
Resp. 11	Univ. Billfath	Kampus Mengajar	Resp. 34	Univ. Indraprasta PGRI Jakarta	Hibah Penelitian
Resp. 12	Univ. Tanjungpura	Kampus Mengajar	Resp. 35	Univ. Sembilanbelas November Kolaka	Pertukaran Pelajar
Resp. 13	Univ. Pendidikan Ganesha	Kampus Mengajar	Resp. 36	Univ. Muhammadiyah Surabaya	Kampus Mengajar
Resp. 14	Univ. PGRI Palembang	Kampus Mengajar	Resp. 37	Univ. Sriwijaya	Pertukaran Pelajar
Resp. 15	Univ. Samudra	Studi Independen	Resp. 38	Univ. Negeri Yogyakarta	Kampus Mengajar
Resp. 16	Univ. Muhammadiyah Metro	Bina Desa	Resp. 39	Univ. Panca Marga	Pertukaran Dosen
Resp. 17	Univ. Muhammadiyah Kendari	Kampus Mengajar	Resp. 40	Univ. PGRI Kanjuruhan Malang	Modul Nusantara
Resp. 18	Univ. PGRI Palembang	Kampus Mengajar	Resp. 41	Univ. Negeri Makasar	Kampus Mengajar
Resp. 19	Univ. PGRI Sumatera Barat	Kampus Mengajar	Resp. 42	Univ. PGRI Kanjuruhan Malang	Bina Desa
Resp. 20	Univ. Muhammadiyah Surakarta	Kampus Mengajar	Resp. 43	Univ. Tribhuwana Tunggaladewi	Pertukaran Pelajar
Resp. 21	Univ. Negeri Malang	Studi Independen	Resp. 44	Univ. Jabal Ghafur	Hibah Penelitian
Resp. 22	Univ. Pattimura	Pertukaran Pelajar	Resp. 45	Univ. Wiralodra	Dosen Magang
Resp. 23	ITP Markandeya Bali	Pertukaran Pelajar			

## Result and Discussion

### Implementation of Independent Study in Learning

From the online questionnaire distributed to 45 respondents, consisting of both public and private university lecturers in this research, the following results were obtained;

Table 2. Quality data on the achievement of Independent Study program implementation

Quality of Achievement	Sum	Percentage
Excellent	2	4%
Good	25	56%
Good enough	8	18%
Not good enough	10	22%
	<b>45</b>	

Source: Survey Results and Research Data Processing (2022)

From the table above, it shows a significant development of the implementation of the Independent Study program. Of the 45 respondents, only 2 people answered very well with a percentage of 4 percent, 25 people answered well with a percentage of 56%, about 8 people answered quite well with a percentage of 18%, and about 10 people answered not well with a percentage of about 22%.

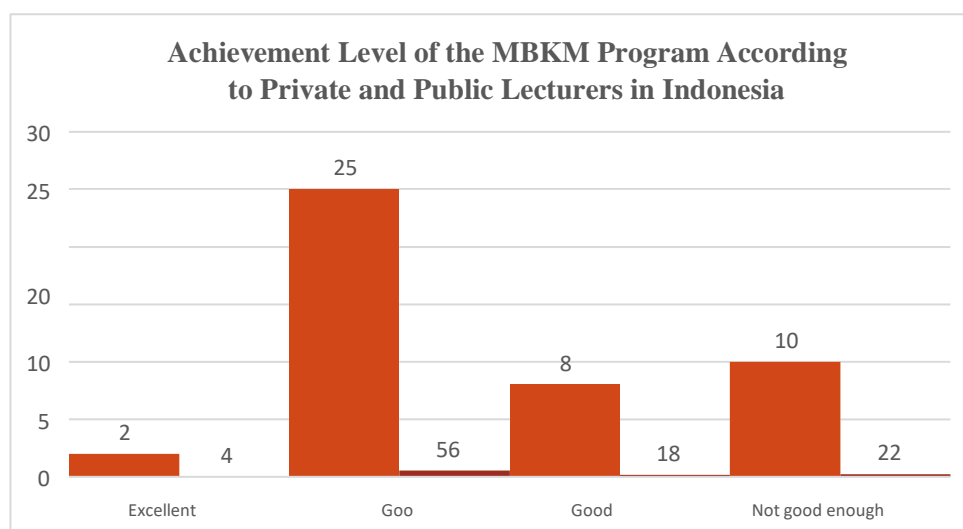


Figure 1. Graphic percentage of quality achievement of Independent Study program implementation

From the graphic shows that, around 2% who rated the implementation of the Independent Study program very good because they felt the benefits of Independent Study were very large for students and lecturers. It is said that Independent Study allows lecturers to collaborate with lecturers across territories and gain new experience, in implementing the knowledge gained during the implementation of the program. Most lecturers, around 56%, consider the implementation of the Independent Study program to be good, because for lecturers the Independent Study program has been carefully prepared. Participating in the Independent Study program is an experience for students to learn while having an impact in the target school.

Participants in the program have the opportunity to gain knowledge outside of their field of study from various professional sources. In addition, the Independent Study program is perceived to facilitate learning activities for students throughout Indonesia to acquire competencies beyond their original department's curriculum. This activity is also said to be beneficial to the community and helps to improve literacy for both students and educators. Around 18% of respondents rated the program positively because they felt that Independent Study provides space for students to explore themselves further. Meanwhile, around 22% of faculty members rated the program poorly, stating that the implementation of Independent Study in the field is still not being executed properly, as the introduction of the new program to students is still insufficient. Evaluation factors were not well-prepared, resulting in the implementation of Independent Study still not being optimal.

### Level of Lecturer Satisfaction with the Implementation of the Independent Study Program

Table 3. Data on the level of lecturer satisfaction with the implementation of the Independent Study program

Satisfaction	Sum	Percentage
Excellent	4	9%
Satisfied	33	73%
Satisfied Enough	2	4%
Not Satisfied Enough	6	13%
	45	

From the table data on the level of lecturer satisfaction with the implementation of Independent Study, it shows significant results. Of the 45 respondents, there were about 4 people who answered very satisfied, with a percentage of 9%, about 33 people answered satisfied with a percentage of 73%, only 2 people answered enough with a percentage of about 4%, and about 6 lecturers answered less satisfied, with a percentage of 13%.

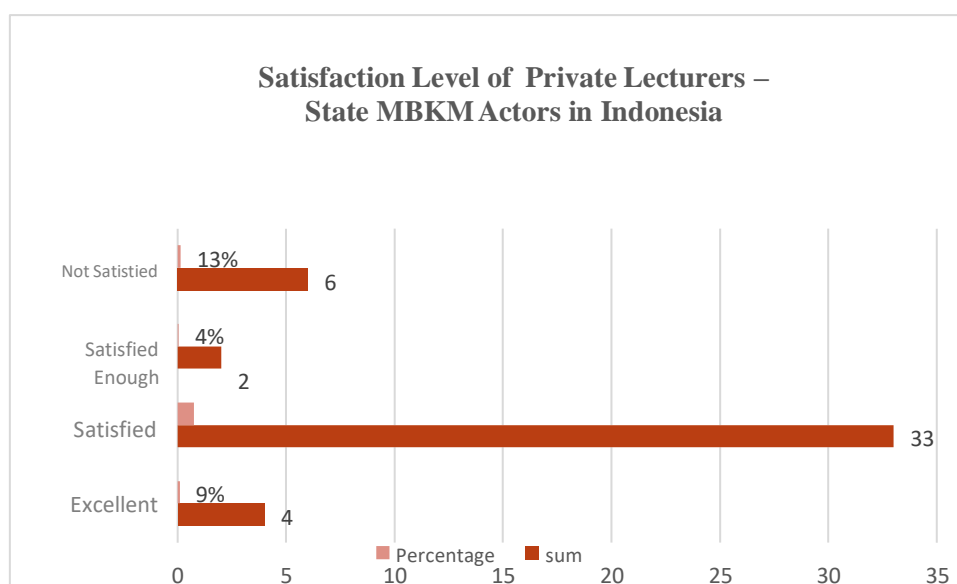


Figure 2. Graph of Lecturer Satisfaction Level with Independent Study Program Implementation



The above image shows a high level of satisfaction. Most of the lecturers, around 73%, who are satisfied with the implementation of the Independent Study program say that the Independent Study program can provide experience and insights to students and institutions in adapting to changes. In addition, Independent Study participants feel that the program can fulfill what they want to learn but is not taught in lectures. Through Independent Study, students are provided with all aspects of academic achievement, including knowledge, skills, and attitudes, not only from lecturers but also from partners who are more prepared for the world of work. The Independent Study program has been provided, and we can run it well. In addition, about 9% of lecturers feel very satisfied because they feel that the program prepares students to face rapid social, cultural, and technological changes, as well as link and match with the industrial and work world.

Around 4% of respondents who answered "satisfied enough" could not provide other input or responses because they only followed one program. Meanwhile, 6% of respondents who felt "unsatisfied" felt that the assessment was not clear and the implementation did not meet expectations. The logic behind this independent student exchange program is to provide students with learning experiences outside of campus and to be more open-minded. However, problems arise if the courses taken by students or offered by partner institutions are not relevant to the study fields of the courses at their home institution. In addition, it is quite troublesome for the study program to convert them. For the *Kampus Mengajar* program, it should be monitored so that the practices carried out by students in schools are in line with the vision and mission of the Program *Kampus Mengajar*.

### **Problems and Constraints in Independent Study Implementation**

Based on field observations, the results of a questionnaire distributed to 45 lecturers indicate that the challenges frequently faced by lecturers during the implementation of the Independent Study program are: 1) Geographic conditions, access, and distance, particularly for programs located in remote 3T areas, make it difficult for teachers to access the destination. 2) Scheduling of classes sometimes conflicts with other activities, forcing many lecturers to choose one program. 3) Lack of internal leadership socialization regarding recognition of activities within credit units, academic integration among universities, and difficulty in converting credits and courses taken outside the study program into the homebase study program. 4) Adaptation of the Independent Study curriculum, particularly in semesters 5, 6, and 7, as well as transfer of Independent Study activities into course grades. 5) Lack of clarity in information, causing many educators to struggle to understand the benefits of Independent Study for both students and lecturers. 6) In addition, network constraints often hinder online learning. 7) Lack of collaboration with external research partners.

Furthermore, 8) Difficulties experienced as the DPL of exchange students, lack of recognition, and communication of the students' vision and mission make it challenging to align activities. 9) Coordination with Independent Study partners is still private because there is no automated system yet. 10) Guidelines for the initial to the final program activities, as well as the alignment of Independent Study results with the internal campus curriculum, are still unclear, causing confusion for lecturers and study programs in aligning courses. 11) Some face challenges in preparing the SPJ due to a lack of guidance and technical knowledge. 12) Other challenges experienced in managing the study program and students who participate in the program. 13) Inadequate funding also hinders operations in the field. 14) Excessive monitoring and evaluation result in activities not aligning with the learning objectives of the study program.

In addition, 15) Other challenges faced by lecturers are related to web-based systems because some features do not function properly, disrupting program operations. 16) Coordination with responsible parties, program choices, and implementation is not evenly distributed among all study programs. 17) Inadequate socialization results in participants and university leaders not fully understanding the Independent Study program. 18) Students' specializations and the skills of accompanying lecturers, as well as the number of recognized credits, will weaken the number of credits in the expertise field. 19) Many challenges are technical, but the main challenge is a lack of understanding of the policy-compliant implementation program, resulting in different interpretations from universities, partners, and students. 20) The synchronization process of Independent Study policies from the ministry with the study program curriculum. 21) Difficulty in directing the program to several students from non-LPTK campuses. 22) Some universities use hybrid learning, which still faces challenges during online learning.

### **Benefits of Independent Study Program to Improve Lecturer Ability**

Despite the shortcomings and challenges of the program, what benefits do you feel the Independent Study program has for improving the quality of education for both lecturers and students? For lecturers who accompany and guide intern students in industry, it is an interesting and insightful experience for human resource development. It allows lecturers to always upgrade themselves and students to gain experience both on and off campus. As a lecturer, I have a platform to implement my knowledge and skills relevantly outside of teaching activities. Lecturers can develop materials outside of the curriculum. For students, through the Independent Study program, they gain knowledge beyond the curriculum that can be used to develop skills in the workplace.

Furthermore, lecturers can gain experience, expand their reach in dedicating themselves to education, and provide diverse campus experiences. Lecturers can observe the state of education in remote areas and provide solutions for improvement. For students, it can be an experience of how to become an educator in the region. The Independent Study program also provides many benefits such as enabling students to complete their studies quickly, overcoming boredom in face-to-face classes, and providing real work experience. Additionally, lecturers can obtain additional teaching credits as external supervisors for Independent Study activities, which can be used as community service.

The program also opens up more opportunities for self-exploration and wider experiences. Research encourages collaboration, leading to multiple perspectives in solving research problems. It also provides real-life experiences that education issues in our country are complex. It changes thinking and independence, and students can compete with other universities to create well-rounded and job-ready graduates, while lecturers can increase their professional quality. It helps to facilitate article writing and fulfills the student's creativity movement through products and writings after participating in Independent Study.

Many also say that the Independent Study program can provide valuable experiences for students, lecturers, and universities in implementing independent curricula. Lecturers can learn practical things through their knowledge application in the industrial and business worlds. For students, they will gain real-life experience when they enter the workforce. They can learn experientially outside of campus. It provides a platform for lecturers to optimize themselves, especially to strengthen their networks with partner schools and others. Lecturers and students can collaborate with various cultural, educational, and religious backgrounds. This can train independence, initiative, tolerance, and global perspectives. In addition, for lecturers, the

benefits obtained are to gain experience in knowing the characteristics of students from all over Indonesia in learning. Building relationships with the community and schools, relationships with students from other universities, and strengthening relationships. Lecturers gain practical experience from partners, and students are more prepared with real-life experiences from the workforce.

It also provides opportunities for the development of lecturers' professions, university management, Pekerti training, scientific article mentoring, community service proposals, and wider networking. It provides opportunities for implementing knowledge according to the needs and demands of the curriculum. It improves professional competencies, opens up more opportunities, has a positive impact on the home institution, and applies good things at the home campus. It educates students to be independent and upgrades lecturers' knowledge. As a lecturer, I can also contribute to schools through guidance to students. Lecturers have wider networks not only among academics but also among practitioners and even DUDI partners.

### **Recommendations for the Development of Independent Study Implementation**

From the various benefits and challenges faced by lecturers, the suggestions, recommendations, and big hopes of lecturers to policy makers in improving the Independent Study program and developing the Indonesian curriculum are as follows: teaching staff hope that the government will help with the accommodation costs for lecturers and students who participate in the Independent Study program. Additional funding for each study program should be provided so that academic systems can be improved, including uniformity in terms of grade conversion. It is hoped that program guidelines can be better prepared. The Independent Study should create a rubric related to grade conversion as this can sometimes cause controversy.

Although the learning activities are already running normally, I hope that campus teaching activities will continue to achieve quality education that is evenly distributed throughout Indonesia. This good program should be continued, whoever the leader is. A regulation (manual) on course conversion should be prepared. There should be a common understanding of the program among all participants. Lecturers also hope that the Independent Study program can be better prepared in terms of administration and other aspects.

Opportunities should be provided for participants with interests outside their field of study to be channeled. Guidelines and curriculum alignment should be provided for each course in each study program so that students and lecturers do not mistakenly choose courses. The quality and quantity of the Independent Study program should continue to be improved, expanding from the current 8 activities. A robust monitoring and evaluation system should be established for the implementation of Independent Study. In terms of curriculum development, it is recommended to involve education experts in curriculum development to design the Indonesian curriculum so that it is suitable for the conditions in Indonesia. Competency mapping is necessary for program participation to help schools implement the program.

### **Conclusion**

Based on the results of the research and discussion presented, it can be concluded that the implementation of the Independent Study curriculum has been carried out to the best of its ability. From the questionnaire distribution, it was found that out of 45 respondents, only 2 people answered "very good" with a percentage of 4%, 25 people answered "good" with a percentage of 56%, approximately 8 people answered "fairly good" with a percentage of 18%,

and about 10 people answered "not good" with a percentage of around 22%. As for the data on the level of satisfaction of the lecturers towards the implementation of Independent Study, it showed significant results. Out of 45 respondents, about 4 people answered "very satisfied" with a percentage of 9%, about 33 people answered "satisfied" with a percentage of 73%, only 2 people answered "fairly satisfied" with a percentage of around 4%, and about 6 lecturers answered "not satisfied" with a percentage of 13%. During the implementation, the lecturers faced many obstacles, especially in terms of access, inadequate facilities, lack of socialization, lack of program guidelines, and the readiness of partner study programs to implement the program. Although many obstacles were felt by the lecturers, many benefits were also obtained from the Independent Study program, starting from the improvement of skills, insights, experience, and knowledge of each lecturer.

### **Acknowledgments**

Grateful to Allah SWT for all the blessings always given to the authors. The authors would like to acknowledge to the scholarship for the funding support. This work is fully supported by the BPI Scholarship - Balai Pembiayaan Pendidikan Tinggi (BPPT); Lembaga Pengelola Dana Pendidikan [202101121002].

## References

- Aswita, D. (2022). Merdeka Belajar Kampus Merdeka (Mbkm): Inventarisasi Mitra Dalam Pelaksanaan Magang Mahasiswa Fakultas Keguruan Dan Ilmu Pendidikan. *Prosiding Seminar Nasional Biotik*, 9(2), 56. <https://doi.org/10.22373/pbio.v9i2.11747>
- Baharuddin, M. R. (2021). Adaptasi Kurikulum Merdeka Belajar Kampus Merdeka (Fokus: Model MBKM Program Studi). *Jurnal Studi Guru Dan Pembelajaran*, 4(1), 195–205. <https://www.e-journal.my.id/jsgp/article/view/591>
- Banda, V. L., Leha, E., Nona, R. V., Suryani, L., Meke, K. D. P., & Supardi, P. N. (2022). Persepsi Tenaga Kependidikan Tentang Merdeka Belajar- Kampus Merdeka Studi Kasus Di Universitas Flores Ende. *Edukatif: Jurnal Ilmu Pendidikan*, 4(1), 952–962. <https://doi.org/10.31004/edukatif.v4i1.2055>
- Fuadi, T. M., & Aswita, D. (2021). Merdeka Belajar Kampus Merdeka (MBKM): Bagaimana Penerapan Dan Kedala Yang Dihadapi Oleh Perguruan Tinggi Swasta Di Aceh. *Jurnal Dedikasi Pendidikan*, 5(2), 603–614. <http://jurnal.abulyatama.ac.id/index.php/dedikasi/article/view/2051>
- Hakim, A. L., Fajri, M. B., & Faizah, E. N. (2022). Evaluation of implementation Of MBKM: Does academic stress affect on student learning outcomes? *International Journal of Educational Research & Social Sciences*, 3(1), 1–16. <https://ijersc.org/index.php/go/article/view/246>
- Kholik, A., Bisri, H., Lathifah, Z. K., Kartakusumah, B., Maufur, M., & Prasetyo, T. (2022). Impelementasi Kurikulum Merdeka Belajar Kampus Merdeka (MBKM) Berdasarkan Persepsi Dosen dan Mahasiswa. *Jurnal Basicedu*, 6(1), 738–748. <https://doi.org/10.31004/basicedu.v6i1.2045>
- Kodrat, D. (2021). Industrial Mindset of Education in Merdeka Belajar Kampus Merdeka (MBKM) Policy. *Jurnal Kajian Peradaban Islam*, 4(1), 9–14. <https://doi.org/10.47076/jkpi.v4i1.60>
- Krishnapatria, K. (2021). Merdeka Belajar-Kampus Merdeka (MBKM) curriculum in English studies program: Challenges and opportunities. *ELT in Focus*, 4(1), 12–19. <https://doi.org/10.35706/eltinf.v4i1.5276>
- Krisnanik, E., Saphira, Q., Intan, D., & Indriana, H. (2021). Desain Model MBKM Dan Kolaborasi Kerja Sama Model Pentahelix Guna Meningkatkan Daya Saing Lulusan. *Konferensi Nasional Ilmu Komputer (KONIK) 2021*, 1–5.
- Kuncoro, J., Handayani, A., Suprihatin, T., Kuncoro, J., Handayani, A., & Suprihatin, T. (2022). Peningkatan Soft Skill Melalui Kegiatan Merdeka Belajar Kampus Merdeka ( MBKM ). *Proyeksi*, 17(1), 112–126.
- Laga, Y., Nona, R. V., Langga, L., & Jamu, M. E. (2021). Persepsi Mahasiswa Terhadap Kebijakan Merdeka Belajar Kampus Merdeka (MBKM). *Edukatif: Jurnal Ilmu Pendidikan*, 4(1), 699–706. <https://doi.org/10.31004/edukatif.v4i1.1951>

- Marjan Fuadi, T. (2022). Konsep Merdeka Belajar-Kampus Merdeka (Mbkm) : Aplikasinya Dalam Pendidikan Biologi. *Prosiding Seminar Nasional Biotik*, 9(2), 38. <https://doi.org/10.22373/pbio.v9i2.11594>
- Meke, K. D. P., Astro, R. B., & Daud, M. H. (2021). Dampak Kebijakan Merdeka Belajar Kampus Merdeka (MBKM) pada Perguruan Tinggi Swasta di Indonesia. *Edukatif: Jurnal Ilmu Pendidikan*, 4(1), 675–685. <https://doi.org/10.31004/edukatif.v4i1.1940>
- Pamungkas, O. Y., & Sudigdo, A. (2022). Profile of Pancasila Students: Implementation of Diversity in MBKM Student's Stories in UST Yogyakarta. *Daengku: Journal of Humanities and Social Sciences Innovation*, 2(2), 156–164. <https://doi.org/10.35877/454ri.daengku870>
- Riyadi, S., Harimurti, R. S., & Ikhsan, J. (2022). Dampak Implementasi MBKM Terhadap Pengembangan Universitas Muhammadiyah Yogyakarta Menuju Research Excellence University. *Edukatif: Jurnal Ilmu Pendidikan*, 4(1), 1018–1029. <https://doi.org/10.31004/edukatif.v4i1.1991>
- Rohiyatussakinah, I. (2021). Implementation of MBKM and the Relationship of Curriculum Policy based on a Case of EFL Education in Japan. *Journal of English Language Teaching and Literature (JELTL)*, 4(2), 39–50.
- Setyawati, E., Mulyawati, I., & Soecahyadi, S. (2022). Studi Kebijakan Merdeka Belajar Kampus Merdeka (MBKM) dengan Menggunakan Pendekatan Kuantitatif dan Kualitatif. *Edukatif: Jurnal Ilmu Pendidikan*, 4(1), 1030–1042. <https://doi.org/10.31004/edukatif.v4i1.2003>
- Sintiawati, N., Fajarwati, S. R., Mulyanto, A., Muttaqien, K., & Suherman, M. (2022). Partisipasi Civitas Akademik dalam Implementasi Merdeka Belajar Kampus Merdeka (MBKM). *Jurnal Basicedu*, 6(1), 902–915. <https://doi.org/10.31004/basicedu.v6i1.2036>
- Suastika, I. K., Suwanti, V., Ferdiani, R. D., & Harianto, W. (2022). Analisis Kepuasan Stakeholder pada Implementasi Kurikulum MBKM Fakultas Sains dan Teknologi. *Edukatif: Jurnal Ilmu Pendidikan*, 4(2), 1657–1667. <https://doi.org/10.31004/edukatif.v4i2.2176>
- Sumani, S., Kadafi, A., Purnomosasi, L. K. D., & Prasasti, P. A. T. (2022). The Impact of “Kampus Mengajar MBKM Program” on Students’ Social Skills. *Pegem Egitim ve Ogretim Dergisi*, 12(3), 220–225. <https://doi.org/10.47750/pegegog.12.03.23>
- Zuhrohtun, Z., Heriningsih, S., Sunaryo, K., & Sriyono, S. (2021). Merdeka Belajar Kampus Merdeka (MBKM) Collaboration with BUMDes Sari Dewi, Maguwoharjo, Sleman. *RSF Conference Series: Business, Management and Social Sciences*, 1(3), 411–418. <https://doi.org/10.31098/bmss.v1i3.370>

## *A Validation Study of the Savoring Beliefs Inventory in Taiwan*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

### **Abstract**

Research has shown that savoring, a capacity of perceived control over positive emotions, is largely independent of the capacity about coping (Bryant, 2003). Although the concept of savoring has received more and more attention by the study of positive psychology, relatively little research has focus on savoring in Taiwan. Bryant (2003) proposed a Savoring Beliefs Inventory (SBI), which is a measure designed to assess attitudes toward savoring positive experience within three temporal orientations: the past (reminiscence), the present moment (present enjoyment), and the future (anticipation). The aim of this study was to examine the measurement characteristics of the Traditional Chinese version SBI (C-SBI) in Taiwan. Based on the English version SBI, we adapted a series of back translation method to develop the C-SBI. This inventory is consist of 12 items to measure savoring beliefs. The scale was tested with 356 Taiwanese participants. All of them are office workers, 63% were female and 37% were male. Age between 23-60. Results showed that: (1) reliability of the four scores (anticipating pleasure, present moment pleasure, reminiscing pleasure, and total score) was relatively good; (2) the factor analysis demonstrated that data fit the three-factor model. However, some of the subscale items are not identical with those of the original SBI. These results show that the C-SBI is a valid and valuable scale to measure attitudes regarding the ability to savor positive experience. However, continued evaluation of the tool and other subscales of C-SBI is required. The implication of such results is discussed.

Keywords: Savoring, Positive Affect, Positive Emotion, Positive Psychology

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## Introduction

### *Workplace stress and stress coping strategy*

The concept of work stress is traditionally viewed as negatively related to work behavior or performance. The fact that distress is not healthy is well-established. A lot of evidence has confirmed that job strain (distress) is associated with increased report of medical symptoms and health-damaging behavior.

However, recent empirical evidence appears to suggest that certain work-related stress seems to have positive effect. For example, Cavanaugh, Boswell, Roehling, & Boudreau (2000) found that work stress is differentially related (positively and negatively) to work outcomes depending on the stressors that are being evaluated.

It is not surprising that there is less evidence concerning the relationship between eustress and health. Although psychology has traditionally been dominated by a focus on distress and dysfunction (Diener, 1984), there is a growing interest in understanding the causes and consequences of positive functioning (Bryant, 2003). Investigations of domains of positive functioning remain rare compared to research on psychopathology.

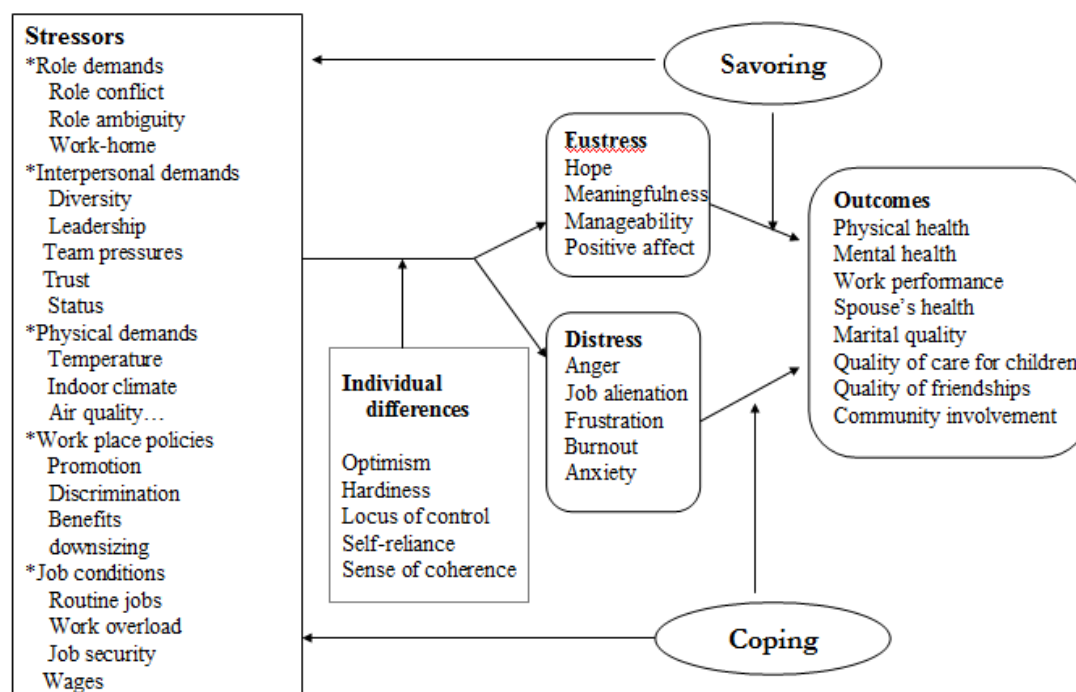
Nelson & Simmons (2003) proposed holistic model of stress (as shown in Figure 1) that incorporates both positive and negative psychological responses. This model also incorporates a broad range of demands, select individual difference variables that may be especially salient for cognitive appraisal, coping, and outcome variables representing things important to the individual both at work and away from work. Specifically, the holistic model also propose a new concept, savoring, that is the parallel for the positive response of coping for the negative response. Because the stress response is complex, we contend that most if not all of these stressors will elicit both a degree of negative and a degree of positive response for any individual.

The demands, distress response, coping, and outcomes portion of the model are well-known in the occupational stress literature. The unique aspects of this model, the indicators of eustress, the individual differences that may promote eustress, and savoring eustress are still not widely and detailed discussed.

From positive (eustress) view of stress, more and more evidence has shown that savoring, a capacity of perceived control over positive emotions, is largely independent of the capacity about coping (Bryant, 2003).



Figure 1. A holistic model of stress



(Source: Nelson & Simmons [2003])

### **Savoring**

Although the concept of savoring has received more and more attention by the study of positive psychology, relatively little research has focus on savoring in Taiwan. In this study, we defined Savoring as Bryant (2003)'s definition of savoring believes, which contain one's ability to enjoy positive events through anticipating, savoring the moment, or reminiscing.

Bryant (2003) also proposed a Savoring Beliefs Inventory (SBI), which is a measure designed to assess attitudes toward savoring positive experience within three temporal orientations: the past (reminiscence), the present moment (present enjoyment), and the future (anticipation). Golay, Thonon, Nguyen, Fankhauser, and Favrod, (2018) applied SBI in France and proposed good validation evidence of French version SBI. However, to our knowledge, there is still no application of Savoring Belief Inventory in our country.

Therefore, the primary purpose of this study was to translate the English version SBI into Traditional Chinese version and validate the Traditional Chinese Savoring Believe Scale (C-SBI).

### **Method**

#### ***Instruments and data collection procedure***

The research instrument of this study was applied from Savoring Believe Inventory (SBI) developed by Bryant (2003). The original inventory contains 24 items— four positively-worded and four negatively-worded items for each of the three temporal forms of savoring.

We first translate all the 24 items into Traditional Chinese and made a pilot study. However, pilot testing with small groups of college students revealed that some of these items were ambiguous or misleading, and these were deleted. We then manipulated a combination of back-translation and small group pilot testing procedure. After three sets of pilot testing, a total of 12 items remained in the Traditional Chinese version Inventory. The 12 items are listed below:

1. Can feel the joy of anticipation.
2. Anticipating is a waste of time.
3. Can enjoy events before they occur.
4. Can feel good by imagining outcome.
5. Know how to make the most of good time.
6. Can prolong enjoyment by own effort.
7. (Find it) easy to enjoy self when want to.
8. Don't enjoy things as much as should.
9. Can feel good by remembering past.
10. Like to store memories for later recall.
11. Easy to rekindle joy from happy memories.
12. Best not to recall past fun times.

The Traditional Chinese version SBI is composed of 24 items, divided into three temporal orientations: past, present, and future, each represented by 4 items. Each item is rated on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." Data were collected Survey Cake through internet.

## **Result**

### ***Sample Description:***

The validation sample group contained 356 survey data gathered from full time workers. The sample distribution is shown in Table 1.

Table 1. Sample Distribution.

Category	<i>numbers</i>	%	% (accu.)
<b>Gender</b>			
Female	224	62.9%	62.9%
Male	132	37.1%	100.0%
<b>Age</b>			
Under 25	13	3.7%	3.7%
26~30 years	85	23.9%	27.6%
31~35 years	70	19.7%	47.3%
36~40 years	59	16.6%	63.9%
41~50 years	90	25.3%	89.2%
Above 51	39	11.0%	100.2%
<b>Education</b>			
Senior high (or below)	19	5.3%	5.3%
College	44	12.4%	17.7%
University	185	52.0%	69.7%
Grad. S. (or above)	108	30.3%	100.0%
<b>Seniority</b>			
Under 1 year	7	2.0%	2.0%
1~3 years	39	11.0%	13.0%
4~10 years	133	37.4%	50.4%
11~15 years	50	14.0%	64.4%
16~20 years	56	15.7%	80.1%
21 years or above	71	19.9%	100.0%

### ***Data analysis***

We manipulated a series of exploratory factor analysis combined with internal reliability analysis. Based on the original definition of Bryant (2003), the three factor model can appropriate interpret the Taiwanese data. The results of exploratory factor analysis and reliability analysis are shown in Table 2.

Table 2. Result of exploratory factor analysis and reliability analysis.

Item	Reliability	Factor 1	Factor 2	Factor 3
Can enjoy events before they occur. (future)	0.805	<b>.705</b>		-.139
Know how to make the most of good time. (now)		<b>.666</b>		.130
Can feel the joy of anticipation. (future)		<b>.689</b>	.233	-.118
Can prolong enjoyment by own effort. (now)		<b>.561</b>		.169
(Find it) easy to enjoy self when want to. (now)		<b>.560</b>		.190
Can feel good by imagining outcome. (future)		<b>.336</b>	.142	
Can feel good by remembering past. (past)	0.695		<b>.823</b>	
Like to store memories for later recall. (past)			<b>.539</b>	.093
Easy to rekindle joy from happy memories ° (past)		.194	<b>.432</b>	.121
Don't enjoy things as much as should._( now_R)	0.682	.223	-.224	<b>.729</b>
Anticipating is a waste of time._( future_R)			.106	<b>.657</b>
Best not to recall past fun times._( past_R)		-.113	.217	<b>.602</b>

Note:

1. "R" represent the reverse scoring item.
2. "future", "now", and "past" represent the original structure according to the Bryant(2003)'s SBI.

As data shown in table 2, result of 3-factor factor analysis revealed good explanation of the C-SBI. Compared with the structure of Bryant(2003)'s SBI, the factor 1 of C-SBI contained 6 items, 3 items estimated the future orientation and other 3 estimate present orientation; the factor 2 contained 3 items all estimated past orientation; the third factor, however, contained all the three reverse scoring items and estimated all the three temporal orientation, respectively.

The internal reliability analysis revealed that Cronback's  $\alpha$  of the three factors are .805, .695, and .682 respectively. Which reflected good reliability index.

## **Conclusions**

This study aimed to translate the English version SBI into Traditional Chinese version. Through a series of translation and back-translation combined with pilot testing, we revealed a 12-item C-SBI. Nevertheless, the preliminary investigation of the factor structure of the C-SBI showed that the EFA indicated that the three-factor structure of the C-SBI was adequate. However, compared with original English version SBI (Bryant, 2003) or French version SBI (Golay, et al., 2018), items which estimated three temporal facet are not identical. Also, all reverse scoring items were draw together in the same factor.

Based on these results, more detailed understanding of construction of savoring belief needs more detailed research by some other subjects or/and under other context.

## References

- Bryant, F. (2003). Savoring Beliefs Inventory (SBI): A scale for measuring beliefs about savouring. *Journal of mental health, 12*(2), 175-196.
- Cavanaugh, M. A., Boswell, W. R., Roehling, M. V., & Boudreau, J. W. (2000). An empirical examination of self-reported work stress among U.S. managers. *Journal of Applied Psychology, 85*: 65–74.
- Diener, E. (1984). Subjective well-being. *Psychological bulletin, 95*(3), 542-575.
- Golay, P., Thonon, B., Nguyen, A., Fankhauser, C., & Favrod, J. (2018). Confirmatory factor analysis of the French version of the Savoring Beliefs Inventory. *Frontiers in psychology, 9*, 1-7.
- Nelson, D. L. & Simmons, B. L. (2003). Health psychology and work stress: A more positive approach. In Quick, J.C. & Tetrick, L. E. (Eds.), *Handbook of Occupational Health Psychology* (pp. 97-120). Washington DC: APA.

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## *City and Mobility Representation in the Films of Studio Ghibli*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

### **Abstract**

The paper looks at the representation of cities in films, particularly animated films by Studio Ghibli, and the role of mobility in these representations. Highlighting the historical significance of city representation in cinema and its influence on urban discourse, the paper explores how the films by Studio Ghibli depict cities and urban mobility. The films *Whisper of the Heart*, *Kiki's Delivery Service*, and *Only Yesterday* are chosen for analysis. The selected films are analysed for their urban landscapes, cultures, and the ways in which different modes of mobility are presented. The study aims to understand how images of mobility are constructed in these movies, the underlying messages conveyed through the portrayal of mobility, and the meanings attached to different modes of transportation. By examining the films' depiction of sustainable and efficient transportation options and pedestrian-friendly urban spaces, the study seeks to provide possible insights for improving urban planning and design. The methodology involves both quantitative analyses of explicit mobility scenes and qualitative analyses of the role of mobility in the narrative. The study aims to shed light on the representation of mobility in urban settings and its implications for public attitudes and urban design.

Keywords: City in Films, Urban Mobility, Urban Geographies, Studio Ghibli, City Representation

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## Introduction to city representation in Films

The history of representing the city in cinemas is long and robust. City representation in visual media has helped shape the discourse around urbanism in no short part, which gave birth to a unique relationship between city, spaces and media. Cities have been a muse in various forms of literature, be it books, movies or songs — fiction or nonfiction, live-action or animated. The cityscape and the screenscape have long been interconnected. Films have developed into an archive of sorts of the changes the urban landscape has undergone (Hallam, 2010). The transformation of cities throughout the twentieth and twenty-first centuries can be traced by studying the different tropes and narrative conventions that shape films about urban settings. As early production of films emerged in the urban areas, since its inception, films have shown life in the city (Bruno, 2007). Even films set in the near or distant future, mostly science fiction, comment on the existing urban structure by imagining the future layout of urban living (Long, 2019). There is an intrinsic urbanism to cinemas and they serve to produce the city, both literally and imaginatively. (Wojcik, 2017) While mostly in live-action films, animated films too have a distinct ability to articulate unanswered conundrums in public attitudes towards cities, by making use of realistic aesthetics and anthropomorphism in their animation. (Tang, 2019) This paper focuses on city representation and the depiction of mobility in animation. And more specifically in the animated films of Studio Ghibli.

### What is Studio Ghibli?

Studio Ghibli is a Japanese animation/anime studio founded in 1985 by Hayao Miyazaki, Isao Takahata, and Toshio Suzuki. Since its inception, it has grown to become one of the most well-known and respected animation studios not just in Japan but internationally. And ever since 1985, Studio Ghibli has been portraying the evolution of Japanese society through its stories. *Oneness with nature* is long-considered a part of Japanese culture, and the stories by the Studio often tell tales that deal with environmental issues and the relationship between humans and nature. The studio's films also depict a deep respect for nature and a reverence for traditional Japanese culture.

*Anime* is the Japanese counterpart of animated media. It is a particular form of animation, having a distinctive Japanese disseminated technique often distinguished by rich illustrations, characters with inflated representations, and creative themes. The roots of anime and *manga* (the comic counterpart) can be traced back to woodblock printing in the Edo period (the 17-19th century), which was used to portray everyday observations in life. Over the years, anime has changed and progressed over the years, from its origins in cutout animation and silent short films to its current use of CGI and online streaming. (Lindwasser, 2018) Portraying multiple characteristics and themes such as realism, fantasy, humour, violence, sexuality, and social commentary, manga and anime are unique forms of expression that reflect Japanese culture and society (Topinio, 2014).

The history of anime thus is one that not only attracts many people but is also rooted in portraying the daily life of Japanese people. A product that was consumed to escape the everyday pressures and anxieties of living.

### Why were the films by Studio Ghibli selected?

Over the course of the late 20th century, around 80% of Japan's population became urban, which by the late 2000s grew to 90%. While the rapid and sustained economic growth in the



post-war era did greatly increase the standards of living for virtually all Japanese people, this growth came at a considerable social and environmental cost. And these films to an extent have been able to capture the impacts of different urban planning and development strategies adopted. Additionally, the films by the Studio have long been analysed by different scholars for understanding different themes like nature and spirituality (Kirkpatrick, 2017) growing up (Singh, 2021) environmentalism (Pan, 2022), and motivations (Singh, 2021), among others. This allows for building further into this literature.

### **Why were the cities in these films selected?**

Studio Ghibli films were chosen for analysis because while most films of the studio feature young adult protagonists, who are based in a magical/supernatural realm, the settings are inspired by real-life locations. And these locations are not limited to one nation or region, but rather throughout the globe, making the cities in these films truly global, celebrating multiculturalism. Since planning as a discipline and practice is also a highly interdisciplinary and diverse one, the city's depiction in its films has the potential to provide some form of insight for planning professionals.

Residing, working, and recreating are spatially separated activities. To be able to perform each, the residents of the space indulge in travelling. To be able to travel on foot, between these spots, mixed-used neighbourhoods need to be near high-density areas. When taking a walk in most cities of the world, one cannot help but be hit by the dysfunction of the city. But when planned per the needs of its residents, it can become a welcome part of daily routine, and the same is the experience of some Ghibli protagonists.

### **Why was mobility representation in these films focused on?**

Studies have examined the representation of cities in cinema, including the work of urban geographers such as Edward Soja and David Harvey. However, limited research has been conducted on portraying mobility in cities through the lens of films, especially animation. Literature shows that the representation of mobility in contemporary urban cinema impacts public perceptions and attitudes toward cities and urban mobility (Friedberg, 2002; Kronenburg, 2010) and how animation particularly can furnish an effective tool for conveying and challenging chief narratives about urban space and identity (Chang, 2013; Hosea, 2015).

There is also a wide scholarship available that looks at the reciprocal relationship between films and social issues like alcohol abuse (Dalton et al. 2002) violence (Anderson & Bushman 2002), and gender inequality (Behm-Morawitz and Mastro 2008). The depiction of mobility in films - live-action or animated - thus has the power to shape public attitudes towards issues around urban mobility. The literature on the decline in exploratory mobility (Gilbert and O'Brien, 2005) and the role of design, urban form and transport to curb that (Saelens & Handy, 2008; Wood et al., 2010) is also continually pouring in.

Transportation is a key element in their films and is often used to explore themes such as environmentalism, modernisation, and social change. From becoming symbols of freedom and defiance against authority to reflecting the everyday realities of life to using different modes of transport to reflect the protagonist's journey through different stages of maturity, transport and mobility mean much more than merely moving and a means of moving, from one point to another.

Since engaging with and exploring the city through mobility - especially by active transport (walking, cycling, and public transport) - is a frequently demonstrated part of most films by the studio, looking at this form of mobility in these films can help us to understand what are these spaces where this form of mobility gets supported and enhanced - what these spaces look like - and how they can be replicated in real-world scenarios. Their films' depictions of cities can be seen as an extension of their emphasis on the interaction between humans and the environment and can provide unique insights into the representation of mobility in urban settings.

Studying the depiction of mobility in Studio Ghibli films can provide insights into how urban planning and design can be improved to accommodate and enhance the movement of people. For example, the films emphasise the importance of sustainable and efficient transportation options, such as walking paths, public transit and cycling infrastructure. At the same time, many Studio Ghibli films also depict the importance of pedestrian-friendly urban spaces, such as the winding streets of the witch's town in "*Kiki's Delivery Service*" or the lively marketplaces in "*Spirited Away*", spaces which prioritise the needs of people over cars and encourage walking and cycling as viable modes of transportation.

### **Research Questions**

This study aims to look at mobility as a cinematic, a visual experience, in the films by Studio Ghibli. Mobility and travel are often motifs in most of their films. The goal of the study is to understand and answer questions about:

- How images of mobility are constructed and strengthened in these movies, in relation to the narrative?
- What underlying messages can be derived from the portrayal of mobility in cities in these films?
- How do Studio Ghibli films depict different modes of mobility (e.g. walking, cycling, flying) and what meanings are attached to each?

### **Methodology**

To capture the nuances of mobility portrayed in the films and to see how much it plays a role in each movie, the study counts the relative amount of film time depicting mobility, a process adopted in other studies to look at the portrayal of smoking, and obesity among others (Escamilla et al. 2000; Himes and Thompson 2007). This includes looking at, for each film, the number of times mobility is shown and its duration as a percentage of the total movie time. The main mode (car, bicycle, foot etc.) of transport, in each film, will also be noted.

While implicit mobility exists in most films, for ease, the study would only look at explicit mobility and focus on how it is portrayed when shown explicitly. Explicit mobility furnishes its audience with particulars of the trip, thus constructing a certain mobility culture: what modes of transport are used by the protagonist and the antagonist? What is the experience of using a certain type of mode (pleasant, exhausting)? What are the purposes of using a vehicle? What do these choices express about the characters?

Additionally, to qualitatively understand the above collected quantitative data, the study will also analyse the role of mobility in the narrative.

While as the study progresses, more films would be analysed, for now, the paper looks at three selected films for content analysis, which are:

1. *Whisper of the Heart*
2. *Kiki's Delivery Service*
3. *Only Yesterday*

To look at how the city is presented in each film and the role of mobility in the narrative, the paper looks at three elements in each film - the urban landscape it portrays, the urban culture it shows and the way urban mobility is put forth. This understanding is derived from both an analysis of the plot and the quantitative data on mobility presented by the films.

### **Plot analysis**

*Whisper of the Heart* is a 1995 Japanese animated romantic drama film by Yoshifumi Kondō and Hayao Miyazaki, based on Aoi Hiiragi's manga. It tells the love story of Shizuku, a book-loving girl, and Seiji, a violin-making boy who checked out her library books to get her attention. The film also explores creativity, dreams, and growing up. Shizuku meets Seiji at his grandfather's antique shop, where she is drawn to a cat statuette called The Baron. Seiji leaves for Italy to study violin-making. Shizuku decides to write a fantasy story about The Baron to test her writing skills. She finishes her story and gives it to Seiji's grandfather, who gives her feedback. Shizuku reunites with Seiji on a hilltop. He tells her that he loves her and wants to marry her someday. She realises that she loves him too and wants to be a writer. They promise to support each other's dreams.

Transport and mobility symbolise the characters' journeys of self-discovery and growth. Shizuku travels by train or bike, following her curiosity and imagination. She finds the antique shop and learns about Seiji's passion by following a cat on a train and riding a bike with him. Seiji travels by plane to Italy, where he follows his dream. His departure inspires Shizuku to work on her own dream. Transport and mobility connect the characters across distances and enable them to explore their identities, interests, and goals.

*Kiki's Delivery Service* is a 1989 Japanese animated fantasy film by Hayao Miyazaki, based on the 1985 novel by Eiko Kadono. It tells the story of Kiki, a 13-year-old witch who leaves home with her cat Jiji to train and come of age in a new town. She starts a delivery business using her broom and makes friends, but also faces challenges and loses the power to fly. Kiki arrives at the port city of Koriko and finds a place to stay at a bakery owned by Osono, a pregnant woman. She offers to deliver goods by broomstick as a way of earning her keep. She meets Tombo, a boy who loves aviation and is fascinated by her flying ability. She also meets Ursula, a painter who lives in the woods. Kiki's delivery service becomes popular, but she also encounters difficulties, such as losing a black cat toy that she has to deliver, getting caught in a storm, and having trouble with a spoiled customer. She also feels lonely and out of place among Tombo's friends. She becomes ill and loses her confidence and her magic. Kiki visits Ursula, who advises her to find her inspiration and passion again. Kiki realises that she loves flying and that she has made many friends in the town. She regains her magic when she has to rescue Tombo from a runaway airship. She flies with him and is cheered by the townspeople.

Transport and mobility are central to the film, as they represent Kiki's freedom, identity, and connection. Kiki uses her broom as a means of transport and work, but also as a way of expressing herself and having fun. She enjoys flying with Tombo and his flying machine,

which shows their mutual interest and attraction. She also travels by train and bike, exploring the town and its surroundings. Transport and mobility allow Kiki to experience new things, meet new people, and find her place in the world.

By focusing on public facilities, the films of Studio Ghibli not only romanticise them but also answers the question of how to better design our public spaces to make them more utilitarian for residents. Making the characters use public spaces like a bench in the park, a seat in the public library, or on public transport, to further the plot than placing it in a cafe or pay-to-use spaces, they present a counterculture which opposes the existing methods of enjoyment that are given to us in the forms of advertisement spectacle and consumption. It shows us a communal city. One reclaimed by its residents. These cities are designed around the human foot. They are places that are socially, environmentally and economically vibrant.

*Only Yesterday* is a 1991 Japanese animated drama film by Isao Takahata, based on the 1982 manga of the same name by Hotaru Okamoto and Yuko Tone. It tells the story of Taeko, a 27-year-old unmarried woman who works in Tokyo and decides to take a trip to the countryside to help with the safflower harvest. She recalls memories of her childhood in 1966, when she was a fifth-grader dealing with family, school, and love issues. She also meets Toshio, a farmer who makes her question her life choices. Taeko remembers various episodes from her past, such as her first crush, her struggle with maths, her rebellion against her father, her first menstruation, and her dream of becoming an actress. She also reflects on how she has changed and how she has stayed the same. She compares her urban lifestyle with the rural one and learns about farming and nature. She develops a friendship with Toshio, who shares her interest in organic farming and music. He also encourages her to follow her heart and pursue her happiness. Taeko faces a dilemma when she has to choose between returning to Tokyo or staying in the countryside with Toshio. She realises that she loves him and that she wants a different life than the one she has been living. She decides to stay and start a new chapter of her life.

Transport and mobility are important in the film, as they represent Taeko's journey of self-discovery and transformation. Taeko travels by train, car, bike, and foot, experiencing different modes of transport and different landscapes. She also travels between the past and the present, revisiting her childhood memories and reevaluating them from an adult perspective. She travels from the city to the country, exploring a different culture and environment. Transport and mobility allow Taeko to connect with herself, with others, and with nature.

By depicting the gap between rural and urban living, the film shows the monotony and loneliness urban life brings. Through repetitive and condensed building structures, it showcases the over-urbanised city, which aces at being impersonal. Their citizens are nondescript. As more people come into these vehicle-centric cities, they experience more solitude, loneliness, and loss of public life, which Taeko does. A product less of cold human behaviour and more of an urban design that encourages the privatisation of space.

**Table 1: Table discussing the urban landscape the films portray, the urban culture they show and the way urban mobility is put forth**

	<b>Urban Landscape</b>	<b>Urban Culture</b>	<b>Urban Mobility</b>
<b>Whisper of the Heart</b>	<p>a mixture of modern and traditional elements</p> <p>contrast between the crowded and noisy streets and the quiet and serene parks, hills and forests</p>	<p>shows the characters interact with different people, places and media in the city, such as librarians, shopkeepers, teachers, classmates, books, music and films</p>	<p>the city as a network of transportation modes that enable the characters to move across different places and space</p> <p>each mode of mobility has different meanings and implications for the characters' experiences and relationships in the city</p>
<b>Kiki's Delivery Service</b>	<p>uses various cinematic techniques, such as long shots, pans, zooms and tracking shots, to convey the sense of space and movement in the city</p>	<p>the city as a diverse and dynamic place that offers various opportunities for learning, creativity and entertainment</p> <p>the characters express their individuality and identity through their hobbies, interests and styles in the city</p>	
<b>Only Yesterday</b>	<p>uses various cinematic techniques, such as flashbacks, cuts, fades and dissolves, to convey the sense of time and change in the city</p>	<p>the challenges of the city, such as peer pressure, social norms, gender roles and expectations</p> <p>uses various narrative devices, such as voice-over, dialogue, songs and radio broadcasts, to convey the sense of culture and identity in the city</p>	<p>the city as a network of transportation modes that enable Taeko to move across different places and spaces in her childhood and adulthood</p>

## Findings

**Table 2: Table depicting the quantitative elements of mobility in the three films**

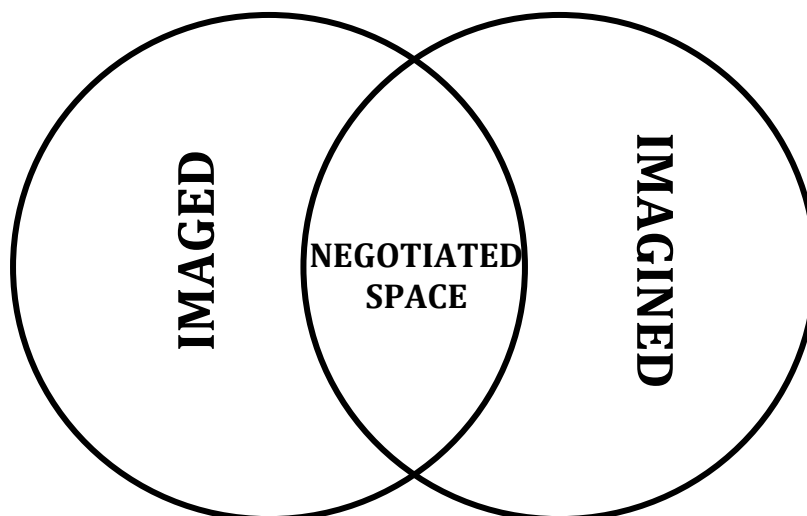
<b>Films</b>	<b>Film Duration (minutes)</b>	<b>Mobility Representation (minutes)</b>	<b>Mobility Representation (% of movie time)</b>	<b>No. of times mobility is shown</b>	<b>Different means of transportation shown</b>
<b>Whisper of the Heart</b>	111	19.5	17.6	25	Bicycle, train, bus, car, plane
<b>Kiki's Delivery Service</b>	103	28.5	27.7	32	Broomstick, bicycle, train, bus, car, airship
<b>Only Yesterday</b>	118	15.5	13.1	18	Train, bus, car, tractor
<i>Average</i>	<i>110.67</i>	<i>21.16</i>	<i>19.53</i>	<i>25</i>	<i>Trains, buses, cars</i>

Table 2 shows a quantitative analysis of the three films. They include different variables for explicit mobility shown in the films. On average, around 20 percent of the movie's duration was spent on showcasing some form of explicit mobility. Additionally, in all these three films, there is a common theme in the story that explores the protagonists' experiences with their cities. One common essence of all three films is that they have a strong bond with the spaces around them. They frequently indulge in walking, admiring the city as a work of art, and taking their audience along. As two of the three protagonists are adolescents, too young to own a personal vehicle and too old to be accompanied by family, we see them on solo adventures. When they walk from one place to another, we walk with them, taking the city in from the pace of a walk. They also heavily use public spaces and amenities in their everyday lives. This focus on the public facilities of a city, in addition to the active mobility of its character, creates an almost romantic vision of walkable cities in our minds.

## Discussion

The commonality between looking at the city and mobility depiction in these films is the negotiations that happen in the work of the Studio (the image) and its different types of imaginations. In other words, there is a connection between the imaged and the imagined. For instance, the depiction of cities in their work (imaged) is contrasted with different (and often) negotiated imaginations of the city.

**Image 1: Image depicting the negotiated spaces created by films when the ‘imagined’ city meets the ‘imaged’ city on screen**



These imaginations have embedded values in them. The importance of walkability is a value-laden imagination of an ideal city. The studio's work negotiates (in particular ways) with these imaginations when depicting (or rather imaging) their city. This tension also plays out in the environment, climate and technology conversation in these films too, but those are separate analyses.

### **Conclusion**

Storytelling is a powerful tool. It allows us to make sense of our present and reimagine our future. Watching stories in the form of films has long been a form of entertainment. Though primarily storytelling mediums, they have also proven to be an important way of learning. The spiritus mundi surrounding animations is that they are a rather callow form of art, which hold little to no value beyond the realm of entertainment. It is often dismissed as being rather facile, a product for kids.

But the films of Studio Ghibli have successfully challenged this conception. Viewed, liked and discussed by adults as much as by kids. With their captivating characters and delightful animation, they are a work of art. Generally, when ‘art’ and ‘cinema’ are used in conjunction, the product is assumed to be detached from the masses and made to be understood by only a few. But these films have defied this understanding as well. They are fine examples of entertainment with integrity. They not only captivate their audiences, leaving them with many thinking points on how to well plan and design a city, how to become more climate-conscious and how to ensure overuse of technology does not degrade the environment.

### **Acknowledgements**

I would like to express my sincere gratitude to my reporting manager Vikas John, for his invaluable guidance, support, and encouragement through the initial proposal writing stage and the following study. His expertise, insights, and feedback have greatly enhanced the quality of this paper and my learning experience. I am also grateful to the Indian Institute for Human Settlements for providing me with the opportunity and the funding to conduct and present this research. I appreciate the access to the resources, facilities, and data that enabled

me to complete this study. I am also thankful to my family and friends who are generally one of the first people to give me feedback on any of my writing.



## References

- Anderson, C.A., & Bushman, B.J. (2002). The effects of media violence on society. *Science*, 295(5564), 2377-2379.
- Behm-Morawitz, E., & Mastro, D.E. (2008). Mean girls? The influence of gender portrayals in teen movies on emerging adults' gender-based attitudes and beliefs. *Journalism & Mass Communication Quarterly*, 85(1), 131-146.
- Bruno, G. (2007). *Atlas of emotion: Journeys in art, architecture and film*. London: Verso.
- Chang, V. (2013). Animating the city: Street art, Blu and the poetics of visual encounter. *Animation*, 8(3), 215–233. <https://doi.org/10.1177/1746847713503280>
- Dalton, M.A., Ahrens, M., Sargent, J., Mott, L., Beach, M., Tickle, J.J., & Heatherton, T. (2002). Relation between parental restrictions on movies and adolescent use of tobacco and alcohol. *Eff Clin Pract*, 5(1), 1-10.
- Escamilla, G., Cradock, A.L., & Kawachi, I. (2000). Women and smoking in Hollywood movies: a content analysis. *American Journal of Public Health*, 90(3), 412.
- Friedberg, A. (2002). Urban mobility and cinematic visuality: The screens of Los Angeles - endless cinema or private telematics. *Journal of Visual Culture*, 1(2), 183–204. <https://doi.org/10.1177/147041290200100203>
- Gilbert, R., & O'Brien, C. (2005). *Child- and youth-friendly land-use and transport planning guidelines*. The Centre for Sustainable Transportation: Toronto.
- Hallam, J. (2010). Film, space and place: researching a city in film. *New Review of Film and Television Studies*, 8(3), 277-296.
- Himes, S.M., & Thompson, J.K. (2007). Fat stigmatization in television shows and movies: a content analysis. *Obesity*, 15(3), 712-718.
- Hosea, B. (2015). *Off the rails: Animating train journeys [Film]*. UK: Animate Projects.
- Kirkpatrick, E. (2017). *The magic and artistry of Studio Ghibli's films*. The Artifice. Retrieved from <https://the-artifice.com/magic-artistry-studio-ghibli-films/>
- Kronenburg, R. (2010). Informing contemporary architectural and urban design with historic filmic evidence. In R. Koeck & L. Roberts (Eds.), *The city and the moving image* (pp. 221–232). London: Palgrave Macmillan.
- Lindwasser, A. (2018). How anime has evolved though the years. Ranker. Retrieved from <https://www.ranker.com/list/how-anime-has-changed-and-evolved/anna-lindwasser>
- Long, C. B. (2019). *Cinematic cities: The visual splendour of urban spaces*. Routledge.

- Pan, Y. (2022). How Studio Ghibli films can help us rediscover the childlike wonder of our connection with nature. *The Conversation*. Retrieved from <https://theconversation.com/how-studio-ghibli-films-can-help-us-rediscover-the-childlike-wonder-of-our-connection-with-nature-176612>
- Saelens, B.E., & Handy, S.L. (2008). Built environment correlates of walking: a review. *Medicine & Science in Sports & Exercise*, 40, S550.
- Singh, P. (2021). *Only yesterday: Tending to your inner child* [Film]. Japan: Studio Ghibli.
- Singh, P. (2021). *Whisper of the heart: Studio Ghibli's hidden gem about finding passion and creativity* [Film]. Japan: Studio Ghibli.
- Tang, R. (2019). *The representation and re-imagining of the city in mainstream American animated feature films* (Doctoral dissertation, University of Liverpool).
- Topinio, P. (2014). *History of manga and anime*. Retrieved from <https://www.slideshare.net/paultopinio/history-of-manga-and-anime>
- Wojcik, P. R. (2017). *The city in film*. In *Oxford Bibliographies in Cinema and Media Studies*. Oxford University Press.
- Wood, L., Frank, L.D., & Giles-Corti, B. (2010). Sense of community and its relationship with walking and neighborhood design. *Social Science & Medicine*, 70, 1381–1390.

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***Studying Problems in Agricultural Areas to Find Effective Policy Solutions to  
Protect the Valuable Environment in Thailand's Agricultural Landscape***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

The agricultural landscape includes three primary elements, First, agricultural areas and agricultural processes, second, concrete and abstract meaning or significance of the community, and, natural landscapes. Consequently, agricultural areas have evolved as a result of economic and social factors that have an impact on natural components and the environment. This study aims to, Firstly, investigate the challenges of agricultural landscapes, Secondly, research the value of agricultural landscapes, and then, improve integration for the protection of agricultural landscapes. By reviewing research, publications, documents, and related agencies, the study determined that the global agricultural landscape has economic values that correspond with economic development, but environmental values that are decreasing. It has reduced the forest area and biodiversity. It affects wildlife habitats, and water sources and soil deteriorates, causing pollution and causing global warming. Therefore, agencies around the world cooperate to support the laws related to landscape management as well as agricultural areas, and agricultural agencies provide tools and assessments as well as a project to conserve, maintain, and repair the agricultural landscape in order to reduce environmental issues and produce a sustainable agricultural landscape.

Keywords: Agriculture Landscape, Agriculture Landscape Value, Agriculture Landscape Policy

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## Introduction

Population growth has an impact on both urban and rural expansion, which directly affects food demand. As a result of the need to produce sufficient food, it leads to the expansion of agricultural areas across the globe. According to the Agricultural Organization, the quantity of agricultural land has increased by approximately 900,000 hectares since 1600. 1.25 million hectares of agricultural land were in existence in 1800. However, as a result of the industrial revolution, tools and machinery were developed to facilitate farming. The rapid expansion of agricultural land from 1800 to 2016 resulted in an increase of 5 million hectares of arable land, which influenced the evolution of existing land and forests. This is consistent with research on the effects of expanding agricultural areas on land cover (You, 2017). The expansion of agricultural land has an impact on the region's forest cover (Estacio, Basu, Sianipar, Onitsuka, & Hoshino, 2022). Environmental impacts, effects on ecosystems, flora, and fauna extinction (Vaz et al., 2021). The threat to global biodiversity posed by expanding agricultural land (Wang (Wang, Wan, & Fajardo, 2021). Additionally, agriculture degraded land with harmful substances in soil and water sources. (Arheimer, Torstensson, & Wittgren, 2004) or even the decrease of endangered and protected animals in specific areas (Mossman, Panter, & Dolman, 2015). Agricultural lands also contribute to climate change and make the environment worse (Kirchner, Schönhart, & Schmid, 2016). Based on these impacts, research on the impacts of agricultural lands around the world is being accelerated to highlight the negative impacts on the environment that are becoming a global problem.

The agricultural landscape is a consequence of the farmer's interaction with nature. Agricultural land expansion affects natural diversity, ecosystems, and ecological structures (Lomba, Ferreira da Costa, Ramil-Rego, & Corbelle-Rico, 2022). Numerous agricultural practices damage the agricultural landscape and have adverse environmental effects. Numerous regions have taken steps to protect agricultural landscapes and reduce environmental impacts. In agricultural areas, regulations, laws, and support for preserving the environment and ecology are made law. The European Union has a method for managing agricultural landscapes that takes the ecosystem, conservation, and preservation of agricultural areas into account (Licari, Boscutti, Bacaro, & Sigura, 2022). The budget for farmers has been encouraged and supported by the European Union to conserve the environment in agriculture by, for example, separating the borders of agricultural areas to preserve the natural vegetation in agricultural areas (Lütz & Bastian, 2002). In addition, management guidelines have been established, with the United Nations establishing seventeen Sustainable Development Goals. The principles relating to the agricultural landscape are: (1) Environmental policies that preserve a high-quality agricultural landscape, establish nutritional security, and preserve crop production while maintaining food quality by decreasing chemical usage and being environmentally friendly (zero starvation). (2) Protection and restoration of terrestrial ecosystems (life and land), including in agricultural areas, and promotion of afforestation as a means for achieving sustainability are necessary to increase forest area to avoid the extinction of species, rehabilitate degraded soil resources, and solve global climate issues (United Nations). Large areas of agricultural land can have both positive and negative effects. Large agricultural areas will contribute significantly to the development of a verdant, high-quality environment. If they are properly managed, they can increase plant diversity, aid in preserving the ecosystem, and enhance the biodiversity of large animal habitats.

Thailand is primarily an agricultural nation. Therefore, the agricultural landscape is regarded as a significant and expansive landscape with distinct diversity in each region, including the

central, northern, northeastern, and southern regions. The agricultural landscape is the most common landscape in the country and varies by regions, such as the agricultural landscape in the highlands, the agricultural landscape in the plains, the agricultural landscape in the river basin, and the agricultural landscape in flooded areas. At present, farming only considers the economic system. Consequently, the agricultural landscape impacts numerous factors. Therefore, numerous organizations investigate the impact of agriculture from a variety of angles. Both land changes, agricultural expansion, and the loss of diversity from monocultures contribute to the decline of diversity. Loss of sustainability in agricultural areas Agricultural regions contribute to global climate issues and pollution PM 2.5. Soil and water contaminated by agricultural chemicals The Ministry of Agriculture and Cooperatives has promoted environmentally friendly agriculture, such as organic and green agriculture. Non-toxic agriculture has been practiced in some areas but has not covered all aspects, causing environmental problems in agricultural areas spread throughout the region in Thailand. Due to the fact that such promotion excludes all facets of the agricultural landscape, this study emphasizes the value of agricultural landscapes, changes in the agricultural landscape, and their effects, including agricultural landscape management policies. This research was funded by the Thai Ministry of Science and Technology in accordance with the policies of both domestic and international relevant agencies.

### **Objective of research**

The Objectives of the research are to, firstly, research the effect of agricultural landscapes and their value in agricultural landscapes; and secondly, research the policy designed to maintain the agricultural landscape's value. And develop methods to manage the agricultural landscape through the process of document review and research. The meaning of the agricultural landscape, changes to the agricultural landscape, and their effects, as well as the importance and worth of agricultural landscapes, are examined in articles and related research. In addition, the study of the principles and work processes of agencies involved with agricultural landscape management, including the resolution of environmental issues in agricultural landscapes and the analysis of data on changes in agricultural landscapes and their effects. An analysis of elements in the agricultural landscape as well as their values; an analysis of agency policies on objectives; and the agricultural landscape management model in order to find suitable policies that can be applied to the agricultural landscape management in Thailand.

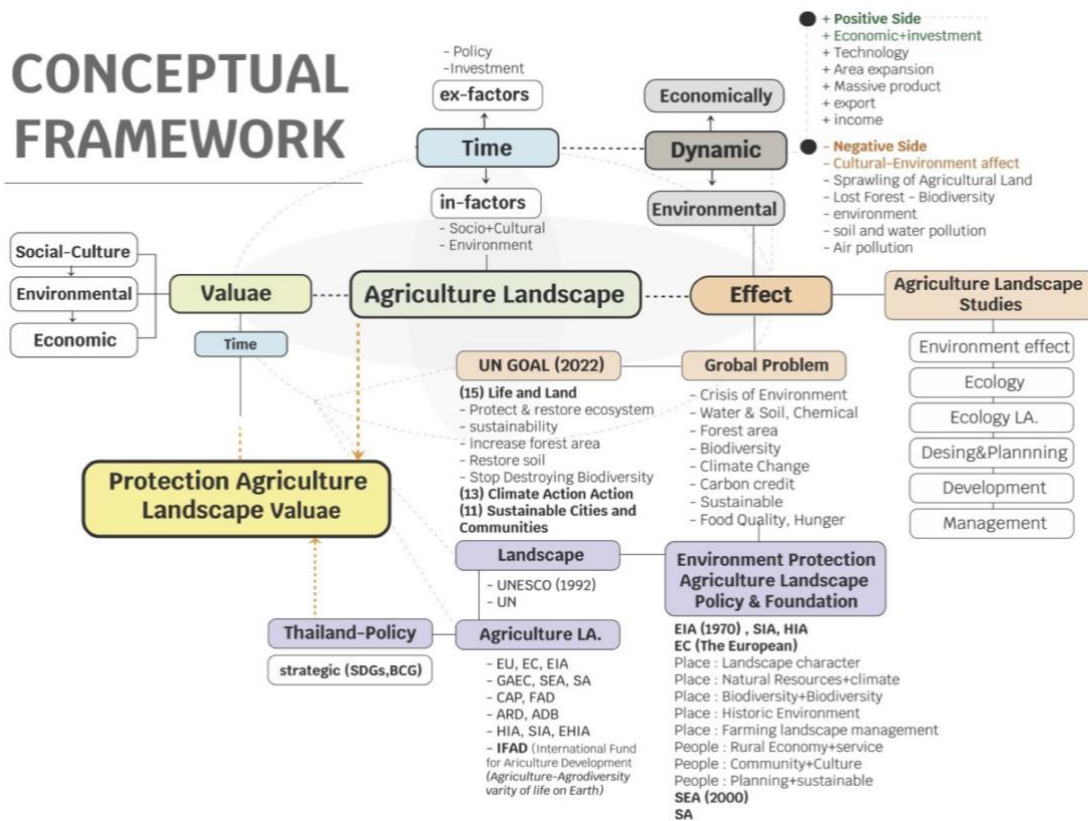


Figure 1: Conceptual framework

**Research result**

The former agricultural landscape reflects the culture of humans. It remains an example of a cultural landscape consisting of diverse elements, including community settlements, architectural works, residential dwellings, and areas expressing the way of life and culture of various human groups. The agricultural landscape demonstrates the close relationship that exists between humans and natural environments. It made for an attractive and distinctive agricultural landscape (UNESCO). The appeal of the agricultural environment can also serve as a green space or open area for audience recreation and aesthetics, as well as a growing agricultural tourist destination. The agricultural landscape comprises three essential and valuable components: economic, social, cultural, and natural, that define and combine in a significant manner and collaborate in all three regards.



Figure 2: The natural landscape in the agricultural landscape in the Northeast of Thailand

## **1. Problems of the agricultural landscape**

### **1.1 Problems and impacts of the agricultural landscape caused by farming**

The agricultural landscape coincides with the development of cities or communities, but it is far from natural areas. Due to growing populations and urbanization, the agricultural landscape is expanding into rural areas and becoming more natural. Therefore, it consequently caused the fragmentation of nature by expanding on the original natural area (Balta & Atik, 2022). It affects natural areas and natural resources, such as forests and water, as well as the ecological structure of the ecosystem and biodiversity. Agricultural activities create environmental and climate problems. The quantity of water in natural water sources is affected by high water usage.

The National Economic Development Plan's expansion of agricultural land in Thailand promotes exports. It led to the expansion of agricultural land and the promotion of product productivity. Monoculture in some regions is unrelated to physical characteristics and the original natural vegetation system, resulting in intervention and alteration of the natural environment, particularly in mountainous regions, areas with gradients, and regions connected to the original forest. Agriculture in these regions breaks down natural ecosystems and reduces biodiversity. Although most research has focused on the harmful effects of agricultural land, there are studies and articles that emphasize the potential of agricultural land. It is a beautiful natural environment. It is a significant economic area for nature. It is an attractive spot with the potential to restore biodiversity. As a result, agricultural regions have evolved into green areas. It is a popular tourist and recreational destination.

Thailand linked agricultural land development policy with the Sustainable Development Goals by establishing the BCG Economy Model policy. It is related to the 2018–2037 National Economic Development Plan and the 20-year strategic management plan. They emphasized a growth plan based on a quality of life that is environmentally friendly and built a green economy for growth and diversity conservation. Restoration of rivers and canals both in urban and rural areas, promotion of agriculture through the conservation of natural resources, and the use of spatial identity to reflect cultural heritage, including watershed management, are the objectives of conserving natural resources and the environment, as well as natural resource restoration (National Economic Development Plan). There are policies regarding the development of agriculture that are consistent with international policies, but there is no holistic approach to agricultural landscape management that involves all aspects of the agricultural landscape. The present strategy focuses strictly on the expansion of farmland and agricultural endeavors. To manage the agricultural landscape in a sustainable manner, education and development must be holistic, including agricultural lands, agricultural communities, settlements, natural areas, and the environment, which are simultaneously important elements in the agricultural landscape.

The value of each agricultural landscape is different.

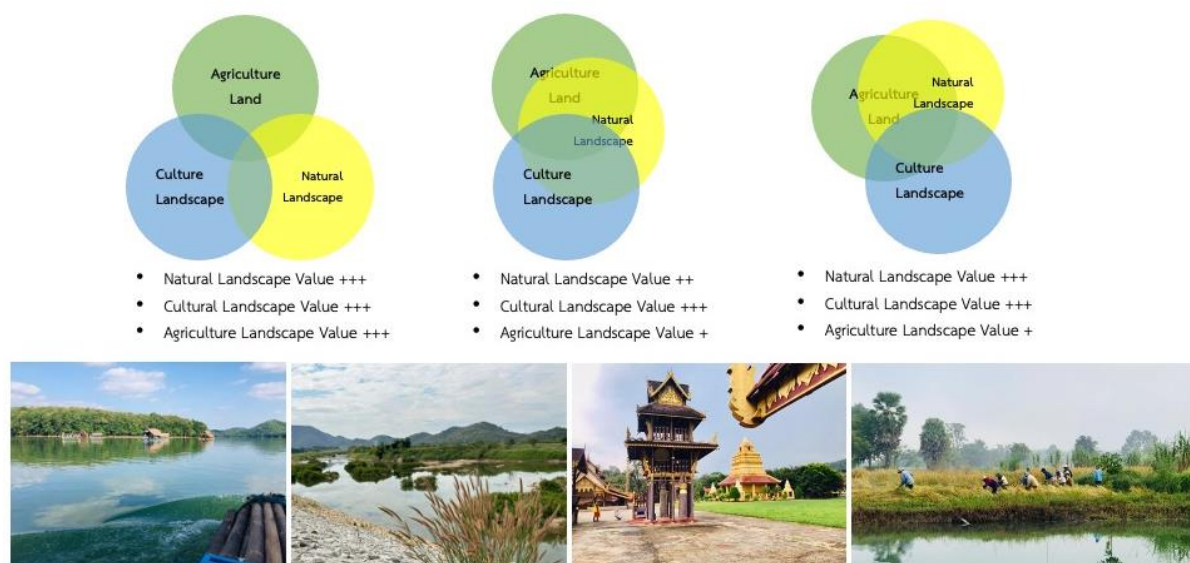


Figure 3: Natural elements, culture and way of life in Thailand's agricultural landscape

## 1.2 Value in the agricultural landscape

The relationship between humans and the environment contributes to the agricultural landscape, which has a variety of significant components (UNESCO). The value of the agricultural landscape must be comprised of vacant land, cultural land, and economic land. Each landscape has sub-elements such as Community Settlement, Farming landscape character, Man-made objects, and specific natural features of biodiversity. Some agricultural landscapes involve natural bodies of water, waterfalls, rivers, forests, and natural areas, and their respective values differ. Some of them have significant cultural value, such as community settlements with historical significance. In addition, it contains ancient architectural statues. Some landscapes have more natural value than economic value, for example, high-altitude agricultural landscapes with unique geological features. There is a river that provides water. There are forests and indigenous vegetation present, as well as a habitat for wildlife. However, the activities of local authorities must ensure the preservation of these three aspects of value. Moreover, based on the study of organizations involved in agricultural landscape management in Thailand, there is still no organization that fully deals with all three aspects of value. In contrast, many organizations in other countries have policies that protect the holistic landscape value of the same area. The whole urban setting is far from natural and agricultural landscapes. Every location will have a unique management approach. They can be divided into three groups: those who value nature and the environment; those who value heritage conventions; and those who value the environment and promote sustainable development.



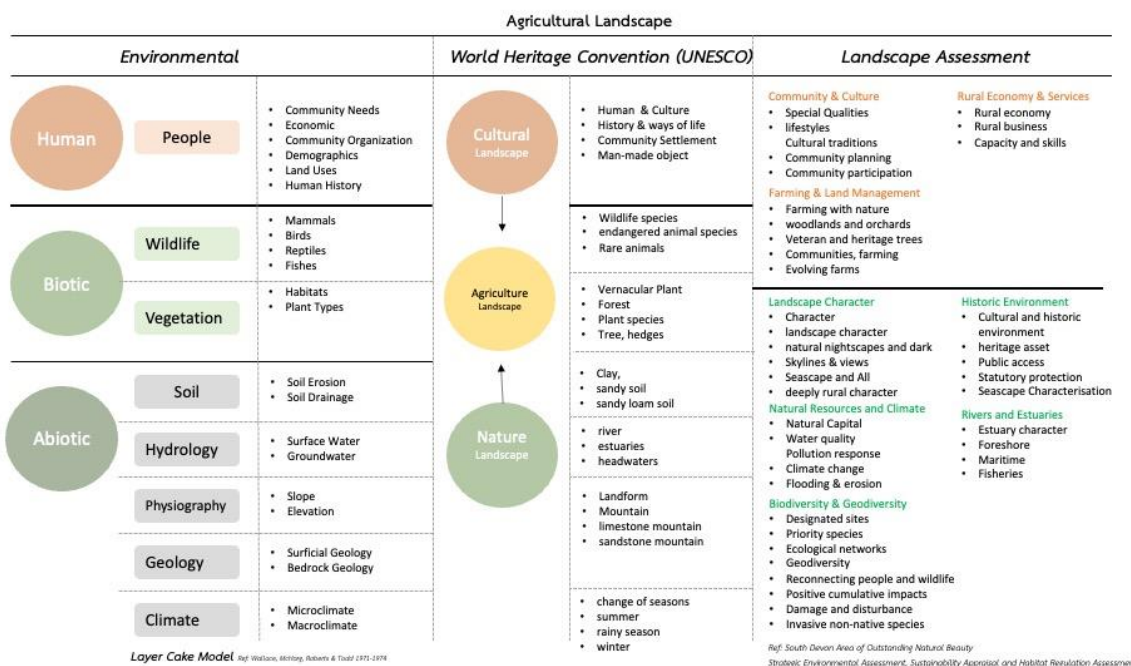


Figure 4: Natural elements and Cultural elements in the agricultural landscape

## 2. Appraisal and Management of Agricultural Landscapes

All across the world, agricultural areas have environmental effects. Numerous organizations are aware of the issue, and research has been started to figure out the best method for protecting, restoring, and enhancing the agricultural landscapes in Europe, America, and Asia. They are managed in various ways. There are regulations for protecting agricultural areas and promoting agricultural areas to reach criteria that have no adverse effects on the environment in the group of European nations, including maintaining economic value, promoting agricultural society, and maintaining the quality of the environment in the agricultural landscape. European nations utilize a standard to administer their verdant agricultural lands. It has ecological value and significance. UNESCO is unique in its ability to preserve and protect natural and cultural values, and there are numerous organizations that research the value and significance of the environment in agricultural landscapes, including the Organisation for Economic Co-operation and Development (OECD), United Nations (UN), and the European Landscape Convention (EU). They have established policies for managing the agricultural landscape, such as Strategic Environmental Assessment in EU Development Cooperation (SEA), which developed from Environmental Impact Assessment (EIA) and the Standard of Good Agricultural and Environmental Conditions (GAEC). Its objective is to establish and protect agricultural landscapes. The operational methods of each department are as follows:

### 2.1 UNESCO

The agricultural landscape is a component of the recognized cultural landscape by UNESCO. In addition to agricultural landscapes, UNESCO also focuses on natural landscapes, ecologically valuable landscapes, and other landscapes that greatly impact people. The cultural environment is always changing and evolving. Consequently, a management approach has been in place since 1992 (Rössler, 2006). After that, many countries around the world have applied the concept to manage their own cultural landscapes (Taylor and St Clair, 2017). The idea of managing cultural landscapes includes both tangible and intangible

landscapes, as well as the methods of management applied to emphasize that they are connected to one another (Scazzosi, 2004). There are a variety of cultural landscape management concepts, including conservation or development planning implementation (Pătru-Stupariu et al., 2019; Tengberg et al., 2012). At the regional or national level, area management methods must be used in a variety of ways and appropriately, as cultural landscapes, which are valuable and important to communities, are different from cultural landscape management (Magnaghi, 2011; Poli, 2020). Thus, the concept of agricultural landscape management, which is a part of the cultural landscape, must take seriously the identity of the community, along with economic and environmental factors in all areas and the changing times.

## **2.2 The European Landscape Convention (EU)**

The European Landscape Convention has the concept of protecting, restoring, and conserving valuable landscapes, including agricultural landscapes. They are an organization that oversees the production management, economic system, trade, and exports of agricultural products, with an emphasis on income and assistance for farmers' cultivation. They also manage agricultural land, preserving agricultural activities and promoting agriculture while minimizing environmental impacts in agricultural areas, preserving traditional geography, and managing rural areas. The previously mentioned concepts apply to the management of the community environment and the environment in agricultural areas with the objective of preventing the impact on the environment and preventing climate issues that might arise from agricultural land. Additionally, they have a budgetary fund to encourage farmer participation and support agriculture in order to achieve the organization's goals.

One of The European Landscape Convention's aims is to promote effective environmental management practices in agricultural areas. It has promoted an environmental management policy named "Condition for Maintaining the Good Agricultural Area and Environmental Condition of Land" and preserving the agricultural landscape's worth. The primary approach to resolving environmental and climate issues is to foster a healthy environment in the agricultural landscape, including water management, soil, and Carbon stock and Landscape, minimum level of maintenance. In order to maintain the environment in agricultural areas, they have established a policy with seven sub-issues as a standard. The study found four sub-issues in relation to the management of the environment and natural resources in agricultural landscapes: GAEC 2, GAEC 3, GAEC 4 and GAEC 6: regarding the proper use of water, the protection of groundwater, the maintenance of sufficient amounts of organic matter in the soil, and the prohibition of burning waste (except for plant health reasons), establishing a minimal land cover to preserve soil moisture.

There is also the issue of preserving the original ecosystem and preserving native vegetation along rivers, canals, and natural water sources in order to maintain the area's original ecosystem, including; GAEC 1, which is a method for establishing buffer zones along waterways in rural and agricultural areas with a minimum distance of 2 meters along the river bank. GAEC 5 emphasizes narrow-slope land management to prevent soil erosion issues. GAEC 7 emphasizes the protection and preservation of the area's original landscape, including traditional plants, native plants, ponds, ditches, solitary trees, groups of trees, perennial shrubs, and ground cover. Moreover, GAEC 7 prohibits cutting down trees and other plants during the breeding season to preserve habitat and protect wildlife.

### **2.3 Case Studies on landscape valuation and environmental management for Sustainability**

In European countries, the agricultural landscape is an essential and beautiful landscape. Therefore, there is a policy regarding the protection and preservation of the agricultural landscape's value, including economic, social, and environmental factors. Protecting the value of beauty in rural and animal husbandry areas is essential. In accordance with EU policy, the UK implemented a variety of projects to protect and restore significant agricultural lands. In the UK, the emphasis is focused on the effects of automated manufacturing processes on the climate, the usage of chemical fertilizers, environmental protection, and the preservation of biodiversity in the agricultural landscape.

The South Devon Area of Outstanding Natural Beauty (AONB) is one of the projects under the policy to protect, rehabilitate, and conserve the environment to ensure its sustainability into the future. The project is subject to the Strategic Environmental Assessment (SEA) in EU development cooperation, which has a four-step implementation process: First step; The need for assessment, Scope of the assessment, Evidence Base, and site characterization. Second step; Description of the AONB Management Plan and possible effects. Third step; Preliminary Considerations and final step; Fuller Considerations. The operating principle is to survey the project area, determine geographic information, analyze it to evaluate various areas, create assessment forms for the value and diversity of the environment, and finally assess the impact that may occur in the future under the relevant policy laws. And the relevant policy laws are the UNESCO World Heritage Convention concerning the protection of the world's cultural and natural heritage (1972), the European Landscape Convention 2000 (ELC), the National Parks and Access to the Countryside Act 1949, the Natural Environment and Rural Communities Act 2006 (as amended), the Wildlife and Countryside Act 1981, the National Planning Policy Framework July 2018, the South West River Basin Management Plan 2015, etc.

After collecting geographic data, the area was analyzed and divided based on significant physical characteristics. and developing various valuation strategies by SEA policies divided into 4 groups; (1) Natural Landscape: Landscape Character, Natural Resources and Climate, Biodiversity & Geodiversity, Historic Environment, and Rivers and Estuaries (2) Agriculture Land: Farming and Land Management, Rural Economy & Services, Tourism Access & Recreation (3) Cultural Landscape: Community & Culture, Communication, Education, & Awareness (4) Management and Development: Planning & Sustainable Development, Management, Organizations and Partnerships, Communication, Education & Awareness; and Coast and Marine Environment.

Upon completion of the project, evaluation Will discover the characteristics of the landscape in various ways, including an area with incredible natural beauty on water and land, and ecologically diverse environments, such as lowlands, wetlands, grasslands, and forests. There are management guidelines for each location, such as preserving the natural beauty, prohibiting the construction of buildings or the implementation of projects that may have an environmental impact, or ensuring that the project preserves the original ecosystem and diversity to be a habitat for native animals, etc. The project demonstrates a holistic approach to management and the integration of appropriate policies to cover the entire local landscape and integrate them accordingly, operating under the EU Environmental Management Policy for Sustainability.

## Conclusion

A study of the values of agricultural landscapes concluded that the World Heritage Convention (UNESCO) emphasized the protection of natural and cultural assets, which affect a significant number of people. The European Landscape Convention (EU) aims to protect the value of a variety of landscapes, including agricultural landscapes, through the Standard of Good Agricultural and Environmental Conditions (GAEC) policy, with an emphasis on the management of agricultural lands to reduce their environmental impact. Then, the Organization for Economic Co-operation and Development (OECD) emphasizes agricultural landscape ecosystems. Although every organization has different primary objectives, they all share the objective of preserving landscape and agricultural landscape values. The values are separated into three distinct categories: Agricultural Land, Cultural Landscape, and Natural Landscape, and on each side, there will be a variety of different components.

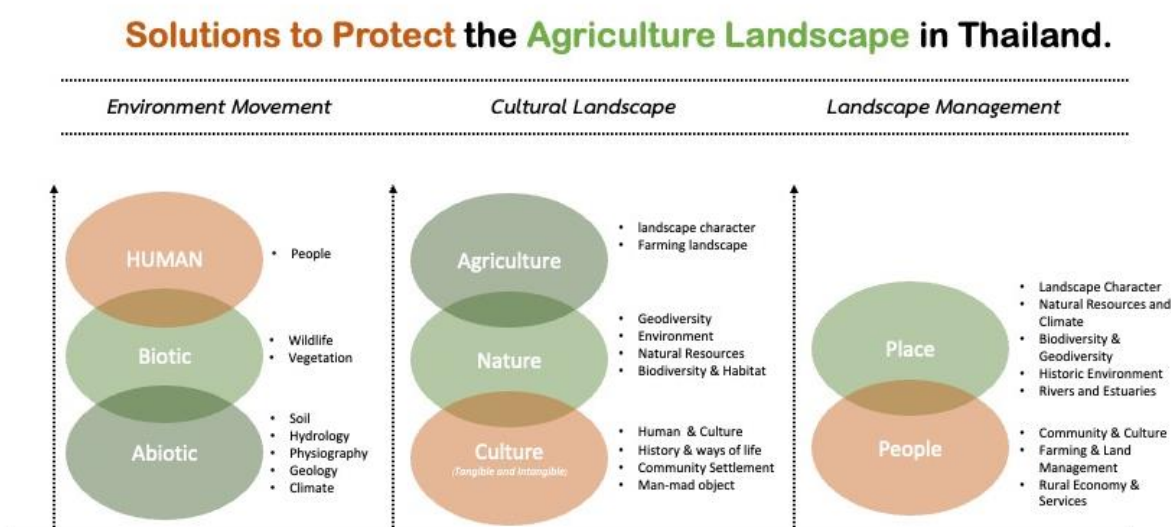


Figure 5: The three values of the agricultural landscape

Problems in the agricultural landscape are a result of managing the area, reducing social and cultural values, and especially not giving importance to natural values. Therefore, agricultural landscape management is an essential process for protecting and preserving the value of agricultural landscapes by creating a comprehensive policy. In European countries, the focus is on the landscape. change and the effects that occur, they have developed a policy to help protect and preserve this valuable landscape by combining the Strategic Environmental Assessment in EU Development Cooperation (SEA), developed from the Environmental Impact Assessment (EIA), and the Good Agricultural and Environmental Conditions, which concentrate on preserving land's value while minimizing environmental impacts and promoting optimal development. The major processes are the following: (1) a spatial analysis to classify the economic, social, cultural, and environmental values of the landscape. (2) investigate strategies that are consistent with the agricultural landscape, and (3) develop an evaluation form and its impact on agricultural landscape values.

## Solutions to Protect the Agriculture Landscape in Thailand.

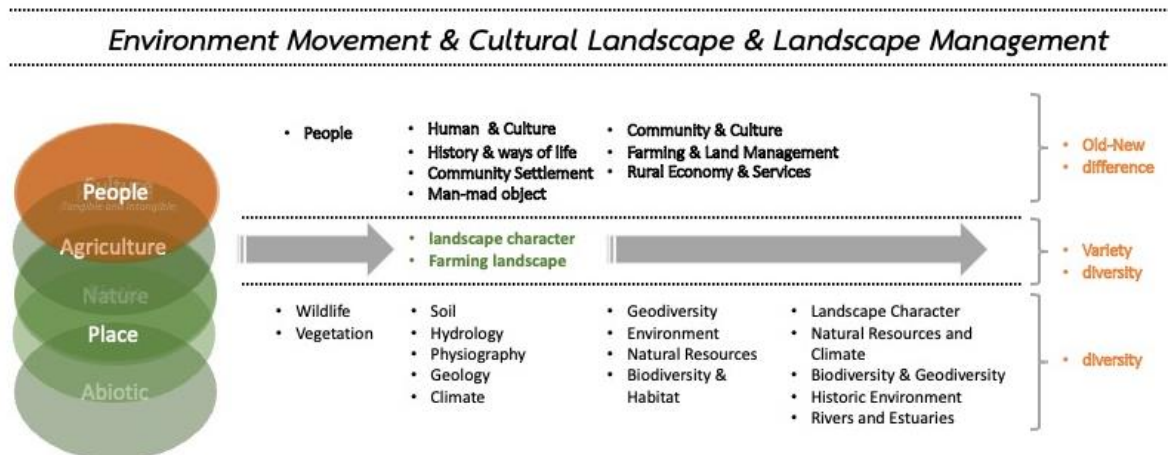


Figure 6: The guidelines for studying the values of agricultural landscapes

Environmental issues in the agricultural landscape are diverse. Policy and management approaches are also diverse. According to the study, there are still some comprehensive policies that can be implemented immediately. However, numerous policies from different organizations are directly and indirectly implicated. As a result, agricultural landscape management in Thailand must investigate three aspects of the agricultural landscape, including the value of agricultural land. Natural value (economic worth) and socio-cultural values are both tangible and intangible. In addition, Thailand must research applicable regulations and laws, such as conservation laws, policies on water resource restoration and environmental protection, natural resources, water resources, forests, wildlife, wildlife habitat preservation policies, or management and impact reduction policies, in order to analyze management approaches suitable for the area. The most important variable is integration to accommodate various social contexts and historical periods, and the management strategy consists of three components: (1) Natural value assessment; (2) Social and cultural value assessment; (3) Establishment of landscape assessment criteria by applicable policies and laws; (4) Summary analysis and evaluation; (5) Agricultural landscape development and management.

### Acknowledgment

This article was part of a doctoral study research in the Doctor of Philosophy Program in Landscape Architecture, Faculty of Architecture Silpakorn University, and the research was supported by funding from the Ministry of Science and Technology, Thailand, and thanks to the faculty members from Silpakorn University and Mahasarakham University and the stakeholders who provide support.

## References

- Arheimer, B., Torstensson, G., & Wittgren, H. B. (2004). Landscape planning to reduce coastal eutrophication: agricultural practices and constructed wetlands. *Landscape and Urban Planning*, 67(1), 205-215. doi:[https://doi.org/10.1016/S0169-2046\(03\)00040-9](https://doi.org/10.1016/S0169-2046(03)00040-9)
- Balta, S., & Atik, M. (2022). Rural planning guidelines for urban-rural transition zones as a tool for the protection of rural landscape characters and retaining urban sprawl: Antalya case from Mediterranean. *Land Use Policy*, 119, 106144. doi:<https://doi.org/10.1016/j.landusepol.2022.106144>
- Council of Europe, *The European Landscape Convention* (Florence, 2000).
- Estacio, I., Basu, M., Sianipar, C. P. M., Onitsuka, K., & Hoshino, S. (2022). Dynamics of land cover transitions and agricultural abandonment in a mountainous agricultural landscape: Case of Ifugao rice terraces, Philippines. *Landscape and Urban Planning*, 222, 104394. doi:<https://doi.org/10.1016/j.landurbplan.2022.104394>
- European Commission, *Standard of Good Agricultural and Environmental Conditions (GAEC)* Retrieved February 8, 2023, from [https://marswiki.jrc.ec.europa.eu/wikicap/index.php/Good\\_Agricultural\\_and\\_Environmental\\_Conditions\\_%28GAEC%29](https://marswiki.jrc.ec.europa.eu/wikicap/index.php/Good_Agricultural_and_Environmental_Conditions_%28GAEC%29)
- History Database the Global Environment (2017). Agricultural area over the long-term, Ourworldindata.com, "Grazing Land Use Over the Long Term, 1600 to 2016": Klein Goldewijk, K., A. Beusen, J. Doelman and E. Stehfest, New anthropogenic land use estimates for the Holocene; HYDE 3.2, in prep.
- International Fund for Agricultural Development (IFAD), *Ensuring environmental sustainability and building resilience to climate change*. Retrieved February 10, 2023, from <https://www.ifad.org/en/climate-and-environment>
- Kirchner, M., Schönhart, M., & Schmid, E. (2016). Spatial impacts of the CAP post-2013 and climate change scenarios on agricultural intensification and environment in Austria. *Ecological Economics*, 123, 35-56. doi:<https://doi.org/10.1016/j.ecolecon.2015.12.009>
- Liccari, F., Boscutti, F., Bacaro, G., & Sigura, M. (2022). Connectivity, landscape structure, and plant diversity across agricultural landscapes: novel insight into effective ecological network planning. *Journal of Environmental Management*, 317, 115358. doi:<https://doi.org/10.1016/j.jenvman.2022.115358>
- Lomba, A., Ferreiro da Costa, J., Ramil-Rego, P., & Corbelle-Rico, E. (2022). Assessing the link between farming systems and biodiversity in agricultural landscapes: Insights from Galicia (Spain). *Journal of Environmental Management*, 317, 115335. doi:<https://doi.org/10.1016/j.jenvman.2022.115335>

- Lütz, M., & Bastian, O. (2002). Implementation of landscape planning and nature conservation in the agricultural landscape—a case study from Saxony. *Agriculture, Ecosystems & Environment*, 92(2), 159-170. doi:[https://doi.org/10.1016/S0167-8809\(01\)00300-0](https://doi.org/10.1016/S0167-8809(01)00300-0)
- Magnaghi, A. (2011). Manifesto of the Territorialist Society – English version. Retrieved March 15, 2020 from [http://www.societadeiterritorialisti.it/wp-content/uploads/2013/05/110221b\\_draft.of.the.territorialists.society.manifesto.pdf](http://www.societadeiterritorialisti.it/wp-content/uploads/2013/05/110221b_draft.of.the.territorialists.society.manifesto.pdf)
- Mossman, H. L., Panter, C. J., & Dolman, P. M. (2015). Modelling biodiversity distribution in agricultural landscapes to support ecological network planning. *Landscape and Urban Planning*, 141, 59-67. doi:<https://doi.org/10.1016/j.landurbplan.2015.04.010>
- Office of the National Economic and Social Development Council, National Economic Development Plan 2018-2037, Thailand, Retrieved November 3, 2022, from <https://www.nesdc.go.th/main.php?filename=plan13>
- Organisation for Economic Co-operation and Development (OECD), Agriculture and fisheries, Agriculture and the environment. Retrieved February 18, 2023, from <https://www.oecd.org/agriculture/>
- Pătru-Stupariu, I., Pascu, M., & Bürgi, M. (2019). Exploring tangible and intangible heritage and its resilience as a basis to understand the cultural landscapes of saxon communities in Southern Transylvania (Romania). *Sustainability*, 11(11), 1–18. doi:<https://doi.org/10.3390/su11113102>
- Rosler, M. (2006). World heritage cultural landscapes: A UNESCO flagship programme 1992-2006. *Landscape Research*, 31(4), 333-353. doi – 10.1080/01426390601004210
- Scazzosi, L. (2004). Reading and assessing the landscape as cultural and historical heritage. *Landscape Research*, 29(4), 335–355. <https://doi.org/10.1080/0142639042000288993>
- Strategic Environmental Assessment in EU development cooperation (SEA). Thomas B. Fischer, *The Theory and Practice of Strategic Environmental Assessment, Towards a More Systematic Approach*, Published July 1, 2007 by Routledge.
- Taylor, K., St Clair, A. & Mitchell, N. (Eds.) (2017). *Conserving Cultural Landscapes: Challenges and New Directions*. London – Routledge.
- United Nation Educational, Scientific and Cultural Organization, Basic Texts of the 1972 World Heritage Convention, Published in 2005 by the United Nations Educational, Scientific and Cultural Organization 7, Place de Fontenoy, 75352 PARIS.
- Vaz, A. S., Amorim, F., Pereira, P., Antunes, S., Rebelo, H., & Oliveira, N. G. (2021). Integrating conservation targets and ecosystem services in landscape spatial planning from Portugal. *Landscape and Urban Planning*, 215, 104213. doi:<https://doi.org/10.1016/j.landurbplan.2021.104213>

Wang, C.-J., Wan, J.-Z., & Fajardo, J. (2021). Effects of agricultural lands on the distribution pattern of genus diversity for neotropical terrestrial vertebrates. *Ecological Indicators*, 129, 107900. doi:<https://doi.org/10.1016/j.ecolind.2021.107900>

You, H. (2017). Agricultural landscape dynamics in response to economic transition: Comparisons between different spatial planning zones in Ningbo region, China. *Land Use Policy*, 61, 316-328. doi:<https://doi.org/10.1016/j.landusepol.2016.11.025>

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***Identity Negotiation of International Women in Higher Education:  
Language and Culture in Focus***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

The role of women in academia and especially in STEM fields has been receiving more and more attention among researchers, however few studies used a quantitative approach and considered the experiences of international women across various disciplines in relation to identity negotiation. This study examines the experiences of foreign-born female faculty living and teaching in the United States through a survey of international women in academia. We explore how they negotiate their ethnic, cultural, and linguistic identity while fulfilling their role in academia. The variables under consideration in this quantitative study include bicultural identity, ethnic pride, language maintenance, language attitudes, and code-switching. Our findings indicate that international women faculty in our study feel strong connection to their place of origin and their native language and culture although length of residence in the United States and U.S. citizenship play a role in the perception of their biculturality. Our respondents' positive attitudes towards native language correlate with ethnic pride and language maintenance, which also strongly correlate with each other. Finally, international women faculty in arts, humanities, and social sciences appear to exhibit more positive attitudes towards English and their native language, more ethnic pride, and more interest in native language maintenance compared with their counterparts in STEM fields.

Keywords: International Women Faculty, U.S. Academia, Bicultural Identity, Language Attitudes, Language Maintenance, Ethnic Pride

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## Introduction

U.S. universities are known for attracting international (i.e., foreign-born) students and scholars from across the globe. Many university departments, especially those in STEM fields, have a sizeable portion of foreign-born faculty. Their presence on college campuses is instrumental in the internationalization of higher education in the United States where they increase diversity and make unique contributions to service, teaching, and research. Working in U.S. academia for foreign nationals is not without challenges. International faculty deal with immigration issues, linguistic and cultural differences, loneliness and isolation, as well as prejudice (Collins, 2008; Ghosh & Barber, 2021; Omiteru et al., 2018). Foreign-born female faculty may face even more challenges, especially in some disciplines traditionally dominated by white males (e.g., Li, 2020; Yakaboski, 2016). As U.S. universities continue to recruit international scholars and among them female faculty, it is imperative to examine their experiences so that their contributions as well as concerns do not go unnoticed. Such research can inform universities at large, individual departments, and international faculty's colleagues and mentors and eventually facilitate retention of foreign-born scholars and international female academics in particular.

This study draws on data from a larger, mixed-methods interdisciplinary project focused on the experiences of international women faculty in U.S. academia, with a focus on the state of Texas. The larger project encompasses multiple variables, such as work-life balance, efficacy, job satisfaction, bicultural identity, and language attitudes, among others. Using survey and interview data we aim to discern common trends for our participants as a group as well as describe some unique experiences via their personal examples and stories. This paper is based on the survey data collected from the initial 36 participants and focuses on the multilingualism and multiculturalism of our respondents.

## Background

As academia is becoming more diverse, it is imperative to understand the experiences, feelings, and thoughts of immigrant scholars in the United States and especially female academics since gender differences continue to affect U.S. faculty (e.g., O'Meara et al., 2017). Recent research demonstrated that international faculty in general and international female faculty in U.S. academia encounter some challenges that may have an effect on their personal and professional lives. For example, among challenges experienced by foreign-born academics regardless of gender prior research revealed immigration issues, cultural differences, and loneliness (Collins, 2008). As for gender-based differences in academia, O'Meara et al. (2017) found that women faculty spend more time advising students, participating in campus service, and engaging in teaching-related activities and that they also receive more new work requests compared with their male counterparts. While this study did not examine international faculty specifically, it is likely that similar patterns would be observed among foreign-born academics as well. For example, Skachkova (2007) interviewed 34 women U.S.-based professors from 22 different countries and discovered that these international women faculty were often treated differently and experienced difficulty in such areas as teaching, research, service, administration, work-life balance, and interaction with other faculty members.

Research into the experiences of immigrant faculty and international female faculty can be crucial to higher education institutions' attempts to facilitate retention of foreign-born faculty (Lawrence et al., 2014). Indeed, if international faculty's challenges and concerns are not

acknowledged and support is not provided, it may be difficult for them to be successful in academia and they may choose to leave it. On the other hand, research into their experiences can inform various stakeholders involved and recommendations can be made for faculty themselves and for institutions where they are employed (Gahungu, 2011). Mentorship programming for international faculty can also be improved based on research findings (Lawless & Chen, 2015). In addition, comparisons can be made with U.S.-born faculty and male foreign-born faculty to understand the roles of national origin and gender in the experiences of faculty. Finally, this type of research will allow for the issues of diversity and inclusion to be examined more critically. To illustrate, Ghosh and Barber (2021) conducted interviews with 33 immigrant women faculty and discovered that their participants “find themselves suffering from cultural tokenism ... in ways that isolate them while also making them effective institutional resources for demonstrating diversity and inclusion” (p. 1076).

Recent studies have shed some light on the experiences of foreign-born academics in the United States demonstrating that both gender and national origin may create challenges for international women faculty. In terms of methodology, prior research mainly employed interviews (e.g., Ghosh & Barber, 2021; Li, 2020) or autoethnographies (e.g., Cruz et al., 2020; Wang, 2021). This study employed a quantitative approach and drew on survey data, which will later be supplemented with interview data within our larger, mixed-methods interdisciplinary project. Moreover, many previous studies focused on a specific subgroup of immigrant female faculty, such as women of color (e.g., Hernandez et al., 2015; Vaishnav et al., 2023) or Asian women (e.g., Li, 2020; Yakaboski, 2016). While we acknowledge the importance of these more narrowly focused investigations, our goal was to examine the experiences of international women faculty in general. We expect to find some universal trends among our participants and later examine their unique stories via interviews. Finally, in this study we focused on the linguistic and cultural aspects of our participants’ identities and experiences and explored the issues related to their language attitudes and maintenance. Traditionally, in studies on international faculty in the United States other researchers have considered acculturation (e.g., Véliz et al., 2020) and English proficiency and foreign accent in particular (e.g., Folwell, 2013; Ghosh & Barber, 2021), while mother tongue and its maintenance have not been considered. On the other hand, it is a crucial topic within research on immigrant groups in the United States (Lee & Gupta, 2020; Lutz, 2007/2008; Nesteruk, 2010; Zhang & Slaughter-Defoe, 2009). Thus, our study contributes to research on language attitudes and maintenance among immigrants in general and specifically among international women faculty.

## **Methodology**

### ***Participants***

For this study, we collected data from 36 respondents. Participants’ age among those who disclosed it ( $n = 30$ ) ranged from 33 to 68 ( $M = 44.47$ ,  $SD = 9.86$ ). Length of residence in the United States ranged from one year to 47 years ( $M = 16.03$ ,  $SD = 9.61$ ). With regard to place of origin, seven respondents were from Europe, 20 were from Asia, six were from Middle East, one respondent was from Africa, and two were from South America. Seven participants reported being H1B (i.e., work) visa holders, while 15 were U.S. residents and 14 were U.S. citizens. In terms of academic rank, there were six full professors, five associate professors, 16 assistant professors, and nine held other academic ranks (e.g., lecturer, visiting assistant professor, etc.). Discipline-wise 19 participants were in arts, humanities, and social sciences, while 16 were in STEM fields. One person chose not to disclose their discipline. Participants’

self-reported language ability in the English language and their native one is presented in Table 1 below.

<b>Question</b>	<b><i>M</i></b>	<b><i>SD</i></b>
How well do you speak English?	5.47	.74
How well do you understand English?	5.67	.53
How well do you read in English?	5.69	.47
How well do you write in English?	5.47	.70
How good is your pronunciation in English?	4.81	.98
How familiar are you with U.S. / American culture and traditions?	4.53	.97
How would you rate your ability in your native language?	5.67	.72

Table 1. Language ability (1 = the lowest, 6 = the highest)

### ***Instrument***

The data collection instrument consisted of two parts, a background questionnaire and a multi-scale questionnaire that included items related to ethnic, cultural, and linguistic identities and practices of our participants. The background questionnaire solicited information on participants' age, length of residence in the United States, place of origin and native language, immigration status, academic rank, and discipline. In addition, participants were asked to self-rate their English language ability. This portion of the background questionnaire was partially based on Birdsong et al. (2012). The main questionnaire consisted of five subscales: language attitudes, language maintenance, bicultural identity, ethnic pride, and code-switching. Most questions in the main questionnaire were Likert-scale type with answer options ranging from *Strongly Agree* (7) to *Strongly Disagree* (1).

### ***Procedures***

After securing an approval from the Institutional Review Board, we began our data collection. To find participants, we perused the departmental websites of universities in Texas in search of female faculty whose profiles indicated that they could be foreign-born. This information was either mentioned in their bios or CVs (e.g., undergraduate education was obtained outside the United States). Then, we sent an email to potential candidates containing an invitation to participate in our study, which briefly outlined its purpose and listed participant criteria, and a link to the survey.

### ***Analyses***

Initially, we analyzed our participants' responses to the main questionnaire descriptively. Then, we ran a correlation analysis to see whether there were any relationships among our variables (language attitudes, language maintenance, bicultural identity, ethnic pride, and code-switching) as well as our participants' length of residence in the United States and language ability in English and in their native language. Finally, we ran a series of one-way ANOVAs to examine potential group differences with regard to citizenship and discipline.

### **Results**

First, we present the descriptive statistics, followed by additional analyses. As a group, our participants exhibited positive attitudes towards both English and their native languages, although there was some variation in their responses. Table 2 provides the means and standard deviations for the six questions measuring language attitudes.

<b>Question</b>	<b><i>M</i></b>	<b><i>SD</i></b>
I like using English in my daily life	5.92	1.32
I feel positive towards the English language	6.06	1.17
I enjoy speaking English every day	5.86	1.36
I like using my native language in my daily life	5.67	1.41
I feel positive towards my native language(s)	6.19	.98
I enjoy speaking my native language	6.17	.97

Table 2. Language attitudes (1 = Strongly Disagree, 7 = Strongly Agree)

Our participants considered it important to maintain their native languages. However, the importance of language maintenance among their offspring was slightly lower, albeit with high variability in responses. Table 3 presents the means and standard deviations for the language maintenance questions.

<b>Question</b>	<b><i>M</i></b>	<b><i>SD</i></b>
It is important for me to maintain my native language	5.92	1.32
It is important for me that my children learn my native language	5.44	1.78

Table 3. Language maintenance (1 = Strongly Disagree, 7 = Strongly Agree)

In addition to the questions in Table 3, we asked our respondents to indicate how often they visited their home country. Eight participants reported that they visited their home country never or rarely (every three to five years), while 28 participants went back regularly (every two years), often (every year), or very often (twice a year or more). Finally, our respondents were asked to select ways that they used to maintain contact with their home culture and language. Only one person did not maintain contact with their home culture and language, whereas 25 participants used three or more ways to do so. Table 4 shows how many participants selected each option.

<b>Option</b>	<b><i>n</i></b>
Regular trips to country of origin	23
Regular contact with friends and family in country of origin (e.g., via Skype, Zoom, WhatsApp, Facebook, etc.)	31
Media consumption in native language (e.g., movies, TV shows, music)	16
News in native language	15
Books in native language	10
Following social media accounts in native language	16
Through work (e.g., research or teaching have to do with native language)	7
Participation in local groups and events that focus on home culture / language	10

Table 4. Contact with home culture and language

Bicultural identity portion of the questionnaire, adapted from Huynh et al. (2018), measured our respondents' perception of their two combined cultures: their culture of origin and American culture. Higher scores on these questions indicated a more harmonized and blended bicultural identity and lower scores indicated a more conflicted and compartmentalized bicultural identity. Table 5 presents the means and standard deviations for the bicultural identity questions, which appear to indicate that there was a lot of variation in participant responses. Some respondents exhibited a more harmonious view of their two cultures, while others seemed to perceive the two cultures to be at odds with each other. These differences in

participant views averaged the mean scores for the group around the middle of the continuum. Question items marked with an asterisk (\*) were reverse coded during analysis.

<b>Question</b>	<b><i>M</i></b>	<b><i>SD</i></b>
I feel torn between my native (i.e., culture of origin) and American cultures*	4.78	1.61
I feel that my native (i.e., culture of origin) and American cultures are incompatible*	4.22	1.57
I keep my native (i.e., culture of origin) and American cultures separate*	4.06	1.71
I feel both _____ (i.e., culture of origin) and American at the same time	4.08	1.70
I relate better to a combined _____ (i.e., culture of origin)-American culture than to my native (i.e., culture of origin) or American culture alone	4.17	1.76

Table 5. Bicultural identity (1 = Strongly Disagree, 7 = Strongly Agree)

The next portion of the questionnaire contained ethnic pride questions related to native language and culture and was based on Barry (2002). Our participants exhibited a relatively strong sense of ethnic pride, albeit with some variation. Table 6 shows the means and standard deviations for the six questions measuring ethnic pride.

<b>Question</b>	<b><i>M</i></b>	<b><i>SD</i></b>
Being _____ (i.e., culture of origin) is an important part of who I am	5.81	1.28
I value my native language (i.e., the language spoken in my place of origin)	5.97	1.11
When a stranger asks me where I am from, I am proud to say that I am _____ (i.e. my place of origin / nationality)	5.58	1.63
I have a strong sense of being _____ (i.e. my place of origin / nationality / culture of origin)	5.39	1.61
I am proud to be able to speak my native language (i.e., the language spoken in my place of origin)	5.72	1.52
I identify with a _____-speaking community (i.e., the language spoken in my place of origin)	5.17	1.61

Table 6. Ethnic pride (1 = Strongly Disagree, 7 = Strongly Agree)

Finally, the last set of questions asked our participants to consider their code-switching practices and attitudes. Most of these questions were adapted from Dewaele and Wei (2014). Admittedly with some variability present in the group, the majority of our respondents reported that they used code-switching when interacting with other multilinguals and their attitudes to code-switching were mainly positive as well. Table 7 contains the means and standard deviations for the individual questions on code-switching. Question items marked with an asterisk (\*) were reverse coded during analysis.

Question	<i>M</i>	<i>SD</i>
I regularly code-switch when I interact with people with whom I share more than one language	5.06	1.84
Code-switching is a sign of incomplete linguistic competence in one of the languages or both*	5.11	1.95
Code-switching displays a distinct multicultural identity	5.19	1.26
Code-switching is a sign of arrogance*	6.14	1.25
Code-switching is a useful tool for multilingual speakers	5.61	1.50

Table 7. Code-switching attitudes and practices (1 = Strongly Disagree, 7 = Strongly Agree)

A correlation procedure revealed that there were relationships between several variables in our study. We found a moderate correlation between length of residence and bicultural identity,  $r(34) = .37, p < .05$ . There was a strong correlation between English language ability and attitudes towards English,  $r(34) = .61, p < .001$ , and a moderate one between English language ability and attitudes to code-switching,  $r(34) = .46, p < .01$ . In addition, there was a moderate correlation between attitudes towards English and bicultural identity,  $r(34) = .33, p < .05$ . Attitudes towards native language strongly correlated with ethnic pride,  $r(34) = .63, p < .001$ , and with language maintenance,  $r(34) = .74, p < .001$ . Finally, there was a strong correlation between ethnic pride and language maintenance,  $r(34) = .84, p < .001$ .

A one-way ANOVA revealed a significant difference with regard to bicultural identity between participants with U.S. citizenship ( $M = 4.71, SD = 1.05$ ) and those without ( $M = 3.97, SD = 1.03$ ),  $F(1, 34) = 4.36, p = .044$ . Furthermore, we conducted a one-way ANOVA to test if our participants' discipline (non-STEM and STEM) had any effect on variables under examination. We found significant differences between groups with regard to attitudes towards English, attitudes towards native language, code-switching practices, ethnic pride, and language maintenance. We present these results in Table 8.

Variables	Group	<i>M</i>	<i>SD</i>	<i>F</i> (1, 33)	<i>p</i>
Attitudes towards English	non-STEM	6.42	.85	7.10	.012
	STEM	5.41	1.40		
Attitudes towards native language	non-STEM	6.39	.86	6.94	.013
	STEM	5.59	.97		
Code-switching practices	non-STEM	5.68	1.67	5.31	.028
	STEM	4.31	1.85		
Ethnic pride	non-STEM	6.11	1.01	7.70	.009
	STEM	5.04	1.25		
Language maintenance	non-STEM	6.26	.87	7.54	.010
	STEM	5.03	1.72		

Table 8. ANOVA results by discipline

## Discussion

This study surveyed a group of international female faculty employed at higher education institutions in the state of Texas, United States. We explored the multilingual and multicultural aspects of these women's identities focusing specifically on bicultural identity, ethnic pride, language maintenance, language attitudes, and code-switching. We found that our participants felt positive towards both their native language and English. They also reported engaging in code-switching practices between English and their native language and expressed rather positive perceptions of this phenomenon. Furthermore, their positive

orientation towards language and culture of origin was evident not only in their language attitude scores, but also in language maintenance scores and ethnic pride scores. Our respondents' positive attitudes towards native language correlated with ethnic pride and language maintenance, which also strongly correlated with each other. In other words, participants with higher ethnic pride and more positive attitudes towards their native language considered maintenance of their native language important.

Our findings indicated that international women faculty in our study felt strong connection to their place of origin and their native language and culture. This was evident not only in their high scores with regard to attitudes to native language, language maintenance, and ethnic pride. Most of our participants used multiple ways to maintain contact with their home language and culture, including contact with friends and family in their country of origin, regular trips to the country of origin, media and news consumption in their native language, and following social media accounts in their native language. These results were not uniform and there were exceptions among our respondents, whose engagement with home language and culture was limited. Future studies with more participants could shed further light on this finding and explore which factors may affect international women faculty's practices concerning contact with home language and culture.

As for the scores on bicultural identity, the results were rather variable, suggesting that some of our participants perceived a harmonious and compatible relationship between their culture of origin and American culture while for others the two cultures were at odds. Language attitudes towards English displayed a moderate correlation with bicultural identity. Furthermore, we found a moderate correlation between length of residence and bicultural identity, which indicates that the longer our respondents resided in the United States, the more harmonious and blended they perceived their culture of origin and American culture. This was further supported when we compared bicultural identity scores of those who were U.S. citizens at the time of this study and those who were not. The citizen subgroup's scores on bicultural identity subscale were significantly higher. We cannot, however, claim that the difference in citizenship status alone affected our participants' bicultural identity. Naturally, the path to citizenship is quite lengthy and length of residence may have played a greater role than citizenship. Future studies could consider these two variables and explore their contributions to the bicultural identity of international faculty.

The finding regarding the effect of discipline was rather interesting. Specifically, international women faculty in arts, humanities, and social sciences appeared to exhibit more positive attitudes towards English and their native language, more ethnic pride, and more interest in native language maintenance compared with their counterparts in STEM fields. They also more readily agreed with the statement about participating in code-switching practices. Perhaps, representatives of non-STEM disciplines engage with language and culture in their teaching and research in a way that makes them consider these aspects of their identities more carefully than their colleagues in STEM fields do. More studies are necessary to explore this topic in greater detail and to ascertain whether this finding will be supported.

### ***Limitations and suggestions for future research***

Our findings should be viewed in light of several limitations. First, these results may not be generalizable to all international female faculty in U.S. academia since we only collected data from faculty in Texas. Faculty from other states should be considered in future research to establish whether our findings apply in different contexts. Second, the sample in this study is quite small and more data is necessary to support our findings. We hope to collect more data



and to rerun the analyses in the near future. Finally, it is important to supplement our quantitative findings with some qualitative data to obtain a more vivid picture of our participants' experiences. We plan to conduct semi-structured interviews with selected participants in the next stage of our project to explore how our participants' experiences in U.S. academia are shaped by two major aspects of their identities (being foreign-born and female) as well as more narrow categories (e.g., place of origin, race / ethnicity, discipline / specialty).

## **Conclusion**

As universities in the United States and across the globe continue to diversify their faculty, it is crucial to examine the experiences of international scholars in order to understand how to support their productivity and overall well-being if higher education institutions are interested in success and retention of these academics. This study contributes to the body of research literature that focuses on international women faculty in U.S. academia. Our research demonstrated that many foreign-born female scholars continue to preserve deep links with their culture of origin and express strong ethnic pride, hoping to maintain their native language and transmit it to their offspring. These linguistic and cultural considerations may add an extra layer to the roles and responsibilities these women have to navigate in their personal and professional lives.

## References

- Barry, D. T. (2002). An ethnic identity scale for East Asian immigrants. *Journal of Immigrant Health, 4*, 87-94.
- Birdsong, D., Gertken, L.M., & Amengual, M. *Bilingual Language Profile: An Easy-to-Use Instrument to Assess Bilingualism*. COERLL, University of Texas at Austin. Web. 20 Jan. 2012. <https://sites.la.utexas.edu/bilingual/>
- Collins, J. M. (2008). Coming to America: Challenges for faculty coming to United States' universities. *Journal of Geography in Higher Education, 32*(2), 179-188.
- Cruz, J., McDonald, J., Broadfoot, K., Chuang, A. K. C., & Ganesh, S. (2020). "Aliens" in the United States: A collaborative autoethnography of foreign-born faculty. *Journal of Management Inquiry, 29*(3), 272-285.
- Dewaele, J-M., & Wei, L. (2014). Attitudes towards code-switching among adult mono- and multilingual language users. *Journal of Multilingual and Multicultural Development, 35*(3), 235-251.
- Folwell, A. L. (2013). Foreign-born faculty who speak accented English: A qualitative investigation of experiences in and out of the classroom. *The Northwest Journal of Communication, 41*(1), 191-218.
- Gahungu, A. (2011). Integration of foreign-born faculty in academia: Foreignness as an asset. *International Journal of Educational Leadership Preparation, 6*(1), 1-22.
- Ghosh, D., & Barber, K. (2021). The gender of multiculturalism: Cultural tokenism and the institutional isolation of immigrant women faculty. *Sociological Perspectives, 64*(6), 1063-1080.
- Hernandez, K. A. C., Ngunjiri, F. W., & Chang, H. (2015). Exploiting the margins in higher education: A collaborative autoethnography of three foreign-born female faculty of color. *International Journal of Qualitative Studies in Education, 28*(5), 533-551.
- Huynh, Q-L., Benet-Martínez, V., & Nguyen, A-M. D. (2018). Measuring variations in bicultural identity across U.S. ethnic and generational groups: Development and validation of the Bicultural Identity Integration Scale – Version 2 (BIIS-2). *Psychological Assessment, 30*(12), 1581-1596.
- Lawless, B., & Chen, Y. W. (2015). Immigrant women, academic work, and agency: Negotiating identities and subjectivities with/in the Ivory Tower. *International Journal of Diversity in Organizations, Communities, and Nations: Annual Review, 14*, 39-50.
- Lawrence, J. H., Celis, S., Kim, H. S., Lipson, S. K., & Tong, X. (2014). To stay or not to stay: Retention of Asian international faculty in STEM fields. *Higher Education, 67*, 511-531.

- Lee, G. L., & Gupta, A. (2020). Raising children to speak their heritage language in the USA: Roles of Korean parents. *Journal of Language Teaching and Research*, 11(4), 521-531.
- Li, Y. L. (2020). First-generation immigrant women faculty's workplace experiences in the US universities—examples from China and Taiwan. *Migration Studies*, 8(2), 209-227.
- Lutz, A. (2007/2008). Negotiating home language: Spanish maintenance and loss in Latino families. *Latino(a) Research Review*, 6(3), 37-64.
- Nesteruk, O. (2010). Heritage language maintenance and loss among the children of Eastern European immigrants in the USA. *Journal of multilingual and multicultural development*, 31(3), 271-286.
- O'Meara, K., Kuvaeva, A., Nyunt, G., Waugaman, C., & Jackson, R. (2017). Asked more often: Gender differences in faculty workload in research universities and the work interactions that shape them. *American Educational Research Journal*, 54(6), 1154-1186.
- Omiteru, E., Martinez, J., Tsemunhu, R., & Asola, E. F. (2018). Higher education experiences of international faculty in the US deep south. *Journal of Multicultural Affairs*, 3(2), 3.
- Skachkova, P. (2007). Academic careers of immigrant women professors in the US. *Higher Education*, 53(6), 697-738.
- Vaishnav, S., Basma, D., Chen, S. Y., & Farrell, I. C. (2023). An autoethnographic inquiry of the experiences of foreign-born women of color in higher education. *International Journal of Qualitative Studies in Education*, Advance Online Publication.
- Véliz, D., Guzmán-Valenzuela, C., & Pickenpack, A. (2020). Becoming a successful international faculty member in a striving university. *Current Issues in Education*, 21(3), 1-21.
- Wang, C. (2021). The irony of an 'international faculty': Reflections on the diversity and inclusion discourse in predominantly White institutions in the United States. *Learning and Teaching*, 14(2), 32-54.
- Yakoboski, T. (2016). Reframing the Two-Body Problem in US STEM Departments: Asian Women Faculty Negotiation of Career and Family. *Journal of the Professoriate*, 8(2), 63-93.
- Zhang, D., & Slaughter-Defoe, D. T. (2009). Language attitudes and heritage language maintenance among Chinese immigrant families in the USA. *Language, Culture and Curriculum*, 22(2), 77-93.

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***Droughts and Gender Heterogeneity in High School Dropouts in Marginal and Small Agricultural Households in India: Discrete Time Survival Analysis***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

**Purpose** – We examine whether droughts are differently associated with high school dropout of girls and boys from marginal and small agricultural households compared to other households. While non-agricultural households may adopt a utility maximisation framework regarding educational investments, marginal or small agricultural households have to make an additional profit maximisation decision regarding production and choice of inputs in their farm including differential deployment of female or male family labour in and outside their farms.

**Methodology** – With discrete-time survival analysis, we examine the association of droughts with the hazards of high school dropout by combining publicly available data from two rounds of the India Human Development Survey (2004-05 and 2011-12) with ICRISAT district-level rainfall data for India.

**Findings** – We find that the hazard of dropout of girls from high school significantly reduces in drought years in marginal and small agricultural households while boys in marginal agricultural households face a significantly higher hazard of high school dropout. We observe that the hazard of dropout of girls in marginal agricultural households increases significantly if there was a drought in the previous academic year.

**Practical implications** –Effective policy interventions are needed to provide high school education to all in the face of climate change and increasing drought frequency across India.

**Originality** – We uniquely contribute by combining data from different publicly available datasets and deploying discrete-time survival analysis to bring out the heterogenous relationship between drought and high school dropout of boys and girls in marginal and small agricultural households.

**Keywords:** Gender Heterogeneity, High School Dropout, Droughts, Discrete-Time Survival Analysis, Marginal and Small Agricultural Household

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## **Droughts and Gender Heterogeneity in High School Dropouts in Marginal and Small Agricultural Households in India: Discrete Time Survival Analysis**

### **Section-I: Introduction**

Literature exploring the relationship of covariate shocks<sup>1</sup> with the educational outcome of children in the household has found that while households show a procyclical behaviour regarding covariate shocks in low-income countries by reducing investment in education and schooling, in the middle-income countries the evidence becomes more ambiguous and in high income developed countries households response to covariate shock become more countercyclical (Ferreira, Santos, Fonseca, & Haase, 2007), (Zimmermann, 2020). Unlike other covariate shocks, rainfall shocks can result in agricultural shocks, and the impacts of rainfall shocks on income, consumption, leisure, and educational investment of agricultural households can therefore be different from non-agricultural households.

We examine whether negative rainfall shocks or drought<sup>2</sup> are associated with high school dropout of girls and boys from marginal and small agricultural households<sup>3</sup> differently than other households. While non-agricultural households may adopt a utility maximisation or cost-benefit framework (Dreze & Kingdon, 2001), (Kearney & Levine, 2016), regarding educational investments of children; marginal or small agricultural households must make an additional profit maximization decision regarding production and choice of inputs in their farm including differential deployment of female or male family labour in and outside their farms.

Education costs involve direct expenditures on school fees, books, and stationery. It also includes the opportunity cost of the time spent by the household members. Perceived benefits of education, subject to the information available to the household (Fiszbein, et al., 2009), may include higher returns through employment and a few other intangible benefits. As per Agricultural Household Model (AHM) (Singh, Squire, Strauss, & [Editors], 1986), production decisions of agricultural households determine farm profits, which are a component of household income and thus influences consumption and labour supply decisions. Further, as production and consumption decisions of small-scale agricultural households are interconnected, and most of these households produce partly for sale and partly for their consumption, they also purchase some of their inputs, like fertiliser and partly provide some, such as family labour, from their resources. Further, In the case of an imperfect labour market, an agricultural household may adopt greater self-sufficiency by

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<sup>1</sup> Income shocks due to natural disasters, changes in food prices, economic crises etc are called covariate income shocks as they affect all households in a region and Shocks like illness, injury or death of family members, job or business loss, theft or destruction of property are called idiosyncratic income shocks as these shocks affect individual households. (Sowmya, Paul, & Gade, 2019).

<sup>2</sup> In India, around 68% of the country is prone to drought in varying degrees and 35% which receives rainfall between 750 mm and 1125 mm is considered drought prone while 33% receiving less than 750 mm is chronically drought prone. Therefore, we have considered Meteorological drought (If annual rain fall is less than 75 % of long-term average for the district) in a district as per definition of Government of India Ministry of Jal Shakti as an event of negative rainfall shock . ( Source A BRIEF ON DROUGHT, <http://jalshakti-dowr.gov.in/brief-drought> accessed on 17.08.2021)

<sup>3</sup> We categorise Farmers with below 1.00 Hectare landholding as Marginal Farmer and farmers 1.0-2.0 Hectare landholding as Small farmers as per Government of India Ministry of Agriculture & Farmers Welfare “Categorisation of Farmers” published by Press Information Bureau on 5<sup>th</sup> February 2019, <https://pib.gov.in/newsite/PrintRelease.aspx?relid=188051> accessed on 21.11.2021

deploying family labour as an optimal strategy ([LaFave & Thomas, 2016], [Taylor & Adelman, 2003]). Due to resource constraint, we assume that a greater deployment of family labour in own farms for marginal and small agricultural households compared to relatively larger farmers with more than 2 hectares of landholding. Moreover, there can be gender disparity in the choice of deploying family labour on the own farm or participation in wage labour outside of own farm and investment of leisure time in education in the agricultural household for the students. At times of rainfall shocks, choices of agricultural households concerning the education/ dropout of high school going adolescents in the household would depend on the above concerns.

Association of women in agriculture is an age-old practice and majority of Indian rural women belong to small and marginal farmers and landless agricultural labourer's families. In general weeding and harvesting are predominantly female activities and women are overrepresented in unpaid, seasonal, and part-time work. Also, women are often paid less than men, for the same work. In view of the above it is more likely that adolescent girls going to high school would be deployed on their farms by marginal and small farming households. Experiencing reduced income and food insecurity during drought periods, marginal and small farming households may deploy adolescent high school boys to work for wages—adhering to prevailing gender roles and considering higher wage male labour. In a study on Madagascar, (Marchetta, Sahn, & Tiberti, 2019) the author also observed lagged effects of shock, indicating some persistence of the impact in the year following the shock itself.

Unlike other covariate shocks, we propose that drought or lesser rainfall shocks are more like agricultural shocks and have greater and varied impacts on the high school education of girls and boys in the marginal and small farming households among the households in a pan-India context. We hypothesise that expecting a lesser farm income and food insecurity due to drought in current year, marginal and small farming households would be compelled to take decisions to increase family income by available means. In such situations, adhering to prevailing gender roles and considering generally higher wage rates for male labour, marginal and small farming households may deploy adolescent high school boys to work for wages. This behaviour may result in higher high school dropout possibilities for boys. A drought in the academic year would reduce the requirement of farm labour and depress market wage for farm labour and may reduce the requirement of deploying labour by household girls resulting in a lesser propensity of high school dropout for girls than boys. Further, in the year following a drought year, such households may face capital constraints due to lesser farm income in the previous year and be compelled to provide for greater labour inputs in their farm to substitute capital by deploying high school going girls and thus a drought's lagged effect can reduce girls' propensity to continue high school education in small and marginal farming households. Moreover, if a drought year is followed by a normal rainfall year, facing higher labour requirements and /or higher market wages of farm labour, marginal and small farming households may increase the deployment of labour of household girls on the farm. Further, (Fulford, 2014) observed that only 14% of women and 41% of men work for wages in India. Therefore, facing a resource crunch after a drought year, the marginal and small agricultural household might see lesser benefits in educating a girl as a girl would be less likely to participate in wage work outside the farm/household and would also leave her parent's household after marriage. Thus, in the year following a drought year, the marginal and small farming households may remain invested in the high school education of boys as a diversification strategy & future insurance.

There are several international studies examining relationships between rainfall variability and educational outcome of students (some recent examples: [Colmer, 2020] for Ethiopia, [Marchetta, Sahn, & Tiberti, 2019] for Madagascar). However, such studies in the Indian context and particularly for high school level education are rare with notable exception of (Zimmermann, 2020). Zimmermann (2020) using India NSSO data found that a negative rainfall shock was associated with increased school enrollment in 2007 for 11-18 years old children, whereas the estimates were of the opposite sign in 1986 and enrollment was increasingly falling after positive rainfall shocks. Zimmermann also found that the effect was stronger for girls than for boys, more pronounced for older children. However, Zimmermann did not examine whether the outcomes are different in marginal and small agricultural households.

To test our propositions, we examine the association of droughts with the hazards of high school dropout in an academic year by combining publicly available data from two rounds of the India Human Development Survey (2004-05 and 2011-12), (Desai, Vanneman, & and National Council of Applied Economic Research, India Human Development Survey (IHDS), 2005), (Desai, Vanneman, & and National Council of Applied Economic Research, India Human Development Survey-II (IHDS-II), 2011-12) with ICRISAT district-level rainfall data<sup>4</sup> for India With discrete-time survival analysis with the Gompertz link function. We check the robustness of our result with several alternative model specifications and controls.

The plan of the paper is as follows, section II discusses the analytical framework; Section III describes the data and computes some exploratory statistics. Section IV presents the results. Finally, Section V concludes the paper.

## Section-II: Analytical Framework and Empirical Strategy

### 2.1 Analytical Framework

A non-agricultural household may adopt a utility maximisation or cost-benefit framework (Kearney and Levine, 2016, Dreze and Kingdon, 2001) regarding educational investments where a student is dropped out when the following condition is met:

$$u_0^d + E(V^d) > u_0^e + E(V^e) \quad (1)$$

It is assumed that a dropout decision is taken when the sum of the present period utility of dropout  $u_0^d$  and the expected discounted sum of future period utilities after dropout  $E(V^d)$  is greater than the sum of present period utility of continuing education  $u_0^e$  and expected discounted sum of future period utilities after completion of education  $E(V^e)$ . It is also assumed that  $E(V^e) > E(V^d)$ .

As per the basic Agricultural Household Model (AHM) developed by Singh, Squire, and Strauss(1986), agricultural households must make an additional profit maximisation decision regarding production and choice of inputs in their farm like fertiliser, farm labour, deployment of family labour in own farm, etc., including differential deployment of female or male family labour in and outside their farms.

<sup>4</sup> <http://data.icrisat.org/dld/src/biophysical.html>



Following Singh, Squire, and Strauss (1986) and considering our context, the AHM can be mathematically represented as follows:

$$\text{Max } (U = U(X_a, X_m, X_l)) \quad (2)$$

For any production cycle, the household is assumed to maximize the above utility function where commodities are; agricultural staple ( $X_a$ ), market purchased good ( $X_m$ ), and leisure ( $X_l$ )

Subject to:

$$\text{Cash Income constraint; } p_m X_m = p_a (Q - X_a) - w_f (L - F_f) + w_{of} F_{of}$$

Where  $p_m$  and  $p_a$  are the prices of the market-purchased good and the staple, respectively,  $Q$  is the household's production of the staple,  $w_f$  is the market wage for farm labour and  $w_{of}$  is the market wage for off-farm labour,  $L$  is total labour input, and  $F_f$  is family labour input in own farm and  $F_{of}$  is off-farm family labour deployment.

And, in the RHS of the income constraint the term,  $p_a (Q - X_a) - w_f (L - F_f)$  can be denoted as  $\pi$  or farm profits.

$$\text{Household time constraint; } T = X_l + F_f + F_{of}$$

Where  $T$  is the total stock of household time

$$\text{Household agricultural production } Q = Q(A, K(Z_{t-1}), L(Z_t, Z_{t-1}), Z_t)$$

Where  $A$  is the household fixed quantity of landholding,  $K$  is aggregated capital deployment for inputs like fertilizer, pesticide, herbicides, farm implements etc.; Drought or negative rainfall shock in the last year  $Z_{t-1}$ , Drought, or negative rainfall shock in the production year  $Z_t$ .

It can be assumed that any directional change in leisure due to negative rainfall shocks is likely to similarly impact time devoted to education and a positive effect on leisure time would result in lesser dropout propensity while a negative effect would result in greater high school dropout propensity.

To cope with a negative weather shock from lower rainfall in the current year, the marginal and small agricultural households would attempt to maximize farm profits and utility. In such situations, adhering to prevailing gender roles and considering generally lesser wage rates for female labour, marginal and small farming households may deploy adolescent high school-going boys to work for wages to increase family income. This behaviour may result in lesser leisure time for boys including time devoted to education and result in greater high school dropout propensity for boys. On the other hand, a drought in the academic year would reduce the requirement of farm labour and depress market wage for farm labour and may reduce the requirement of deploying labour by household girls resulting in greater leisure time and a lesser propensity of high school dropout for girls.

i.e., as per our proposition, it is expected that for boys in the marginal and small agricultural households  $(\delta X_l / \delta Z_t)_b < 0$  and for girls in marginal and small agricultural households the  $(\delta X_l / \delta Z_t)_g > (\delta X_l / \delta Z_t)_b$  of boys in such households.

After a drought year, marginal and small agricultural households may be compelled to provide greater labour inputs in their farm and may increase the deployment of adolescent girls in their farms.

For girls in marginal and small agricultural households, we posit that  $(\delta X_i / \delta Z_{t-1})_g < 0$

## 2.2 Empirical Strategy:

Though many of the studies examining dropout use variants of probit or logit analysis – due to the presence of left and right censored data and incomplete information – survival analysis methods are increasingly being used to study dropout of education. (Momo, Cabus, Witte, & Groot, 2019) in a literature review of school dropout studies observe that the longitudinal studies used logistic regression and survival analysis methods such as the discrete-time logit model and the Cox regression model. Table 1 we present some of the recent studies in school dropout where survival analysis methods have been used.

Table 1: Some recent Survival Analysis studies in various countries on school dropout

Study	Country, Sample	Method
(Goel & Zakir, 2018)	India, Cross section Data NSSO, 2011-12, 456,976 Individuals, from 101,718 households with ~233 thousand males and ~223 thousand females in Rural & urban areas	Survival analysis with Discrete-time hazard Model: complementary log-log model. Cohort Analysis was deployed to identify temporal trends in gender differences in the educational survival rate
(Liu & Hannum, 2017)	China, Sample size ~ 60 Longitudinal China Health and Nutrition Survey (CHNS)	Cox proportional hazard model of dropping out of school in young adulthood
(Zhang, 2017)	China, publicly available large-scale survey data (RUMIC)	Proportional hazards regressions (or survival analysis) with three different stratifications are conducted to find out the school outcome of migrant children, as compared with their urban and rural cohorts. The dependent variable for the proportional hazard regression is the hazard ratio of schooling duration.
(Valdivieso, 2015)	Peru, Panel data on Peruvian children from Young Lives program. 2,052 children who were born in 2001 and 2002 and 714 children who were born in 1994 and 1995, with 3 interventions, in September 2002, March 2007 and August 2009.	Kaplan-Meier survival curves, Cox Proportional Hazards (PH) model, Adjusted survival curve using Cox PH model and Testing of PH assumption
(Thomas, Singh, & Klopfenstein, November 2015)	USA, Longitudinal Data from Texas USA tracking ~175,000 students for 5 years	Cox proportional hazards model with time-varying effect and shared frailty
(Gelli, et al., 2014)	Mali, Sample size ~ 7500 primary education	Cox regression model with time-invariant covariates
(Tamusuza, December 2011)	Uganda, National Longitudinal surveys 2000 to, 2002/3, 2005/6, 2009/10, ~11,600 school-age children and ~4200 households	A discrete-time Cox regression model to identify factors related to children's survival through to the final grade

(Marshall, 2011)	Guatemala, up to four years of information for ~ 850 children who were in first grade in 1999.	Uses grade level transitions framework for analysing stratification. The multinomial dependent variable is year-specific and includes passing, failing, and dropping out as opposed to dichotomous indicators for completing each level of schooling.
(Ferreira, Santos, Fonseca, & Haase, 2007)	Portugal, 10-year longitudinal study of 445 participants from age 7 to 17	Hierarchical Proportional hazards regression analysis is used to model the probability of the event of dropping out of school.

Survival analysis is a collection of statistical procedures for data analysis for which the outcome variable of interest is time until an event occurs (Kleinbaum & Klein, 2008). Survival analysis focuses primarily on two central pieces of information, whether a participant suffers the event of interest like death, failure etc. during the study period and the follow-up time for everyone being followed.

Let the random variable  $T$  be the survival time in years in high school education and  $t$  be the observed value of  $T$ . Following (Kleinbaum & Klein, 2008), the survivor function  $S(t)$  is the probability that a student does not drop out of high school education less than some specified time  $t$ . If we denote  $F(t)$  as the cumulative probability of dropping out of a student till year  $t$  and the underlying probability density function of  $T$  is  $f(t)$  then:

$$F(t) = P(T \leq t) = \int_0^t f(u) du \quad (3)$$

And then the Survivor function:

$$S(t) = P(T > t) = 1 - F(t) \quad (4)$$

In survival analysis, instantaneous failure rate or risk/hazard of an event like dropout at some time  $t$  conditional on whether the student has not dropped out of high school until that time is defined as hazard.

The hazard function  $h(t)$  can be defined as:

$$h(t) = \lim_{\delta t \rightarrow 0} \left\{ \frac{P(t < T \leq t + \delta t | T > t)}{\delta t} \right\} \quad (5)$$

Sir David Cox in 1972 developed a continuous proportional hazard model to estimate the hazard function (Cox, 1972). Discrete survival time data may arise because either the time scale is intrinsically discrete, or survival occurs in continuous time, but spell lengths are observed only in intervals (Jenkins, 2005). In the case of high school dropouts, the spell lengths are observed only in intervals, and discrete-time survival analysis methods can be deployed to analyse the probability or hazard of a student dropout each year.

One way to estimate discrete time survival analysis is by estimating a logistic regression model. The equation for the logistic regression model is as follows:

$$\ln [p/(1-p)] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k \quad (6)$$

Where  $p$  is the probability of the event occurring,  $X_1, X_2, \dots, X_k$  are the predictor variables,  $\beta_0, \beta_1, \beta_2, \dots, \beta_k$  are the regression coefficients, and  $\ln$  is the natural logarithm.

The logistic regression model can be used to estimate the odds ratio (OR) of the event occurring for each predictor variable. The OR represents the increase or decrease in the odds of the event occurring associated with a one-unit increase in the predictor variable, holding all other variables constant.

However, another way to model this probability is to use the Gompertz distribution as the link function.

$$\ln[-\ln(1-p)] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k \quad (7)$$

Where  $p$  is the probability or hazard of dropout,  $X_1, X_2, \dots, X_k$  are the predictor variables,  $\beta_0, \beta_1, \beta_2, \dots, \beta_k$  are the regression coefficients, and  $\ln$  is the natural logarithm.

Fang & van de Schoot (2019) suggests that though both Logistic and Gompertz link functions are suitable for most cases and usually lead to similar parameter estimates where underlying hazards are small; the two links result in different interpretations of the estimated parameters. Fang & van de Schoot (2019) further explains that in a logistic model, the exponential term of a parameter estimate quantifies the difference in the value of the odds per unit difference in the predictor, while in the Gompertz model, it is the value of the hazard (i.e., which is a probability). Therefore, the Gompertz link results in a more intuitive model interpretation.

With discrete-time survival analysis with the Gompertz link function, we examine the association of droughts with the hazards of high school dropout in an academic year by combining publicly available data from two rounds of the India Human Development Survey (2004-05 and 2011-12) with ICRISAT district-level rainfall data for India. The two rounds of the India Human Development Survey (IHDS), IHDS-I conducted in 2004-05 consist of 41,554 households and 215,754 individuals and IHDS-II, conducted in 2011-12 resurveyed 83% of original households and 150,988 individuals.

We construct an analytical sample from these individuals who were a student in IHDS-I but did not enter high school and who were surveyed in IHD-II and completed at least 8 years of education. In our case the “Event” of interest is Dropout from High school, and the “Time” is in years from passing out of 8<sup>th</sup> grade or from the start of the study period till the student drops out or passes out of high school or the study period ends. In this case, an observation is right censored if a student passes out of high school i.e., complete 12 years of education or the student is still studying in high school while the study period has ended. On the other hand, an observation is left censored if at the time of the start of the study period the student had already enrolled in high school i.e., had completed education for more than 8 (eight) years and less than 12 years. We avoid left censored data by limiting the completed education of students in round 1 to less than 9 years, i.e., we followed all students in our study from entry into high school i.e., from 8 years of completed education. Though, we have incomplete observations for the right-censored data where the students do not complete high school education during the study period.

We convert the above sample in a person-year format drawing out one record for each year of high school attendance of an individual and combining the person-year data with ICRISAT district-level rainfall data. Our person-year data contains the information that whether a

student has dropped out in a particular year and the information on whether there was a drought in that year or in the previous year along with household-specific and individual-specific information. An individual is considered a high-school dropout in a person-year if she/he was not a student as per IHDS-II and whose completed years of education as per IHDS-II is one grade below that grade. We define negative rainfall shocks or drought if the rainfall deficiency in a corresponding academic year is more than 25% of long-term average of the district by broadly following the Meteorological drought definition.

We consider households with less than 1 hectare of agricultural land as marginal agricultural households and households having 1 to 2 hectares of agricultural land as small agricultural households as per the definition of the Government of India and the categorisation is placed in Table 2.

Table 2: Categorisation of farmers

Sl. No.	Category	Size-Class
1.	Marginal	Below 1.00 hectare
2.	Small	1.00-2.00 hectare
3.	Semi- Medium	2.00-4.00 hectare
4.	Medium	4.00-10.00 hectare
5.	Large	10.00 hectare and above

Source: Press Information Bureau, Government of India, Ministry of Agriculture & Farmers Welfare

Our sample with both urban and rural residences is having 36,388 person-year observations for 13,704 students and our rural subsample consists of 24,215 person-year observations for 9,383 students.

From the person year dataset, we estimate discrete-time hazard models with the Gompertz link function, and our variables of interest are whether the student belongs to a small or marginal agricultural household, the gender of the student and whether the household faced drought in the academic year or its previous year and interactions of the above terms.

For robustness, we estimate two analytical samples with rural and both rural and urban residents and we control for year of high school, some student characteristics as per IHDS-I such as student age and its square, log of the log of total investment in the education of the child (sum of school fees, books, and uniform and private tuition). We also control for some household characteristics like highest adult education in years as per IHDS-I, the log of per capita consumption as per IHDS-I, whether the household is an agricultural labour household as per IHDS-I and its interaction with gender, whether a household belongs to any of the disadvantaged groups (Scheduled Caste [SC], Scheduled Tribe [ST], Other Backward Classes [OBC], and Muslim), dependency ratio of the household in IHDS-I and Change in dependency ratio in IHDS-II and interaction of the previous dependency ratios with gender, whether the household has experienced single or multiple financial shocks or losses between IHDS-I and IHDS-II and also the interaction of the shock variable with gender. We also

control for all drought-prone districts with rainfall less than 1125 mm per annum<sup>5</sup> and its interaction with gender. In Gompertz models, the exponential term of parameter estimates quantifies the hazard's value (i.e., probability) and results in an intuitive model interpretation. Further, in robustness check, we estimate the above models with additional variables of excess rainfall in the academic year or in the previous year. Where we consider a year with excess rainfall if yearly rainfall is more than 25% of its long-term average.

### Section-III: Data and Descriptive Statistics

Our sample with both urban and rural residences is having 36,388 person-year observations for 13,704 students and our rural subsample consists of 24,215 person-year observations for 9,383 students. Table 3 reports the overall number and proportions of discrete variables in our sample across gender and dropout status.

Table 3: Descriptive Table for Discrete Variables across Gender and Dropout Status

	Overall	Overall		Boys		Girls	
		No Dropout	Dropout	No Dropout	Dropout	No Dropout	Dropout
Observations (n)	13704	11327	2377	5954	1372	5373	1005
Variables	Number (%)						
Agricultural Labour Household=1	1569 (11.4)	1135 (10.0)	434 (18.3)	646 (10.8)	219 (16.0)	489 (9.1)	215 (21.4)
Marginal agricultural Household=1	1907 (13.9)	1503 (13.3)	404 (17.0)	840 (14.1)	252 (18.4)	663 (12.3)	153 (15.2)
Small Agricultural Household=1	910 (6.6)	732 (6.5)	178 (7.5)	388 (6.5)	118 (8.6)	344 (6.4)	60 (6.0)
Drought prone districts	7870 (57.4)	6358 (56.1)	1512 (63.6)	3343 (56.1)	860 (62.7)	3015 (56.1)	652 (64.9)
Large expenditure Shock /loss between IHDS-I and II : MULLOSSCC							
Household experienced No shock=0	4619 (33.7)	4045 (35.7)	575 (24.2)	2145 (36.0)	366 (26.7)	1900 (35.4)	209 (20.7)
Household experienced one Shock =1	4425 (32.3)	3603 (31.8)	822 (34.6)	1923 (32.3)	447 (32.6)	1680 (31.3)	375 (37.3)
Household experienced more than one Shock =2	4660 (34.0)	3679 (32.5)	981 (41.3)	1887 (31.7)	559 (40.8)	1793 (33.4)	422 (41.9)
Other Backward Caste Household =1	4862 (35.5)	4024 (35.5)	838 (35.3)	2151 (36.1)	492 (35.9)	1873 (34.9)	346 (34.4)
Scheduled Caste Household =1	3189 (23.3)	2527 (22.3)	662 (27.9)	1286 (21.6)	363 (26.5)	1240 (23.1)	299 (29.8)
Scheduled Tribe Household =1	727 (5.3)	532 (4.7)	195 (8.2)	314 (5.3)	110 (8.0)	218 (4.1)	85 (8.5)
Muslim Household =1	1556 (11.4)	1225 (10.8)	331 (13.9)	598 (10.0)	187 (13.6)	627 (11.7)	144 (14.3)

<sup>5</sup> Source A BRIEF ON DROUGHT, <http://jalshakti-dowr.gov.in/brief-drought> accessed on 17.08.2021.

Rural Household =	10293	8415	1877	4458	1057	3957	820
1	(75.1)	(74.3)	(79.0)	(74.9)	(77.1)	(73.6)	(81.6)

Note: Author's computation from IHDS I and IHDS II data using IHDS-I individual weights. Weighted observations across categorical variables rounded to the nearest integer. Percentage of observations depicted inside Parenthesis

Means and standard deviations of continuous variables are presented in Table 4 across gender and dropout categories.

Table 4: Mean and Standard deviation of Continuous variables across Gender and Dropout

	Overall		Boys		Girls		
	No Dropout	Dropout	No Dropout	Dropout	No Dropout	Dropout	
Observations	13704	11327	2377	5954	1372	5373	1005
Variables	Mean(sd)						
Age of student in years IHDS-I	10.70 (2.58)	10.43 (2.55)	12.00 (2.31)	10.55 (2.54)	12.44 (2.30)	10.29 (2.56)	11.40 (2.19)
Square of age of student IHDS-I	121.16 (56.01)	115.25 (54.31)	149.31 (55.47)	117.72 (54.50)	159.97 (56.77)	112.51 (53.97)	134.76 (50.12)
Highest adult education (completed years) in household-IHDS-I	7.95 (4.58)	8.40 (4.54)	5.82 (4.15)	8.13 (4.60)	5.78 (4.14)	8.70 (4.45)	5.87 (4.17)
Log of percapita consumption expenditure in household -IHDS-I	6.36 (0.61)	6.40 (0.60)	6.15 (0.58)	6.40 (0.61)	6.20 (0.58)	6.40 (0.60)	6.09 (0.58)
Log of total annual education expense IHDS-I	6.47 (1.42)	6.55 (1.42)	6.07 (1.33)	6.62 (1.41)	6.23 (1.28)	6.47 (1.42)	5.84 (1.36)
Increment in dependency ratio in IHDS-II over IHDS-I in the Household	-0.08 (0.16)	-0.07 (0.16)	-0.13 (0.17)	-0.08 (0.16)	-0.14 (0.18)	-0.06 (0.16)	-0.10 (0.16)
Dependency ratio in the Household in IHDS-I	0.55 (0.13)	0.55 (0.12)	0.58 (0.12)	0.54 (0.12)	0.56 (0.12)	0.56 (0.13)	0.60 (0.12)

Note: Author's computation from IHDS I and IHDS II data using IHDS-I individual weights

#### Section-IV: Empirical Results

Through discrete-time survival analysis, we examine the association of rainfall shocks with the hazards of high school dropout in an academic year in two analytical samples drawn from the students from rural residences (model 1) and as well as students from both urban and rural residences (model 2) respectively. We report the results in Table 5 where the estimated coefficients for our selected variables of interest for the discrete-time hazard models with the Gompertz link function along with their standard errors for the variables of interest is presented. In Table 5, model 1 is estimated on both urban and rural residences with 36388 person-year observations for 13704 students while model 2 is estimated on students from the rural subsample with 24215 person-year observations for 9383 students.

Table 5: Results

<b>Prob(Y=1)Dependent Variable Y: Whether Individuals who were students in the IHDS-I survey round but did not enter high school, dropped out of education in the high school year 9,10,11 or 12 as per the IHDS-II survey? (1: "Yes", 0: "No")</b>				
<b>Variable Description</b>	<b>Model 1: Urban &amp; Rural</b>		<b>Model 2: Rural</b>	
	1a	1b	2a	2b
Girl in Marginal Agricultural Household and Drought in Current Academic year	-1.217** (0.490)	0.30**	-1.140** (0.507)	0.32**
Student in Marginal Agricultural Household and Drought in Current Academic year	0.623* (0.322)	1.86*	0.602* (0.328)	1.83*
Girl in Small Agricultural Household and Drought in Current Academic year	-1.114**(0.516)	0.33**	-0.928* (0.532)	0.40*
Student in Small Agricultural Household and Drought in Current Academic year	0.453 (0.342)	1.57	0.416 (0.350)	1.52
Girl in Marginal Agricultural Household and Drought in Previous Academic year	0.951**(0.444)	2.59**	0.849*(0.463)	2.34*
Student in Marginal Agricultural Household and Drought in Previous Academic year	-0.480* (0.292)	0.62*	-0.492 (0.305)	0.61
Girl in Small Agricultural Household and Drought in Previous Academic year	0.093 (0.519)	1.10	-0.076 (0.540)	0.93
Student in Small Agricultural Household and Drought in Previous Academic year	0.422 (0.352)	1.53	0.421 (0.363)	1.52
Girl and Drought in Current Academic year	0.284*(0.172)	1.33*	0.167 (0.210)	1.18
Girl and Drought in Previous Academic year	-0.113 (0.181)	0.89	-0.016 (0.217)	0.98
Drought in Current Academic year	-0.114 (0.097)	0.89	-0.084 (0.120)	0.92
Drought in Previous Academic year	-0.003 (0.097)	1.00	-0.010 (0.122)	0.99
GIRL in Agricultural Labour Household	0.679*** (0.182)	1.97***	0.627*** (0.202)	1.87***
Girl in Marginal Agricultural Household	0.085 (0.257)	1.09	0.052 (0.275)	1.05
Girl in Small Agricultural Household	0.182 (0.303)	1.20	0.076 (0.318)	1.08
Student in Agricultural Labour Household	-0.001 (0.107)	1.00	-0.006 (0.118)	0.99
Student in Marginal Agricultural Household	0.205 (0.167)	1.23	0.233 (0.176)	1.26
Student in Small Agricultural Household	-0.002 (0.192)	1.00	0.033 (0.196)	1.03
Girl in Drought prone districts	0.078(0.133)	1.08	0.231(0.158)	1.26
Student in Drought prone districts	0.189*** (0.085)	1.21***	0.147(0.102)	1.16



<b>Prob(Y=1)Dependent Variable Y: Whether Individuals who were students in the IHDS-I survey round but did not enter high school, dropped out of education in the high school year 9,10,11 or 12 as per the IHDS-II survey? (1: "Yes", 0: "No")</b>				
<b>Variable Description</b>	<b>Model 1: Urban &amp; Rural</b>		<b>Model 2: Rural</b>	
GIRL	-1.411*** (0.406)	0.24***	-1.582*** (0.491)	0.21***
Rural	-0.208*** (0.071)	0.81	---	
<b>AIC</b>	<b>14838.39</b>		<b>10179.22</b>	
<b>Deviance</b>	<b>15130.56</b>		<b>10634.83</b>	
<b>Dispersion</b>	<b>0.918</b>		<b>0.927</b>	
<b>Pseudo-R<sup>2</sup> (McFadden)</b>	<b>0.12</b>		<b>0.11</b>	
<b>Num. obs.</b>	<b>36388</b>		<b>24215</b>	
<b>Number of Students</b>	<b>13704</b>		<b>9383</b>	

Notes: a). Estimated coefficient values of selected variables of interest have been reported for discrete-time hazard models with Gompertz link function using IHDS-I survey weights for individuals, Standard errors are inside the parenthesis, b) column 1a and 2a depicts estimated coefficients with standard error in parenthesis and column 2a and 2b depicts exponentiated value of the coefficients as per column 1a and 2a respectively b) \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1

In Gompertz models, the exponential term of parameter estimates quantifies the hazard's value (i.e., probability) and results in a more intuitive model interpretation. For example, in Table 5, the exponentiated value of 1.86 of the significant coefficient estimate for students in marginal agricultural households who had experienced drought in the current academic year and exponentiated value of 0.3 for the significant coefficient estimate for girls in marginal agricultural households who had experienced drought in the current academic year in model 1, estimated on students from both urban and rural residence, denotes that holding other things constant, in such situations and households, while the hazard of dropout from high school for boys significantly increases 86% (1.86-1) in that academic year, girls face 70% (1-0.3=0.7) lesser hazard or probability of dropout compared to boys.

Interpreting in the same manner, as per Table 5, we observe that in model 2, estimated on the rural sample, boys from marginal agricultural households face an 83% greater hazard or probability of dropout in case of drought in the current academic year and girls in such situations and households face 68% (1-0.32) lesser hazard or probability of dropout compared to boys. Also, the hazard of dropout of girls during drought in the current academic year reduces significantly by 67% (1-0.33) and 60% (1-0.4) in small agricultural households in model 1 and model 2, respectively. However, the hazard of dropout of students (boys) from high school during drought in the current academic year in the small agricultural household does not become significant in both models.

Further, in Table 5, we observe that the dropout hazard of girls in marginal agricultural households increases by 159% and 134% if there was a drought in the previous academic year in model 1 and model 2, respectively. We also observe that if there was a drought in the previous academic year, hazard of dropout of boys reduces significantly by 38% in marginal agricultural household as per model 1 though in model 2 it is not significant.

In general, we observe no significant parameter estimates for drought in the current academic year or previous academic year for students. However, in the overall model (model1) we observe that at times of drought in current academic year girls face a 33% higher chance of dropout.

In addition, as per Table 5, we find that girls from agricultural labour households have an 97% and 87% greater hazard of dropout from high school compared to boys in such households in model 1 and model 2, respectively<sup>6</sup>. Further, we also observe a 21% higher dropout hazard for students from drought-prone districts in model 1, containing students from both urban and rural locations.

**Robustness check:** In Table 6 we present the results of robustness check estimates of the models in Table 5 where we estimate the same models with additional variables of excess rainfall in the academic year or in the previous year. We observe that our robustness results are also in the same line with our main results.

These results support our propositions that, unlike other covariate shocks, drought or lesser rainfall shocks are more like agricultural shocks and have greater and varied impacts on the high school education of girls and boys in the marginal and small farming households among the households in a pan-India context. Our findings are somewhat different from Zimmerman's (2020) in a way that we observe that gender choices in high school dropouts during and after a drought are different in small and marginal agricultural households compared to other households. Therefore, targeted policy support would be required to these households to reduce high school dropouts of students from these households.

Table 6: Results with robustness check

<b>Prob(Y=1)Dependent Variable Y: Whether Individuals who were students in the IHDS-I survey round but did not enter high school, dropped out of education in the high school year 9,10,11 or 12 as per the IHDS-II survey? (1: "Yes", 0: "No")</b>				
<b>Variable Description</b>	<b>Model 1: Urban &amp; Rural</b>		<b>Model 2: Rural</b>	
	1a	1b	2a	2b
Girl in Marginal Agricultural Household and Drought in Current Academic year	-1.215** (0.484)	0.30**	-1.136** (0.499)	0.33**
Student in Marginal Agricultural Household and Drought in Current Academic year	0.623** (0.310)	1.87**	0.600* (0.315)	1.82*
Girl in Small Agricultural Household and Drought in Current Academic year	-1.117** (0.515)	0.33**	-0.930* (0.530)	0.40*
Student in Small Agricultural Household and Drought in Current Academic year	0.452 (0.342)	1.57	0.417 (0.349)	1.52
Girl in Marginal Agricultural Household and Drought in Previous Academic year	0.947** (0.442)	2.58**	0.846* (0.458)	2.33*
Student in Marginal Agricultural Household and Drought in Previous Academic year	-0.480* (0.286)	0.62*	-0.490* (0.296)	0.61*

<sup>6</sup> As we did not find any significant coefficient estimates of drought in current and previous year for both boys and girls in households with agricultural labour as principal occupation, for the sake of parsimony, we do not estimate and report such interaction effects in our results.

Girl in Small Agricultural Household and Drought in Previous Academic year	0.104 (0.516)	1.11	-0.076 (0.535)	0.93
Student in Small Agricultural Household and Drought in Previous Academic year	0.421 (0.352)	1.52	0.420 (0.363)	1.52
Girl and Drought in Current Academic year	0.292* (0.165)	1.34*	0.163 (0.200)	1.18
Girl and Drought in Previous Academic year	-0.124 (0.181)	0.88	-0.031 (0.215)	0.97
Drought in Current Academic year	-0.105 (0.098)	0.90	-0.081 (0.119)	0.92
Drought in Previous Academic year	0.002 (0.102)	1.00	-0.002 (0.127)	1.00
GIRL in Agricultural Labour Household	0.677*** (0.182)	1.97***	0.627*** (0.202)	1.87***
Girl in Marginal Agricultural Household	0.086 (0.257)	1.09	0.054 (0.276)	1.06
Girl in Small Agricultural Household	0.176 (0.304)	1.19	0.077 (0.318)	1.08
Student in Agricultural Labour Household	-0.001 (0.107)	1.00	-0.006 (0.118)	0.99
Student in Marginal Agricultural Household	0.204 (0.167)	1.23	0.231 (0.176)	1.26
Student in Small Agricultural Household	0.000 (0.192)	1.00	0.034 (0.196)	1.04
Girl in Drought prone districts	0.078 (0.136)	1.08	0.238 (0.161)	1.27
Student in Drought prone districts	0.186** (0.083)	1.20**	0.144 (0.100)	1.16
Excess Rain in Current Academic year	0.045 (0.121)	1.05	0.016 (0.155)	1.02
Excess Rain in Previous Academic year	0.013 (0.145)	1.01	0.033 (0.184)	1.03
GIRL	-1.404*** (0.415)	0.25***	-1.564*** (0.502)	0.21***
Rural	-0.206*** (0.072)		---	
<b>AIC</b>	<b>14845.15</b>		<b>10179.22</b>	
<b>Deviance</b>	<b>15129.70</b>		<b>10634.57</b>	
<b>Dispersion</b>	<b>0.918</b>		<b>0.928</b>	
<b>Pseudo-R<sup>2</sup> (McFadden)</b>	<b>0.12</b>		<b>0.11</b>	
<b>Num. obs.</b>	<b>36388</b>		<b>24215</b>	
<b>Number of Students</b>	<b>13704</b>		<b>9383</b>	
Notes: a). Estimated coefficient values of selected variables of interest have been reported for discrete-time hazard models with Gompertz link function using IHDS-I survey weights for individuals, Standard errors are inside the parenthesis, b) column 1a and 2a depicts estimated coefficients with standard error in parenthesis and column 2a and 2b depicts exponentiated value of the coefficients as per column 1a and 2a respectively b) ***p < 0.01, **p < 0.05, *p < 0.1				

## Section-V: Conclusion and Policy Implications

We examine whether droughts are differently associated with high school dropout of girls and boys from marginal and small agricultural households compared to other households. With discrete-time survival analysis, we examine the association of droughts with the hazards of high school dropout by combining publicly available data from two rounds of the India

Human Development Survey (2004-05 and 2011-12) with ICRISAT district-level rainfall data for India.

We find that while boys in marginal agricultural households face a significantly higher hazard of high school dropout, the hazard of dropout of girls from high school significantly reduces in drought years in marginal and small agricultural households. We observe that the hazard of dropout of girls in marginal agricultural households increases significantly if there was a drought in the previous academic year. Additionally, we also observe that girls in agricultural labourer households are more prone to dropping out of high school. Thus, our study shows heterogenous procyclical and countercyclical behavior of marginal and small agricultural households regarding educational investment in the children according to gender at times of drought.

Our study has limitations that the student's participation in certain high school grade will be approximated based upon completed years in IHDS-I and the month/year of survey and we have assumed no grade repeat in between the two survey rounds, incorrect reporting etc.

However, we uniquely contribute by combining data from different publicly available datasets and deploying discrete-time survival analysis to bring out the heterogenous relationship between drought and high school dropout of boys and girls in marginal and small agricultural households.

Effective policy interventions are needed to provide high school education to all in the face of climate change and drought. Particularly, policy makers should consider implementing policies aimed at reducing the vulnerability of agricultural households to climate variability and change. Fiszbein, et al., (2009) suggested that conditional cash transfers (CCT) can drive the actual household choice of a child's education towards optimal level.

As gender heterogeneity in the dropout choice of households are also plausibly emanating from underlying stereotyped gender roles in the society, we suggest that policies incentivizing greater participation of women in the labour force might also alleviate the existing condition.

Substantial improvement in enrolment and dropout rate in elementary education had only occurred when education up to the elementary level was taken up as an obligation of the government. A more demanding Right to Education in India that includes school education may be an essential step towards reducing high school dropouts and achieving the Sustainable Development Goals of the United Nations.

### **Acknowledgement**

We thank the IHDS and ICRISAT team for making their dataset publicly available. Authors bear full responsibility for any remaining errors.

## References

- Colmer, J. (2020). Rainfall Variability, Child Labor, and Human Capital Accumulation in Rural Ethiopia. *American Journal of Agricultural Economics*, 103(3), 858-877. Retrieved from <https://doi.org/10.1111/ajae.12128>
- Cox, D. R. (1972). Regression models and life -tables (with discussion). *Journal of the Royal Statistical Society, series,B* 187-220.
- Desai, S., Vanneman, R., & and National Council of Applied Economic Research, N. D. (2005). India Human Development Survey (IHDS). ICPSR22626-v8. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2010-06-29. . doi:<http://doi.org/10.3886/ICPSR22626.v8>
- Desai, S., Vanneman, R., & and National Council of Applied Economic Research, N. D. (2011-12). India Human Development Survey-II (IHDS-II). ICPSR36151-v2. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2015-07-31. doi:<http://doi.org/10.3886/ICPSR36151.v2>
- Dreze, J., & Kingdon, G. G. (2001). School Participation in Rural India. *Review of Development Economics*, vol. 5,issue 1,1-24.
- Fang, Q., & van de Schoot, R. (2019, October 14). Intro to Discrete-Time Survival Analysis in R. Retrieved from [www.rensvandeschoot.com](http://www.rensvandeschoot.com): <https://www.rensvandeschoot.com/tutorials/discrete-time-survival/>
- Ferreira, J. A., Santos, E. J., Fonseca, A. C., & Haase, R. F. (2007). International Journal of Educational Development A 10-year follow-up study. *Journal of Vocational Behavior*, 70, 61-77.
- Fiszbein, A., Schady, N., Ferreira, F. H., Grosh, M., Keleher, N., Olinto, P., & Skoufias, E. (2009). Conditional cash transfers: A World Bank Policy Report. Washington, D.C.: World Bank. Retrieved from <https://doi.org/10.1596/978-0-8213-7352-1>
- Fulford, S. (2014). Returns to Education in India. *World Development*, 59, 434-450. doi:10.1016/j.worlddev.2014.02.005
- Gelli, A., Masset, E., Diallo, A. S., Assima, A., Hombrados, J., Watkins, K., & Drake, L. (2014). Agriculture, nutrition and education: On the status and determinants of primary schooling in rural Mali before the crises of 2012. *International Journal of Educational Development*, 39, 215-225.
- Goel, S., & Zakir, H. (2018, December). Gender, caste, and education in India: A cohort-wise study of drop-out from schools. *Research in Social Stratification and Mobility*, 58, 54-68.
- Jenkins, S. (2005). Survival Analysis. Unpublished Manuscript. Mimeo: University of Essex. Retrieved from <https://www.iser.sx.ac.uk/files/teaching/stephenj/ec968/pdfs/ec968lnotesv6.pdf>

- Kearney, M. S., & Levine, P. B. (2016). Income Inequality, Social Mobility, and the Decision to Drop Out of High School. *Brookings Papers on Economic Activity*, 1, pp. 333-396.
- Kleinbaum, D. G., & Klein, M. (2008). *Survival Analysis: A Self-Learning Text* Second Edition. New Delhi: Springer (India) private Limited.
- LaFave, D., & Thomas, D. (2016). Farms, Families, and Markets: New Evidence on Completeness of Markets in Agricultural Settings. *Econometrica*, 84(5), 1917-1960.
- Liu, X., & Hannum, E. (2017). Early poverty exposure predicts young adult educational outcomes in China. *China Economic Review*, 44, 79-77.
- Marchetta, F., Sahn, D., & Tiberti, L. (2019). The Role of Weather on Schooling and Work of Young Adults in Madagascar. *American Journal of Agricultural Economics*, 101(4), 1203-1227. Retrieved from <https://doi.org/10.1093/ajae/aaz015>
- Marshall, J. H. (2011). School quality signals and attendance in rural Guatemala. *Economics of Education Review*, 30, 1445-1455.
- Momo, M. S., Cabus, S. J., Witte, K. D., & Groot, W. (2019). A systematic review of literature on the causes of early school leaving in Africa and Asia. *Review of Education*, 7(3), 496-522. doi:<https://doi.org/10.1002/rev3.3134>
- Singh, I., Squire, L., Strauss, J., & (Editors). (1986). *Agricultural Household Models: Extensions, Applications, and Policy*. Baltimore and London: Published for the World Bank, The Johns Hopkins University Press.
- Sowmya, D., Paul, C. M., & Gade, S. (2019). Household income dynamics and investment in children: Evidence from India. *Education Economics*, 27(5), 507-520. doi:[10.1080/09645292.2019.1599325](https://doi.org/10.1080/09645292.2019.1599325)
- Tamusuza, A. (December 2011). Leaving School Early: The Quest for Universal Primary Education in Uganda. *Journal of Statistique Africain*, 13, 110-151. Retrieved from <https://www.afdb.org/fr/documents/document/african-statistical-journal-vol-13-25569>
- Taylor, J. E., & Adelman, I. (2003). *Agricultural Household Models: Genesis, Evolution, and Extensions*. *Review of Economics of the Household*, 1, 33-58.
- Thomas, M. K., Singh, P., & Klopfenstein, K. (November 2015). Arts education and the high school dropout problem. *Journal of Cultural Economics*, 39(4), 327-339.
- Valdivieso, P. (2015, September). *Survival Analysis: Exploring the dropout motives in a panel of Peruvian children, using the Young Lives program dataset*. Student paper, MSc Dissertation, University of Edinburgh. Young Lives International Study of Childhood Poverty, University of Oxford. Retrieved from [https://www.younglives.org.uk/sites/www.younglives.org.uk/files/YL-SP\\_Valdivieso\\_Drop-out%20in%20Peru.pdf](https://www.younglives.org.uk/sites/www.younglives.org.uk/files/YL-SP_Valdivieso_Drop-out%20in%20Peru.pdf)
- Zhang, H. (2017). Opportunity or new poverty trap: Rural-urban education disparity and internal migration in China. *China Economic Review*, 44, 112-124.

Zimmermann, L. (2020). Remember when it rained--Schooling responses to shocks in India. *World Development*, 126. Retrieved from <https://doi.org/10.1016/j.worlddev.2019.104705>

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## ***Choice of Gender in High School Dropout: A Comparison of MNL and BIMNL Models***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

### **Abstract**

**Purpose** – To estimate gender disparity in high school dropouts when households experience financial shocks, this study aims to extend the simple decision-making process of school dropouts to allow for the multiplicity of dropout choices with respect to gender in households having exactly one boy and one girl in high school. We also account for heterogeneity in the households choosing the baseline “no dropout” category and resulting bias in the estimated effects of variables by comparing Baseline Inflated Multinomial Logit (BIMNL) models with Multinomial Logit (MNL) models. **Design/methodology/approach** – We filter households from India Human Development Survey (IHDS) dataset having exactly one boy and one girl in high school. We estimate Multinomial Logit (MNL) model and to account for the heterogeneity of the no dropout case, we estimate BIMNL models developed by Bagozzi and Marchetti (2017) and compare average partial effects (APE) and econometric performance of MNL and BIMNL models.

**Findings** – We find that Households facing shocks due to marriage or crop failure are more likely to drop out the girl. BIMNL only could capture the association of crop failure with dropout of girl. Econometrically BIMNL models performed better than MNL.

**Practical implications** – It would be pertinent to examine whether girls are especially at higher risk of high school dropout with these more sophisticated econometric tools to draw effective policy interventions in the backdrop of financial shocks due to Covid-19 / geopolitical crisis across the world.

**Keywords:** Gender Disparity, High-School Dropout, Financial Shocks, Multinomial Logit, Baseline Inflated Multinomial Logit

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## 1. Introduction

The decision-making process of school dropout is often modelled as a trade-off. This trade-off could be modelled either in a cost-benefit framework (Dreze and Kingdon, 2001) or in a utility maximization framework comparing the sum of present and future period utilities of the options of dropping out or continuing education (Kearney and Levine, 2016)<sup>1</sup>. However, studies on school dropouts often fail to recognize that different households in a sample may have different choice problems with respect to the number of children and gender.<sup>2</sup> To estimate the real impact of any disparity due to gender, households in a sample should have at least a boy and a girl. It may be noted that even for the simplest case of just one boy and one girl, households have multiple discrete choice options e.g., no dropout, dropout of the girl, dropout of the boy, and dropout of both. A simple probit or logit model would not be able to capture a choice among these four options. Further, survey data on dropouts often reports too many “no dropout” cases, leading to apparent inflation in the zero or the reference category of the multinomial choice problem. Extending the logic of Bagozzi and Marchetti (2017) in the context of the dropout problem, we argue that “zero inflation” in no dropout can come from several sources and non-recognition of this in a simple Multinomial Logit (MNL) model can induce a bias in the estimated effects of variables and this, in turn, may lead to faulty inferences. Bagozzi and Marchetti (2017) developed a Baseline Inflated Multinomial Logit (BIMNL) model that accounts for the baseline category inflation and argued that the econometric performance of this BIMNL model will be superior in terms of model fit criteria like BIC or AIC compared to standard MNL models.

In this paper, we extend the simple decision-making process of school dropouts to allow for the multiplicity of choices with respect to gender and apply this extended framework to the India Human Development Survey (IHDS) dataset. To avoid complexity, we restrict ourselves to the dropout choice problem of households with one boy and one girl only, both children being of school going age. As income shock is found to be one of the most important determinants of dropout, we examine how and to what extent dropout decisions of households are influenced by a financial shock. Several studies (Boyle et al., 2002; Heltberg et al., 2013) in some Asian and African countries (Bangladesh, Nepal, Uganda, Zambia, etc.) report that in response to adverse financial shocks, dropout rates increase substantially and it is the girl child who becomes a victim. In the Indian context, a recent study by Sowmya, Paul, and Gade (2019) on young school-going cohorts in Andhra Pradesh and Telangana, however, did not find significant effects of income shocks on enrolment in the primary level.

Theoretically, during or after a financial shock, the discounted future period utilities of education may change significantly for high school going boys and girls in the case of some households. A household in such a situation may choose to drop out a girl or a boy or both, depending upon the nature and the severity of the shock. Though, even such households can choose a “no dropout”. However, following Bagozzi and Marchetti (2017), we argue that many of the households in a given sample will be effectively impervious to the effects of covariates like an adverse financial shock as these households might be unwilling to discontinue the education of any of their children, no matter what the benefits of the dropout choice of any or both of the children might provide. The inclusion of both categories of households that choose no dropout in the reference category of a multinomial choice problem may cause biased estimation of coefficients and may lead to faulty inferences. Empirically, to capture the

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<sup>1</sup> For more detail on these approaches, see Dreze and Kingdon (2001) and Kearney and Levine (2016).

<sup>2</sup> For example, households that do not have a girl cannot discriminate against a girl. Many papers reported in a recent survey by Momo et al. (2019) do not recognize the difference.

multiplicity of choice, we specify and estimate the MNL model. In addition, to recognize the heterogeneity of the no dropout case, we specify and estimate the BIMNL model developed by Bagozzi and Marchetti (2017). The paper presents empirical applications of these models in India, constructing a data set from two waves of the IHDS dataset. In order to make the theoretical framework and the empirical application consistent, we estimate both these models on a filtered dataset of households that have only one boy and one girl, both of school-going age. We analyse the roles played by different types of financial shocks on dropout decisions at the high school level in India with respect to gender. We compare their econometric performance and compute the average partial effects (APE) of explanatory variables and attempt to suggest policies that may mitigate the problem.

Section 2 of this paper describes the analytical framework, Section 3 presents data and descriptive statistics, Section 4 carries out an empirical analysis, and Section 5 concludes the paper.

## 2. Analytical Framework

A dropout decision is often treated as a joint decision within a household. Both the cost-benefit framework (Dreze and Kingdon, 2001), and the utility maximization framework (Kearney and Levine, 2016) have been developed considering a single child. For example, in the utility maximization framework of Kearney and Levine (2016), a dropout of an individual from school is chosen if the following condition is met:

$$u_0^d + E(V^d) > u_0^e + E(V^e) \quad (1)$$

It is assumed that a dropout decision is taken when the sum of the present period utility of dropout  $u_0^d$  and the expected discounted sum of future period utilities after dropout  $E(V^d)$  is greater than the sum of present period utility of continuing education  $u_0^e$  and expected discounted sum of future period utilities after completion of education  $E(V^e)$ . It is also assumed that  $E(V^e) > E(V^d)$ .

However, with the increasing number of children in the household the choice problem becomes more complex as with  $n$  number of children, there can be  $2^n$  number of choices. Thus for 2 high school going children (say, A and B), there are  $2^2$  or 4 choices: no dropout, dropout A, dropout B, or dropout both. Therefore, to estimate the impact of any disparity due to gender and also to keep the choice problem manageable we select households with just one boy and one girl. In such households, the total utilities of the household corresponding to the four dropout choices available to the household are as follows:

We can write,

$$U^0 = u^{eg}_0 + E(V^{eg}) + u^{eb}_0 + E(V^{eb}) \quad (2)$$

$$U^1 = u^{dg}_0 + E(V^{dg}) + u^{eb}_0 + E(V^{eb}) \quad (3)$$

$$U^2 = u^{eg}_0 + E(V^{eg}) + u^{db}_0 + E(V^{db}) \quad (4)$$

$$U^3 = u^{dg}_0 + E(V^{dg}) + u^{db}_0 + E(V^{db}) \quad (5)$$

Where,

$U^0$ ,  $U^1$ ,  $U^2$ , and  $U^3$  be the total utilities of the household corresponding to the four dropout choices available to the household, e.g. no dropout, dropout of the girl, dropout of the boy, and dropout of both respectively.

$u^{eg}_0$  and  $u^{eb}_0$  are the present period utility of the household for continuing education for the girl and the boy respectively,

$u^{dg}_0$  and  $u^{db}_0$  are the present period utility of the household for dropout of the girl and the boy respectively,

$E(V^{eg})$  and  $E(V^{eb})$  are expected discounted sum of future period utilities of the household after completion of education for the girl and the boy respectively, and

$E(V^{dg})$  and  $E(V^{db})$  are the expected discounted sum of future period utilities of the household after dropout for the girl and the boy, respectively.

Note that  $U^0$ ,  $U^1$ ,  $U^2$ , and  $U^3$  can be different for a household. For example, the present period utility of dropout may increase due to an increase in the direct and indirect cost of schooling and also due to increased opportunity cost of a child's time<sup>3</sup>. Future period benefits of schooling can be both instrumental and intrinsic – which might include higher returns through employment, increased cognitive and other skills, facilitate partner selection in marriage and /or reduction of its costs (mostly for daughters), and intergenerational benefits like better education and health outcomes for offspring. However, the actual benefits of education to a child can be greater than the perceived utilities of it to the household (Dreze and Kingdon, 2001). Based on studies conducted in Madagascar and the Dominican Republic, Banerjee and Duflo (2011) conclude that simple intimation of average income gains from spending one more year in school to parents can improve the educational outcome of students.

The evaluation of utilities of dropout choices may also depend on other factors or household characteristics like parents' education level, the income of the household, the father's age, information available to parents about the benefits of education, etc. Greater income and parental education are associated with a lesser likelihood of dropping out of school (Hunt, 2008; Murnane, 2013; Momo et al., 2018). The greater age of the father is also associated with dropout (Momo et al., 2018; Siddhu, 2011). Mvroniuk et al. (2017) show that students from families with more social capital achieve higher educational milestones.

High school students in India receive lesser support compared to primary and upper primary students (e.g., in terms of no-detention policy, midday meals, school fees etc) from the government. Moreover, high school going children have a greater opportunity cost of schooling. Therefore present period utility of dropout for both girls and boys  $u^{dg}_0$  and  $u^{db}_0$  are likely to be greater at the high school level than the present period utility of continuing education  $u^{eg}_0$  and  $u^{eb}_0$  for boys and girls compared to primary / upper primary levels.

Further, the opportunity cost of a child's time or utilities of dropout can also be different for high school going girls and boys. As per prevailing social norms, a boy is generally considered more suitable to be employed in wage work outside a household and a girl in household activities. Moreover, for different households, the expected discounted sum of future period utilities of the household after completion of education or after discontinuation of education for the girl and the boy,  $E(V^{eg})$ ,  $E(V^{eb})$  and  $E(V^{dg})$ ,  $E(V^{db})$  respectively, can be different. In the Indian context, after marriage a daughter usually leaves her parents and joins her husband's

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<sup>3</sup> Direct costs of schooling are expenditures on school fees, books, and stationeries and indirect costs include efforts on the part of parents or guardians in terms of motivating and helping the child for school (Dreze and Kingdon, 2001).

family, some parents may often see a lesser benefit in educating a daughter while others may send a daughter to school out of genuine concern for her own wellbeing.

Evaluated utilities of the multinomial dropout choices ( $U^0, U^1, U^2, U^3$ ) can change when families experience large financial shocks. For some households, the discounted future period utilities may change substantially after a financial shock resulting in a differential discounted sum of future period utilities for girls and boys. If the discounted utilities differ across gender, a household in such a situation may choose to drop out a girl or a boy or both, based on their choice utilities. However, many households in a sample can choose a “no dropout” option. These “no dropout” households could be a heterogeneous group in the sense that among them, there can also be some for whom the discounted utilities would not change after a financial shock or these households are effectively impervious to the effects of adverse financial shock as these households might be unwilling to discontinue the education of any of their children, no matter what the benefits of the dropout choice of any or both of the children might provide.

On the other hand, there may be some households that choose no dropout option based upon some observable factors like their wherewithal to continue education for both, gender preference, the age difference of the children, opportunity costs, etc at times of financial shock.

Data on dropouts often reports too many “no dropout” cases, leading to apparent inflation in the zero or the reference category of the multinomial choice problem. In our case, the choice of zero option or “no dropout” option can come from heterogeneous sources leading to “zero inflation”. As the problem at hand is also a problem of choosing one among four categorical options by a household, Multinomial Logit (MNL) is one of the standard methods for empirical estimation. However, Bagozzi and Marchetti (2017) argue that if “zero inflation” comes from heterogeneous sources and non-recognition of this in a simple Multinomial Logit (MNL) model can bias the estimated effects of variables, leading to faulty inferences.

We examine the role played by financial shocks in high school dropout choices of a household with respect to gender in the Indian context after controlling for a set of explanatory variables. To capture the multiplicity of choice of the household we specify the MNL models and further to account for “zero inflation” or baseline category inflation, we specify the BIMNL model developed by Bagozzi and Marchetti (2017).

If we assume that a household chooses the alternative outcome with the highest level of utility among  $U^0, U^1, U^2, \text{ and } U^3$ , then we can specify an MNL model to determine the probability that household  $i$  ( $i=1, 2, \dots, N$ ) with characteristics vector  $\mathbf{x}'_i$  would choose an outcome  $Y_i$  that can take any of  $j+1$  discrete unordered values of  $0, 1, \dots, J$  such that:

$$Pr(Y_i = j) = \frac{\exp(\mathbf{x}'_i \boldsymbol{\beta}_j)}{\sum_{j=0}^J \exp(\mathbf{x}'_i \boldsymbol{\beta}_j)} \quad (1)$$

where  $\boldsymbol{\beta}_j$  is the vector of parameters. A normalization  $\boldsymbol{\beta}_0 = \mathbf{0}$  for choice category  $j=0$  or baseline category to zero ensures that probabilities across  $J+1$  choice categories for an observation  $i$  sum to one, under the assumption that the corresponding  $J+1$  error terms for underlying utilities of  $J+1$  choices are independent and identically distributed with Gumbel (Type 1 extreme value) distribution.

As specified by Bagozzi (2016), the BIMNL estimation consists of two stages: an inflation stage logistic equation for a latent binary non-inflation indicator  $s_i$  and a latent outcome stage

MNL equation for  $\tilde{Y}_i$  with discrete unordered values of  $0, 1, \dots, J$  given  $i$  ( $i=1, 2, \dots, N$ ). Bagozzi (2016) further elaborates that the observed outcome  $Y_i = \tilde{Y}_i \times s_i$  implies that the baseline outcome  $Y_i=0$  can occur when  $s_i=0$  or when  $s_i=1$  and  $\tilde{Y}_i=0$  and the baseline inflated MNL distribution arises as a mixture of a degenerate distribution in the baseline category and the assumed distribution of the polytomous variable  $\tilde{Y}_i$ :

$$\Pr(Y_i = j) = \begin{cases} \Pr(s_i = 0|z_i) + \Pr(s_i = 1|z_i)\Pr(\tilde{Y}_i = 0|x_i, s_i = 1) & \text{for } j = 0 \\ \Pr(s_i = 1|z_i) \Pr(\tilde{Y}_i = J|x_i, s_i = 1) & \text{for } j = 1, 2, \dots, J \end{cases} \quad (2)$$

Where  $z_i$  and  $x_i$  are inflation and outcome stage covariates, respectively (Bagozzi, 2016).

We use two waves of the nationally representative, multi-topic, pan-India IHDS, which is a joint project between the University of Maryland (USA) and the National Council of Applied Economic Research (India). Wave 1 of IHDS or IHDS-I (Desai et al., 2005) covered over 41,000 households in 1,503 villages and 971 urban blocks throughout India, and Wave 2 or IHDS-II (Desai et al., 2012) resurveyed 83% of original households<sup>4</sup>. The Wave-1 fieldwork was carried out from September 2004 to August 2005, and Wave-2 from September 2011 to August 2012.

We filter resurveyed households that have only one girl and one boy—who are siblings—at school with less than 12 years of completed education in IHDS-I, but more than seven completed years of education in IHDS-II.<sup>5</sup> Additionally, we specify a maximum age difference of three years between them so that the external environments faced by the two during their school years are not too different and also to restrict and control for the difference in the opportunity cost of a child's time. In this way, this study becomes more like a controlled experiment. We acknowledge that there can be some unobserved factors related to motivation, the ability of the child, and similar. We assume that households invest more in children with greater ability and thus use the natural logarithm of total expenditure on the education of the girl and the boy in IHDS-I as separate proxies for their individual ability in the MNL stage of the BIMNL models.

IHDS-II survey enquires about whether a household has had to incur large financial loss or expenditure due to one or more of the following seven reasons: Major illness, accidents, drought, flood, fire, loss of job, marriage, crop failure, death, and other losses. We examine the association of high school dropout choices of a household with a dummy variable, which takes a value of 1 if a household has experienced any one of the seven categories of losses.

In an alternate specification, we also examine the association of high school dropout choices with the following four types of losses: Major illness or accidents, marriage, crop failure, and death, which are more frequent in our sample.

IHDS does not provide information on the timing of the shock. We assume that the shocks are randomly distributed in the 6–7 years and if we find a significant relationship with this data, this indicates that with more information, the effect of shocks on gender choice in dropout can be more pronounced.

<sup>4</sup>See <https://www.ihds.umd.edu/>

<sup>5</sup> These conditions ensure that both the girl and the boy had the opportunity to enroll in high school.

At the inflation stage, we control for covariates such as the logarithm of per-capita consumption in IHDS-I, education of mother and father (in completed years) separately, father's age (in years), a social capital index of the household<sup>6</sup>, and whether the household resides in a rural area. For the multinomial stage, we consider factors like whether the household has suffered a large financial loss, the difference between the ages of the girl and the boy, the log of expenditure on education of the girl and the boy, the father's age, log of per-capita consumption and the mother's and the father's education in the multinomial stage.

We compare the performance of MNL and BIMNL models by computing standard measures like AIC or BIC. We also compute APE for both MNL and BIMNL models using and extending algorithms and R codes<sup>7</sup>, as given by Bagozzi and Marchetti (2017)<sup>8</sup> and Bagozzi (2016)<sup>9</sup>. While Bagozzi and Marchetti (2017) and Bagozzi (2016) compute partial effect at means, we develop R code for computing APE<sup>10</sup>. We draw a random sample of 1,000 from the multivariate normal population with respective maximum likelihood estimates of MNL and BIMNL model coefficients as means with Cholesky decomposition of variance-covariance matrices as per Krinsky and Robb (1986)—also suggested by Greene (2018). The sample average of the partial effects yields APE for each draw. The empirical variance of these 1,000 observations is used to compute the statistical significance of APE estimates for each model.

We report APEs of both MNL and BIMNL methods in Tables 2 and 3 for two alternate loss specifications. Table 2 shows the aggregate loss dummy indicating whether the household experienced any one of the seven categories of losses as an independent variable. In Table 3 models, we use dummy variables for the following four types of losses: Major illness or accidents, marriage, crop failure, and death. The first four columns in Tables 2 and 3 show the APEs of the MNL model and the next four show the APEs of the BIMNL model respectively.

### 3. Data and Descriptive Statistics

In Table 1 we present a summary of the descriptive statistics of the analytical sample used in this study based on the IHDS-I and IHDS-II datasets. As in this study, we are comparing two estimation methods, we are reporting descriptive statistics without survey weights. The sample contains 1,018 households that made one among four choices in the interim period of the two surveys: dropout of neither (759; 74.10%), drop out of the girl (101; 9.92%), drop out of the boy (95; 9.33%), and dropout of both (63; 6.19%). We observe that 57.1% of the 1018 households have experienced at least one large financial loss between IHDS-I and IHDS-II survey rounds. Among households choosing to drop out a girl, the proportion of experiencing at least one loss is highest (72.3%), followed by households choosing a boy dropout option (62.1%), and among households choosing the no dropout option the proportion is lowest (54%). Table 1 also presents information on specific losses experienced by households. We observe that proportion of households experiencing loss due to major illness and accidents (30.5%) is

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<sup>6</sup> Following (Mvroniuk, Vanneman and Desai 2017) we also compute a simple index of social capital based on whether the household has contacts in the formal sectors like, education and healthcare sectors and also in government as per 2005 IHDS-I survey data . The index takes a value of 0 to 3.

<sup>8</sup> Bagozzi & Marchetti(2017) provided code and replication files at url <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/3JR2YL> last accessed, 28 May 2020.

<sup>9</sup> We use standard formulas for computing APE of a covariate as per the MNL model. While for computing APE of a covariate for BIMNL model, we use formulas provided by Bagozzi (2016), given in Appendix A.7 to A.10.

<sup>10</sup> We write a “margins” method for MNL and BIMNL model objects, which works when we attach the library of the “margins” package ( Thomas J. Leeper, 2018, Margins: Marginal Effects for Model Objects. R Package version 0.3.23)

highest among the households choosing to drop out a boy, while the sample average is 24.2%. On the other hand, 44.6% of households that have chosen to drop out a girl have experienced large financial expenditures due to marriage. This proportion is the highest among the four groups and the sample proportion is 28.7%. The sample average of experiencing a crop failure is 14.7% while in households choosing girl dropout and boy dropout options the proportions are 21.8% and 20.0% respectively. The proportion of households experiencing large financial loss due to death is the highest (14.8%) among the group choosing the no dropout option with a sample average of 14.0%. We observe that among households choosing the girl dropout option, girls are almost 1-year senior to the boy and almost the reverse is true for households choosing a boy dropout option. We also observe that the average value of the following variables; Log of total educational expense for a girl and a boy, Log of per capita consumption is household, mother's and father's education in years; are highest in the households choosing the no dropout option compared to other three options and the average value of all these variables are lowest in the group choosing dropping out both children. The average father's age is lowest in the group choosing no dropout option and highest in the group choosing dropping out both children. The social capital index of the household is also highest among the households choosing no dropout options. The proportion of households from rural areas is highest among households choosing to drop out the girl.

Table 1: Descriptive Statistics

Variables*	Overall		Stratified on Dropout Choice of Households					
	count(%)/ mean(SD)	1018 Pctl(25) Pctl(50) Pctl(75)	No Dropout 759 count(%)/ mean(SD)	Girl Dropout 101 count(%)/ mean(SD)	Boy Dropout 95 count(%)/ mean(SD)	All Dropout 63 count(%)/ mean(SD)		
Whether household experienced large financial loss/expenditure (Dummy)=1*	581 (57.1)	--	--	--	410 (54.0)	73 (72.3)	59 (62.1)	39 (61.9)
Large financial loss/expenditure: Major illness / Accidents (Dummy)=1*	246 (24.2)	--	--	--	181 (23.8)	23 (22.8)	29 (30.5)	13 (20.6)
Large financial loss/expenditure: Marriage- (Dummy)=1*	292 (28.7)	--	--	--	181 (23.8)	45 (44.6)	35 (36.8)	31 (49.2)
Large financial loss/expenditure: Crop Failure- (Dummy)=1*	150 (14.7)	--	--	--	97 (12.8)	22 (21.8)	19 (20.0)	12 (19.0)
Large financial loss/expenditure: Death - (Dummy)=1*	143 (14.0)	--	--	--	112 (14.8)	10 (9.9)	13 (13.7)	8 (12.7)
Girl's Age -Boy's Age in Year	0.16 (2.29)	-2	1	2	0.22 (2.28)	1.03 (2.21)	-1.00 (1.98)	-0.19 (2.19)
Log total education expense on Girl IHDS-I	6.79 (1.44)	5.97	6.89	7.82	6.93 (1.50)	6.47 (0.96)	6.48 (1.29)	6.06 (1.26)
Log total education expense on Boy IHDS-I	6.84 (1.52)	5.99	6.95	7.94	6.97 (1.57)	6.39 (1.50)	6.77 (1.06)	6.19 (1.24)
Log of per capita consumption in IHDS-I	6.57 (0.67)	6.14	6.55	7	6.66 (0.69)	6.33 (0.56)	6.46 (0.56)	6.17 (0.49)
Mother's education in years	5.10 (4.53)	0	5	9	5.97 (4.52)	2.30 (3.34)	3.14 (3.84)	2.13 (3.05)
Father's education in years	7.40 (4.50)	4	8	10	8.21 (4.39)	5.05 (3.95)	5.42 (4.11)	4.40 (3.72)



Father's age in years	40.29 (6.75)	35	40	45	39.59 (6.45)	41.32 (7.34)	42.12 (6.82)	44.27 (7.25)
Social Capital Index (numbers 0 to 3)	1.20 (1.15)	0	1	2	1.32 (1.18)	0.94 (1.08)	0.78 (0.95)	0.84 (0.95)
Rural (Dummy) =1*	644 (63.3)	--	--	--	455 (59.9)	79 (78.2)	64 (67.4)	46 (73.0)

Note: Computed by authors from IHDS-I and IHDS-II data set, survey weights have not been used. \* For these variables the observations represent sample count for variable value =1 and parenthesis has sample proportion

#### 4. Empirical Results

Households experiencing large financial losses are more likely to opt for a dropout of the girl. Estimated APEs are 4.3 percentage points as per both the MNL and BIMNL models in Table 2. However, the likelihood of choosing the dropout of the boy or the dropout of both is not significant even at the 10 % level. In Table 3, we observe that households experiencing large financial loss/expenditure due to marriage are more likely to choose the girl dropout option by 4.1 and 4.0 percentage points as per MNL and BIMNL models respectively, while no significant association with boy dropout or all dropout options is observed. Moreover, as per the BIMNL model in Table 3, the probability of choosing the girl dropout option increases by 5.3 percentage points when a household has experienced a crop failure. There is no significant estimate of choosing the dropout of a boy or both. The MNL model fails to discover this association. Considering sample estimates of dropout for girls and boys in the 10% range, the above estimated effects are quite substantial. No significant APE estimates are observed for the other two loss variables: Loss/expenditure due to major illness or accidents and large financial loss/ expenditure due to death.

Households with an elder girl are more likely to choose the dropout of the girl as per models in both Tables 2 and 3. Both models in Tables 2 and 3 indicate that households at higher consumption levels are less likely to choose dropout of both. Households with a higher education level of the mother are less likely to choose to drop out the girl; 6.7/6.5 and 5.8/5.8 percentage points less for MNL and BIMNL models respectively in Table 2/ Table 3 respectively. Households with higher education of the father are less likely to choose to drop out of the boy, though the APE estimate is almost half of that of the mother's education increment for girls. Households with a better-educated mother and father are also more likely to choose the no dropout option, while the estimated APEs of choosing the no dropout option associated with the mother's education are 7.7 to 11.3 percentage points in Tables 2 and 3. The estimates are 1.2 to 2,3 times more than that of increment due to a higher father's education.

With seniority in the father's age, households are more likely to choose dropout of both students and dropout of the boy as per both MNL and BIMNL models in Tables 2 and 3 and the estimates of BIMNL models are higher than that of MNL models for both the options in Tables 2 and 3. Therefore, with the increased age of the father, the choice of dropout shifts towards the boy and dropping out both, and the BIMNL model better extracts the association. As per MNL models in both Tables 2 and 3, with one more acquaintance in a social network, the likelihood of choosing no dropout increases, and the likelihood of choosing boy dropout decreases. BIMNL estimates of choosing no dropout options are close to that of MNL models in Tables 2 and 3 while BIMNL estimates that social network is more evenly associated with a lesser likelihood of choosing boy and girl dropout options. The rural dummy was not significant in either model in both tables. The BIMNL model outperforms the MNL model as per AIC and BIC criteria in both Tables 2 and 3, while in Table 2 BIMNL model is the best among the four models as per AIC and BIC criteria.

**Table 2: Estimated Average Partial Effects (APE) of MNL and BIMNL Models of High School Dropout With Aggregate Loss Dummy**

	MNL Model APE of Dropout of				BIMNL Model Global APE of Dropout of			
	None	Girl	Boy	Both	None	Girl	Boy	Both
Whether Household experienced large financial Loss /Expenditure-(Dummy), 0-> 1 <sup>a</sup>	-0.031 (0.025)	0.043 (0.018)**	0 (0.019)	-0.012 (0.016)	-0.032 (0.022)	0.043 (0.017)**	-0.002 (0.016)	-0.009 (0.014)
Girl's Age -Boy's Age in Year, 1->2 <sup>b</sup>	-0.004 (0.006)	0.022 (0.006)***	-0.014 (0.002)***	-0.004 (0.003)	0.002 (0.005)	0.018 (0.005)***	-0.015 (0.003)***	-0.005 (0.003)**
Log total education expence on Girl IHDS-I, 5.97->6.89 <sup>c</sup>	0.02 (0.015)	0.002 (0.011)	-0.012 (0.011)	-0.01 (0.008)	0.017 (0.014)	0.002 (0.01)	-0.01 (0.011)	-0.009 (0.008)
Log total education expence on Boy IHDS-I, 5.99->6.95 <sup>d</sup>	-0.01 (0.014)	-0.001 (0.01)	0.012 (0.011)	-0.001 (0.008)	-0.013 (0.01)	0.002 (0.008)	0.011 (0.01)	0 (0.007)
Log of per capita consumption in IHDS-I, 6.14->6.55 <sup>e</sup>	0.015 (0.01)	-0.006 (0.007)	0.003 (0.008)	-0.013 (0.005)**	0.013 (0.009)	-0.004 (0.008)	0.005 (0.008)	-0.014 (0.006)**
Mother's education, 0->5 <sup>f</sup>	0.113 (0.025)***	-0.067 (0.02)***	-0.019 (0.016)	-0.027 (0.015)*	0.085 (0.029)***	-0.058 (0.019)***	-0.009 (0.017)	-0.018 (0.014)
Father's education, 4->8 <sup>g</sup>	0.049 (0.016)***	-0.015 (0.01)	-0.021 (0.011)**	-0.013 (0.009)	0.06 (0.021)***	-0.02 (0.012)	-0.028 (0.014)**	-0.012 (0.009)
Father's Age, 40->45 <sup>h</sup>	-0.053 (0.01)***	0.008 (0.007)	0.019 (0.007)***	0.026 (0.006)***	-0.059 (0.011)***	0.008 (0.007)	0.023 (0.007)***	0.027 (0.006)***
Social Network Index, 0->1 <sup>i</sup>	0.036 (0.014)**	-0.006 (0.009)	-0.027 (0.011)**	-0.003 (0.008)	0.035 (0.013)***	-0.014 (0.005)***	-0.013 (0.005)***	-0.008 (0.003)***
Rural (Dummy) , 0->1 <sup>j</sup>	-0.019 (0.028)	0.022 (0.021)	0 (0.021)	-0.003 (0.018)	-0.031 (0.027)	0.012 (0.011)	0.012 (0.01)	0.007 (0.006)
Number of Observations	1018				1018			
AIC	1522.88				1506.13			
BIC	1685.42				1668.68			

Notes: Standard Errors in (parentheses); Significance Codes: '\*\*\*' 0.01 '\*\*' 0.05 '\*' 0.1; We use following levels of the independent variables to compute Average Partial effect (APE) a: Whether household experienced large financial Loss/Expenditure (Dummy) at 1 yes and 0 No; b: Girl's Age -Boy's Age in Year at 75th percentile value of 2 and median value 1;c:Log total education expence on Girl IHDS-I, at the median value 6.89 and 25th percentile value 5.97 ; d:Log total education expence on Boy IHDS-I, at the median value 6.95 and 25th percentile value 5.99; e: Log of per-capita consumption in IHDS-I at the median value 6.55 and 25th percentile value 6.14; f: Mother's education at median value of 5 years of education and 25th percentile value of 0 year of education, g: Father's education at median value of 8 years of education and 25th percentile value of 4 years of education, h: Father's Age at 75 percentile value of 45 years and median value of 40 years, i: Social Network Index at median value of 1 and 25th percentile value of 0, j: Rural (Dummy) at 1 Yes and 0 No

**Table 3: Estimated Average Partial Effects (APE) Of MNL And BIMNL Models of High School Dropout With Four Specific Losses**

Dependent Variable: Dropout Choice of Households -- None, Girl, Boy, Both								
	MNL Model APE of Dropout of				BIMNL Model Global APE of Dropout of			
	None	Girl	Boy	Both	None	Girl	Boy	Both
large financial Loss/Expenditure-Major illness / Accidents MI1 (Dummy), 0-> 1 <sup>a</sup>	0.012 (0.029)	-0.018 (0.021)	0.025 (0.021)	-0.019 (0.015)	-0.005 (0.021)	-0.012 (0.017)	0.029 (0.018)	-0.012 (0.014)
large financial Loss/Expenditure-Marriage- MI4 (Dummy), 0-> 1 <sup>a</sup>	-0.07 (0.029)**	0.041 (0.022)*	0.005 (0.021)	0.024 (0.017)	-0.064 (0.029)**	0.04 (0.02)**	0.002 (0.019)	0.022 (0.015)
large financial Loss/Expenditure-Crop Failure- MI5 (Dummy), 0-> 1 <sup>a</sup>	-0.041 (0.037)	0.021 (0.026)	0.018 (0.027)	0.002 (0.021)	-0.066 (0.037)*	0.053 (0.027)*	0.016 (0.025)	-0.003 (0.018)
large financial Loss/Expenditure-Death - MI6 (Dummy), 0-> 1 <sup>a</sup>	0.032 (0.036)	-0.03 (0.024)	-0.001 (0.026)	-0.001 (0.021)	0.013 (0.026)	-0.028 (0.02)	0.007 (0.024)	0.008 (0.02)
Girl's Age -Boy's Age in Year, 1->2 <sup>b</sup>	-0.003 (0.006)	0.021 (0.006)***	-0.014 (0.002)***	-0.004 (0.003)	0.003 (0.005)	0.018 (0.005)***	-0.015 (0.003)***	-0.005 (0.003)*
Log total education expense on Girl IHDS-I, 5.97->6.89 <sup>c</sup>	0.018 (0.015)	0.002 (0.011)	-0.011 (0.011)	-0.009 (0.008)	0.015 (0.012)	0.006 (0.01)	-0.011 (0.011)	-0.009 (0.008)
Log total education expense on Boy IHDS-I, 5.99->6.95 <sup>d</sup>	-0.009 (0.014)	-0.002 (0.01)	0.012 (0.011)	-0.001 (0.008)	-0.012 (0.008)	-0.001 (0.008)	0.012 (0.009)	0.001 (0.007)
Log of per capita consumption in IHDS-I, 6.14->6.55 <sup>e</sup>	0.015 (0.01)	-0.005 (0.008)	0.002 (0.007)	-0.013 (0.005)**	0.011 (0.008)	-0.003 (0.007)	0.006 (0.008)	-0.014 (0.006)*
Mother's education, 0->5 <sup>f</sup>	0.104 (0.026)***	-0.065 (0.02)***	-0.017 (0.017)	-0.022 (0.015)	0.077 (0.028)***	-0.058 (0.02)***	-0.005 (0.016)	-0.014 (0.013)
Father's education, 4->8 <sup>g</sup>	0.05 (0.016)***	-0.015 (0.01)	-0.022 (0.011)**	-0.013 (0.008)	0.062 (0.02)***	-0.019 (0.012)	-0.031 (0.013)**	-0.013 (0.008)
Father's Age, 40->45 <sup>h</sup>	-0.048 (0.011)***	0.006 (0.007)	0.019 (0.007)**	0.023 (0.006)***	-0.055 (0.011)***	0.006 (0.007)	0.025 (0.008)***	0.025 (0.006)**
Social Network Index, 0->1 <sup>i</sup>	0.037 (0.013)***	-0.007 (0.01)	-0.027 (0.011)**	-0.004 (0.008)	0.038 (0.012)***	-0.015 (0.005)***	-0.015 (0.005)***	-0.009 (0.003)*
Rural (Dummy) ,0->1 <sup>j</sup>	-0.016 (0.031)	0.025 (0.022)	-0.004 (0.021)	-0.005 (0.019)	-0.024 (0.027)	0.01 (0.01)	0.009 (0.01)	0.006 (0.006)
Number of Observations	1018				1018			
AIC	1533.15				1507.53			
BIC	1740.03				1714.41			

Notes: Standard Errors in (parentheses); Significance Codes: \*\*\*\* 0.01 \*\*\* 0.05 \*\* 0.1; We use following levels of the independent variables to compute Average Partial effect (APE) a: Whether household experienced large financial Loss/Expenditure- due to reason specified (Dummy) at 1 Yes and 0 No; b: Girl's Age -Boy's Age in Year at 75th percentile value of 2 and median value 1, c: Log total education expense on Girl IHDS-I, at the median value 6.89 and 25th percentile value 5.97, d: Log total education expense on Boy IHDS-I, at the median value 6.95 and 25th percentile value 5.99, e: Log of per-capita consumption in IHDS-I at the median value 6.55 and 25th percentile value 6.14, f: Mother's education at median value of 5 years of education and 25th percentile value of 0 year of education, g: Father's education at median value of 8 years of education and 25th percentile value of 4 years of education, h: Father's Age at 75 percentile value of 45 years and median value of 40 years, i: Social Network Index at median value of 1 and 25th percentile value of 0, j: Rural (Dummy) at 1 Yes and 0 No

### 5. Conclusion

As far as gender discrimination in dropouts is concerned, the choice sets of different households in a sample could be different. We use a filtered dataset, where all households have exactly one

boy and one girl. To capture the multiplicity of choices of such households, we specify models of multinomial discrete choice family. We also observe that households opting for “no dropout” for both the boy and the girl could be heterogeneous due to the possible presence of households that will not discriminate and will also not drop out any child irrespective of gender even after an adverse financial shock due to their perception of the value of education and some other households that will choose the same option after evaluating a tradeoff. To capture this effect, we specify the BIMNL model.

Our results indicate that in households that experience large financial loss, a girl faces a significantly higher chance of dropout compared to a boy. More specifically, households that have experienced large financial loss/expenditure due to marriage or crop failure are more likely to choose to drop out of the girl from high school education. BIMNL model is able to capture the association of crop failure with the dropout of the girl while the MNL cannot. We found that elder girls face a significantly higher chance of dropout. Interestingly, the more the father’s age, the more is the likelihood of dropout for a boy or dropout of both, and BIMNL model estimates are higher than MNL estimates. Mother’s education significantly reduces the probability of dropout of girls and increases the likelihood of choosing no dropout. Further, networked households experience lower dropout and BIMNL estimates that social network is more evenly associated with a lesser likelihood of choosing boy and girl dropout options.

Large financial loss due to marriage in the household reduces wherewithal of households to invest in education and there is more propensity of households choosing dropout of a girl in such a situation. This is similar to an observation made by Boyle et al. (2002) that an economic slowdown that gradually constrains cash income may result in girls being withdrawn from school occasionally or permanently. In this context, our finding that sudden shocks (e.g. crop failures) lead to a higher probability of dropout of girls is contrary to the earlier findings. For example, Boyle et al. (2002) find that a sudden shock such as the death of a key income earner may result in the permanent withdrawal of a boy to take up an income-earning role. However, we find that our approach of the recognition of the multiplicity of options available to households is important here. If we recognize that households have options of dropping either or both a girl and a boy, then these differences in our findings with earlier studies can be reconciled. A limitation in our study is that the results may not be interpreted in the causal sense. Our results are however associative in nature. Future studies may focus on the casual aspect in more detail.

Econometrically, we find that BIMNL models perform better than MNL models and BIMNL estimates are different for some critical variables in our study. As BIMNL models recognize the multiplicity of choice and can capture heterogeneity in the no dropout choice effectively, their applications on appropriately filtered datasets may be a good approach to study gender discrimination in dropout. In the current context, as many households are currently suffering from a financial shock due to Covid-19 in different parts of the world, it would be interesting to examine whether girls are especially at higher risk of dropout with these more sophisticated econometric tools.

## **Acknowledgement**

We thank the IHDS team for making their dataset publicly available, and we also thank Benjamin E. Bagozzi and Kathleen Marchetti for making publicly available the R code for

Baseline Inflationary Multinomial Logit (BIMNL) model, which we have used in this study. Authors bear full responsibility for any remaining errors.

## References

- Bagozzi, Benjamin E. 2016. "The baseline-inflated multinomial logit model for international relations research." *Conflict Management and Peace Science* 33 (2): 174-197.
- Bagozzi, Benjamin E., and Kathleen Marchetti. 2017. "Distinguishing Occasional Abstention from Routine Indifference in Models of Vote Choice." *Political Science Research and Methods* 5 (2): 277-249.
- Banerjee, Abhijit V., and Esther Duflo. 2011. *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. New York: Perseus Books.
- Boyle, S., A. Brock, J. Mace, and M. Sibbons. 2002. *Reaching the Poor: The 'Costs' of Sending Children to School*. Synthesis Report, London: DFID.
- Desai, Sonalde, Reeve Vanneman, and New Delhi. and National Council of Applied Economic Research. 2005. *India Human Development Survey (IHDS)*. Vols. ICPSR22626-v8. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2010-06-29. . doi:<http://doi.org/10.3886/ICPSR22626.v8>
- Desai, Sonalde, Reeve Vanneman, and New Delhi. and National Council of Applied Economic Research. 2011-12. *India Human Development Survey-II (IHDS-II)*. Vols. ICPSR36151-v2. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2015-07-31. doi:<http://doi.org/10.3886/ICPSR36151.v2>
- Dreze, Jean, and Geeta Gandhi Kingdon. 2001. "School Participation in Rural India." *Review of Development Economics* vol. 5, issue 1, 1-24.
- Gandjour, Afschin. 2007. "Mutual dependency between capabilities and functionings in Amartya Sen's capability approach." *Social Choice and Welfare* 31 (2): 345-350. doi:10.1007/s00355-007-0283-7
- Greene, William H. 2018. *Econometric Analysis, 8th Edition, Indian Subcontinent Reprint*. Noida, Uttar Pradesh: Pearson India Education Services Pvt. Ltd.
- Heltberg, Rasmus, Naomi Hossain, Anna Reva, and Carolyn Turk. 2013. "Coping and Resilience during the Food, Fuel, and Financial Crises." *The Journal of Development Studies* 49 (5): 705-718. doi:10.1080/00220388.2012.746668
- Hunt, Frances. 2008. *Dropping Out from School: A Cross Country Review of the Literature*. CREATE PATHWAYS TO ACCESS Research Monograph No 16, University of Sussex. <https://files.eric.ed.gov/fulltext/ED504047.pdf>
- Kearney, Melissa S., and Phillip B. Levine. 2016. "Income Inequality, Social Mobility, and the Decision to Drop Out of High School." *Brookings Papers on Economic Activity*. 333-396.
- Krinsky, I., and L. Robb. 1986. "On Approximating the Statistical Properties of Elasticities." *Review of Economics and Statistics* 68(4), pp. 715-719.

- Momo, Michelle S. M., Sofie J. Cabus, Kirstof De Witte, and Wim Groot. 2019. "A systematic review of literature on the causes of early school living in Africa and Asia." *Review of Education* 7 (3): 496-522. doi:<https://doi.org/10.1002/rev3.3134>
- Murnane, Richard J. 2013. "U.S. High School Graduation Rates: Patterns and Explanations." *Journal of Economic Literature* 51(2),370-422,<http://dx.doi.org/10.1257/jel.51.2.370>
- Mvroniuk, Tyler W., Reeve Vanneman, and Sonalde Desai. 2017. "Getting a Child through Secondary School and to College in India: The Role of Household Social Capital." *Sociology of Development* Vol. 3 No.1, Spring 2017;(pp. 24-46).
- Siddhu, G. 2011. "Who makes it to the secondary school? Determinants of transition to secondary schools in rural India." *International Journal of Educational Development* 31 (4): 394-401. <https://doi.org/10.1016/j.jedudev.2011.01.008>
- Sowmya, Dhanaraj, Christy Mariya Paul, and Smit Gade. 2019. "Household income dynamics and investment in children: Evidence from India." *Education Economics* 27 (5): 507-520. doi:10.1080/09645292.2019.1599325

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## ***Startup Music Business Finance, Valuation and Ethics: Methods and Techniques***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

### **Abstract**

This paper examines the interactions between Music business ethics related to start-up music businesses and discusses their methods and techniques for start-up music business finance and valuation. The practice of music business ethics creates trust between the funding agency and start-up entrepreneurs that helps to mitigate investors' problems in the music industry. In such cases, investors can use contracts involving financial ethics in the music business. However, in the absence of the practice of normative entrepreneurial, funding agency problems arise that need to be resolved by Informal agreement with assigned additional legal criteria. This paper argues that the traditional form of start-up music business valuation limitation on contractual forms enhances the funding agency and start-up entrepreneurial problems to grow their business. Besides this, this paper explores the effective methods and techniques of start-up music business valuation, finance, and ethics which reduce the challenges of music business start-ups and mitigate funding agency problems. When Normative entrepreneurial ethics are not practiced but financial business ethics are practiced, investors can finance entrepreneurs by using cutting-edge era Start-up music business valuation methods to alleviate funding agency problems with Informal agreement with assigned additional legal criteria. On the other hand, if normative and entrepreneurial business ethics are not practiced then the funding agency problem cannot be mitigated by contractual means.

Keywords: Start-Up Music Businesses, Startup Business Finance, Business Valuation, Business Ethics, Normative Entrepreneur Ethics

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## 1. Introduction

The development of innovative, entrepreneurial start-up music businesses using online platforms has become a recent trend, and it is affecting how companies operate in the future. Ideal conditions for starting a music business or any kind of business indicate that everyone can become an entrepreneur today. However, nine out of ten new businesses fail. The key cause (in about 42% of cases of failure) for these failures, as noted by researchers, is that there is no market demand for the produced goods or services. Most other failure cases result from poor business management abilities, as even companies with excellent business ideas fail when they encounter their initial obstacles.

Researchers are looking for ways to improve the likelihood that early-stage startups will succeed. Spending a significant amount of time on corporate strategy is just one of the key strategies advised. A well-written start-up business strategy that outlines the entire business concept, management strategy, and business model in one document is a very useful method for putting this process into action. Nevertheless, Start-up entrepreneurs need to possess or build managerial abilities and apply the most efficient procedures to establish a "successful" corporate strategy. It is well known that the field of project management considerably improves the effectiveness of project delivery. Accordingly, if the funding of a corporate is considered as a venture, that field can be applied to increase the probability that the project will be successful, with advantageous techniques emerging in the areas of strategic planning, budgeting, corporate governance, goal setting, and the formation of a culture of team building within the organization (Kiznyte, J., Welker, M., & Dechange, A. 2016). Venture creation funding must address specific risks that emerge in start-up businesses because of incomplete knowledge, a lack of practical experience, and the unavailability of suitable securities. Venture capitalists also suffer possible threats to numerous agency issues brought on by the different goals of entrepreneurs and investors, in addition to commercial dangers. Venture capitalists particularly confront asymmetric information concerns in the form of ethical risk issues in the post-investment phase and adverse selection issues in the pre-investment phase (Ahmed, H. and Aassouli, D., 2022; Maxwell and Levesque 2014; Triantis, 2001). These factors make financial institutions unwilling to provide start-up financing, therefore initial capital is frequently provided by inventors' personal funds, colleagues, and relatives, as well as angel financiers and investment firms (Ahmed, H. and Aassouli, D., 2022; Berger and Udell 1998; Denis 2004).

Their potential to get finance is one of the most significant difficulties affecting entrepreneurial businesses. Debt financing is normally not an option for such businesses because they are frequently not yet profitable and have no real assets. Therefore, venture capital funds, angel investors, and corporate investors are often the three main outside equity financing sources that entrepreneurs turn to (Denis, D.J., 2004).

Many researchers have made it aware, called awareness to it with justification, and moved towards defining solutions that establish higher standards of conduct. However, a substantial portion of this study concentrates on bigger firms and bigger institutions in established industries. This indicates that the study of ethics in the context of entrepreneurship, particularly venture finance, has been largely unexplored. It can be considered essential to contribute to the largely unexplored field of ethical issues in entrepreneurial finance as governments, researchers, and practitioners urge for more accountability for all parties involved. We take a step towards integrating ethics in this context—particularly the behavior of entrepreneurs, angel investors, and venture capitalists—because of the significant

economic role of financing entrepreneurial ventures and the distinctive challenges that financing young, uncertain ventures pose (Dushnitsky, G. and Shapira, Z., 2010; Sohl 1999).

There is a significant necessity for regulators and other interested parties to promote a thorough understanding of the factors that affect startup valuations in the context of venture capital (VC). Venture capitalists (VCs), entrepreneurs, and fund investors all place a high value on the valuation of startups in the VC setting, in addition to regulators and policymakers (Köhn, A., 2018).

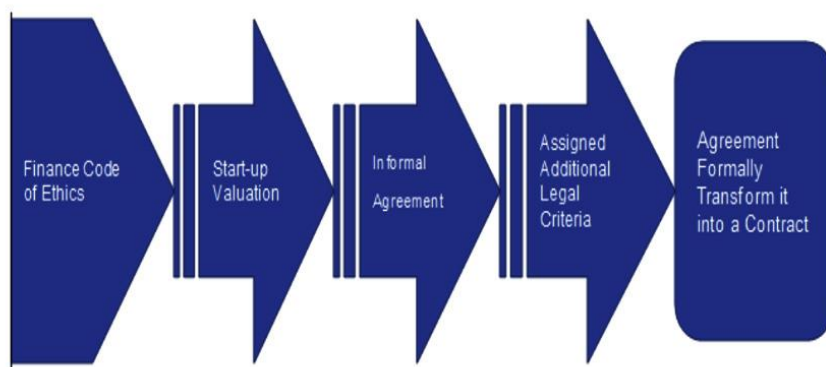
## 2. Background

Even if new entrepreneurs in music industry did not entrepreneurial ethics, funding agencies can indeed grant finance to start-up firms by adopting a start-up business valuation technique as component of an informal or verbal agreement. Regardless of whether this agreement is written or verbal, in this condition a verbal agreement can be more effective than contract because the start-up businessperson hasn't practiced entrepreneurial principles. As a result, this agreement includes detailed requirements for things like software development, patents, and priorities project planning. This modern agreement is taken and assigned additional legal criteria to formally transform it into a contract.

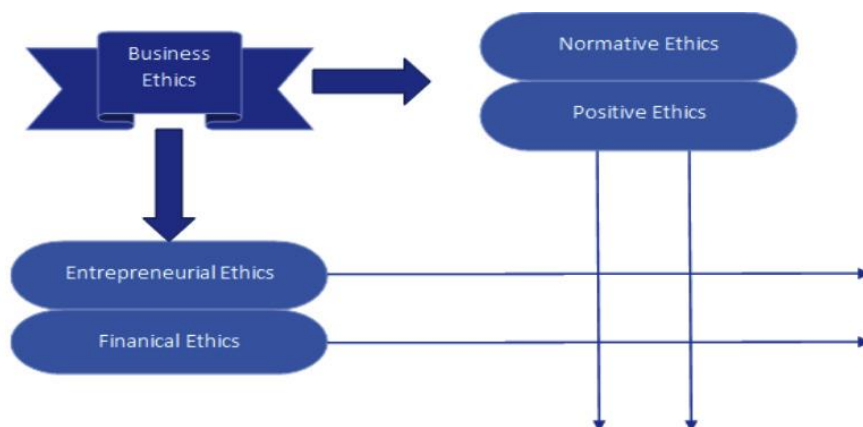
**Hypothesis 1.** *Entrepreneurial & financial Ethics relationship with normative ethics*

**Hypothesis 2.** *Mitigation of funding agency problems by Informal Agreement with assigned additional legal criteria*

**Hypothesis 3.** *Informal agreement formally transforms into a contract*



**Figure 1: Process of the formal agreement transformation into a contract**



**Figure 2: Business ethics image**

### **3. Literature Review: Entrepreneurial and Financial Ethics: Normative Ethics Approach**

#### **3.1 Normative Entrepreneurial Ethics**

Businesses are considered as normative entrepreneurs if they develop a self-regulatory effort or construct a voluntary code, as same actions donate to norm development by voluntary agreement. The idea of norm establishing, in its ideal form, refers to the intentional creation of new, broadly accepted standards for proper conduct (Flohr, A., Rieth, L., Schwindenhammer, S. and Wolf, K., 2010; Jepperson et. al 1996). However, when companies consciously work to create new rules for business conduct, they make a contribution to the norm-setting process. But the standards that need to be established typically don't have that much novel or original content. In actuality, most of the standards that businesses have agreed to under self-regulatory programmers (or somewhere else) had already been established in other bodies of law, typically public international law (Flohr, A., Rieth, L., Schwindenhammer, S. and Wolf, K.,2010).

#### ***Literature Review of The Normative Foundations of Entrepreneurial Activity - The St. Gallen Approach to Management (Ulrich, P., 2013)***

According to an old fiction claim, "great" administration is nothing more than the execution of value-free purely financial logic. An increasing amount of social and economic disputes centered on entrepreneurial activities, which include and have an impact on a wide range of people and stakeholders, challenge this viewpoint. Business executives today must approach issues of corporate morals sensibly, just as they do issues of business planning and operations. This method relies more on a good knowledge of the moral foundation of legal entrepreneurship but it does not draw primarily on management tools and techniques or patent claims. The foundational terms and ideas required for this understanding are briefly presented in this literature that follows (Ulrich, P., 2013).

The market growth for a review of corporate and business ethics demonstrates that responsible individuals believe that open discussion about the entrepreneurial pursuit of achievement is necessary for a free and open society. What gives this endeavor its legitimacy and significance? What are its legitimate normative requirements, forms, options, and restrictions? These core normative issues surrounding entrepreneurship cannot be resolved by apparently "pure" financial justifications. The key idea here is that whichever position we adopt on the following "business-of-business" formulation, we are invariably selecting a normative viewpoint. Each potential perspective is founded on firmly established economic-philosophical and economic-moral underlying assumptions regarding: the creation of an "excellent" social and economic structure (regulate morals), the "correct" society function and constitutional protection of the entities that we identify as business (corporation organizational morality), and what "excellent" leadership entails (business ethics, specifically management morality) (Ulrich, P., 2013).

Corporate-ethical response: After considering the claims made against the firm, morally minded industry leaders can decide that the claims are true and worthy of regard in and of themselves. The degree to which this occurs, if at all, depends on one's own morality and the social norms that support those beliefs. Ethical notions are voluntary within the confines of the appropriate laws of a democratic and open society since they express subjective decisions and priorities in this setting. Most society's participants would not allow disrespect for or

violations of these standards, though; failing to do so would lead to consequences of one kind or another. These norms themselves, then, constitute ethical or legal duties (Ulrich, P., 2013).

### ***Literature Review of (Soppe, A., 2016) New Financial Ethics: A Normative Approach***

The prior thorough analysis of numerous responsibilities, including social, ethical, and commercial ones, can be seen as the foundation for a fresh concept of financial morals. The issue of whether we view financial morals as a normative or a positive science is essential in this regard. Positive economics is truth and scientific, whereas normative economics is value-based and subjective. Positive economic assertions need not be true, but they should be capable of being evaluated and either supported or rejected. Since normative economic claims are founded on opinions, they are much more challenging to confirm or reject. Even while this difference appears straightforward, it is rarely simple to tell positive assertions apart from normative ones. Many commonly held beliefs that individuals take to be true are truly value-based. (Soppe, A., 2016; Aragon, 2011), for instance, attempts to view finance morals as a positive scientific study. Even though the application of ethical principles is normative, he argues that characterizing, clarifying, and forecasting the economic effects of human morality in finance morals is a constructive scientific endeavor. With this method, which claims that the exchange transaction between two economic actors forms the basis of his "positive" investigation of financial morals (FE), Aragon demonstrates his status as a true finance researcher.

He recognizes three fundamental types of transactions, each with an asymmetric power relationship: He makes a distinction between three fundamental types of interactions, each having an asymmetric power connection, where (1) the strongest agent wants to monopolize the weaker one—this is known as stealing; (2) the selfless agent; and (3) a relationship based on mutual faith. By treating these beginning stances as axioms, the specification, application, and study of the subsequent behavior can be seen as a constructive scientific endeavor. Aragon acknowledges the difference between normative and positive science in a clear and nuanced way, but he attempts to do an analysis in his work that is free of value judgement and hence adheres to positive financial ethics. He made a good effort, but Soppe, A. 2016 book studies on financial ethics obviously takes a different tack (Soppe, A., 2016).

## **4. Methodology and Analytical Framework**

This essay includes qualitative research techniques and is classified as conceptual research. Conceptual studies increase the scope of knowledge and VENTURE CAPITAL<sup>31</sup> thinking by connecting concepts from several disciplines and bridging current notions (Ahmed, H. and Aassouli, D., 2022; Gilson and Goldberg 2015). Instead of evaluating these links directly, conceptual research typically suggests novel connections between various concepts by creating logical and solid arguments about them (Ahmed, H. and Aassouli, D., 2022; Gilson and Goldberg 2015).

By studying significant ideas from the research on the use of moral and constitutional principles to address principal - agent problem in entrepreneurial finance, the theoretical foundation for this research was constructed. Business ethics can be divided into two categories in this regard: entrepreneur and financial ethics on the one side, and normative and positive ethics on the second side. While "Business ethics" is a catch-all phrase for several sorts of ethics, "entrepreneurial ethics" is a set of guidelines for acceptable behavior among

businesspeople, and "financial ethics" refers to moral standards and ideals that apply to financial activities which is not discussed in this research.

The various Normative and Positive Business Ethics concepts that are significant to Entrepreneurial and Financial Ethics are summarized in Table 1. In the context of the above structure, this study explores three situations of business ethics under various presumptions regarding the existence of normative financial and entrepreneurial ethics (see Table 2). Both normative financial and entrepreneurial ethics are maintained in Case 1 and mitigated through ethical means. Case 2 appears at an instance where financial ethics are employed to finance a business, but the entrepreneurs do not conduct morally, leading to funding agency issues. The funding agency issues can be resolved contractually in order to mitigate the funding agency issues to actual practice using extra-legal criteria that have been provided informal agreement which formally transform into legal contract. because of the restrictions that financial moral norms impose on contracts. Case 3 shows another scenario, when normative financial and entrepreneurial business ethics are not practiced then the funding agency problem cannot be mitigated by contractual means.

**Table 1. Normative and Positive Business Ethics Relevant to Entrepreneurial and Finance Ethics**

Business Ethics	Entrepreneurial Ethics	Financial Ethics
Normative	Normative entrepreneurial norms and ethics <b>The Normative Foundations of Entrepreneurial Activity (Ulrich, P., 2013)</b> texts and literature review	Normative financial Values and Principles specified in (Soppe, A., 2016) literature
Positive	Not Discussed	Not Discussed

**Table 2. Status of Business Ethics and Agency Problem**

Cases	Normative Entrepreneurial Ethics	Normative Financial Ethics	Agency Problem Mitigation
Case 1	Practiced	Practiced	Mitigated by ethical mean
Case 2	Not Practiced	Practiced	Mitigated by Informal Agreement with assigned additional legal criteria
Case 3	Not Practiced	Not Practiced	Not Mitigated by contractual mean

**Table 3. Business Perspective on Contractual Methods of Mitigating Agency Problems**

Contractual Methods	Description	Legal Perspectives
Control Rights	Investors can get control over the enterprise to limit the decisions of the entrepreneur that are detrimental to their interests	Permissible
Incentive Structure	Cash-flow rights (compensation and stock ownership) of the entrepreneur made contingent on her performance	Permissible
Cash-flow rights	Investors can get pre-determined dividends and have the right to obtain a disproportionate share of the enterprise if the entrepreneur performs poorly	Impermissible
Liquidation rights	Investors have preferential shares that are converted into common shares at favorable prices and have senior claims in case of poor performance	Impermissible

**Table 4. Business Perspective on Informal Agreement Methods of Mitigating Funding Agency Problems**

Informal Agreement Methods	Description	Legal Perspectives
Musical intangible value right	Investors can get control over the Musical intangible value of enterprise to limit the decisions of the entrepreneur that are detrimental to their interests.	Permissible
	If start-up music business entrepreneurs are not able to provide control over to the music intangible value of enterprise to limit the decisions of the entrepreneur that are detrimental to their interests to funding agency.	Impermissible
Design and development of music application or software rights	Design and development of music application of software rights (ownership) of the entrepreneur made contingent on him/her development	Permissible

	If start-up music business entrepreneurs are not able to provide control over to the design and development of music software or application of enterprise to limit the decisions of the entrepreneur that are detrimental to their interests to funding agency.	Impermissible
Venture capital (Future RIO) Rights	Investors get pre-determined dividends and have the right to obtain a disproportionate share of the enterprise if the entrepreneur performs poorly	Impermissible

## 5. Discussion

### 5.1 Valuation vs. Pricing

According to (Divestopedia, 2018; Reinfeld, P. 2018), an assessment is a procedure of figuring out a company's true market worth in a hypothetical framework. This means that the valuing is time-specific, that there is no bargaining involved, and that there is no possibility of exposure to the public market. A lot of financial professionals and analysts use the terms "valuation" and "pricing" synonymously. However, one has a very different nature from the other. More specifically, valuation is based on its intrinsic value drivers, including asset revenue, risk, and growth, as well as how they interact. basics of business. Instead, market momentum, sentiment, new information, and any possible illiquidity problems all have a significant impact on it. Market forces can cause stock prices to take on a life of their own and deviate from the true, fundamental worth reflected by a company's fundamentals. The variance leads to the distinction between value and pricing (Damodaran, 2016; Reinfeld, P. 2018).

### 5.2 Business Idea

Typically, the founder's skills and expertise are where a business concept comes from. Therefore, the idea is frequently associated with a particular industry in which the inventor earned his or her degree and/or gained their professional expertise. In addition to relying on the initial company concept, the new firm must constantly rethink itself if it is to survive the severe competition. The initial company idea must be creative, distinct, and easily distinguished from already existing concepts to develop a long-term profitable company. Another choice is to better optimize current processes, which could not only make the process itself more efficient but also open new distribution channels like e-commerce, pioneering sourcing techniques, or implementing a target market. However, having a great company idea by itself is insufficient. Implementation, execution, and, most significantly, the discovery of brand-new market prospects is all necessary for success (Klandt, 2006; Reinfeld, P. 2018).

Developments in the demographic, economic, social, cultural, technological, political, or regulatory fields must be taken into account from the outset of an organization. The return to traditional values, changes in gender roles, or an emphasis on local products are only a few



examples of current trends. For the company idea to be continuously improved, it is thought necessary to analyze trends as they change in response to technology advancements (Klandt, 2006; Reinfeld, P. 2018). Ideas can also be found by researching various industry best practices or by looking at regional and supra-regional specifics. Although there may be less danger involved, this adaptation process still requires careful consideration of any potential violations of copyrights or intellectual property (Klandt, 2006; Reinfeld, P. 2018). As a result, creating new business initiatives should not be done through adaptation or complete acceptance of an existing business idea.

### **5.3 Preliminary Examination of The Business Idea**

Following agreement on the company concept, more stages and procedures are required to lower the risk of failure. Six fundamental processes make up the preliminary evaluation of a business idea: creating the idea's main components; defining the goods and services offered; assessing competitors; comprehending the industry; recognizing crucial figures; and identifying the target market (Küsell, 2006; Reinfeld, P. 2018).

First, the foundation of the new enterprise is laid with a clearly defined sketch of key components. The specification of intended outcomes, such as those related to the products and services offered, the general objective of the new endeavor, the market, competitor identification, and target group identification, can be aided by useful tools like hypotheses (Küsell, 2006; Reinfeld, P. 2018). The second definition of the company's products and services is that they are all intended to help customers solve problems or meet certain demands (Küsell, 2006; Reinfeld, P.2018). Thirdly, a thorough examination of the market and rivals must be done. As was already noted, it is imperative to continuously monitor and assess trends and rival activity. An essential component of accurately identifying direct and indirect competitors is the new venture's self-positioning. The most typical method for identifying direct competitors is a top-down approach. A spatial distinction enables a dramatic downsizing to the universe of direct competitors after starting with all prospective competitors. In the end, softer standards like quality and price range are employed as benchmarks to accurately identify organizations that are directly competing with one another (Küsell, 2006; Reinfeld, P.2018).

Fourth, the entrepreneur must get a comprehensive understanding of the underlying industry. Common industry best practices and organizational structures must, therefore, be carefully examined in this context to identify any potential efficiency improvements. By breaking the traditional business model and selling directly to customers in place of the existing retail selling structures, Dell clearly understood how to obtain a competitive edge. Sales and/or marketing, production, and procurement are possible areas for enhancements and disruptions (Küsell, 2006, Reinfeld, P.2018).

Lastly, the complete grasp of consumer needs and how the client will ultimately perceive the newly offered product is the final and most important step. As a result, to create a product that can be sold, frequent feedback loops during the development phase are essential. This feedback method enables changes at early stages of development in accordance with real client requirements, as opposed to testing the final product in the market, which is a common misconception of young and inexperienced entrepreneurs. As a result, only goods that are in line with consumer demands are created; previously created goods do not need to be modified. This additional layer of interim feedback also avoids any further delays in giving clients their final items (Küsell, 2006; Reinfeld, P.2018).

## 5.4 Planning

The following primary instruments make up the planning phase: a breakdown of the organizational structure, a marketing and sales plan, a financial plan, and a plan for resources. Clearly, a significant component of the system of worldwide planning is the company's business strategy. A company strategy does not, however, contain an excessive amount of complexity in terms of information; rather, it is more of a communication and record-keeping tool (Küsell, 2006). A business plan, according to the Austrian Chamber of Commerce, is a tool for obtaining new money by providing high level insights on a venture's overall potential, profitability, and end consumer value. In a nutshell, it provides swift external stakeholders with an overview of the business (Wirtschaftskammer sterreich - Gründerservice, 2016; Reinfeld, P.2018).

## 6. Findings/Results

### 6.1 Business Perspective on Contractual Methods of Mitigating Agency Problems

**Control Rights:** It is legitimate for investors to have control over a business to prevent the entrepreneur from making decisions that are harmful to their interests.

**Incentive Structure:** The entrepreneur's cash-flow rights (pay and stock ownership) are made conditional on her success, which is a legal word.

**Cash-flow rights** are illegal from a legal standpoint since they allow investors to receive predetermined rewards and the right to a disproportionately piece of the business if the entrepreneur performs poorly.

**Liquidation rights:** Investors have senior claims in the event of bad achievement, which is an illegal word from a legal standpoint, and preferred shares that can be changed into common shares at favorable rates.

### 6.2 Business Perspective on Informal Agreement Methods of Mitigating Funding Agency Problems

**Musical Intangible Value Right:** Investors have the legal right to take ownership of a business's musical intangible worth to prevent the owner from making decisions that are harmful to their objectives. The legal viewpoints term will not be valid if start-up music business owners are unable to grant ownership over the intangible worth of their business related to music to restrict their decisions that are harmful to the funding agency's objectives.

**Design and Development of Music Applications or Software Rights:** Design and development of music applications or software rights (ownership) made dependent on the entrepreneur's development is legal. The legal perspective term will not be valid if start-up music business owners are unable to exercise control over the design and development of music software or business applications to prevent them from making decisions that are harmful to the funding agency's interests.

**Venture Capital (Future RIO) Rights:** - Investors have the right to acquire a disproportionate share of the business if the entrepreneur does poorly, which is illegal from a legal standpoint. Investors also receive predetermined dividends.

## **7. Recommendations**

There is a limitation in this research that positive business ethics studies cannot be analyzed with a normative approach. However, a positive economical approach might be investigated for future recommendation in the positive business approaches and strategies for music company funding, business analysis, and morals that can help startups face fewer obstacles and avoid financing agency issues. When positive entrepreneurial ethics are practiced but financial business ethics are not practiced, investors can finance entrepreneurs by using music business fact-based methods to alleviate funding agency problems with Informal agreement with assigned additional legal criteria.

## **8. Conclusion**

In conclusion, it is obvious that investors can finance entrepreneurs employing advanced era start-up music business valuation methods to alleviate funding agency problems with an informal agreement with assigned additional legal criteria when normative entrepreneurial ethics are not practiced but normative financial business ethics are practiced. On the other hand, the financing agency issue cannot be resolved through contractual means if normative financial and entrepreneurial business principles are not followed. Investors can gain control over the business to limit the entrepreneur's decisions that are harmful to their interests, and cash-flow rights (compensation and stock ownership) of the music entrepreneur made contingent on the performances, as shown in Table 3 from a business perspective on contractual methods of mitigating agency problems. On the other hand, if the entrepreneur does poorly, investors may be entitled to pre-determined payouts and the right to acquire a disproportionate share of the business. Aside from having senior claims in the event of subpar performance, investors can also own preferential shares that can be exchanged into common shares at favorable rates. A commercial viewpoint on informal agreements as a means of reducing funding agency issues is presented in Table 4. Investors can exert control over the enterprise's musical physical and intangible assets worth to prevent the entrepreneur from making actions that are harmful to their interests. However, the design and development of a music application of software rendered the owner's (music entrepreneur's) rights dependent on development. If music business starters are unable to exert control over the creation of music software or applications or any kind of intangible assets for startup, the financing agency may be adversely affected by their business decisions. If the entrepreneur performs poorly, investors have the right to acquire a disproportionate stake of the business in addition to receiving predetermined dividends.

## **9. Acknowledgements**

I would like to express my gratitude to my supervisor as well as our Special Investigation team who support and courage me to do this wonderful project on this subject which gave me motivation to do more research and I came to know about a lot of new things, for which I am grateful to them.

Secondly, I would also like to thank my Lovely Professional University Chancellor, Pro Chancellor, Vice Chancellor, Pro vice chancellor, Dean, HOS, HOD of my department and Performing arts Department members who motivated me a lot in finalizing this project within a limited time frame.

## References

- Ahmed, H., & Aassouli, D. (2022). Entrepreneurial finance, agency problems and Islamic ethics: complementarities and constraints. *Venture Capital*, 24(1), 25-46.
- Aragon, G. A. (2011). *Financial ethics: a positivist analysis*. Oxford University Press, USA.
- Berger, A. N., & Udell, G. F. (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of banking & finance*, 22(6-8), 613-673.
- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative research journal*, 9(2), 27-40.
- Denis, D. J. (2004). Entrepreneurial finance: an overview of the issues and evidence. *Journal of corporate finance*, 10(2), 301-326.
- Dushnitsky, G., & Shapira, Z. (2010). Entrepreneurial finance meets organizational reality: Comparing investment practices and performance of corporate and independent venture capitalists. *Strategic Management Journal*, 31(9), 990-1017.
- Flohr, A., Rieth, L., Schwindenhammer, S., & Wolf, K. (2010). *The role of business in global governance: Corporations as norm-entrepreneurs*. Springer.
- Gilson, L. L., & Goldberg, C. B. (2015). Editors' comment: so, what is a conceptual paper? *Group & Organization Management*, 40(2), 127-130.
- Hirschheim, R. (2008). Some guidelines for the critical reviewing of conceptual papers. *Journal of the Association for Information Systems*, 9(8), 21.
- Katzenstein, P. J. (Ed.). (1996). *The culture of national security: Norms and identity in world politics*. Columbia University Press.
- Kiznyte, J., Welker, M., & Dechange, A. (2016). Applying project management methods to the creation of a start-up business plan: the case of Blendlee. *PM World Journal*, 5(5), 1-24.
- Köhn, A. (2018). The determinants of startup valuation in the venture capital context: a systematic review and avenues for future research. *Management Review Quarterly*, 68(1), 3-36.
- Maxwell, A. L., & Lévesque, M. (2014). Trustworthiness: A critical ingredient for entrepreneurs seeking investors. *Entrepreneurship Theory and Practice*, 38(5), 1057-1080.
- Reinfeld, P. (2018). Start-Up Valuation Start-Up Valuation. *HEC Paris*.
- Soppe, A. (2016). *New financial ethics: a normative approach*. Taylor & Francis.
- Triantis, G. G. (2001). Financial contract design in the world of venture capital.

Ulrich, P. 2013. The normative foundations of entrepreneurial activity.

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## *A Necessary Challenge to Avoid Missing the Turning Point to Avoid Medical Malpractice*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

### **Abstract**

This study analyzed perinatal medical malpractice court cases in Japan between 1999 and 2021, especially those where midwives were found negligent in cases involving the use of labor-inducing medications. The aim was to identify the turning points where adverse events could have been avoided and examine the necessary measures to prevent missing these turning points. Two cases of successful plaintiff's verdicts where the midwife's fault was recognized during the use of labor-inducing medications were found. In both cases, the turning points where the adverse events could have been avoided were related to the midwife's failure to properly evaluate the situation and make critical judgments, such as deciding whether to increase the dose of labor-inducing medications, fitting an electronic fetal heart rate monitoring device and interpreting the results, and observing the delivery progress. To prevent medical errors, midwives must engage in ongoing education and training, practice effective communication and collaboration with healthcare providers, refer to guidelines to minimize the risk of medical errors, and accurately record patient information. The findings are deemed useful for modern medicine as they highlight the importance of midwives' responsibilities in preventing medical errors during labor and delivery.

Keywords: Malpractice, Midwife, Turning Points

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## Introduction

Medical malpractice during delivery can result in cerebral palsy (CP) and other lifelong disabilities, causing immense suffering on infants and families (Jonsson, 2007). Many legal challenges to labor management involve allegations regarding the misuse of labor-inducing medications (Berglund, et al.2008). For example, oxytocin is used for inducing and enhancing uterine contractions and treating uterine bleeding, but excessive stimulation may lead to reduced gas exchange to the placenta (Oscarsson, 2006). To prevent this, medications must be used judiciously and in accordance with institutional policies and procedures.

In Japan, cases where the dosage and administration of oxytocin preparations fell within the standard range of the “Guidelines for the Practice of Obstetrics and Gynecology–Obstetrics” have increased, and 70%–80% of cases involved continuous fetal heart rate monitoring using electronic fetal heart rate monitoring (cardiotocography, CTG) devices (The Japan obstetric compensation system for Cerebral Palsy, 2022) These improvements are considered to be the result of various measures taken to prevent accidents caused by inappropriate use, such as the establishment of obstetric care compensation and medical accident investigation systems, as well as the publication and revision of guidelines for obstetric and gynecological care. Moreover, cases where mothers and infants have experienced serious outcomes due to failure of using the product in accordance with standards have been repeatedly reported in Japan. In particular, the use of labor-inducing medications is an auxiliary service under the direction of physicians, and midwives must work together with physicians to safely carry out their duties. Thus, the necessary measures that midwives must take to prevent medical errors caused by inappropriate use or violation of their duty must be determined to improve the use of these drugs.

Medical accident cases have often been used to prevent recurrence, and learning from past cases has been demonstrated to be beneficial and important for ongoing midwifery education (Guidera, et al. 2012). In Japan, attempts have been made to utilize case studies as a means of emphasizing the potential for preventing medical accidents and developing the ability to avoid overlooking warning signs. However, previous studies on medical malpractice trials suggest that unfavorable outcomes could have been prevented if timely and appropriate measures had been taken (Jonsson M, 2007). We believe that this case study can contribute to future medical safety education for midwives by enhancing their ability to accurately identify critical moments that may develop into adverse events. Therefore, this study analyzed a perinatal medical malpractice trial that occurred at the time of the adverse event and identify the turning point where the adverse event could have been avoided based on the facts revealed during the trial. The study aims to examine the necessary measures to prevent missing this turning point and provide insights into the care needed to avoid medical errors.

### Definition of Terms:

1. Perinatal medical malpractice refers to a legal determination of negligence by a healthcare provider in a lawsuit related to childbirth.
2. Turning point refers to a critical moment at which the occurrence of medical malpractice can be prevented. In this paper, the turning point is defined as the moment before the midwife’s negligent act that was determined by the trial court, at which the midwife’s actions and circumstances presented an opportunity to prevent negligence from occurring.



## Methods

This study collected and analyzed perinatal medical malpractice court cases between 1999 and 2021, wherein midwives were found negligent in cases involving the use of labor-inducing medications. A legal database (TKC Law Library, 2020) was used for this purpose, and the study falls under the category of literature review. The reason for focusing on court cases from the past 20 years is that this was a period during which Japan's medical safety measures were being promoted based on the history of similar repeated accidents. The issues for medical malpractice prevention derived from this study are deemed to be useful in modern medicine. Keywords including "medical accidents" and/or "childbirth" were used to search for cases from April to December 2020. Two cases of successful plaintiff's verdicts where the midwife's fault was recognized during the use of labor-inducing medications were selected. After organizing the issues, arguments of the parties, and background information based on the chronological medical history chart (Supreme Court of Japan, 2017), the turning point was examined. During the analysis of the turning point, objectivity was ensured by making a comprehensive assessment of (1) the scientific basis, (2) evidence presented at the trial, and (3) statements of the witnesses and parties. The assessment also considered the foreseeability of serious outcomes for the mother and child. In addition, three medical professionals experienced in medical malpractice lawsuits provided oversight to ensure objectivity in the case.

## Results

The following is a summary of the two selected court cases and their respective turning points.

Case 1: LEX/BD Document No. 28060137, Fukuoka District Court, July 29, 1999.

### 1) Outline of the case

Ms. A, a woman with a history of multiple childbirths, was induced with an oxytocin preparation for delivery at Hospital C. Midwives monitored her progress. About 3 h after the start of the infusion, a midwife reported to Dr. D that the baby's heartbeat had decreased. Dr. D attempted suction delivery and Kristeller maneuver, but was unsuccessful in delivering the baby, which led to a Cesarean section. As a result, Baby B was left with residual cerebral palsy.

### 2) Negligence of certified midwives established by court

Midwife E was found to be negligent for overlooking the appearance of late deceleration or suspected bradycardia that occurred after 11:56 a.m. Midwife F was found to be negligent for not taking appropriate measures after taking over from midwife E.

### 3) Turning point

Midwife E increased the dose of oxytocin at 10:40 a.m., approximately 3 h before the delivery of Baby B.

Fetal distress, including 12 episodes of late deceleration, was suspected, but the midwife was unaware of it. The midwife should have considered reducing or discontinuing the use of oxytocin. In addition, fetal heart rate monitoring should have been performed to assess fetal well-being.

#### 4) Verification of the turning point

##### (1) Timeline

9:57 a.m.: Late deceleration occurred, followed by mild sustained tachycardia of 160 to 180 bpm. Midwife E noticed the sustained tachycardia, but she did not consider it abnormal and decided to observe carefully, without reporting to Dr. D.

10:10 a.m.: Oxytocin dosage increased.

10:16 a.m.: Contractions occurred intermittently every 2.5–3 min.

10:18–10:53 a.m.: Fetal distress, including 12 episodes of late deceleration, was suspected.

10:40 a.m. (turning point): Midwife E increased the dose of oxytocin preparation.

11:45 a.m.: Midwife E noticed that the fetal heart rate had dropped to about 80 bpm.

11:50 a.m.: Midwife E began administering 3 L of oxygen per minute, which resulted in a recovery of the fetal heart rate to about 160 bpm. Due to the rapid recovery of the fetal heart rate, it was decided to monitor the patient and report to Dr. D if the drops in fetal heart rate became more frequent. From the witness examination of Midwife E, it was found that “it is difficult to find that Midwife E was actually aware of the variable deceleration.”

12:00 p.m.: Midwife E informed Midwife F that the fetal heart rate had decreased at approximately 11:45 a.m. but recovered with the administration of oxygen, and Midwife F took over. The fetal heart rate began to show late deceleration, but Midwife F did not notice.

12:15 p.m.: Midwife F noticed that the fetal heart rate had dropped to 70 bpm and reported this to Dr. D. Among other interventions, she stopped the oxytocin infusion and increased the oxygen dosage.

\*Annotation: The normal fetal heart rate is 110–160 bpm.

(2) Based on the scientific evidence, trial evidence, and witness and party statements, we have determined that the medical malpractice in this case could have been prevented if the midwife had responded with a sense of urgency to the increased dose of oxytocin, predicted the subsequent progression, or considered the possibility of the fetal heart rate deviating from normal values and promptly reported it to the physician.

Case 2: LEX/BD Document No. 28091003, Kobe District Court, September 30, 2003.

##### 1) Outline of the case

Ms. H, a first-time mother, was admitted to Hospital J in her hometown after her water broke in the first trimester. The next day, she was given a dinoprostone preparation due to weak labor pains. About 7 h later, she was diagnosed with fetal dysfunction and underwent a Cesarean section to deliver Baby I. Unfortunately, Baby I died shortly after birth. During the delivery induction at Hospital J, doctors and midwives visited the room at intervals to monitor the delivery progress by interweaving Doppler fetal heart rate checks, interviews, observations, and attachment of CTG as appropriate. On the day of delivery, there were four scheduled deliveries and three actual deliveries (including two using labor-inducing medications). Sixteen patients were admitted to the obstetrics and gynecology department, and outpatient care was provided in the morning and part of the afternoon.

##### 2) Negligence of certified midwives established by court

From the time when six doses of dinoprostone, a labor-inducing agent, were administered at 1:15 p.m., high-grade bradycardia persisted until 3:00 p.m. Between 1:15 p.m. and 3:00 p.m., the midwife did not attach the fetal monitor and did not visit A's room, leaving her unattended.

The midwife had a duty to monitor the progress of labor in conjunction with the physician, and her failure to perform the monitoring duty constitutes negligence.

### 3) Turning point

Midwife M instructed Ms. A to take the fifth dinoprostone tablet at 12:15 a.m., approximately 3 h before the delivery of Baby I.

Due to the sudden increase in pain and the deviation of fetal heart rate from normal values, continuous monitoring using CTG should have been performed.

### 4) Verification of the turning point

#### (1) Timeline

11:15 a.m.: Ms. H took the fourth dinoprostone tablet.

11:30 a.m.: Ms. H was unable to eat lunch and endured each contraction by placing a towel over her mouth to stifle her voice and using breathing exercises to manage the pain.

Before taking the fifth dinoprostone tablet: Midwife L obtained information from Doppler auscultation, indicating a fetal heart rate of 150–170 bpm, a labor cycle of 2 min (as reported by Ms. H), and seizure time of 10–20 s.

12:15 p.m. (turning point): Midwife M ordered and confirmed the administration of the fifth tablet. She explained that she would consult with Dr. K on whether to administer the sixth tablet 1 h later, which also influenced the physician's decision to order the sixth tablet. Midwife M did not attach CTG to Ms. H.

1:00 p.m.: Ms. H, who was unable to walk unassisted due to the intensity of her contractions, went to the examination room with her husband for an internal examination by Dr. K. Dr. K noted an opening of the uterus of 3–4 cm and 50% retraction. Dr. K administered the sixth dose to Ms. H. Midwife N was present and provided a back massage to Ms. H.

3:00 p.m.: Midwife O fitted Ms. H with CTG (CTG was not available until 3:00 p.m. due to other patients).

\*Annotation: The normal fetal heart rate is 110–160 bpm.

(2) Based on the scientific evidence, trial evidence, and witness and party statements, we have determined that the medical malpractice could have been avoided if the midwife had followed standard procedures by considering the possibility of complications and performing continuous monitoring with CTG. This was particularly necessary in the situation where the fetal heart rate deviated from normal values and the woman was experiencing a sudden increase in pain.

## Discussion

We will examine the necessary measures and provide insights into the care needed to avoid medical errors.

In Case 1, from 10:18 a.m. to 10:53 a.m., 12 episodes of late deceleration occurred, but the midwife was unaware of this fact. The midwife should have considered reducing or discontinuing the administration of oxytocin to the patient. Furthermore, an accurate interpretation of CTG should have been conducted to assess fetal health. The trial court concluded that the risks of administering oxytocin products should be comprehended, and any abnormal signs in the mother or fetus should be appropriately monitored to avoid preventable harm. In this regard, it was also determined that avoiding harm was warranted. In addition, if

the midwife had considered the possibility of fetal heart rate deviation from normal values, the situation could have been communicated to the physician approximately 2 h earlier than it was in the case, potentially leading to an altered outcome. According to the Japan Obstetric Compensation System for Cerebral Palsy, in situations where fetal dysfunction is suspected, it is recommended to promptly report to a physician or request his/her presence, as well as consider reducing or discontinuing uterotonic medications (Murakami, 2018). However, previous research speculated that midwives do not encounter obstetric emergencies or high-risk deliveries frequently and that it is impossible to acquire the necessary skills to manage such events solely in clinical practice. Therefore, supplementary training is deemed necessary (Hogh, 2021). Eggermont (Eggermont, 2015) analyzed cases of medical malpractice by midwives providing delivery care over the past 40 years and reported that many cases were related to the interpretation of fetal monitoring, with the most common responsibility lying with midwives who failed to identify fetal distress through fetal monitoring. The author also emphasized the importance of continuous monitoring, acquisition of accurate interpretation skills, need for good communication and organizational structure among healthcare professionals to facilitate support requests, and sharing of all relevant information with colleagues and obstetricians without hesitation, even when abnormalities are suspected. From these considerations, it becomes clear that there is a need for ongoing education and training, as well as effective communication and collaboration between healthcare providers, so that midwives can avoid medical errors and not miss turning points.

In Case 2, we conclude that medical malpractice could have been prevented if the midwife had accurately assessed the situation where the woman was experiencing sudden and severe pain and the fetal heart rate deviated from normal values. Continuous monitoring with CTG should have been performed. The package for labor-inducing medications in Japan was revised in 2020 to include a requirement for continuous monitoring with CTG when using oxytocin. This update was made in response to reports of severe cases of excessive labor and fetal dysfunction associated with the use of this drug. It is crucial that we adhere to these guidelines (Ministry of Health, Labor and Welfare, 2020). In cases where continuous monitoring is not possible, a clear rationale should be provided, and the patient should be monitored using an appropriate alternative method. If the alternative method is using a handheld Doppler to listen to the fetal heartbeat, then the labor stage, location of the heartbeat, appropriate timing and measurement interval of 60 s immediately following uterine contractions, and any additional findings should be described (Murakami, 2018). Based on the above cases, it becomes clear that midwives need to make important decisions at turning points regarding the assessment of whether to increase oxytocin, the attachment and interpretation of CTG during oxytocin use, and the observation of labor progress. In order not to miss the turning points, midwives should refer to guidelines and accurately record patient information to minimize the risk of medical errors.

In both cases, we identified a turning point, which was a critical point that could have altered the course of events toward prevention, several hours before the court's finding of negligence. However, there are limitations to examining "why the midwife missed the turning point" based solely on the facts stated in the court's decision. Further examination of the necessary care to avoid missing the turning point is needed. Another limitation of this study is that it only includes cases listed in the legal database (TKC Law Library, 2022), which does not provide a comprehensive understanding of court cases involving labor-inducing medications.

## **Conclusion**

Through these case studies, it becomes clear that turning points are situations that could lead to a shift in the direction toward avoiding medical errors, such as deciding whether to increase the dose of labor-inducing medications, fitting CTG and interpreting the findings, using labor-inducing medications, and observing the delivery progress. Midwives must make critical judgment during these turning points. Therefore, midwives should engage in ongoing education and training, practice effective communication and collaboration between healthcare providers, refer to guidelines to minimize the risk of medical errors, and accurately record patient information.

## References

- Berglund, S. Grunewald, Pettersson, H., et al. (2008). Severe asphyxia due to delivery-related malpractice in Sweden 1990–2005. *An International Journal of Obstetrics and Gynaecology*, 115(3), 316-323.
- Eggermont, M. (2015). The Belgian, French and Dutch midwife on trial: A critical case study. *Midwifery*, 31(5), 547-53.
- Guidera, M. McCool, W. Hanlon, A., et al. (2012). Midwives and Liability: Results from the 2009 Nationwide Survey of Certified Nurse-Midwives and Certified Midwives in the United States. *Journal of Midwifery and Women's Health*, 57(4), 345-52.
- Hogh, H. Thellesen, L. Bergholt, T., et al. (2021). How often will midwives and obstetricians experience obstetric emergencies or high-risk deliveries: a national cross-sectional study. *BMJ Open*, 11(11), e050790.
- The Japan Obstetric Compensation System for Cerebral Palsy. (2022). Report on Preventing Recurrence of The Japan obstetric compensation system for Cerebral Palsy, 12th Edition. Retrieved November 12, 2022, from: [http://www.sanka-hp.jcqhc.or.jp/documents/prevention/trend/pdf/Saihatsu\\_Report\\_12\\_88\\_106.pdf](http://www.sanka-hp.jcqhc.or.jp/documents/prevention/trend/pdf/Saihatsu_Report_12_88_106.pdf)
- Jonsson, M. (2007). Analysis of malpractice claims with a focus on oxytocin use in labour. *Acta Obstet Gynecol Scand*, 86(3), 315-319.
- Jonsson, M. Nordén, SL. Hanson, U. (2007). Analysis of malpractice claims with a focus on oxytocin use in labour. *Acta Obstet Gynecol Scand*, 86(3), 315-319.
- Ministry of Health, Labor and Welfare. (2020). OXYTOCIN injection. Retrieved July 6, 2021, from: <https://pins.japic.or.jp/pdf/newPINS/00054001.pdf>
- Murakami, A. (2018). The Japan Obstetric Compensation System for Cerebral Palsy and Risk Management in Midwifery Practice – Learning through cases. ISHIYAKU PUBLISHERS, INK, Japan. 56-58.
- Oscarsson ME, Amer-Wahlin I, Rydhstroem H, Kallen K. (2006). Outcome in obstetric care related to oxytocin use. A population-based study. *Acta Obstet Gynecol Scand*. 2006;85:1094–8.
- Supreme Court of Japan. (2017). From the filing of the lawsuit to the final judgment. Retrieved July 6, 2021, from: [https://www.courts.go.jp/osaka/saiban/medical/02\\_02\\_soutenseiri/index.html](https://www.courts.go.jp/osaka/saiban/medical/02_02_soutenseiri/index.html)
- TKC Law Library. (2020). Retrieved April 4, 2020, from: <https://www.tkc.jp/law/lawlibrary/company/>

## *Analysis of COVID-19 Pandemic Impact on Labor Force in Thailand*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

### **Abstract**

Covid-19 has begun to spread in Thailand since early 2020, and consequently the economy in some industrial divisions contracted while some industrial divisions expanded significantly. This research investigates the impact of Covid-19 pandemic on Thai labor force in the aspect of employment and income. The labor force survey data collected by National Statistical Office during 2019-2020 was categorized into 80 industrial divisions. Descriptive statistics and inferential statistics were utilized to compare between the situation before the Covid-19 pandemic and the situation while Covid-19 spreading. The study found that while Covid-19 spreading, in Thailand, the number of unemployed persons increased 40.35% while the number of employed persons increased 2.51%. The employment in the accommodation division showed the highest decreased by 90,992 persons while the employment in the food and beverage service activities division showed the highest increased by 222,142 persons. The income of the persons in the travel agency and tour operator activities division showed the highest decreased by 66.39% while the income of the persons in the libraries, archives, museums and other cultural activities division showed the highest increased by 316.90%. The government policy maker, the investor, and labor force should learn about the opportunity and threat from this crisis.

Keywords: Covid-19, Labor Force, Industry, Employment, Income

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## Introduction

Coronavirus Disease 2019 or COVID 19 is an emerging disease. It was first found in Wuhan, China. It was first reported in December 2019. Coronaviruses are virulent viruses that cause disease in humans and animals. There are several strains of coronavirus, for example, Delta, Omicron, Lambda, Colombia, or Mu. All these strains cause respiratory diseases. With the COVID-19 epidemic situation spreading rapidly and widely in many countries around the world. As a result, there are a large number of infected people and deaths. The World Health Organization has declared the COVID-19 outbreak a pandemic as the number of cases increases. The outbreak has not yet been controlled in many countries in all regions of the world. The outbreak wreaks havoc on both human livelihoods and global health security.

The COVID-19 disease began to spread in Thailand in early 2020. and had a clear impact on the economy Those affected are broad in particular small businesses, restaurants, hotels, retailers and tourism due to the country's lockdown or cancellation of economic activities. It is to control the spread of the coronavirus disease. As a result, there are many workers who are suddenly unemployed and suffer from insufficient income to livelihoods. Entrepreneurs need to adapt to be able to cope with the Coronavirus epidemic situation. Due to declining incomes, the broader economic system has been disturbed, which has had an impact on many workers.

From the aforementioned problems, this research is about comparing the total employment value and the employment of Thai workers in the situation of COVID-19 by comparing 2019-2020. The objective is to study which industry groups are most affected by total employment value and employment impact the most to propose solutions in the future.

## Related research

Jakrapat Watanasuk (2007) Study on labor wage differences between genders: a case study of the automotive industry in Wellgrow Industrial Estate, Chachoengsao Province. It was found that during the probationary period, males had higher wages than females by 120.311 baht/month. At the start of work, males were paid 120.040 baht/month which was more than females. At present, males were paid 175 baht/month which was more than females.

Nuanphan Maithongdee (2010) studied discrimination and wage differences between men and women: the case of private employees in higher occupations (including managers, professionals in various fields, and technicians are mainly used in this analysis) had higher wages than female workers.

Kritsana Lertkasetwittaya and Terdsak Chomtosuwan studied the analysis of factors affecting income differences in the Thai labor force and found that the higher the level of education, the higher the income. Higher work experience will increase your income at a reduced rate. Males earn more than female workers. Working spaces in cities earn more than outside cities. The region in Bangkok earns the most. Senior public servant managers have the greatest inequality.

Nipapan Jensantikul (2020) Studying workers in the situation of the spread of the coronavirus (COVID-19, government measures and impacts) found that 1) workers who are at higher risk of termination of employment than other groups are elderly workers 2 ) The impact on each group of workers differs depending on the nature of their business and occupation. 3) Some workers lack information technology knowledge.



Thananya Wanta, Wannika Sinthornsawat, and Nonglak Jiwju (2022) studied the economic impact assessment of the COVID-19 epidemic situation for the hotel accommodation business in the Tak Special Economic Area, it was found that the overall economic impact is divided into 2 aspects. The overall income is at a high level.

From other literature reviews of relevant research, it was found that specific groups and provinces were studied only.

## Objectives

The aim of this research is to study the impact of COVID-19 pandemic on value of employment, number of employment in each industry group and its income inequality.

## Research methodology

### 1. Data collection

In this study, secondary data were used as raw data from the Labor Force Survey in Q4 (2019-2020). In 2019, there were 205,256 samples out of a total of 68,020,986 people or 0.3% and there were 221,185 samples out of a total of 68,152,065 people or 0.3%. The data were collected by the National Statistical Office. They collect data each year and cover the entire country using a random sampling of the Thai population throughout the country. The researcher used a questionnaire to survey the working conditions of the population and interview the respondents.

### 2. Data analysis

The study uses data on labor income divided by industry groups based on data from the National Statistical Office of 80 industry groups.

### 3. Research tools

#### 3.1 Change in value of employment

In this research, the rate of change was used to analyze two aspects: employment and value of employment. The calculation formula is as follows:

$$\delta = \left( \frac{\lambda_{2020} - \lambda_{2019}}{\lambda_{2019}} \right) \times 100\%$$

This research used inflation to analyze how increasing or decreasing income of each industry affects the purchasing power of labor. The calculation formula is as follows:

$$PV_{2019} = \frac{FV_{2020}}{\left( 1 + \frac{r_{2020}}{100} \right)}$$

Which  $FV_{2020}$  is the value of money in 2020 after adjusting for inflation corresponds to its value in 2019,  $PV_{2019}$  is the value of money in 2020 after adjusting for inflation corresponds to its value in 2019, and  $r$  is inflation rate.

### 3.2 Change in number of employment

Which  $\delta$  is the rate of change in number of employment,  $\lambda$  is the employment.

$$\phi = \left( \frac{\mu_{2020} - \mu_{2019}}{\mu_{2019}} \right) \times 100\%$$

Which  $\phi$  is the rate of change in value of employment,  $\mu$  is the value of employment.

### 3.3 Income inequality

This research used the Gini Index to measure the income disparity of the Thai workforce. The Gini Index equal to 100 means the most inequality, while the Gini Index equal to 0 means the least inequality or no inequality. The calculation formula is as follows:

$$G = \left( 1 - \sum_{i=1}^n (X_i - X_{i-1})(Y_i + Y_{i-1}) \right) \times 100$$

Which  $G$  is Gini index,  $X$  is the cumulative percentage of the Thai labor force,  $Y$  is the cumulative percentage of income of Thai labor force, and  $n$  is the number of Thai labor force.

The Gini index used to measure income distribution is calculated differently from the Gini index used by governments to measure income distribution. If it's a government, the average household income is used to calculate the Gini index. However, this research uses Labor Force Survey data for calculations without averaging the number of household members or dividing by the number of household members. We can reflect the person who actually receives the money.

## Results

The results of this research show that the change in the total employment value of each industry group can be seen. This analysis was divided into 2 analyses: the change in the total employment value within industry groups and the change in the total employment value of each industry group to the total employment value across all industry groups.

The change in the value of total employment within an industry group as a percentage of each industry group concerning the top 10 percent changing industries and the top 10 worst changing industries were found to be: The 1st best percentage change in total revenue within the industry is libraries, archives, museums, and other cultural activities increased by 3.17 percent. The 2nd place is the treatment and other waste management activities, increased by 2.84 percent. The 3rd place was head office activities and management consulting services increased by 0.87 percent. The 4th place was a waste collection, treatment and disposal increased by 0.83 percent. The 5th place was the care activity that gave accommodation an increased by 0.82 percent. The 6th place was other mining and quarrying increased 0.64 percent. The 7th place was the preparation of computer programs and consulting increased by 0.61 percent. The 8th place was civil engineering increased by 0.55 percent. The 9th place was veterinary services increased by 0.54 percent. The 10th place was film, video, and television production increased by 0.45 percent. The percentage change in total employment value within the top 10 worst industries from the table showed: The 1st place was the activity of travel agents and tour operators

decreased by 0.66 percent. The 2nd place was air transport decreased by 0.65 percent. The 3rd place was accommodation decreased by 0.49 percent. The 4th place was sports activities, entertainment and recreation decreased by 0.43 percent. The 5th place was production of coke and refined petroleum products decreased by 0.42 percent. The 6th place was the production of leather and related products decreased by 0.41 percent. The 7th place was Security Services and Investigations decreased by 0.40 percent. The 8th place was other professional, scientific and technical activities decreased by 0.36 percent. The 9th place was water transport decreased by 0.30 percent. The 10th place was creative arts and entertainment activities decreased by 0.25 percent.

**Table 1: The impacts on employment in each industry group**

Code	Industry group	Number of employments 2019 (Person)	Number of employments 2020 (Person)	Change in employment (Person)	Change in total employment value before inflation (Million baht)	Change in total employment value after inflation (Million baht)
01	farming and animal husbandry, hunting and other related	832,293	832,072	-221.00	28.94	62.31
08	other mining and quarrying	9,005	10,509	1,503.88	39.40	40.27
10	food production	1,415,517	1,408,139	-7,377.68	-49.53	27.60
11	beverage production	6,619,336	6,822,491	203,155.76	333.54	353.23
12	tobacco production	3,325,291	3,426,327	101,036.17	375.26	404.36
13	textile production	306,462	290,503	-15,959.31	-172.24	-159.54
14	clothing production	1,449,618	1,445,663	-3,954.76	-400.88	-380.14
15	leather and related production	123,300	80,915	-42,384.91	-435.25	-430.35
16	wood and wood products and cork production	215,461	202,185	-13,275.97	3.30	10.43
17	paper and paper products production	130,486	112,575	-17,911.48	84.06	98.69
18	printing and reproduction of storage media production	73,148	79,788	6,640.20	12.62	18.86
19	charcoal and petroleum refining products production	38,682	25,345	-13,336.44	-575.74	-569.30
20	chemicals and chemical products production	171,661	192,221	20,559.17	-99.94	-76.19
21	pharmaceuticals, chemicals, plant/animal products for medicinal purposes production	61,631	68,942	7,311.54	289.28	298.14
22	rubber and plastic products production	464,331	483,339	19,007.83	323.19	365.27
23	other products made from non-metallic minerals production	274,291	279,417	5,126.91	-369.59	-346.44
24	basic metal production	142,439	129,973	-12,466.09	88.21	104.99

Code	Industry group	Number of employments 2019 (Person)	Number of employments 2020 (Person)	Change in employment (Person)	Change in total employment value before inflation (Million baht)	Change in total employment value after inflation (Million baht)
25	fabricated metal fabrication	358,993	358,892	-100.83	-106.94	-81.05
26	electronic computer manufacturing	399,373	399,997	624.68	106.33	162.61
27	electrical equipment manufacturing	174,220	200,840	26,620.23	459.49	485.43
28	manufacture of machinery and tools (Not classified)	152,086	185,940	33,853.59	291.43	316.56
29	manufacture of motor vehicles, trailers and semi-trailers	375,631	383,208	7,577.10	-5.33	52.37
30	manufacture of other transport equipment	54,666	81,457	26,790.24	330.35	339.76
31	furniture production	400,110	401,475	1,365.74	-141.67	-128.30
32	manufacturing other products	485,157	446,471	-38,686.62	-550.19	-534.62
33	repair and installation of machinery and equipment	107,877	130,629	22,752.08	47.84	54.83
35	electricity, gas, steam and air conditioning systems	129,983	137,528	7,544.42	206.25	237.32
36	water storage, water supply and distribution	58,237	67,685	9,448.19	125.56	135.96
37	wastewater management	7,404	10,047	2,643.07	3.70	4.09
38	waste collection, treatment and disposal	27,090	43,471	16,381.14	133.87	136.40
39	other waste treatment and management activities	754	1,391	636.99	25.72	26.02
41	building construction	1,550,106	1,742,225	192,119.25	1,599.02	1,707.34
42	civil engineering	79,920	114,297	34,377.06	479.83	491.52
43	specialized construction work	463,263	458,744	-4,518.88	-138.46	-113.87
45	wholesale and retail, repair of motor vehicles or motorcycles	908,232	901,630	-6,601.62	390.44	447.02
46	wholesale (except vehicles and motorcycles)	1,193,148	1,122,885	-70,263.41	-552.33	-482.25
47	retail trade (except motor vehicles and motorcycles)	4,257,326	4,353,901	96,575.46	-231.61	-128.50
49	land transport and pipeline transport	834,346	860,158	25,811.09	221.24	262.55
50	water transport	20,235	15,083	-5,152.11	-54.67	-53.58

Code	Industry group	Number of employments 2019 (Person)	Number of employments 2020 (Person)	Change in employment (Person)	Change in total employment value before inflation (Million baht)	Change in total employment value after inflation (Million baht)
51	air transport	44,377	28,744	-15,633.11	-1,322.08	-1,316.06
52	warehouse activities and activities that support transportation	245,792	295,364	49,571.95	887.17	930.69
53	postal and parcel delivery activities	139,708	157,556	17,848.44	136.18	154.99
55	accommodation	363,289	272,297	-90,991.63	-2,303.85	-2,283.28
56	food and beverage service	2,487,589	2,709,731	222,141.85	19.42	64.45
58	Publication, distribution or dissemination	26,994	28,320	1,325.99	161.47	167.20
59	Film, video and television production	22,714	28,124	5,410.03	173.31	178.08
60	Program scheduling and broadcasting	19,975	17,128	-2,846.77	-28.12	-25.32
61	telecommunication	98,811	73,082	-25,728.35	-172.78	-153.87
62	computer program preparation and consulting	44,474	69,038	24,564.05	709.05	725.13
63	information service	8,632	10,443	1,811.88	12.77	13.85
64	financial services activities	375,703	379,419	3,715.28	412.01	495.22
65	Insurance and pension fund	93,750	108,914	15,163.58	275.18	295.10
66	financial services and insurance activities	42,161	46,991	4,829.66	79.90	86.07
68	real estate activities	220,871	260,612	39,741.17	532.63	554.16
69	legal and accounting activities	133,142	152,888	19,746.01	111.29	128.27
70	Head office activities and administrative consulting services	19,652	27,657	8,005.43	316.04	321.86
71	Architectural and engineering activities	38,826	52,860	14,033.68	174.87	181.89
72	scientific research and development	29,945	36,610	6,664.25	167.88	173.47
73	Advertising and market research	52,016	59,674	7,658.20	133.14	138.25
74	Other professional, scientific, and technical activities	79,492	68,006	-11,485.49	-269.88	-265.68
75	veterinary service	7,801	10,557	2,755.21	37.18	38.09
77	rental activities	44,119	41,616	-2,503.08	-8.86	-7.13
78	employment activities	176,817	198,417	21,599.58	223.14	243.21
79	Travel agency and tour operator's activities	77,384	48,096	-29,288.42	-685.38	-682.41

Code	Industry group	Number of employments 2019 (Person)	Number of employments 2020 (Person)	Change in employment (Person)	Change in total employment value before inflation (Million baht)	Change in total employment value after inflation (Million baht)
80	Security and investigative services	93,270	60,022	-33,247.76	-444.53	-438.86
81	Service activities for buildings and landscapes	191,650	153,535	-38,115.14	-274.54	-262.24
82	Administrative and operational support services	85,184	76,792	-8,391.75	-136.96	-133.04
84	public administration and national defense	1,556,990	1,625,669	68,678.78	1,250.33	1,517.87
85	education	1,106,037	1,173,816	67,778.67	2,112.95	2,384.35
86	human health activities	550,104	632,490	82,386.45	1,664.67	1,786.89
87	Residential care activities	8,280	18,954	10,674.42	117.93	120.17
88	Social work activities without accommodation	73,389	75,954	2,565.18	-30.18	-23.68
90	Creative arts and entertainment activities	47,069	52,130	5,060.39	-52.50	-51.12
91	Library, archives, museums, and other cultural activities	31,800	86,248	54,447.79	1,139.51	1,152.36
93	Sporting activities, entertainment, and recreation	117,943	72,593	-45,350.23	-463.41	-458.25
94	member organization activities	29,530	35,693	6,162.65	54.36	57.81
95	repair of computers and personal and household items	123,572	124,469	897.03	-35.18	-33.83
96	Other personal services	709,959	664,351	-45,607.87	-225.00	-207.81
97	Employment in private households	223,261	249,617	26,355.35	130.80	149.10
99	International organizations and partners	62,551	75,753	13,201.74	10.28	20.59

The change in the total employment value of each industry group to the total employment value of all industry groups when taken as a percentage of each industry group, of interest to the top 10 industry groups with the best percentage change and the top 10 worst percentage change industries from Table 1 found that The 1st place was education increased by 0.32 percent The 2nd place was human health activities increased by 0.25 percent The 3rd place was building construction increased by 0.24 percent. The 4th place was public administration and defense increased by 0.19 percent. The 5th was libraries, archives, museums and other cultural activities increased by 0.17 percent. The 6th place was warehouse activities and transportation support activities increased by 0.13 percent. The 7th place was computer program and consulting increased by 0.11 percent The 8th place was real estate activities increased by 0.08 percent The 9th place was civil engineering increased by 0.07 percent The 10th place was the production of electrical equipment increased by 0.06 percent. The percentage change in the total

employment value of each industry to the total employment value of the top 10 worst industry groups are: The 1st place was accommodation decreased by 0.34 percent. The 2nd place was air transport decreased by 0.20 percent. The 3rd place was activities of travel agents and tour operators decreased by 0.10 percent. The 4th place was the production of charcoal and petroleum refining products decreased by 0.09 percent. The 5th place was Wholesale trade (except motor vehicles and motorcycles) decreased by 0.08 percent. The 6th place was the production of other products decreased by 0.07 percent. The 7th place was sports activities, entertainment and recreation decreased by 0.06 percent. The 8th place was Security Services and Investigations decreased by 0.05 percent. The 9th place was production of leather and related products decreased by 0.05 percent. The 10th place was garment production decreased by 0.05 percent.

The Employment Changes found that the top 10 industries whose employment was most negatively impacted were as follows: The 1st place was Accommodation which decreased by 90,992 people. The 2nd place was Wholesale (excluding motor vehicles and motorcycles) which decreased by 70,263 people. The 3rd place was other personal service activities which decreased by 45,608 people. The 4th place was Sports Activities, Entertainment, and Recreation which decreased by 45,350 people. The 5th place was Production of leather and related products which decreased by 42,385 people. The 6th place was Production of other products decreased by 38,687 people. The 7th place was service activities for buildings and landscapes which decreased by 38,115 people. The 8th place was Security and Investigation Services which decreased by 33,248 people. The 9th place was the activities of travel agencies and tour operators which decreased by 29,288 people. The 10th place was telecommunications which decreased by 25,728 people. The top 10 industry sectors where employment was most positively impacted are as follows: The 1st place was food and beverage services which increased by 222,142 people. The 2nd place was the production of beverage production which increased by 203,156 people. The 3rd place was building construction which increased by 192,119 people. The 4th place was the production of tobacco products which increased by 101,036 people. The 5th place was Retail sales (excluding motor vehicles and motorcycles) which increased by 96,575 people. The 6th place was Human Health Activities which increased by 82,386 people. The 7th place was Public Administration and National Defense which increased by 68,679 people. The 8th place was Education which increased by 67,779 people. The 9th place was libraries, archives, museums and other cultural activities increased by 54,448. The 10th place was warehousing activities and transport support activities which increased by 49,572 people.

## **Summary and Discussion**

The value of total employment in pre-COVID 19 in 2019 compared to the COVID-19 pandemic in 2020 found that the sectors hardest hit by travel agency and tour operator activities, which decreased by 66.39 percent. The main reason is from the declaration of an emergency decree to prevent COVID-19. As a result, the tourism business has employees to stop or work less. Therefore, the income has decreased as well. The second worst impact was air transport, which dropped 65.32 percent. During the epidemic, many airlines lacked liquidity and had to cancel operations of Nok Scoot and the bankruptcy of Thai Airways. Most operators have accelerated cost cuts such as payroll, staff and fleet cuts and sought government assistance. Therefore, air transport has been hit hard as well.

In contrast, the industry sector that was positively impacted during the COVID pandemic was library, archives and museum and cultural activities, with a 316.90 percent increase. In sub-

sections there will be botanical and zoo activities and nature conservation. During the COVID-19 epidemic in 2020, there were no tourists due to government policies. Therefore, the government takes this opportunity to use the budget for natural restoration projects and zoos, making people earn more. This project will be a short-term project to bring nature back to its beauty and ready to receive tourists after COVID-19 or when the situation is getting better.

However, the revenue increase in each industry group does not reflect the real income. The inflation rate at that time was minus 0.85 percent. Negative effects of inflation have a positive effect on increased income. This indicates that the value of money or income is more valuable and that more goods and services can be purchased.

As for employment during the COVID epidemic situation, it was found that unemployment increased by 40.35 percent and employed workers increased by 2.51 percent. The industry with the biggest drop in employment was accommodation, with a drop of 90,992. The main reason is that hotels and resorts have to reduce costs due to the absence of tourists during the epidemic situation. Hotels and resorts have to cut salaries or have their employees stop working. As a result, employees have to resign and find a new job in order to make himself an income. On the other hand, the industry with the largest increase in employment was food and beverage services with an increase of 222,142. During the epidemic situation, the government has announced the temporary closure of department stores and dine-in restaurants, discouraging people from leaving their homes. It is an opportunity for the food and beverage delivery business that we know as GRAB, LINE MAN, FOOD PANDA. More and more people are ordering food and drinks through apps. Therefore, more and more workers who have lost their jobs from other occupations have turned to work in this sector because the income is quite good.

Regarding the disparity between industry groups, it was found that the Gini Index in 2019 was 62.70 and the Gini Index in 2020 was 63.43. From the figures, it can be concluded that before COVID-19, there was a disparity between industries as high as 62.70. During the COVID-19 pandemic, the disparity between industries increased slightly to 63.43.

### **Policy suggestions**

Thai government must adapt to the people to live with COVID-19 because after the economy has been disrupted quite a lot, the impact is full. There is also a highly erratic and unequal recovery in some sectors. Both domestic and international tourism has been severely affected. Restaurants, night businesses and people employed will be hit hard. SMEs with short cash flow lines and the household sector are also affected. We will see higher leverage across all issues. The government business sector must promote and support employment by maintaining employment conditions in parallel with developing key skills. To increase liquidity during this period, there must be a management plan during the temporary closure, which increases the debt burden. Entrepreneurs need to use costs for their operations without severe impacts. The labor sector must increase their skills and potential to work in many occupations. to accommodate future uncertainties

### **Acknowledgements**

This research would like to thank the National Statistical Office for supporting the microdata of the Thai Labor Force Survey.



## References

- BBC News Thai. (2020). Business upswing during economic downturn, effects of new strain of corona virus. Retrieved on April 4, 2020 from <https://www.bbc.com/thai/thailand-52163423>
- BBC News Thai. (2020). The government announced an emergency decree to contain COVID-19. Retrieved on 24 March 2020 from <https://www.bbc.com/thai/thailand-52014435/>
- Jensantikul, N. (2020). Labor in the Coronary Epidemic Situation (COVID-19): Government Measures and Effects. *Journal of Multidisciplinary in Humanities and Social Sciences*, 3(3), 601-612.
- Lerdkasetwittaya, K., & Chomtohsuwan, T. (2015). An Analysis of Factors Affecting Income Differences in the Thai Labor Force. Proceeding of the 3rd National Conference on From Disruptive to Post COVID-19 World : New Landscapes and Sustainable Development for Thailand. Rangsit University, pp. 210-223, Bangkok, Thailand.
- Maithongdee, N. (2010). Gender discrimination and wage differentials : the case of private employees in professional occupations. National Institute of Development Administration. Retrieved on 2 March 2023 from: <http://repository.nida.ac.th/handle/662723737/616>
- Thailand Development Research Institute (2020). Turning the COVID-19 Crisis into Opportunities: Reviving Natural Resources and Natural Attractions. Accessed on June 16, 2020. from <https://tdri.or.th/2020/06/covid-19-turning-crisis-into-an-opportunity-for-natural-tourism/>
- Wanta, T., Sinthornsawat, W., & Jiwju, N. (2022). Economic Impact Assessment of the COVID-19 Outbreak for Accommodation Businesses in Special Economic Zones Tak. *Journal of Social Sciences*, 5(2), 160-171.
- Watanasuk, J., Sajjanand, S., & Srisawaluk, O. (2007). Gender Wage Differences: A Case Study of Automotive Industry at Wellgrow Industrial Estate in Chachoengsao Province. Proceeding of the The 2nd STOU Graduate Research Conference. Sukhothai Thammathirat Open University, pp. 1-14, Nonthaburi, Thailand.

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## *Virtual Reality Translation of Filipino Perspectives on Selected Depressive Social Context*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

### **Abstract**

An estimated count of 154 million Filipinos are suffering from depression and it is considered to be one of the mental health concerns in the Philippines. It is a mental disorder that can be seen in various social contexts that display its level of functioning specially when exposed or triggered in a specific environment. Depression can be treated, and it is beneficial for it to be diagnosed at an early onset. Currently, virtual reality technologies have been utilized in the medical field to simulate real-life depressive situations and scenarios in the virtual space. Modern technologies like the virtual reality systems are simulations of environments and objects that seem to be real as they provide an opportunity for the user to have similar real experiences. Locally, there are few studies which tackle the design of culturally adapted environments for Filipinos where depressive social contexts can be identified. In this study, virtual spaces were developed based on real-life depressive social contexts in the Philippine setting. The inputs were obtained from typical layouts and designs of local social contexts based on literature reviews. Results show various designs of proposed virtual reality environment where therapy simulations could possibly take place.

Keywords: Depression, Virtual Reality, Virtual Environment

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## Introduction

The COVID-19 pandemic has placed the world to an unprecedented psychological burden including the Philippines (Acob, Arifi & Dewi, 2021). There were around 3.6 million Filipinos who are battling mental disorders, according to a 2020 survey from the Department of Health (Mendoza, 2022). Depression is a leading cause of psychological disability globally and is expected to be a burden by 2030 (Kwong, López-López, Hammerton, Manley, Timpson, Leckie & Pearson, 2019). According to Acob *et al.* (2021) it contains nine symptoms that include physiological, behavioral, cognitive, and psychological symptoms. It is a condition of disinterest and extreme sadness. People with depressive disorders have difficulties in their ability to operate physically and socially that are just as severe or worse than those brought on by other medical diseases. There are significant efforts made to increase access to mental healthcare services to many (Reyes, 2020).

To narrow the therapeutic gap, technology is increasingly being used as a supplement to or a means of delivering mental health treatments. Moreover, virtual reality is initially introduced as a technology that simulates a virtual environment where users can be immersed and provide similar objects and scenes that appear to be real. The market for VR technology has increased with its rapid development (Wohlgenannt, Simons, & Stieglitz, 2020) in which it reached its purpose to be utilized in the purpose of understanding mental health. The virtual environment developed from the current study replicates the design, objects, and selected social contexts of classroom, household, and workplace in which possible episodes of depressive behaviors or symptoms arise. Other mental health conditions are now being treated with virtual reality in addition to phobic diseases. Given its potential to offer clinically pertinent information related to the assessment and treatment of individuals suffering from mental illness, this technique is crucial for future practice. Studies examining the use of virtual reality treatment for depression are encouraging given the mounting evidence that it is useful in treating post-traumatic stress disorder and anxiety disorders (Emmelkamp & Meyerbröker 2021).

## Related Studies

Depression disorder is a major concern around the world. There has been several research conducted towards this disorder from across contexts, subjects, and methodology. In general, people with depression reported some level of functional impairment as a result of their depressive symptoms. Academics is one of the top reasons for depressive behaviors (Porillo & Tungol, 2021). Thus, the current study has collected the results of various research that covers the affective symptoms, cognitive concerns, behavioral challenges, physiological concerns, and social concerns. The affective symptom refers to the emotional vulnerability and difficulty of expression that leads to emotional numbness (Porillo & Tungol, 2021). It includes the overwhelming sadness (Valdeavilla, Santos, Domingo & Pulido, 2019) and academic stress especially for math related subjects (Pineda & Bueno, 2019), moodiness, irritability, and anxiety (Valdeavilla *et al.*, 2019). Moreover, the cognitive concerns. include the uncertainty towards the future and accomplishing academic requirements (Pineda & Bueno, 2019). It affects their task performance and concentration (Lee, Maria, Estanislao & Rodriguez, 2013). The behavioral challenges include being aloof, quiet (Porillo & Tungol, 2021), low motivation (Valdeavilla *et al.*, 2019), and other somatic symptoms are referred to physiological concerns. In addition, studies have emphasized the concern role played by the social environment and relationship. It established that Filipinos influence others with their emotion and are also influenced by others.

Furthermore, the household setting asserts the idea of the Filipino's parental depressive symptoms and negative parenting behaviors. It states that mothers have higher levels of depressive symptoms, and they are the caregivers of the children and management of the house. Further, although mothers' results on harsh parenting with small effect size have increased with higher reports of depressive symptoms. Jocson (2020) notes that mental health professionals must have a sense of the negative repercussions of poor mental health on the community. There are narrated scenarios of depressive behaviors of crying in the living room, having a messy household and being restless in the bed are a few (Yap, Chua, Chan & Canoy, 2020). Moreover, parental expectations, guilt feelings, anxiety, difficulty of letting go of tension, and difficulty of acceptance are vital incidents of depressive behavior (Pineda *et al.*, 2019).

Another significant public health issue about depression is its presence in the workplace. Although the potential to be a key setting for interventions targeted at preventing the onset of depression (Tan, L., Wang, MJ., Modini, M. *et al.*, 2014) it still has a significant detrimental impact on performance, productivity, absenteeism, and disability expenses (Bender & Farvolden, 2008). Depression does not have the same effect on all individuals for it has a range of personal, social, environmental moderators within each of us that influence our susceptibility and coping abilities in relation to stressors we experience (Goldberg & Steury, 2001). When exposed to a stressful environment repeatedly, people exhibit a variety of indications and symptoms as having hazy feelings, despair, boredom, apathy, emotional exhaustion, sleep difficulties, irritability, lack of sex desire, acute anxiety, withdrawal, restlessness, and suicidal thoughts which don't happen all at once but develop over time (Tan, L., Wang, MJ., Modini, M. *et al.*, 2014). Despite this expanding concern regarding this, there are many untapped aspects that have not been studied yet such as the sex, age, year level, course and religion in the Philippine setting (Lee *et al.*, 2019).

Virtual Reality Technology has expanded substantially since Sutherland's concept of an 'Ultimate Display' and Jaron Lanier's coining of the term 'Virtual Reality' in the Mid to Late 20th Century (Schroeder, 1993). The current wave of Virtual Reality, which started with the kickstarter of the Oculus Rift Head-Mounted Display (HMD) in 2012, has brought vast amounts of options not only for research but also for the consumer (Anthes, García-Hernández, Wiedemann & Kranzlmüller, 2016).

Davis, Steury & Pagulayan (2005) reticles have been a staple in games, especially in the First-Person Shooter (FPS) genre, with virtual reality applications and games being mainly rendered and displayed to the user in first person to provide graphical visual aids for improved user experience and feedback. Use of reticles or crosshairs have also been proven to reduce VR sickness or cybersickness (Seok, Kim, Son, & Kim, 2021) while using an HMD which further improves immersion (Arshad, Mello, Ender, McEwen & Ferré, 2021). With mobile HMD's or smartphone-based VR's, gaze-dwelling technique is widely used to interact with objects and the user interface by using an indicator that slowly fills up as long as the object is continuously looked at (Steed, Takala, Archer, Lages & Lindeman, 2021).

In terms of environments, there are certain common categories of such in which symptoms of depression are typically experienced by various people in different circumstances. Adolescents commonly experience depressive symptoms at school, particularly in classrooms, and in their own households due to the stress brought about by academic pressure being exerted on them by their parents and familial stress due to certain problems being experienced within their respective households (Deng, Cherian, Khan, Kumari, Sial, Comite, Gavurova & Popp, 2022) (Bezold, Banay, Coull, Hart, James, Kubzansky, Missmer & Laden, 2018). Moreover, as cited

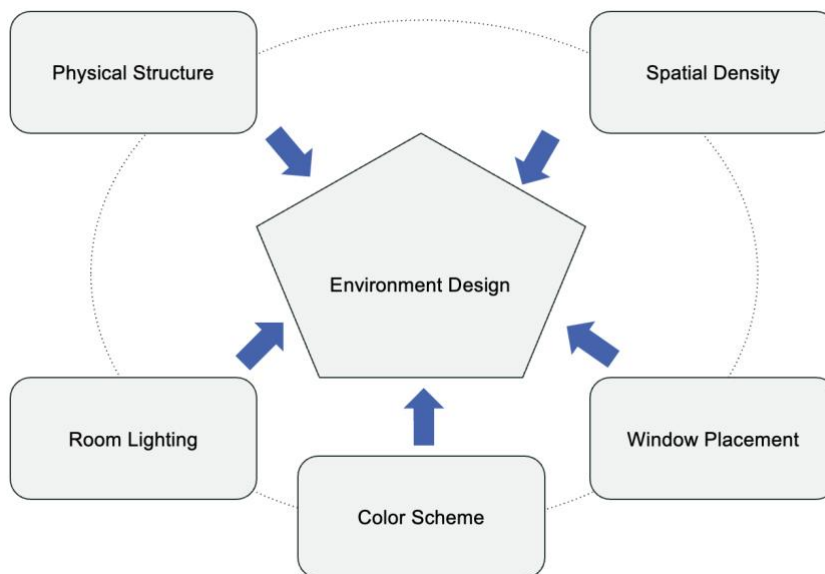
by Philipps (2018), the physical structure of a classroom plays an important role in improving and maintaining students' morale and learning. As for elderly people, the neighborhood environment also contributes to the depressive symptoms being experienced by them (Lam, Loo, & Mahendran, 2020). This meant that each of the households were directly affected by the physical and architectural features of the community settings which could, in turn, lead to environmental stressors and affect the response of an elderly person to depression. Moreover, the prevalence of depression has been found to be affected by the quality of housing as well as the numbers of rooms present in the home (Lam *et al.*, 2020). Moving on, Broom, Kokanović, Ziebland & Hill (2017) stated that an intersection between depression and work was encountered after the interviews of participants of their study who were citizens of the United Kingdom and Australia. Most of the Australian workforce believed that workplace problems were causing them distress with well-being and work-life balance declining in relation to such. Moving on, Veitch (2011) stated that existing knowledge suggested that workplace or office design could have an influence in mental health. Examples of such include light exposure effects on circadian regulation, social behavior, & affect, aesthetic judgements effect on at-work mood, physical wellbeing, & at-home sleep quality, and effects of having access to nature on recovery from stressful experiences. Additionally, a well-designed workplace could be supportive to an employee's mental health through removal of potential stressors for better individual focus and productivity. Some examples of design considerations for workplace include spatial density (the floor area per person) to prevent or alleviate crowding, placement of windows within a workplace or office space to allow employees access to a view of the outside environment, and the amount of white light passing through the workspace or office space for better overall mood.

Currently in the Philippines, there has been virtual reality-related research regarding the design of environments in the virtual space but none of these tackled the design and development of virtual-reality environments based on real-life social contexts while taking into consideration people experiencing symptoms of depression. The virtual reality environments produced by Grepon and Martinez (2021) and which were translations of real-life school buildings and rooms found in the Philippines, only focused on the conversion of such real-life environments into the virtual world space but never took into consideration anything related to depression and its symptoms. Though, the colors used in their designs and architectural shape & layout of the structures were similar with the common color of the materials being represented and the real-life structure being represented. Additionally, overall quality and addition of functionalities would be ideal for such environments (Valdez, Rivera & Pabico, 2015).

In this study, the virtual reality translation of Filipino perspectives on selected depressive social contexts were investigated and the relevant virtual environments were designed.

## **Methodology**

The conceptual framework of the VR environment design is shown in Figure 1. The process began by identifying the necessary input components for the design of the environment, namely room lighting, physical structure, spatial density, color scheme, and window placement. These input components were identified through the principles of game design and development which were based on data acquired from previously conducted studies related to virtual reality, depression, and social contexts. The actual virtual environment design was carried out with Unity as the development platform.



**Figure 1:** *Conceptual Framework of VR Environment Design*

Aside from the input components, this also included objects that would be necessary for the virtual reality environment design in replicating a certain depressive social context. Moving on, once the design was done, this was then finally exported into the device handling virtual reality-related environments and applications. The equipment necessary for such process included a Windows laptop and a Samsung smartphone wherein the application containing the environments were built in Unity by means of a Windows laptop and then exported into the Samsung smartphone using serial communication.

**Acquisition of Data for Design Considerations with Regards to Depressive Social Contexts**

The data was acquired from the methodologies and discussion of results within the studies conducted by Phillips (2014); Lam *et al.*, 2020; Ridge *et al.*, 2017; Veitch (2011); Grepon & Lester (2017); and Valdez *et al.*, 2015. Table 1 shows the design considerations that were taken into account when the virtual environments were developed.

**Table 1:** *Design Considerations for the Development of the Virtual Environments*

<b>Design Consideration</b>	<b>Details</b>
Physical structure	Should be similar with real-life environment being represented
Spatial density	Adequate spacing should be provided within the environment for space traversal
Room lighting	Room should be well-lit such that all elements of its interior are visible

Window placement	Handful of windows should be present to represent access to the outside world
Color scheme	Should match the common color of the real-life material being represented

Table 1 shows the design considerations that were considered when the environments were developed. Looking at the table, there were five (5) design considerations included, which were physical structure, spatial density, room lighting, window placement, and color scheme. The first design consideration was meant to give the environment a real-life feel through similarity with its real-life counterpart. Meanwhile, the second design consideration was necessary to allow for movement within the environment to further enhance the immersive experience that comes with it. As for the third design consideration, this was so that all objects included within the environment could be easily seen by the user and also to inhibit any negative thoughts while going through the environment. The fourth design consideration was included so that the user immersed in the environment could have a grasp of the artificial outside world within the virtual reality and exhibit the capability of being able to view such world space. Lastly, the fifth design consideration was necessary to further amplify the feel for the environment through imitation of the object's common material color. Additionally, quality of the objects and structure components included were also taken into consideration during the development of such environments.

### **Design and Development of Virtual Environments**

The virtual reality application was designed using Unity, a cross-platform game engine development platform. Moreover, the application featured three (3) environments powered by the platform initially mentioned and Google Cardboard. To be more specific, Unity was used to create not only the application but also the environments, Google Cardboard XR Plugin for Unity and Cardboard SDK were utilized to provide virtual reality capabilities, and Ink Unity Integration was utilized for integration of non-player character (NPC) dialogue interaction between it and the user. Additionally, the objects that were utilized were taken from various asset stores which were then modified to meet the needs of the environment with regards to the design considerations found in Table 1.

### **Development of Program Functionalities**

Two (2) virtual reality techniques were implemented to enable the user to visualize interactions within the environments. The following were the techniques that were used for such:

- 1) Reticule: This was implemented to aid the user in determining the interactable objects that he or she looked at.
- 2) Loading indicator: The application used gazes to register input from UI elements. A loading indicator was used which filled up as the user continued to look at the gazed UI element, the user could easily determine if he or she was about to select a button.



Meanwhile, interactions included within the environment were also developed. Three (3) unique features pertaining to such various functionalities were designed and implemented within the application. Such components are as follows:

- 1) **Gaze:** Gaze was a feature implemented to select user interface objects such as buttons and press them in the virtual environment. A reticle or crosshair was provided that guided the user where he or she was looking at.
- 2) **Movement:** Movement was determined by looking at the ground and pressing the corresponding left mouse button on the controller. This allowed the user to travel to a specific position being gazed at upon pressing the left mouse button.
- 3) **NPC Dialogue:** Dialogue between the NPC's and the user used Ink Unity Integration, this provided conversational capabilities between an NPC and a user.

## Results and Discussion

Depression is a mental health concern in which the occurrence of each symptom can be seen across personal, social, academic, and occupational functioning. The dysfunction of a person represents the course and onset of the depressive symptoms. Based on the previous studies, there are social contexts and objects that are related to certain clinical criteria for depression. With these as considerations, the current study has included the classroom, household and workplace in the replication for the virtual reality environment.

A local classroom setting is shown in Figures 2 and 3. The reference photos were taken from a typical classroom in Philippine Public School.



**Figure 2:** Reference photo of a Philippine Classroom (taken from DZRH News, n.d.)

The reference photos collected all employ the guideline of organizing classroom space in terms of personal territory as David (2002) stated which consists of each student having their own space/desk to place personal belongings. Arrangement of the desks are done in Large Group Row Arrangements, with Rows of wooden desks facing a blackboard, with a teacher's desk in front. Decorations in the classroom are also found in the reference photos such as letters of the alphabet or papers plastered on the upper areas of the classroom walls or above the blackboard. Large windows can be found on one side of the classroom.



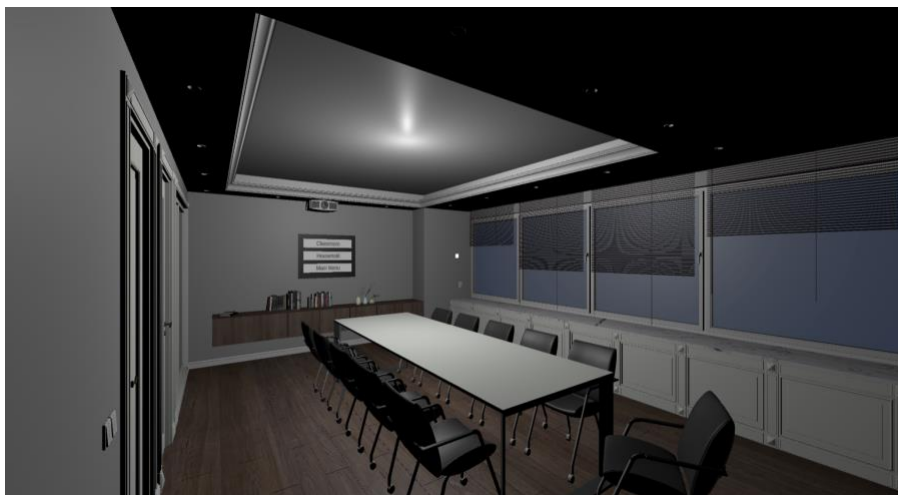
**Figure 3:** Reference photo of a Philippine Classroom (taken from L.M. David, n.d.)

Figures 4, 5, and 6 shows the translated virtual environment for the classroom, office, and household, respectively.



**Figure 4:** Virtual Classroom Environment

The translated virtual classroom environment is of 3 rows of 3 desks in each row. The rows of desks are facing a blackboard in which the menu can also be found. An alphabet and numbers from 1-10 are found above the blackboard. A map of Europe can be found on one side, with a board with papers can be found on the other side. The classroom floors are made of wooden textures, while the walls are made out of off-white textures and wooden textures. Windows can be found on the right side facing the blackboard. A board with papers can also be found on the opposite side of the classroom. The virtual classroom has similarities with the reference photos of the classroom, with similar arrangements of desks, its windows, and sharing of decorations on the walls.

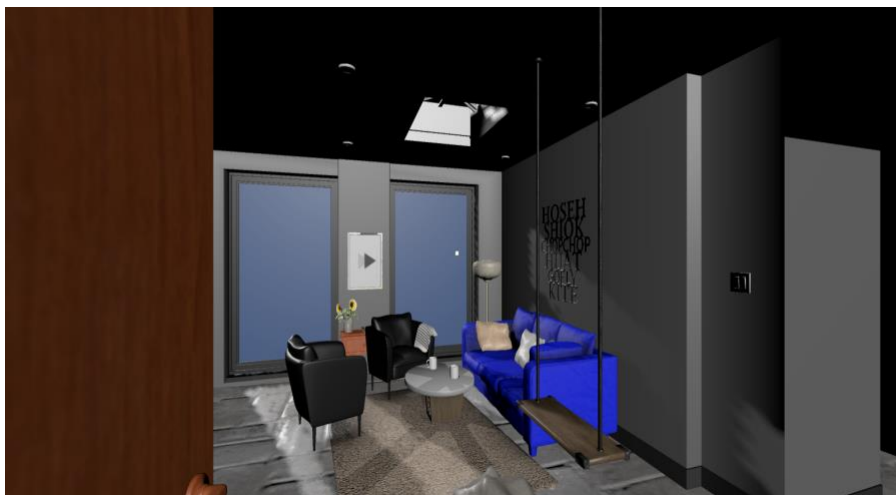


**Figure 5:** *Virtual Office Environment*

The translated office environment is a conference room. The conference room consists of a large table and chairs used for formal meetings in office settings, which can also provide teleconference services (Rechavi, 2009). The translated virtual office environment in Fig 5. has those similar themes with a large conference table with chairs in a conference format (Evans, 2003). The television on one end containing the main menu emulates the ability for teleconference service.

The office environment reference is a conference room. This room consists of a long, white, conference table in the center with chairs facing each other. On the far end of the room is a television with a wooden cabinet below it. The right side of the room facing the television consists of large windows and an elongated white cabinet below. The opposite side has multiple doors. The virtual office environment is a replica of the reference photo. The room consists of a similar layout, a conference table in the center with a menu on one end. The windows and doors on each side of the room are also replicated in the virtual office. The main menu to connect to other environments has replaced the television from the reference photo.

The virtual household environment consists of just a living room space. The living room space has four (4) walls with a couch on one side of the wall, a coffee table, and two extra chairs, one diagonally and another across the couch. The opposite side of the couch has a Television where the menu to go to other environments are found. Windows are also found on the right side facing the television. Various objects are found on the walls used as decorations such as pictures. There are other items around the room such as vases and lamps that serve as decoration in the virtual household environment.



**Figure 6:** *Virtual Household Environment*

A living room in a household shares several objects and themes despite the fact that households are made of different types of dwellings, like apartments or stand alone houses, or have people of different genders and economic abilities living in them. The “living room prototype” according to Rechavi (2009) consists of a couch, a coffee table, and an additional seat diagonally across or beside it. Additionally, a living room includes objects that are meaningful to its inhabitants. The living room of the virtual household environment meets these themes of a living room.

The built environments are known to impact a person’s mental health, directly or indirectly through its design. The interior design of a room, such as the arrangement of chairs or addition of decoration on walls affects the social interaction and passive behavior of people interacting in the room (David, 2022). A virtual environment can emulate a presence with realism within a safe environment, and it has been suggested that virtual environments can produce the same social effects it has when interacting with real people. Being able to translate the classroom, office and household into a virtual environment greatly aids in the goal of being able to reproduce depressive symptoms for further study.

## **Conclusion**

In general, people with depression are assessed based on reported levels of functional impairment because of their depressive symptoms. These symptoms experienced by the participants from the previous papers have caused difficulty for them to work, complete tasks at home or be efficient in performance. The social aspect of Filipinos has influenced factors of depression and needs to be in consideration to see a greater risk. The criterion of abnormal behavior involves dysfunction, distress, atypical behavior, and deviance. The extent of these criteria being present in a person’s depressive state can be seen across different contexts of functioning. Virtual reality proves encouraging opportunities to be used widely in the assessment, therapy and rehabilitation for various mental health concerns in the future. The virtual reality environments, which were based from the design of real-life depressive social contexts, that were designed along with the developed application containing such environments would be of great help in the medical field, particularly in the field of mental health and psychology. These could be utilized as a medium for assessing and treating people experiencing depression, its symptoms, and certain episodes of such illness. With the design considerations taken into account when the environments were, the world space provided by the environments would prove to be useful in making sure that control for both the patient and

doctor addressing the patient's illness could be established while ensuring that the environment provides the patient a pleasant experience during the sessions.

Moving on, it is recommended to involve a clinical trial to assess the system's efficacy on the intended subject population. Long-term research is also required to look into the emotional interface design and graphical visualization of the system in order to enhance patient testing and to expand the potential of virtual reality and its environments in utilizing and addressing therapeutic gaps so that appropriate preventive measures may be taken and reduce the prevalence of mental illness which can be addressed in different research approaches, norms, methodology and variables.

## References

- A. Steed, T. M. Takala, D. Archer, W. Lages, and R. W. Lindeman, "Directions for 3D User Interface Research from Consumer VR Games," *IEEE Transactions on Visualization and Computer Graphics*, vol. 27, no. 11, pp. 4171–4182, Nov. 2021, doi: 10.1109/tvcg.2021.3106431
- Acob, J. R. U., Arifin, H., & Dewi, Y. S. (2021, August 1). Depression, Anxiety and Stress among Students amidst COVID-19 Pandemic: A Cross-Sectional Study in the Philippines. *Jurnal Keperawatan Padjadjaran*, 9(2), 102–109. <https://doi.org/10.24198/jkp.v9i2.1673>
- B. G. Grepon and A. Lester, "Architectural Visualization Using Virtual Reality: A User Experience in Simulating Buildings of a Community College in Bukidnon, Philippines," *International Journal of Computing Sciences Research*, vol. 5, no. 1, pp. 644-662, Feb. 2021, doi: 10.25147/ijcsr.2017.001.1.64
- Bender, A., Farvolden, P. Depression and the workplace: A progress report. *Curr Psychiatry Rep* 10, 73–79 (2008). <https://doi.org/10.1007/s11920-008-0013-6>
- C. Anthes, R. J. García-Hernández, M. Wiedemann and D. Kranzlmüller, "State of the Art of Virtual Reality Technology," in 2016 IEEE Aerospace Conference, 2016.
- C. P. Bezold, R. F. Banay, B. A. Coull, J. E. Hart, P. James, L. D. Kubzansky, S. A. Missmer, and F. Laden, "The association between natural environments and depressive symptoms in adolescents living in the United States," *Journal of Adolescent Health*, vol. 62, no. 4, pp. 488–495, 2018.
- C. S. Weinstein, "Classroom Design as an External Condition for Learning," *The Future of Instructional Design: Part Two*, vol. 21, no. 8, pp. 12-19, 1981.
- Carnegie Mellon University, "Conference & Event Services," [Online]. Available: <https://www.cmu.edu/conferences/facilities/meeting/uc/room-styles.html>. [Accessed September 2022].
- D. Haniff, A. Chamberlain, L. Moody and S. De Freitas, "Virtual environments for mental health issues: A review," *Journal of Metabolomics and Systems*, vol. 3, no. 1, pp. 1-10, 2014.
- D. Ridge, A. Broom, R. Kokanović, S. Ziebland, and N. Hill, "Depression at work, authenticity in question: Experiencing, concealing and revealing," *Health: An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine*, vol. 23, no. 3, pp. 344–361, 2017.
- Emmelkamp, P., & Meyerbröker, K (2021). Virtual Reality Therapy in Mental Health. *Annual Review of Clinical Psychology*. Vol 17:495-591. Retrieved from <https://doi.org/10.1146/annurev-clinpsy-081219-115923>
- G. W. Evans, "The Built Environment and Mental Health," *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, vol. 80, no. 4, 2003.

- Goldberg, R. J., & Steury, S., Depression in the Workplace: Costs and Barriers to Treatment, *Psychiatric Services* 2001 52:12, 1639-1643.
- I. Arshad, P. De Mello, M. Ender, J. D. McEwen, and E. R. Ferré, “Reducing Cybersickness in 360-Degree Virtual Reality,” *Multisensory Research*, vol. 35, no. 2, pp. 203–219, Dec. 2021.
- J. P. Davis, K. Steury and R. Pagulayan, "A survey method for assessing perceptions of a game: The consumer playtest in game design," *The International Journal of Computer Game Research*, vol. 5, no. 1, October 2005.
- J. Veitch, “Workplace design contributions to mental health and well-being,” *HealthcarePapers*, vol. 11, no. sp, pp. 38–46, 2011.
- Jocson, R. M. (2020, June). A Dyadic Analysis of Depressive Symptoms, Harsh Parenting, and Rejection in Filipino Mothers and Fathers. *Family Process*, 60(2), 556–569. <https://doi.org/10.1111/famp.12547>
- K.-H. Seok, Y. Kim, W. Son, and Y. S. Kim, “Using Visual Guides to Reduce Virtual Reality Sickness in First-Person Shooter Games: Correlation Analysis,” *JMIR Serious Games*, vol. 9, no. 3, p. e18020, Jul. 2021, doi: 10.2196/18020
- Kwong, A. S. F., López-López, J. A., Hammerton, G., Manley, D., Timpson, N. J., Leckie, G., & Pearson, R. M. (2019, June 28). Genetic and Environmental Risk Factors Associated With Trajectories of Depression Symptoms From Adolescence to Young Adulthood. *JAMA Network Open*, 2(6), e196587. <https://doi.org/10.1001/jamanetworkopen.2019.6587>
- L. M. David, "Teachers to Marcos: Filipino, instead of English, must be the medium of instruction," [Online]. Available: <https://ph.news.yahoo.com/teachers-to-marcos-filipino-instead-of-english-must-be-medium-of-instruction-031229812.html>. [Accessed September 2022].
- Lee, R. B., Maria, M. S., Estanislao, S., & Rodriguez, C. (2013, November 6). Factors Associated with Depressive Symptoms among Filipino University Students. *PLoS ONE*, 8(11), e79825. <https://doi.org/10.1371/journal.pone.0079825>
- M. Aaron, "dzhnews-philippines-classroom," [Online]. Available: <https://announcement.ph/cash-allowance-for-teachers-to-be-released-in-june/dzhnews-philippines-classroom/>. [Accessed September 2022].
- M. Phillips, “A place for learning: The physical environment of classrooms,” *Edutopia*, 05-Aug-2014. [Online]. Available: <https://www.edutopia.org/blog/the-physical-environment-of-classrooms-mark-phillips>. [Accessed: 30-Sep-2022].
- Mendoza, G. (2022, February 06). A Closer Look at Mental Health in the Philippines . Retrieved from The Borgen Project : <https://borgenproject.org/look-at-mental-health-in-the-philippines/>

- National Center for Education Statistics, "Space Use Codes: Definitions, Descriptions, and Limitations," [Online]. Available: <https://nces.ed.gov/pubs2006/ficm/content.asp?ContentType=Section&chapter=4&section=3&subsection=1>. [Accessed September 2022].
- N.R. Valdez, M. V. Rivera, and J. P. Pabico, "Experiences in Implementing an ICT-Augmented Reality as an Immersive Learning System for a Philippine HEI," *Asia Pacific Journal of Education, Arts and Sciences*, vol. 2, no. 2, Apr. 2015.
- Pineda, Adelwina & Bueno, David Cababaro. (2019). School, Home, Personal and Mental Health- Related Issues of Senior High Students in a Catholic School in the Philippines. 10.13140/RG.2.2.32578.94404.
- Porillo , J.-a. E., & Tungol, J. R. (2021). Capturing Depressive Symptoms in Filipino College Students: A Preliminary Phase to Scale Construction. *Jurnal Psikologi Malaysia*, 47-55 ISSN-2289-8174.
- R. Schroeder, "Virtual reality in the real world: History, applications and projections," *Futures*, vol. 25, no. 9, pp. 963-973, 1993.
- Reyes , L. (2020, October 16). The State of Mental Healthcare in the Philippines. Retrieved from Borgen Magazine : <https://www.borgenmagazine.com/mental-healthcare-in-the-philippines/>
- T. B. Rechavi, "A room for living: Private and public aspects in the experience of the living room," *Journal of Environmental Psychology*, vol. 29, no. 1, pp. 133-143, 2009.
- Tan, L., Wang, MJ., Modini, M. et al. Preventing the development of depression at work: a systematic review and meta-analysis of universal interventions in the workplace. *BMC Med* 12, 74 (2014). <https://doi.org/10.1186/1741-7015-12-74>
- Valdeavilla, D.; Santos, N.; Domingo, A. and Pulido, M. (2019). Investigating the Presence of the Symptoms of Depression among University-age Filipinos. In *Proceedings of the 4th International Conference on Internet of Things, Big Data and Security - IoTBDS*, ISBN 978-989-758-369-8; ISSN 2184-4976, pages 359-363. DOI: 10.5220/0007748903590363
- W. W. Lam, B. P. Loo, and R. Mahendran, "Neighborhood environment and depressive symptoms among the elderly in Hong Kong and Singapore," *International Journal of Health Geographics*, vol. 19, no. 1, 2020.
- Wohlgenannt, I., Simons, A., & Stieglitz, S. (2020). Virtual Reality . *Business & Information Systems Engineering*, 62, 455–461 <https://doi.org/10.1007/s12599-020-00658-9>
- Y. Deng, J. Cherian, N. U. Khan, K. Kumari, M. S. Sial, U. Comite, B. Gavurova, and J. Popp, "Family and academic stress and their impact on students' depression level and academic performance," *Frontiers in Psychiatry*, vol. 13, 2022.



Yap, J., Chua, M., Chan, T., & Canoy, N. (2020). To build a home: A Phenomenological Approach of Reconstructing "feeling at home" among Children Living in Households with Parents Exhibiting Depressive Symptoms. *Journal of Social and Personal Relationships*, DOI: 10.1177/0265407520908053

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## *Household Internet Affordability and Its Affecting Factors in Thailand*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

### **Abstract**

Internet accessibility is considered a key factor affecting economic growth in the digital economy. In Thailand, while internet use is on the rise, household internet access is less widespread than in developed countries. This study examines the situation of household internet expenses, affordability, and the factors that affect households' internet affordability from 2012 to 2021. Descriptive statistics and linear regression analysis were used to analyze secondary data from the National Statistical Office of Thailand. According to the study, 73.28 percent of Thai households pay for membership or internet service expenses, and 49.03 percent of these households are required to pay an unreasonably high percentage of their income. Internet usage patterns a household has, as well as the number of computers it owns, are factors that influence the household's internet expenses, income, and affordability. This study also found that socio-economic class and residential location are key factors that affect internet affordability. Household size and residential type are important factors that impact internet expenses, while household size and socio-economic class are key factors that affect the income of households with internet expenses.

Keyword: Households, Internet, Affordability, Affecting Factors, Thailand

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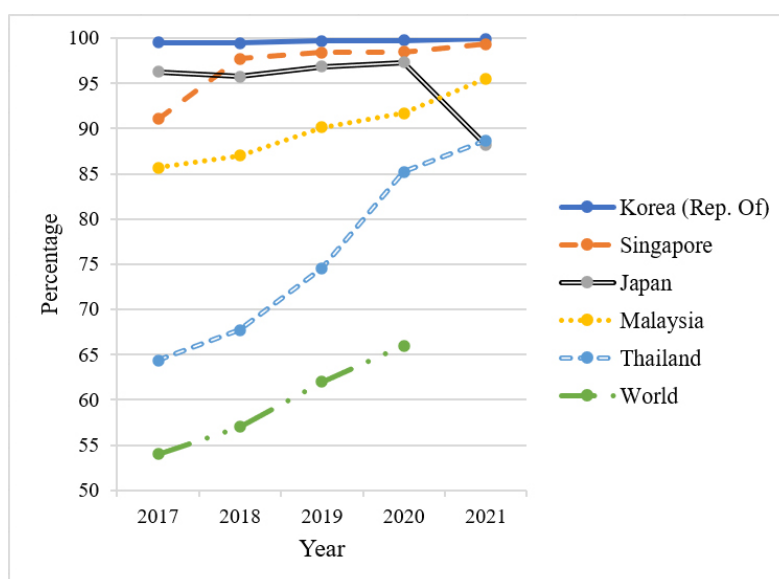
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## Introduction

The internet is a critical foundational infrastructure for the development of the digital economy, driving changes in economic and social activities that impact both the growth of the economy and the quality of life of individuals.

According to the report by the 2021 International Telecommunication Union (ITU) titled 'The Economic Impact of Broadband and Digitization through the COVID-19 Pandemic: Econometric Modelling, a 0.8 percent increase in GDP per capita is the impact of a 10 percent increase in fixed broadband penetration worldwide, while a 1.6 percent increase in GDP per capita is the impact of a 10 percent increase in mobile broadband penetration worldwide. This information demonstrates the significant impact that the rate of internet penetration has on a country's economic development. However, it is worrying that around 34 percent of the global population remains without access to internet services, according to the ITU's latest report.

According to a survey on The Use of Information and Communication Technology in Thailand in Q4 of 2021, which collected data by the National Statistical Office of Thailand, the number of people aged 6 and above who use the internet is 54.6 million or 85.3 percent, up from 52.9 percent in 2017. Additionally, the percentage of Thai households with internet connectivity has increased to 88.7 percent, up from 64.4 percent in 2017. However, Thailand's rate of home internet access is still lower than many countries that are more advanced in digital technology, such as South Korea and Singapore, where the percentage of households with home internet connection is 99.93 percent and 99.32 percent, respectively.



**Figure 1:** Percentage of households with internet access at home in South Korea, Singapore, Japan, Malaysia, Thailand, and World between 2017 and 2021

*Source: Households with Internet access at home (ITU DataHub, 2021)*

Affordability is a key factor for household internet access, which is related to the cost of internet service and household income. Despite the consistent decrease in internet service fees in Thailand due to competition among service providers, the average monthly income per capita and household income have shown a downward trend, particularly during the COVID-19 pandemic outbreak in 2019.

One of the reasons why many people around the world do not have access to and use ICT services is the high cost of connectivity compared to income, as reported by the ITU in 2020 on "The affordability of ICT services". Additionally, fixed broadband internet affordability among the population in the Asia-Pacific region has decreased due to the income has decreased proportionally more than the reduction in service fees. This is a result of the economic recession, as reported by the ITU in 2021 on "The economic impact of broadband and digitization through the COVID-19 pandemic.

The above statement has sparked interest among authors to study Thai households' internet affordability and its affecting factors, especially during the COVID-19 pandemic, as people are adjusting to new lifestyles that require increased internet access.

## **Literature Review**

A study on the digital life divide in Thailand (Pansri T. and Chomtohsuwan T., 2019) found that the Thai population is showing a continuous trend towards better digital life. The internet usage index has rapidly increased, and most people use smartphones connected to the internet to carry out daily activities such as financial transactions and online shopping. However, the digital life divide still exists in every area of Thailand. People in urban areas use digital technology more in their daily lives than those in rural areas, and those in the capital have the highest digital life behavior patterns. Developing digital infrastructure, such as increasing internet signals, especially in remote areas, can help reduce the digital life divide.

There are two main obstacles to accessing internet services in Thailand (Tiamnara N. et al., 2015). Firstly, a large portion of the population has low income, and secondly, there are problems with developing internet infrastructure, such as broadband and high-speed internet in rural areas. In addition, industrial factors such as service fees and internet speed can affect the usage rate. Lower service fees can increase the number of internet users, and statistical analysis has shown that high-speed internet service fees and competition among service providers affect the use of the internet.

### ***Affordability***

Affordability is a measure of a person's ability to purchase certain goods or to pay for general living expenses on average (Kenton W., 2021). The measurement of affordability is often compared to the price of goods or the cost of living with personal income. The resulting number may be presented as a raw ratio or adjusted to a specified index, which can provide an idea of the standard of living.

The study by Garner and colleagues in 1996 indicated that affordability is an assessment of well-being and happiness in terms of the aspirations of an individual or a family. Affordability is related to the economy, meaning the ability to purchase or achieve certain goals, with budget constraints and beliefs about budget constraints differing from the willingness to pay or purchase. The principle of willingness to pay or purchase is that a person will make a purchase when they want to. If a person thinks they can afford to pay for goods or have enough income to buy them, it is expected that they have better economic well-being than those who cannot afford to buy the products or have insufficient income to make the purchase.

### ***The affordability of ICT services***

Yates and colleagues (2010) studied the impact of country policies on the spread and affordability for fixed broadband internet access in over 110 countries. The study also revealed that a country's economic wealth affects the population's ability to pay for broadband services, with countries having higher economic wealth able to provide internet services at lower costs or more affordable services. The economic wealth also affects the readiness and cost relationships of fixed broadband internet services.

Similarly, Weiss and colleagues (2015) also conducted a study on individual abilities based on Sen's capability concept, stating that an individual's capability is determined by the opportunities available to them, such as income and education. In a comparative study of ICT service payment capabilities among countries, it is assumed that countries with higher economic wealth and affluent populations have a higher status in paying for technology-related goods and services.

The report from the ITU on affordability in the context of telecommunications states that the cost of services is often considered a barrier to using telecommunications/ICT services (ITU, 2021). However, "affordability" or ease of decision-making in purchasing services is more important. Affordability depends not only on the cost of the service and income but also on other payment options that can be used as substitutes.

Since the outbreak of COVID-19 in 2020, there has been an increased demand for internet usage to support work, education, and communication. Reddick and colleagues (2020) conducted a study to identify the factors that determine access to and the affordability for home high-speed internet services. They found that the factors affecting the affordability included user-related factors, economic and social factors, as well as provider-related factors such as geographical constraints and industry competition. Overall, the study shows that both user-related and provider-related factors have an impact on the internet affordability.

### ***Affordability Measurement Using the Price-to-Income Ratio Approach***

The Price-to-Income Ratio is one of the most used measures of "affordability." It is a method that provides clarity, requires minimal data, and yields a straightforward ratio for calculation and interpretation. This measure is widely used in the media and policy organizations in the real estate market. (Leung C. K. Y., 2021) This concept compares the average cost of goods or services to the average household income. The resulting value shows what proportion of the income is spent on appropriate goods or services. Therefore, the key variables in this method are income and cost of service.

The Price-to-Income Ratio is also applicable to measure affordability for ICT products and services. The cost of ICT services can be presented as a percentage of gross national income per capita, indicating the relationship between the cost of services and the size of the economy of each country, and it also reveals the affordability from a national perspective. However, this ratio alone does not indicate whether ICT services are affordable for low-income households or individuals. In-depth analysis of affordability may require consideration of income distribution or domestic consumption, such as comparing the cost of ICT services to the income of the lowest 40 percent of the population (ITU, 2021).

## **Methodology**

### ***Data collection***

This quantitative research uses microdata or raw data from The Household Socio-Economic Survey of the Whole Kingdom between 2012 and 2021. The survey is conducted annually by the National Statistical Office of Thailand, and it collects household expenditure data every year and household income data biennially.

### ***Statistics Used***

The statistical analysis is divided into two parts: (1) descriptive statistics that present the frequency, percentage, and mean to examine the proportion of internet expenditure to household income, and (2) regression analysis that identifies the factors affecting households' internet expenditure, income, and internet affordability.

### ***Data Analysis***

The researcher proceeded with the data as follows:

- Analyzed the data on the frequency of households using the internet and their internet expenses between 2012 - 2021.
- Analyzed the proportion of internet expenses to household income using the price-to-income ratio approach. The analysis was based on the data of the average monthly internet expenses per person and average monthly income per person of households in 2021. The results of the analysis were compared to the target proportions used by the Thai government and international standards to determine internet affordability. All types of internet usage were analyzed and categorized into three groups according to their patterns: (1) households that use only home internet, (2) households that use only mobile internet, and (3) households that use both home and mobile internet.
- Analyzed the factors related to the socio-economic status and characteristics of households that affect the internet expenses, income, and internet affordability of Thai households. The analysis included factors such as residential location, residential type, household size, number of employed members, socio-economic class, number of computers and smartphones, phone call expenses (Voice services), and the usage patterns of internet services within the household.

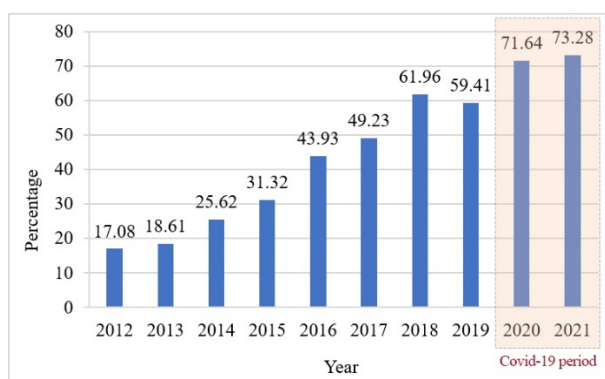
## **Results**

### ***Frequency and percentage of households with internet expenses and the average monthly internet expenses between 2012 and 2021.***

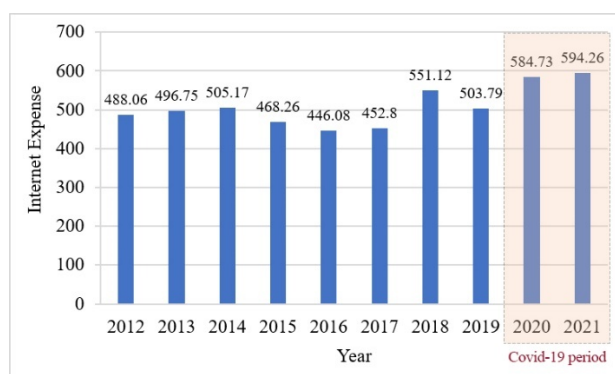
According to the survey on The Household Socio-Economic Survey of the Whole Kingdom between 2012-2021, the number of households paying for internet service has continuously increased. In 2020, which was the beginning of the COVID-19 pandemic, 15,977,316 households out of a total of 22,301,642 surveyed households (71.64 percent) were paying for

internet service, which was an increase from 59.41 percent in the previous year. In 2021, 16,580,091 households out of a total of 22,624,352 surveyed households (73.28 percent) were paying for internet service.

The analysis of the average monthly internet expenses found that households paid 594.26 baht per month in 2021. This amount increased from 584.73 baht in 2020 and was higher than the average before the COVID-19 outbreak in 2019, which households paid an average of 503.79 baht per month.



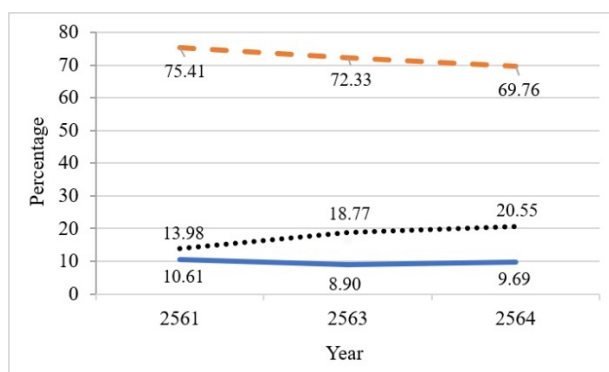
**Figure 2:** Percentage of Thai households with internet monthly expenses between 2012 and 2021.



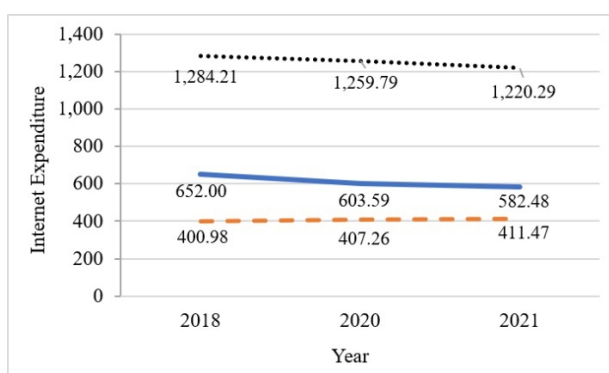
**Figure 3:** Average monthly internet expenses of Thai households between 2012 and 2021.

The analysis of household internet usage and expenses, classified by usage patterns, shows that in 2021, 69.76 percent of households use only mobile internet, which decreased from 72.33 percent in 2020. This group has the lowest average monthly internet expenses compared to other usage patterns. The percentage of households that only use home internet increased from 8.90 percent in 2020 to 9.69 percent in 2021, and they have internet expenses of 582.48 baht, which decreased from 603.59 baht. However, there is a trend of an increasing number of households using both home and mobile internet simultaneously, while the expenses are decreasing.





**Figure 4:** Percentage of households with internet expenses by usage patterns between 2018 and 2021.



**Figure 5:** Average monthly internet expenditure of households by usage patterns between 2018 and 2021.

- Using only home internet
- - - Using only mobile internet
- ..... Using both home and mobile home internet

***Thai households' internet affordability in 2021, categorized by affordability level and internet usage patterns.***

The affordability levels are divided into two groups: (1) The group with internet expenses equal to or less than 2 percent of their income, and (2) the group with internet expenses exceeding 2 percent of their income. These groups are compared to the target level of high-speed internet service affordability in developing nations set by the ITU/UNESCO Broadband Commission for Sustainable Development, which has established a goal for 2025 to make basic broadband services affordable in developing countries (defined as costing less than 2 percent of monthly Gross National Income per capita). This target aligns with the one set in the Thai national digital infrastructure development plan, stating that 'the cost of high-speed internet services shall not exceed 2 percent of the gross national income per capita.' This goal is specified in the National Digital Economy and Society Development Plan and Policy for the period of 2018-2037."

The data of the year 2021 was analyzed using the Price-to-Income Ratio approach. The analysis was divided according to internet usage patterns, including (1) using only home internet, (2) using only mobile internet, and (3) using both home and mobile internet. Additionally, a summary of home and/or mobile internet usage was included. The analysis

was conducted for each member of the household in order to compare the results with the target of promoting internet usage in developing countries.

**Table 1:** Frequency and percentage of households categorized by their internet affordability and usage patterns.

Percentage of internet expenses per income	Using only home internet (9.69)	Using only mobile internet (69.76)	Using home and mobile internet (20.55)	Using Home and/or mobile internet (100)
< = 2	861,485 (53.62)	6,680,976 (57.76)	909,210 (26.68)	8,451,671 (50.97)
> 2	745,299 (46.38)	4,884,916 (42.24)	2,498,205 (73.32)	8,128,420 (49.03)
Total	1,606,784 (100.0)	11,565,892 (100.00)	3,407,415 (100.00)	16,580,091 (100)

According to Table 1, the group that only uses mobile internet is the largest group, with a total of 11,565,892 households or 69.76 percent. Next is the group that uses both home and mobile internet, with a total of 3,407,415 households or 20.55 percent, followed by the group that only uses home internet, with a total of 1,606,784 households or 9.69 percent. Most households that use only home internet and those that use only mobile internet have internet expenses that are less than or equal to 2 percent of their income per capita, with percentages of 53.62 percent and 57.76 percent, respectively. However, for most of the group that uses both home and mobile internet, their internet expenses exceed 2 percent of their income per capita, at 73.32 percent. When considering the overall use of the internet, it is found that most households pay for the internet in proportion to or less than 2 percent of their income per capita, at 50.97 percent. This is close to the number of households that have internet expenses that are more than 2 percent of their income per capita, which is 49.03 percent.

***Socio-Economic Characteristics affecting household internet expenses, income, and internet affordability ratio in 2021.***

In this section, the analysis results are presented on the socio-economic factors of Thai households that affect average internet expenses and average monthly income, which directly affects the price-to-income ratio used to indicate the level of household internet affordability. The analysis was conducted using a multiple regression analysis and the results are as follows.

**Table 2:** Regression coefficients for factors affecting internet expenses, income, and internet affordability ratios in Thai households in 2021.

<b>Socio-Economic Characteristics</b>	<b>B</b>	<b>SE</b>	<b>Beta</b>	<b>t</b>	<b>p</b>
<i>Internet Expenses</i>					
Constant	507.290	0.235			
Residential location					
Bangkok	35.407	0.148	0.065	238.694	0.000
Central	32.859	0.116	0.081	283.050	0.000
North	-11.585	0.128	-0.023	-90.753	0.000
Northeast	0.406	0.121	0.001	3.358	0.000
Municipality	12.072	0.080	0.032	151.478	0.000
Residential type					
Detached house	-26.420	0.160	-0.063	-164.882	0.000
Row house	-36.448	0.167	-0.067	-217.893	0.000
Town house/twin house	-4.228	0.187	-0.006	-22.655	0.000
Household size	-56.952	0.036	-0.471	-1560.799	0.000
Number of employed members	3.101	0.049	0.016	62.932	0.000
Socio-economic class					
Farm operators/culture	-9.800	0.136	-0.017	-71.980	0.000
Entrepreneurs	12.403	0.124	0.025	99.922	0.000
Employees	16.593	0.106	0.044	156.992	0.000
Number of computers	41.930	0.077	0.119	542.551	0.000
Number of smartphones	10.949	0.046	0.071	237.448	0.000
Phone call expenses	0.031	0.000	0.071	325.086	0.000
Internet usage patterns					
Using only home internet	-181.912	0.137	-0.284	-1329.660	0.000
Using only mobile internet	-213.525	0.103	-0.518	-2063.116	0.000
<i>Income</i>					
Constant	19908.682	17.011			
Residential location					
Bangkok	1396.695	10.742	0.040	130.016	0.000
Central	425.517	8.407	0.017	50.613	0.000
North	-1473.486	9.245	-0.046	-159.387	0.000
Northeast	-632.582	8.750	-0.022	-72.292	0.000
Municipality	1116.167	5.772	0.046	193.391	0.000
Residential type					
Detached house	-270.374	11.604	-0.010	-23.300	0.000
Row house	-1729.664	12.114	-0.050	-142.780	0.000
Town house/twin house	-332.912	13.516	-0.008	-24.613	0.000
Household size	-3291.714	2.643	-0.429	-1245.656	0.000
Number of employed members	556.244	3.568	0.046	155.896	0.000
Socio-economic class					
Farm operators/culture	608.197	9.860	0.017	61.684	0.000
Entrepreneurs	164.488	8.989	0.005	18.298	0.000
Employees	1828.648	7.655	0.076	238.898	0.000
Number of computers	4674.880	5.597	0.209	835.264	0.000
Number of smartphones	-214.813	3.339	-0.022	-64.327	0.000
Phone call expenses	5.644	0.007	0.200	806.061	0.000
Internet usage patterns					

<b>Socio-Economic Characteristics</b>	<b>B</b>	<b>SE</b>	<b>Beta</b>	<b>t</b>	<b>p</b>
Using only home internet	-2773.939	9.908	-0.068	-279.973	0.000
Using only mobile internet	-3932.406	7.495	-0.150	-524.655	0.000
<i>Internet Affordability Ratio</i>					
Constant	3.962	0.005			
Residential location					
Bangkok	0.045	0.003	0.006	15.669	0.000
Central	0.218	0.002	0.037	97.906	0.000
North	0.322	0.002	0.044	131.623	0.000
Northeast	0.222	0.002	0.034	0.034	0.000
Municipality	-0.108	0.002	-0.20	-70.797	0.000
Residential type					
Detached house	-0.215	0.003	-0.036	-69.986	0.000
Row house	-0.101	0.003	-0.013	-31.593	0.000
Town house/twin house	-0.169	0.004	-0.017	-47.133	0.000
Household size					
Number of employed members	-0.107	0.001	-0.039	-113.149	0.000
Socio-economic class					
Farm operators/culture	-0.297	0.003	-0.036	-113.606	0.000
Entrepreneurs	-0.181	0.002	-0.025	-75.928	0.000
Employees	-0.539	0.002	-0.099	-256.764	0.000
Number of computers					
Number of smartphones	-0.367	0.001	-0.072	-247.170	0.000
Phone call expenses					
Phone call expenses	-0.001	0.000	-0.079	-273.887	0.000
Internet usage patterns					
Using only home internet	-0.958	0.003	-0.104	-364.724	0.000
Using only mobile internet	-1.365	0.002	-0.229	-687.128	0.000

The socio-economic characteristics of households that influence internet expenses, income, and affordability include residential location, Residential type, household size, number of employed members, socio-economic class, number of computers and smartphones, service and phone call expenses, and internet usage patterns. These variables can collectively explain the variation in household internet expenses, income, and affordability, with R-squared values of 46.5 percent (R Square = 0.465), 30.4 percent (R Square = 0.304), and 5.2 percent (R Square = 0.052), respectively.

According to the analysis results, the most significant factors affecting a household's internet affordability are the usage patterns in the group that uses only mobile internet, followed by the group that uses only home internet, which has a significant negative correlation with the percentage proportion of internet expenses to income. It can be explained that when compared to households that use both home and mobile internet (Reference group), households that use only mobile internet and households that use only home internet have a lower proportion of internet expenses to income, with less than 1.365 and 0.958, respectively. This indicates a higher level of affordability. The next important factor is the socio-economic class of households in the employed group, which has a lower percentage proportion of internet expenses to income than the group of non-economically active (reference group), at 0.539 indicating better affordability. Another factor is the number of computers in the

household, which shows that if the number of computers increases by 1, the percentage proportion of internet expenses to income decreases by 0.367, indicating better affordability.

The most significant factor affecting household internet expenses is the internet usage patterns in the group using only mobile internet, followed by the group using only home internet. These have a negative correlation with household internet expenses. Compared to households that use both home and mobile internet, households that use only mobile internet pay less for internet expenses, at 213.525 baht, while households that only use home internet pay even less, at 181.912 baht. The next most important factors that affect household internet expenses are household size and the number of computers in the household, which have negative and positive correlations, respectively. A household with an additional member pays less for internet expenses, at 56.952 baht, while a household with an additional computer pays more, at 41.930 baht.

The most influential factor on the income of households that pay for internet service is the number of computers in the household, which has a significant positive correlation with household income. This can be explained that for every additional computer in the household, there is an increase in income of 4,674.88 baht. The next most influential factors on household income are the internet usage patterns of the internet in the group of using only mobile internet, and the household size, which have a negative correlation. It can be explained that households that only use mobile internet have lower income compared to households that use both home and mobile internet, with a difference of 3,932.406 baht. Additionally, households that have an increase of one member experience a decrease in average income of 3,291.714 baht.

## **Conclusion**

Based on the research findings, it can be concluded that the number of Thai households spending money on internet services has continuously increased, especially during the COVID-19 pandemic when people have changed their lifestyles to adapt to the new normal. This has led to the incorporation of various technologies to facilitate work and daily life, making the internet an essential component. The data reveals a trend in household internet expenses, with a decrease in the group that only uses home internet and the group that uses both home and mobile internet, but an increasing trend in expenses for mobile internet service. Although the average rate of voice and mobile internet services has decreased from the previous year, and service providers are focusing on marketing to users of smartphones, which have continuously gained popularity in service usage (NBTC, 2021). This indicates that even though service providers reduce the service fee, households tend to pay more for internet usage, possibly because they choose more expensive internet packages for better quality, such as higher speeds. Additionally, service providers often promote the sale of smartphones with service contracts for more expensive packages than regular packages, which may explain why they tend to pay more for internet usage.

### ***Internet affordability of Thai households***

Internet affordability of Thai households was examined by studying the percentage proportion of household internet expenses to income. It was found that households that use only home internet and those that use only mobile internet generally pay for the service at or below 2 percent of their income. However, households using both types of internet services mostly paid a service fee higher than 2 percent of their income. In terms of overall internet

usage, the analysis found that approximately 50.97 percent of Thai households paid for the service fee at or less than 2 percent of their income, while 49.03 percent paid more than 2 percent of their income. If compared with the target set by the ITU/UNESCO Broadband Commission for Sustainable Development in 2025, as well as one of the objectives of Thailand's digital infrastructure development plan, there are still almost half of Thai households or people who pay for internet service at a higher proportion than the desired target. This shows that Thailand still needs to develop by increasing household income, while simultaneously supporting access to and use of the internet at a reduced cost, for the internet to be more accessible and easier to use for everyone.

### ***Factors affecting households' internet affordability***

The price-to-income ratio, which indicates internet affordability, is affected by various factors including the patterns of internet usage, the socio-economic class of households, and the number of computers in households.

Key socio-economic characteristics that impact internet expenses and household income include the household's internet usage pattern. In Thailand, households use home or mobile internet, or both, to cater to their increasing demand for internet usage, resulting in higher expenses relative to income. The number of computers in a household reflects the technology skills that contribute to the income of household members, along with their internet usage patterns and household size.

Overall, it can be explained that socio-economic characteristics that affect internet expenses and household income will inevitably affect the price-to-income ratio, which indicates households' internet affordability.

## **Recommendations**

### ***Policy recommendations***

In order to reduce the expenses of household internet usage and increase the internet affordability, the government, private sector, and stakeholder should support the following measures:

- **Government support:** To reduce the cost of internet services for households, the government can play a significant role by implementing policies that foster competition among internet service providers, investing in infrastructure development, and offering tax incentives to companies that provide affordable internet services. This will lead to lower prices for consumers. The government can achieve this by creating policies that promote competition among internet service providers (ISPs) and funding the expansion of broadband infrastructure to remote and underserved areas. Additionally, the government can finance programs that offer subsidies to low-income households, enabling them to access affordable internet services and/or provide tax relief for low-income households.

The government also supports the research and development of communication technology in Thailand, encouraging the development and utilization of self-invented technology, reducing dependence on foreign technology, reducing service costs, and allowing consumers to access communication technology at a lower cost. To control

and reduce monopolies in the communication industry, especially internet service providers, the government can enact and enforce laws. Additionally, by adjusting the frequency spectrum allocation structure, service costs can be lowered for current providers, and opportunities for new providers with lower potential costs to enter the market can be opened up.

Lastly, promote the idea of family members living together and sharing the cost of household internet services to reduce the burden on individuals and lower the overall cost of internet services for the household.

- Private sector support: Internet service providers can provide affordable packages to households, especially low-income households. They can also work with the government to develop infrastructure in under-served areas. The private sector can also invest in technology that enables households to consume less data while maintaining a high-quality internet experience.
- Stakeholder support: Stakeholders, such as consumer advocacy groups, can work with the government and internet service providers to identify and advocate for policies that support affordable internet access for all households. They can also educate the public about the importance of affordable internet access and how to access it.

Simultaneously, the government and private sector should promote increasing household income to enhance internet affordability by supporting the following measures:

- Encourage and support small and medium-sized enterprises to grow and expand by providing incentives and opportunities to develop their businesses. Additionally, encourage and promote entrepreneurship and innovation by providing incentives, funding, and mentorship programs to individuals who wish to start their own businesses.
- Develop human resources and skills through education and vocational training programs that are relevant to current market demands and can help increase income levels. Provide training and develop skills in computer technology for business operations and work in the digital economy to create new professions as alternatives or supplementary occupations.
- Provide financial support to low-income households or households that have suffered economic hardship, such as those affected by the COVID-19 pandemic, to increase their ability to pay for internet services.
- The government provides financial support to consumers to increase household income. Support access to low-interest loan sources for people to use as capital in their professions. Also, implement policies to reduce income inequality and promote social welfare programs to support households in need.
- Develop infrastructure and promote investment in the digital economy to create more job opportunities and increase income levels. Moreover, encourage and support the growth of the gig economy by creating a favorable legal and regulatory environment and promoting the development of platforms that enable individuals to offer their skills and services online.

### ***Academic recommendations***

There are several areas that can be explored to gain a better understanding of the issues related to household internet access. Firstly, expanding the scope of studies to include households that do not pay for internet access can provide valuable insights into the barriers that exist for low-income households, as well as inequality in various aspects related to household internet access. Secondly, the impact of service provider mergers on the ability of households to pay for internet access should be studied, as consolidation in the industry may lead to higher prices for consumers. Thirdly, it is important to examine the impact of the COVID-19 pandemic on internet usage behavior and access, as the pandemic has highlighted the crucial role that internet access plays in daily life. Fourthly, analyzing internet usage and service costs by industry type can help to understand the impact of internet access on business returns. Lastly, exploring the relationship between internet access and education in the digital economy era can help to identify the benefits and challenges of using technology in the classroom.

### **Acknowledgements**

This research would like to thank the National Statistical Office for supporting the survey data.



## References

- Garner, T., Stinson, L., & Shipp, S. (1996). Affordability, income adequacy, and subjective assessments of economic well-being: Preliminary findings. Association for Consumer Research Conference. Tucson, Arizona. Retrieved from <https://www.researchgate.net/publication/237274355>
- Hancock, K. E. (1993). "Can pay? Won't pay?" or economic principles of "affordability". *Urban Studies*, 30(1), 127-145. Retrieved from <https://www.researchgate.net/publication/258198368>
- International Telecommunication Union. (2021). The economic impact of broadband and digitization through the COVID-19 pandemic Econometric modelling. ITU Publication. Retrieved from [https://www.itu.int/pub/D-PREF-EF.COV\\_ECO\\_IMPACT\\_B-2021](https://www.itu.int/pub/D-PREF-EF.COV_ECO_IMPACT_B-2021)
- International Telecommunication Union. (2021). Households with internet access at home. Retrieved from <https://datahub.itu.int/>
- International Telecommunication Union. (2020). The affordability of ICT services 2020. Policy Brief. Retrieved from <https://www.itu.int/en/ITU-D/Statistics/Pages/ICTprices/2020default.aspx>
- International Telecommunication Union. (2021). Affordability. Retrieved from <http://www.itu.int/en/mediacentre/backgrounders/Pages/affordability.aspx>
- Kenton, W. (2021). Affordability index. Macroeconomics. Retrieved from <https://www.investopedia.com/terms/a/affordability-index.asp/>
- Leung, C. K. Y., & Tang, E. C. H. (2021). The Dynamics of the House Price-to-Income Ratio: Theory and Evidence, ISER Discussion Paper, Institute of Social and Economic Research, Osaka University. Retrieved from <https://econpapers.repec.org/paper/dprwpaper/1125.htm>
- National Statistical Office. (2021). Microdata of the Household Socio-Economic Survey of the Whole Kingdom, 2012-2021. Retrieved from <http://www.nso.go.th/>
- National Statistical Office. (2021). The 2021 Household Survey on the Use of Information and Communication Technology. Retrieved from <http://www.nso.go.th/>
- Office of The National Broadcasting and Telecommunications Commission. (2021). Annual retail Price Report 2021. Retrieved from <https://www.nbtc.go.th/>
- Pansri, T., & Chomtohsuwan, T. (2019). Digital life inequality in Thailand. *Journal of Demography*, 35(2), 44-63.
- Reddick, C. G., Enriquez, R., Harris, R. J., & Sharma, B. (2020). Determinants of broadband access and affordability: An analysis of a community survey on the digital divide. *Cities*, 106. Retrieved from <https://www.sciencedirect.com/science/article/pii/S026427512031252X>

- Rubin, S. J. (2001). Affordability of water service. Rural Water Partnership Fund White Paper. National Rural Water Association. Retrieved from <https://www.researchgate.net/publication/242291930>
- Tiamnara, N., Madan, N., & Malisuwan, S. (2015). Factors motivating broadband adoption in Thailand. *Journal of Economics, Business and Management*, 3(8), 772-779.
- Weiss, J. W., Gulati, G. J., Yates, D. J., & Yates, L. E. (2015). Mobile broadband affordability and the global digital divide, an information ethics perspective. 48th Hawaii International Conference on System Sciences. 2177-2186. Retrieved from <https://ieeexplore.ieee.org/abstract/document/7070074/>
- Yates, D., Gulati, G., & Weiss, J. W. (2010). Towards universal broadband: Understanding the impact of policy initiatives on broadband diffusion and affordability. *ECIS 2010 Proceedings*. 69. Retrieved from <https://aisel.aisnet.org/ecis2010/69>

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### ***Virtual Reality to Increase Intercultural Competence and Openness***

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

Using the framework of Allport's contact hypothesis (1946) and Deardorff's pyramid for Intercultural competence (2006), this study examines the findings of using virtual reality (VR) in university communication classes to increase intercultural competence and motivation to learn about foreign countries and cultures. Twelve students spent fifteen to twenty minutes traveling the world using Wander software on an Oculus Quest VR headset. The students then completed a survey describing the experience. Every participant reported a positive experience and said they were now more likely to travel to the locations they visited and would recommend the VR travel experience to others. We posit other possible uses of VR in communication classes, including interpersonal communication and reducing public speaking anxiety. The researchers believe the applications for existing technology and new technology in classrooms are endless.

Keywords: Education, Virtual Reality, Intercultural Competency, Intercultural Communication, Openness, Study Abroad

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## Introduction

In a globalized world, intercultural communication has become an increasingly important asset (Zhang & Zhou, 2019). The 2020 US Census Bureau reports that the US population is more ethnically and racially diverse than ten years ago. Indeed, Americans cannot be content to limit their interactions only to people within their culture (de Guzman et al., 2016). The proliferation of social media and the internet has exposed individuals to different cultures while simultaneously creating polarization (Iyengar & Westwood, 2015). While ethnic groups can use social media to connect with like-minded people for support, the internet also provides tools for hate groups to gather and spread dangerous messages (Martin & Nakayama, 2022). Intercultural competence combats these dangerous messages by teaching individuals to value other cultures and withhold judgment (Deardorff, 2006). The openness and curiosity learned by intercultural competence increase individuals' willingness to engage with people who are different, which according to the contact hypothesis, lessens prejudice (Allport, 1953). Martin & Nakayama (2022) share many benefits of intercultural communication. Understanding intercultural communication increases a person's self-awareness and sense of cultural identity, making them aware of their ethnocentrism. Intercultural learning can lead to one's awareness of their privilege. Intercultural communication can also increase knowledge about cultures, resulting in less prejudice.

For these reasons, teaching intercultural competence and intercultural communication is more critical than ever. Sierra-Huedo & Nevado (2022) contend that universities must train students to work in a global environment and with people "who are very different from them and to appreciate and embrace diversity as a treasure and not as a threat" (p. 16-17). They contend that this knowledge does not come naturally, so universities must be intentional when teaching students to be global citizens.

## Conceptual Framework

When discussing how to teach Intercultural Competence, many turn to Deardorff's pyramid of Intercultural Competence (2006). Deardorff's pyramid includes four levels of development. For our purposes, we focused on the base of the pyramid, Requisite Attitudes. Respect, Openness, and Curiosity and Discovery are included within this base. Respect involves valuing other cultures and respecting cultural diversity. Openness refers "to intercultural learning and to people from other cultures, withholding judgment" (p. 254). Curiosity and Discovery include "tolerating ambiguity and uncertainty" (p. 254). These characteristics are the beginning of intercultural competence.

Additionally, we considered the contact hypothesis for improving intercultural competence and communication. Martin & Nakayama (2022) explain that the contact hypothesis proposes that communication between people groups will improve by bringing the groups together and allowing them to interact. They propose eight conditions that must be met for the contact hypothesis to hold true. One condition states that interaction between groups should be collaborative rather than competitive. Institutional or organizational support for the groups is also needed. The contact hypothesis is more likely to hold true if the group members share values and beliefs.

The immersive nature of study abroad programs meets the conditions of the contact hypothesis, effectively increasing intercultural competence. Nishioka & Yashima (2018) used the contact hypothesis as a framework for their study on intercultural competence. They

designed a course in which international students studied together in a collaborative environment. The students completed a questionnaire before and after the course, and the scores indicated significant improvement in intercultural competence. Yilmaz et al. (2021) examined the results of contact between non-Muslims and Muslims in Australia. Their findings showed that young Muslim Australians, even when initially met with discrimination and prejudice, were able to change the views of non-Muslims through creative exchanges and dialogue. Genkova et al. (2022) studied predictors of xenophobia of international students. They learned that when international students had good contacts with locals while they studied abroad, xenophobia was reduced. If the student stayed abroad for an extended time, xenophobia was reduced only if the student displayed intercultural competence. Engle & Crown (2014) met the conditions of the contact hypothesis when they examined the impact of a short-term international experience on 135 university students and found that all four factors that make up intercultural intelligence increased significantly.

While study abroad programs are the traditional method for increasing contact and intercultural competence (Salisbury, 2013), studying abroad is not always affordable for U.S. minority group members. In America, students from white, wealthy families are most likely to study abroad (McNair, 2023). Many economically disadvantaged students in the U.S. are often unable to go abroad and cannot get the benefits of immersing themselves in another culture. Therefore, alternatives are needed.

### **Benefits of Virtual Reality for Study Abroad Experiences**

VR is one method to provide study abroad experiences. Akdere et al. (2021) say virtual reality can offer a substitute for studying abroad in a post-pandemic world where logistics and expense are often a barrier. Indeed, when the pandemic interrupted study abroad programs for business classes, Liu & Shirley (2021) studied Collaborative Online International Learning (COIL) pedagogy approach that used virtual reality to redesign the class. Students were satisfied with the new courses. They said that while “VR cannot replace a full immersion in a different country” (p. 192), the VR cultural exchange did serve as a successful substitute during the COVID-19 pandemic and can provide rich experiences to those for whom studying abroad is inaccessible.

VR has already been successfully used in numerous applications. Xie et al. (2021) found that VR has become increasingly more affordable and accessible and can be beneficial in a number of different non-gaming applications, including First Responder Training (Koutitas et al., 2020), Medical Training (Gallaher et al., 2019; Hurd et al., 2019; Krösl et al., 2019), Military Training (Dalladaku et al., 2020), Transportation (Lang et al., 2018), Workforce Training (Viar, 2019) and Interpersonal Skills Training (Colbert et al., 2016).

Virtual reality’s use in education is not a new concept. Zhao and Yang (2022) discovered that their use of VR in language learning increased proficiency and student motivation. Dobhal et al. (2023) reported that VR produces “huge engagement and connectivity with the students” (p. 1). Pellas et al. (2021) analyzed 46 articles regarding the use of VR in education published between 2009 and 2020. They concluded that VR provides learned benefits for students and teachers and “VR-supported instruction...successfully achieved better outcomes than their counterparts in traditional (lecture-style) formats” (p. 857). However, few studies include more than 30 students, so more research is needed.

One of the unique and positive aspects of VR is that it is an immersive tool, and participants feel as if they are really there. The experience “helps to increase student engagement, provide active learning, increase the frequency of authentic learning experiences, exercise creativity, and produce an environment to visualize abstract concepts concretely” (Alanís et al., 2023, p. 1). In addition, Alanis et al. (2023) reported the students found VR enjoyable and interesting. Hernandez-Pozas & Carreon-Flores (2019) reported students found VR “fun, engaging, safe and less expensive options to strengthen student’s capabilities in International Business” (p. 207).

### **Improving Intercultural Competence through Virtual Reality**

One of the ways to increase intercultural competence is by studying abroad (Dunn-Jensen et al., 2021). The Institute of International Education Open Doors 2022 Report on International Education Exchange states that the number of Americans studying abroad increased each year for the last twenty years before the pandemic. In the U.S., 347,099 college students traveled abroad in 2018-2019. That number decreased by 91% in 2020/2021 due to the COVID-19 pandemic. One of the reasons that study abroad programs are so successful could be due to the contact hypothesis.

We suggest that Virtual Reality (VR) can be a more affordable and accessible step needed to increase students' curiosity and openness toward intercultural competence and make contact with varied cultures more accessible and desirable to minority group members in the U.S.

This immersive quality creates a natural interest in using VR in intercultural competency. Akdere et al. (2021) found virtual reality effective for intercultural learning and competence. DeWitt et al. (2022) 's research found "significant improvement in ICC in the cognitive and affective domains of learning" (p. 629). In addition, they reported that students' attitudes and skills improved "after producing VR environments about Chinese culture" (p. 629). VR can effectively increase intercultural openness, an essential part of intercultural competence (Xie et al., 2021, p. 11). Li et al. (2021) used virtual reality to increase students' intercultural competence with good results. Li et al. reported that "the study demonstrated feasibility and effectiveness of the virtual reality approach in enhancing youth's intercultural sensitivity in Hong Kong with strong empirical evidences" (p. 633).

Because modern software and headgear give users a feeling of being in a new location, students may be less afraid to travel and interact with different cultures in the future. Liaw (2019) found that "VE [virtual environments] technologies created 'real' (e.g., uploading a map) and simulated (e.g., the train ride on Eurostar) environments that enabled different aspects of intercultural communicative competence to be exercised and developed. The affordances of physical presence provided by VEs and their role for intercultural communication learning deserve to be further understood and better exploited for instructional design" (p. 53). The immersive environments involve all the participants' senses and provide unique opportunities. Shadiev et al. (2020) proposed that an immersive virtual environment will increase learning. Going abroad via VR will familiarize them with the country they want to visit, making them more comfortable and less anxious about going to the same place in reality (Kuna et al., 2023; Higuera-Trujillo et al., 2017).

The above information leads us to our two research questions: RQ1: What is students' experience using "Wander" virtual reality traveling abroad software? And RQ2: Can VR promote interest in studying abroad and improve intercultural competence?

## Methods

In this qualitative study (Strauss & Corbin, 1990), we examined the VR experiences of undergraduate students and their impact on the potential to participate in study abroad. Students taking the "Intercultural Communication" course were recruited to simulate study abroad using VR. Twelve students agreed to participate in the study. We used the Oculus Quest headset and Wander software. Students signed up for a 30-minute time slot. Fifteen to twenty minutes were spent using the VR, and fifteen minutes were used to complete the VR Intercultural Survey about the experience. Students were given a 14-question open-ended survey where they were asked to describe their experience. The goal of the study was threefold. First, we hoped the experience would increase students' openness to new experiences and cultures and even foreign travel or study abroad programs. We also hypothesized that the experience would increase understanding of cultural differences by letting students experience different cultures virtually. Finally, we were interested in enhancing the student's educational experience.

When students arrived for their session, the instructor showed them how to put on the headset and use the controllers. She then verbally guided them to find the virtual controls and how to navigate their travels. While several students seemed interested in visiting their own homes, the instructor asked them to take this opportunity to travel to new and different locations. Once the instructor felt confident that the participant understood how to work the headset, she remained quiet while the student explored the world through VR. She told the students when the fifteen minutes were complete, and the students then removed the headsets and completed the survey. She asked each participant about their experience.

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Data analysis involved reviewing the entire VT Intercultural Survey in its entirety. A priori coding was conducted using the concepts from the conceptual framework used to answer our research questions. Key quotes were placed into an Excel matrix for deeper analysis—selected quotes aligned with the conceptual frameworks used for this study. The data was examined multiple times using constant comparative analysis (Glaser & Strauss, 1965 ) to reduce the data for coherency.

## Results

### *Overall Experience*

Research question one asked students about their experience using “Wander” virtual reality software. During the experience, participants traveled to twenty-seven countries, covering all seven continents. The most popular destinations included France (n=4), Dubai (n=3), and Italy (n=3). A common theme of the experience is that students said they felt like they were really in the locations (n=9):

*I felt like I was actually there. Felt like it was so real and I can actually teleport.*

*It was exciting to see all the places. When I went to Paris I was inside the Eiffel Tower, I could look down and see all of Paris. It was awesome! I was able to see how beautiful the water was in Bora Bora. Pretty blue water, just like I like them. Makes you feel like you are laid out on vacation.*

*Honestly, it felt surreal. I was just in shock by the details of the picture in front of my eyes. It honestly felt as if I was there [Bali].*

*I felt like I was actually walking down the streets exploring buildings and people.*

*I enjoyed how real it felt to be in each place; it was very beautiful.*

While most participants said there was nothing they did not like about the experience (n=5), others did offer some criticisms (n=7):

*The set hurt my head.*

*The lens were a little blurry.*

*I did not like the floating feeling.*

*Some places would have random blurred out areas...*

*Navigating around and selecting a certain place was hard.*

*The pictures were slow to render.*

Other complaints included needing more time and not getting to see places that were unavailable in the software (such as rural areas or certain countries).

Students also complemented the experience:

*The places were really cool to see and moving around was fun. The information it tells you about certain places was neat.*

*[I liked] Everything! [about the experience] From the quality to variety; it was all great.*

*I think that fact that I had the ability to go anywhere in the world for 15 minutes that coolest thing ever.*

*What I like the most is how they let you move and zoom in further down the street.*

Another aspect of the experience students discussed is the accessibility and affordability of VR travel versus actual travel (n=9). The contact hypothesis proposed that under the correct situation, exposure to different cultures decreases prejudice. If students are unwilling to make contact with different cultures, contact will not happen. The VR experience can provide a substitute for students unable or unwilling to travel:



[I was interested in] *Being able to travel to places I'll never be able to afford. Like seeing the world in one sitting. Living life in a chair.*

*They [VR travelers] can gain experience that would be hard to gain in real life due to the fact that travel is time consuming and expensive.*

*I would recommend other students to try [VR] because it was very interesting to look at other countries without leaving my house.*

*I think that students can gain the experience i.e. and knowledge of different cultures and how other places look that they might not have had the means to travel to.*

[VR is a] *great way to experience traveling the world while on the coach.*

[VR] *helps students see how that country is and what they have to offer without the extra hassle of pay and stay.*

Responses also show that the VR experience made the students more open to travel, partly because the virtual experience allowed them to visit the different locations from the safety of home first. This lessens the fear of traveling to a new location since they feel they have already been there and know what to expect (n=4):

*Now I am not flying blind; for example, now I know that I need a scooter to get around in Japan.*

[VR] *would be useful to plan out a trip before spending all the money to go.*

*I think VR tech can promote intercultural understanding by bringing to different places that have different cultures to see if you would like to experience these places in real life.*

*You see it all - gas stations, mountains, water - since I got a sneak peek view, it makes you want to be there more.*

All participants said they recommend others try the VR headset and Wander software (n=12):

*I would recommend other students come try because it is a great experience overall.*

*It's a fun experience and they get to travel for free.*

*Everyone should experience new tech and how it feels and how useful it is.*

### **Requisite Attitudes**

Research question two asked if VR can promote interest in studying abroad and intercultural competence, and the responses indicated that it can. Survey answers demonstrated the Requisite Attitudes (Respect, Openness, Curiosity and Discovery) described by Deardorff's pyramid of Intercultural Competence.

According to Deardorff (2006), respect includes valuing other cultures and respecting cultural diversity. Every participant expressed some appreciation at seeing the diversity of cultures they witnessed during their VR experience (n = 12). Comments included:

*You can go see how other cultures live by going to different places.*

*You get to see how there are so many different people in the world and so many interesting historical places.*

*I think [VR] gives people the opportunity to see what customs are; for example in the UK the VR was tailgating a police car. Also, everyone in Dubai was modestly dressed.*

*They can experience different cultures and understand how other people live in the world.*

Openness to intercultural learning and to people from other cultures and withholding judgment is another requisite attitude. Participants gained an openness to travel and new cultures after using VR. Participants shared that they were more likely to travel to new locations after the VR experience (n=12):

*Now that I've seen those places it's a must I physically go there and create memories with my people.*

*I am more likely to travel because VR gives a good experience but seeing it in person is going to be a lot better.*

*I am [more likely to travel] because it gave me a teaser of how beautiful the world is outside my country.*

*I definitely am more likely to travel to other places. It felt amazing.*

Participants' sense of Discovery and Curiosity also increased. Students commented on the new things they discovered:

*I felt like a certain country looked one way because stigmas you hold with it and it turned out to be beautiful.*

*Not only would you see a lot of beautiful places but there's also an info column that tells you about where you are at and the history behind that place. Although I was too busy looking around to remember the small facts shared.*

*[I learned] What they [the countries] look like, monuments, etc. differences from Texas (cars, gas prices, etc.)*

*Japan really is as crowded as everyone states.*

*It seemed like the roads were a bit smaller in Germany.*

*There are a lot more people that ride scooters or bikes to get from place to place. A lot of one-way roads. You can tell it's been around for a while with the statues they have and some buildings that look ancient and getting remodeled and the hotel rooms are amazing.*

*Most places I visited had a different outcome than I expected so the outcome was nice.*

Students' sense of curiosity was also stimulated:

*Students can gain not just knowledge from seeing new places, but even gain new curiosity for new places.*

*It [VR] can give you an inside view of different countries' living situations.*

By going to less developed countries or normally hard-to-visit places students discovered new perspectives:

*Honestly, I felt privileged. I have always been told the infrastructure in the USA is amazing and now I know why.*

*[I was] surprised at the state of some of those places.*

*I guarantee what they [future travelers] have in their head is not reality!*

The second tier of Deardorff's (2006) Pyramid of Intercultural Competence is Knowledge & Comprehension and some responses indicated these qualities. Participants suggested students could gain *Knowledge* (n=5), *Understanding* (n=3) or *Experience* (n=2) from the VR opportunity:

*[VR] will help them [other students] grasp an understanding of Intercultural Communication better.*

*[VR] can promote intercultural understanding by seeing what other countries are like and how not so different people are.*

*[VR] can promote intercultural understanding by showing the diversity that is in every single part of this world. This is very important for this branch of study.*

### ***Future Considerations***

Through this information, we realize that guides cannot tell students that they can go anywhere in the world. Also, the instructions should insist that students not go to their own home, since eight visited locations in the United States.

One idea for future study is a travel scavenger hunt where students are asked to find different locations or information through the VR headset. This would give students direction but could still be fun. This would also increase the areas explored since some students chose to spend their time in one location, while many chose to teleport from one country to another.

For instructional purposes, the objectives of the lesson might need to be more clearly tied to the location the students visit.

## Conclusion

We considered the contact hypothesis (Allport, 1954) and Deardorff's Pyramid of Intercultural Competence (2006) as we answered the two research questions. The first research question asked what is the experience of students using "Wander" virtual reality traveling abroad software. The students reported a positive experience using the VR technology. They described the experience as feeling like they were really there and were impressed by how real the experience felt. Only a few negatives were listed for the experience, including an uncomfortable headset, and not liking the floating feeling. Others mentioned that there were some areas they could not travel to, and the software was sometimes slow. They appreciated that they could feel like they were traveling without leaving home or spending money. They also felt the experience could help them know what to expect if they could visit another culture in person.

The contact hypothesis says communication between people groups will improve by bringing the groups together and allowing them to interact. While bringing people together physically through study abroad may be ideal, financial limitations often prevent the experience. Moreover, because of those limitations, some students are not initially open to the experience. The VR experience addresses this by giving students a virtual experience if they cannot make contact in person. It also gives students a preview that will make them more willing to travel in the future since they know what to expect. The virtual contact made the places they visited attractive and increased their desire to visit other countries. The contact hypothesis tells us that familiarity can lead to likeability, and VR can start the familiarity process.

Research question two asked if VR can promote interest in studying abroad and intercultural competence. Again, the student responses indicate that VR can promote interest in studying abroad and intercultural competence. Survey answers demonstrated the Requisite Attitudes of Respect, Openness, Curiosity, and Discovery were present. Participants repeatedly indicated an appreciation for the diversity and cultures they witnessed. All participants said they were more likely to visit the countries they visited in VR, showing openness. Students also demonstrated curiosity and discovery, mentioning what they discovered about the countries they visited. Students made the connection between the VR experience and intercultural competence.

The experience made participants more open and curious about other countries. This curiosity and openness that can be lacking are the base of Deardorff's pyramid and the first steps toward Intercultural Competence. Presenting a safe and affordable VR experience can increase students' openness and curiosity, making them more willing to be in contact with other cultures. Intercultural competence begins with getting people interested in other cultures and learning about different countries.

Because this is a work in progress, the above are only the preliminary results, and the data is limited. However, the positivity of the preliminary results is motivation to continue using VR in Intercultural communication to increase intercultural competence. The plan going forward is to integrate VR into a course assignment in future semesters, and it will be assessed using pre and post-tests in addition to the qualitative questionnaire used in this part of the study. One suggestion is to use Deardorff's (2006) Intercultural Competency Questionnaire.

Improvements will also be made to future experiences, including making the wording in the directions more specific to avoid students going home. The students will do the VR experience to complement their “Foreign Country Report” assignment integrating the research aspect with the practical virtual visit to the country.

We see many possibilities in using VR technology in social sciences and other fields. For Languages, there is software to learn and experience the culture integrated with some textbooks that have a VR component. For History, the Anne Frank VR software is available. For Public Speaking, it can be used with avatars in the classroom to reduce stage fear. There is also the possibility of custom-designing a VR software experience that can be used for various courses and learning objectives.

## Appendix

### VR Intercultural Survey

1. Name \_\_\_\_\_
2. Date: \_\_\_\_\_
3. What made you interested in doing the VR Traveler experience?

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4. Were you more interested in:
  - A. Experiencing traveling to other countries
  - B. Trying out the VR technology
  - C. Equalling interested in both

5. What country or counties did you visit using the VR set?

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6. What did you learn about these countries or places?

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7. How many minutes did the experience last? \_\_\_\_\_ minutes

8. Describe how it felt and what you saw in as much detail as possible:

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9. After this experience are you more or less likely to travel to the places you visited and why so?

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10. How do you think VR technology can promote intercultural understanding?

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11. What do you think students can gain from using this software and traveling to other countries?

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12. What did you dislike about the experience?

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13. What did you like about the experience?

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14. Would you recommend to other students to come and try out the VR set and Traveler software and why or why not?

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## References

- Akdere, M., Acheson, K., & Jiang, Y. (2021). An examination of the effectiveness of virtual reality technology for intercultural competence development. *International journal of intercultural relations*, 82, 109-120. <https://doi.org/10.1016/j.ijintrel.2021.03.009>
- Alanís, P. I. M., Márquez, R. E. C., Gonzalez, D. C., Mendoza, A. G. R., & Muñoz, D. (2023). Analysis of the impact of virtual reality on high school students' learning in nutrition courses. 2023 Future of educational innovation-workshop series data in action, future of educational innovation-workshop series data in action, 1-6. <https://doi-org.ezproxy.shsu.edu/10.1109/IEEECONF56852.2023.10104668>
- Allport, G. (1954), *The nature of prejudice*, New York, NY: Basic Books. Google Scholar
- Colbert, A., Yee, N., and George, G. (2016). The Digital Workforce and the Workplace of the Future. *Acad. Manage. J.* 59 (3), 731–739. doi:10.5465/amj.2016.4003
- Dalladaku, Y., Kelley, J., Lacey, B., Mitchiner, J., Welsh, B., & Beigh, M. (2020, April). Assessing the effectiveness of virtual reality in the training of army aviators. In *Proceedings of the 2020 annual General Donald R. Keith memorial capstone conference, New York, NY* (p. 40).
- Deardorff, D. K. (2006). Identification and assessment of intercultural competence as a student outcome of internationalization. *J. stud. int. educ.* 10, 241–266. doi:10.1177/1028315306287002
- de Guzman, M. R. T., Durden, T. R., Taylor, S. A., Guzman, J. M., Potthoff, K.L. (2016). Cultural competence: An important skill set for the 21st century. *Nebraska extension*, <https://extensionpublications.unl.edu/assets/html/g1375/build/g1375.htm>
- DeWitt, D., Chan, S. F., & Loban, R. (2022). Virtual reality for developing intercultural communication competence in Mandarin as a foreign language. *Education tech research dev*, 70, 615–638. <https://doi.org/10.1007/s11423-021-10074-9>
- Dobhal, D. C., Negi, H. S., & Das, P. (2023). The effect of virtual reality in the modern system of education. *2023 2nd international conference for innovation in technology (inocon), innovation in technology (INOCON), 2023 2nd international conference For*, 1-4. <https://doi-org.ezproxy.shsu.edu/10.1109/INOCON57975.2023.10101080>
- Dunn-Jensen, L. M., Osland, J. S., & Wells, P. M. (2021). To understand you, I need to know me: approximating the study abroad experience utilizing assessment as learning in Glocal classroom. *Frontiers: The interdisciplinary journal of study abroad*, 33(1), 206-230. <https://doi.org/10.36366/frontiers.v33i1.520>
- Engle, R. L., & Crowne, K. A. (2014). The impact of international experience on cultural intelligence: an application of contact theory in a structured short-term programme. *Human resource development international*, 17(1), 30–46. <https://doi-org.ezproxy.shsu.edu/10.1080/13678868.2013.856206>



- Gallagher, A., McClure, N., McGuigan, J., Crothers, I., and Browning, J. (1999). Virtual reality training in laparoscopic surgery: A preliminary assessment of minimally invasive surgical trainer virtual reality (Mist Vr). *Endoscopy* 31, 310–313. <https://doi.org/10.1055/s-1999-15>
- Genkova, P., Schreiber, H., & Schneider, J. (2022). Contacts during a stay abroad and xenophobia – duration of stay, contact quality and intercultural competence as predictors of xenophobia. *Current Psychology*, 41:7544–7554, <https://doi.org/10.1007/s12144-020-01298-8>
- Glaser, B.G. & Strauss, AL. 1967. *The discovery of grounded theory: Strategies for qualitative research*. Aldine De Gruyter.
- Hernandez-Pozas, O. & Carreon-Flores, H. (2019). Teaching international business using virtual reality. *Journal of teaching in international business*, 30(2), 196-212. <https://doi.org/10.1080/08975930.2019.1663779>
- Higuera-Trujillo, J.L., Maldonado, J.L., & Llinares Millán, C. (2017). Psychological and physiological human responses to simulated and real environments: A comparison between photographs, 360° panoramas, and virtual reality. *applied ergonomics*, 65, 398-409. <https://doi.org/10.1016/j.apergo.2017.05.006>
- Hurd, O., Kurniawan, S., and Teodorescu, M. (2019). “Virtual reality video game paired with physical monocular blurring as accessible therapy for amblyopia”, in IEEE conference on virtual reality and 3d user interfaces, Osaka, Japan, March 23, 2019 (New York, NY: IEEE), 492–499.
- Institute of International Education (2022, November 14). *US study abroad*. Open doors. Retrieved June 16, 2023, from <https://opendoorsdata.org/annual-release/u-s-study-abroad/#key-findings>
- Iyengar, S., & Westwood, S. J. (2015). Fear and loathing across party lines: new evidence on group polarization. *American journal of political science*, 59(3), 690–707.
- Koutitas, G., Smith, K. S., Lawrence, G., Metsis, V., Stamper, C., Trahan, M., et al. (2019). “A virtual and augmented reality platform for the training of first responders of the ambulance bus”, in proceedings of the 12th ACM international conference on pervasive technologies related to assistive environments, Rhodes, Greece, June, 2019 (New York, NY: Association for Computing Machinery), 299–302. <https://doi.org/10.1145/3316782.3321542>
- Krösl, K., Elvezio, C., Hürbe, M., Karst, S., Wimmer, M., and Feiner, S. (2019). “Icthroughvr: Illuminating cataracts through virtual reality,” in IEEE conference on virtual reality and 3d user interfaces, Osaka, Japan, March 23, 2019 (New York, NY: IEEE), 655–663.
- Kuna, P., Hašková, A., & Borza, L. (2023, April 25). Creation of virtual reality for education purposes. *Sustainability*, 15(9), 7153. <https://doi.org/10.3390/su15097153>

- Lang, Y., Wei, L., Xu, F., Zhao, Y., & Yu, L. F. (2018, March). Synthesizing personalized training programs for improving driving habits via virtual reality. In *2018 IEEE conference on virtual reality and 3d user interfaces (VR)* (pp. 297-304). IEEE.
- Li, C., Ip, H. H. S., Wong, Y. M., & Lam, W. S. (2020). An empirical study on using virtual reality for enhancing the youth's intercultural sensitivity in Hong Kong. *Journal of computer assisted living*, *36*, 625-635. [wileyonlinelibrary.com/journal/jcal](http://wileyonlinelibrary.com/journal/jcal)
- Liaw, M.-L. (2019). EFL learners' intercultural communication in an open social virtual environment. *Educational technology & society*, *22*(2), 38-55.
- Liu, Y., & Shirley, T. (2021, March). Without crossing a border: Exploring the impact of shifting study abroad online on students' learning and intercultural competence development during the covid-19 pandemic. *Online learning journal*, *25*(1), 182-195.
- Martin, J. N. & Nakayama, T.K. (2022). *Intercultural communication in contexts*. (8th ed.). New York, NY: McGraw Hill.
- McNair, Kameron. Studying abroad can cost over \$16,000 per semester—here's how students plan to pay for it (2023, January 31). *CNBC.com*. <https://www.cnbc.com/2023/01/31/how-college-students-afford-study-abroad.html>
- Nishioka, M. & Yashima, T. (2018). The effects of intercultural collaborative learning on the development of intercultural competence: Using the contact hypothesis and the common ingroup identity model, *Intercultural education*. *47*, 100-115. [https://doi.org/10.34347/iesj.47.0\\_100](https://doi.org/10.34347/iesj.47.0_100)
- Pellas, N., Mystakidis, S., & Kazanidis, I. (2021). Immersive virtual reality in K-12 and higher education: A systematic review of the last decade of scientific literature. *Virtual reality*, *25*, 835–861. <https://doi.org/10.1007/s10055-020-00489-9>
- Salisbury, M., An, B. & Pascarella, E. (2013). The Effect of Study Abroad on Intercultural Competence Among Undergraduate College Students. *Journal of Student Affairs Research and Practice*, *50*(1), 1-20. <https://doi.org/10.1515/jsarp-2013-0001>
- Shadiev, R., Xueying, W., & Huang, Y. M. (2020, September). Promoting intercultural competence in a learning activity supported by virtual reality technology. *International review of research in open and distributed learning*, *21*(3).
- Sierra-Huedo, M. L., & Nevado-Llopis, A. (2022, May-August). Promoting the development of intercultural competence in higher education through intercultural learning interventions. *Revista electrónica educare (Educare Electronic Journal)*, *26*(2), 1-21. <https://doi.org/10.15359/ree.26-2.8>
- Strauss, A., & Corbin, J. (1990). Qualitative research. *Grounded Theory*; SAGE Publications Ltd.: New York, NY, USA.

- U.S. Census Bureau. (n.d.) *2020 U.S. Population More Racially and Ethnically Diverse Than Measured in 2010*. U. S. Department of Commerce. Retrieved 2023 June 16. census.gov.
- Viar (2019). Retail Training: The Role of Virtual Reality in the Retail L&d Process. Viar360. Available at: <https://www.viar360.com/the-role-of-virtual-reality-in-retail-training/>
- Xie, B., Liu, H., Alghofaili, R., Zhang, Y., Jiang, Y., Lobo, F. D., Li, C., Li, W., Huang, H., Akdere, M., Mousas, C., & Yu, L.-F. (2021, April). A review on virtual reality skill training applications. *Frontiers in virtual reality*, 2, 1-19. <https://doi.org/10.3389/frvir.2021.645153>
- Yilmaz, I., Bliuc, A., Mansouri, F., & Bashirov, G. (2021). Young Muslim Australians' experiences of intergroup contact and its implications for intercultural relations. *Ethnic and racial studies*. 44(15), 2772–2793, <https://doi.org/10.1080/01419870.2020.1850823>
- Zhang, X. & Zhou, M. (2019) Interventions to promote learners' intercultural competence: A meta-analysis, *International Journal of Intercultural Relations*, 71, 31-47, ISSN 0147-1767, <https://doi.org/10.1016/j.ijintrel.2019.04.006>
- Zhao, J.-H., & Yang, Q.-F. (2023, January 9). Promoting international high-school students' Chinese language learning achievements and perceptions: A mind mapping-based spherical video-based virtual reality learning system in Chinese language courses. *Journal of Computer Assisted Learning*, 39, 1002-1016. <https://doi.org/10.1111/jcal.12782>



*Fluid Vernacular Architecture*  
—*Spatial Ethnography in the Rural Area of Southeastern China*

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The Asian Conference on the Social Sciences 2023  
Official Conference Proceedings

**Abstract**

After the 1970s, the Chinese rural area has been shaped by two forces. One is from the rural community, which is internal and reflected in the inheritance of traditions and old habits; the other is from outside the community, which is external and manifested in the penetration of urbanization and the intervention of the strong government. Under the influence of internal and external forces, the contemporary Chinese rural community presents a complex and fluid state, and can directly be observed on the vernacular architecture, which is regarded as the materialization of social relations. This paper examines the vernacular architecture spaces in a rural community in southeastern China and uses "spatial ethnography" as the main research method. "Spatial ethnography" enriches the level of investigation of social facts by coupling classical anthropological ethnography with architectural mapping and space analysis. The research is organized by three dimensions of time as clues, which are historical time, everyday life time, and immediate time. Historical time dimension examines the evolution of space forms under social and historical changes; everyday lifetime dimension shows the redevelopment of the space under people's everyday activities; immediate time dimension presents the transformation of the function and atmosphere of space in an instant situation. The intervention of multi-level time dimensions helps to reveal the different levels of fluidity shaping process of spaces, and to understand the complexity and contradictions of the decisions made by the rural people during these processes, and to reveal the shaping mechanism of the internal and external tension on the rural space.

Keywords: Vernacular Architecture, Space, Spatial Ethnographic, Architecture Anthropology, Rural China

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## 1. Introduction

The contemporary Chinese countryside after the 1970s has always been in a field full of internal and external tension. On the one hand, the traditional Chinese rural society and culture have not yet been completely disintegrated, and the internal culture and daily life inertia of village communities dominated by blood or geography still support the basic operation of rural society. On the other hand, with the rapid development of the country's economy and the continuous advancement of urbanization, many rural people have flowed into the cities, and the economy, culture, and institutions from the cities have also poured into the countryside like never before. Under the influence of external urbanization penetration and strong grass-roots government intervention and internal village cultural traditions and daily life inertia, contemporary Chinese rural society presents a complex and changing state. Rural self-built houses, as living spaces independently built by villagers, reflect the spontaneous habits, preferences and economic level of villagers; on the other hand, self-built houses are inevitably constrained and influenced by policies and regulations. This makes the rural architecture in China after the 1970s present a state of diversity, complexity, and change in terms of shape, space and function. Therefore, paying attention to rural self-built houses can help us find a window to observe the changes of contemporary Chinese rural society.

The rural houses in the pre-industrial period are typical representatives of traditional Chinese architecture, and their construction techniques and decorative arts have important cultural value. In the early days, the construction society represented by Dunzhen Liu [1] conducted in-depth research on rural houses from the perspective of architecture, the research at this stage focused on the aesthetics, technology, and cultural value of architecture. Space, as the core concept and object of architecture, is also applicable to the study of vernacular architecture. Many scholars have analyzed the space of vernacular architecture, discussing functions, culture, the association of society and space and why. And based on this, a typical research paradigm of vernacular architecture was developed. However, with the deepening of research and the disintegration of traditional Chinese rural society, the research paradigm of traditional vernacular architecture has gradually begun to break through the scope of architectural aesthetics and technology and turn to think about the correlation between space, society and culture, especially vernacular architecture in the contemporary context, as a product of pragmatism, the aesthetic value is limited, and it becomes more necessary to discuss the social and cultural significance, and the social turn of architecture has become a trend.

As a kind of living space, rural self-built houses are closely related to people's production and life and have been paid attention to by social science researchers very early. However, in the early social science research, housing and living space did not become the center of the research, but more as the preconditions and background of the history and culture of the research object were introduced by researchers by a background or context, but gradually, more and more anthropologists regard space as the center of research and even regard space as a dimension of social change to be studied [2].

The significance of residential spaces in human societal development has made them a focal point of anthropological inquiry. For instance, Marcel Mauss conducted meticulous observations of Inuits dwellings, demonstrating the correlation between spatial forms and their corresponding social patterns of life [2]. Pierre Bourdieu explored the spatial arrangements of northern African homes, elucidating how Berber people's cosmology and ideologies are materialized through space [3]. Marshall Sahlins studied the housing spaces of

the Moala people and Kabyle people, finding the symbolic relationship between internal spatial structures and gender, and contending that their architectural forms reflect the division of labor [4]. French sociologist Levi-Strauss even proposed the concept of "house society," placing the home as the central focus of research and emphasizing its animate nature and comparative relationships with individuals, thereby opening up avenues to study social structural patterns through the symbolism and meanings embedded in space [5]. Beyond the classical anthropological focus on primitive societies, residential spaces in developed societies have also increasingly attracted the attention of anthropologists. Like Tim Ingold also argues the ongoing processes of dwelling transformation, highlighting the dynamic and reciprocal relationship between humans and their surroundings [6]. Michel de Certeau focuses on the power of individual behavior to shape space in daily life from a more microscopic and narrative perspective [7].

Architecture and social science pay attention to vernacular architecture from different starting points, but the social turn of architecture and the space turn of social science make the two interact and intersect to a certain extent. The difference in research focus and methods of the two disciplines makes architecture more inclined to think about space pictorially and devotes more energy to the interactive relationship between technology, aesthetics, and space. For social sciences, space is still a perspective or method to some extent, and its research objects are still society and culture, and it also relies more on literal narratives to show space in the development of research. Therefore, the existing architectural scholars tend to ignore the "non-substantial" part of space, and the dynamics of space are ignored; anthropology scholars make the study of space a mere narrative due to the lack of pictorial thinking. Some technical unspoken facts over-interpreted.

Therefore, for the complex and mobile rural society and rural architecture and settlements, an interdisciplinary research method that bridges the limitations of the two disciplines in the study of space is essential. One such area is spatial ethnography, and scholars from different disciplines such as anthropology, geography, architecture, and urban studies have contributed to the development and advancement of spatial ethnography. Spatial ethnography combines classical ethnographic methods with spatial analysis techniques to understand the interconnections between space, place, and culture. It combines traditional ethnographic methods with spatial analysis techniques such as cartography, geospatial analysis, or other spatial tools to visualize and analyze spatial data. Many scholars have explored the method of spatial ethnography, For example, Arijit Sen used the method of spatial ethnography on Devon Avenue in Chicago, by focusing on three-dimensional timelines: environmental time, historical time, and intermediate time), to deeply describe the rich interactive relationship between users, time and physical settings, and to show the multi-layered connotations behind the material culture [8]. Paul Hardin Kapp discussed the role of spatial ethnography in mining hidden information in the preliminary research work of historical heritage protection and emphasized the significance of this information in the rules and design of historical heritage protection.

## 2. Methodology

### 2.1. Materials



Figure 1: The overall appearance of Qingyuan Village

Image source: Photographed by the author

The main research and observation object selected in this paper is the spontaneously formed vernacular architectural space of Qingyuan Village, and the architectural space formed by the government and other external subject organizations is not within the scope of this research. Besides self-built houses, non-residential spaces such as temporary spaces and public spaces are also included since they are all deeply related to the villagers' life.

Qingyuan Village is in the northeast of Fujian Province. It belongs to the mountainous and hilly area. It was not until the middle of the Ming Dynasty to the early Qing Dynasty that the area developed rapidly for more than 300 years. The area has high mountains and dense forests, and a complicated water network. Settlements are often distributed in relatively flat valleys in the hills, and will choose as sunny valleys as possible. These valleys are narrow and scattered, and the roads between the valleys are rugged. Therefore, under such geographical and natural conditions, as the population increases, there is no condition for continuous expansion of the village. Therefore, the scale of settlements in this area is relatively small. The settlements' shape is irregular and scattered spatial distribution. Due to the limitation of geography and transportation, the villages are less affected by China's rapid urbanization. Some relatively old self-built houses have survived, and at the same time, they present a relatively general state of change under a macro-historical process, which provides abundant observation samples for research.

The current population of Qingyuan Village is about 3,123, and the main surnames are Zhuo and Wei. The ancestor of the Zhuo family moved here for more than 340 years. The Qingyuan town government is in Qingyuan Village, so the economy and transportation of Qingyuan Village are relatively developed. The decline of the village is not obvious. The resident population is on the rise or relatively stable, and the number of self-built houses is also growing steadily. According to statistics from the government of Qingyuan Township,



there are 580 rural houses in Qingyuan Village. The distribution of the built year is shown in figure 2. Overall, it presents an evolving appearance of vernacular architecture with the coexistence of old and new.

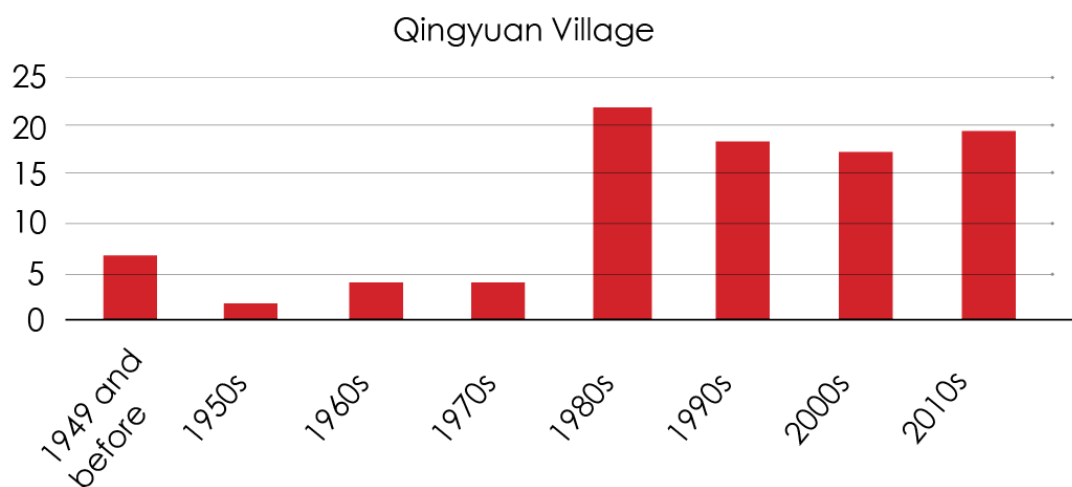


Figure 2: Statistics of housing construction years in Qingyuan Village  
Source: Date from Qingyuan town government and drawn by the author

## 2.2. Research procedure

Space ethnography is the core content of this study, and as a method, it has also been applied to the study of vernacular architecture in Qingyuan Village. Based on the analysis of the overall form of the settlement and the research of regional textual materials, 42 primary observation samples of rural buildings were selected through field visits. The selection of samples has the following principles: covering representatives of different construction age groups and covering all structural types. Priority is given to selecting cases with historical buildings or special features. This part of the observation mainly includes two parts: architectural images and simple interviews. Among the 42 primary observation samples, we further select 8 samples for detailed spatial ethnographic. The spatial ethnography at this stage will include two parts. The first part is the architectural plan and main facade. Surveying and mapping, surveying and mapping is to increase the records of furniture layout and "traces of life" based on general architectural plan drawing; the second part is the interview with the main users of vernacular buildings. The interviews are divided into: basic information of users (age, occupation, Family situation, etc.); the current use of each space and the typical range of activities of the users in the house in a day; the main changes and changes in the structure and use of the space since it was built. The first part and the second part are not completed in isolation, but proceed simultaneously.

## 3. The spatial changes of vernacular architecture in multiple time dimensions

Space itself is a fluid and multidimensional concept. As Doreen Massey suggests, space is not a static and neutral entity but is intricately linked with time, constantly changing even when unoccupied [9]. Recognizing this characteristic of space, and introducing time as an observational dimension to classify spatial objects is a beneficial endeavor. It helps to focus on the key influencing factors in their transformations, ensuring a deeper understanding when conducting ethnographic of spaces.

For vernacular architectural spaces, they can be categorized into three types based on the temporal span of their changes: historical time, everyday life time, and immediate time. The following discussion on ethnographic observation of vernacular architectural spaces will be based on this classification framework.

### 3.1. Historic time

The dimension of historical time examines the evolution of vernacular architectural space at the settlement level and the macro-level societal historical changes. Communities establish meaningful relationships with the unique natural and architectural environments, a process that transforms "space" into a "place."

Within the dimension of historical time, the visual aspect of spatial ethnography focuses on the overall evolution of settlements and the typical physical characteristics of vernacular architecture from different eras. The textual aspect, on the other hand, concentrates on the historical development process of the village. By combining these two aspects, typical features of spatial evolution within the historical dimension and the underlying social, economic, and cultural factors are elucidated.

After the 1970s, based on the existing spatial features of vernacular architecture in Qingyuan Village and the stages of social development, vernacular architecture samples can be categorized into four temporal groups: the 1970s, 1980s, 1990s, and 2010s to the present.



Figure 3: The appearance and characteristics of buildings in different ages in Qingyuan Town  
Source: drawn by the author

In pre-industrial China, rural areas were relatively closed and experienced slow development, and the structure and form of vernacular architecture remained relatively stable, including in Qingyuan Village. The typical house form in Qingyuan Village features a wood structure, rammed earth wall, and stone foundation with a "one bright room, two dark room" three-room courtyard-style layout. The open central hall and the enclosed side rooms constitute the main building, which serves as the core space. Courtyard and Patio and are arranged in the front and back. The main entrance is usually located directly opposite the main building along one side of courtyard, or at the front side of the main building, and stairs are typically positioned in the front and back of the main building. For traditional type houses, the spatial hierarchy is clear and the layout is quite symmetrical.

In the early 1970s, Qingyuan Village, as a remote mountain village, had not yet widely adopted the industrialized construction methods. Therefore, the traditional construction mode and houses was kept. In 1978, China began its reform and opening-up policy, and the most significant change for rural areas was the implementation of the household responsibility

system, which significantly increased villagers' income. Villagers began to emulate urban housing by using new building materials and construction methods. Red bricks became popular and replaced rammed earth walls as the external supporting structure. Later, the wood structural system was replaced by brick structures for load-bearing, but concrete materials and construction techniques were still not widely adopted. Therefore, components such as floors, roofs, and stairs continued to use wood structures.

In the 1980s, the official dissolution of the people's communes in 1982 marked the complete dismantling of the collective economy. Rural economy experienced rapid development, and the life of villagers improved. The generation born during the population growth peak of the 1960s began to settle down and establish their careers in this decade, resulting in a significant increase in housing demand. This period became relatively active in rural construction. The introduction of new construction materials and technologies allowed for vertical growth of buildings, with the number of floors increasing from 2 to 3,4, or more. New spatial forms such as flat roofs, elevated platforms, and rooftop terraces emerged. Due to land limitations, the courtyard no more existed. However, the building floor plan still followed the three-room layout, with a middle hall and two rooms on either side. The entrance faced the central hall, and the staircase was located either on both sides of the entrance or at the rear of the central hall. Some buildings with larger depths would have a partition in the central hall, like the back hall in traditional house layout, serving as a dining room or other functions. Each floor of the building had a similar layout. The central hall in this period is like a "large corridor" leading to other rooms, with a weaker sense of ceremonial space compared to the central hall of traditional layout houses. At this stage, buildings prioritized practicality, and decorative elements in brick and wood structures were minimal. The exterior facades faithfully reflected the construction materials used. Prefabricated hollow brickwork was used in spaces like staircases and central halls for ventilation, lighting, and decoration. Brick walls are easier to create openings in compared to rammed earth walls, resulting in a significantly larger window area on the building facade compared to traditional houses. Internal ventilation and lighting were greatly improved compared to before.

After the 1990s, land availability became increasingly scarce, and the size of available residential land for construction gradually decreased. However, rural economic levels continued to improve, leading to the unauthorized occupation of arable land and a rise in the phenomenon of competing in house construction. Although the national approval system for residential land improved, its implementation fell short of expectations. Villagers still found ways to maximize their interests. For example, increasing the number of floors became an important method for villagers to expand the usable area. Due to the lack of professional design, the layout of buildings became arbitrary, with a construction approach focused on determining the position of the staircase and stacking floors one by one. As the building plots significantly reduced in size, the traditional three-room layout was no longer viable, and the spatial arrangement and functionality of buildings transformed. The logic of symmetric and unfolding layouts shifted to a vertical stacking arrangement. The ground floor of the building can be seen as a semi-public area where homeowners rarely lock the doors. It serves multiple functions, like the courtyards in traditional houses, including processing agricultural products, storing miscellaneous items, and receiving guests. Some families may also have their kitchens on the ground floor, and homeowners located along the street might use all or part of the space as a shop. A shoe-changing area is typically placed at the staircase between the ground floor and the second floor. The second floor is usually used as a living room and bedrooms, while the third floor and above are primarily dedicated to bedrooms. Overall, the ground floor and the upper floors have distinct spatial attributes. The former is more

outward-facing, noisy, dusty, and cluttered, while the latter is more inward-focused, quiet, tidy, and cozy.

In the 2000s, the housing model that emerged in the 1990s continued, but there was an incorporation of some popular urban design elements in facade design and details. For example, the use of rounded corners and the application of small ceramic tile decorations on the exterior façade and the blue glass floor-to-ceiling windows. During this period, the level of concrete construction further improved, and cast-in-place floor slabs and stairs completely replaced wooden ones, becoming widely utilized. Indoor bathrooms also became more common.

After 2010, the industrialized construction mode became widespread in rural areas. The application of concrete frame structures became more mature, with diverse facade designs and materials. Interior decoration and finishing became more sophisticated, and spatial layouts became increasingly rational. The floor plans of urban high-rise apartments began to be applied in rural low-rise houses, and there was also a trend of seeking professional designers for house design. The combination of staircases and urban apartment floor plans became the primary choice for many households. Some European-style decorations also became popular. At the same time, with the strengthening of grassroots government power, strict control measures were implemented for self-built houses in rural areas. There were strict regulations regarding the height and area of self-built houses. Meanwhile, the value of traditional-style houses started to be recognized, and some residents who had moved away from the villages began to renovate their vacant old houses. Some villagers chose to rebuild using traditional wood structures.

Several key factors have strongly reshaped rural architecture since the 1970s, including political system changes, relevant policies, laws and regulations, industrialization, urbanization, and population growth. In the macro-scale transformations, contemporary Chinese rural villagers have been passive recipients of external forces. While self-built houses have always been based on individual actions, the architectural space is more often a product of pragmatic compromises or struggles. The culture of contemporary Chinese rural areas exhibits a disregard for tradition and a blind pursuit of modernization and industrialization. This is directly reflected in the mixed and low-quality modernity evident in the architectural space.

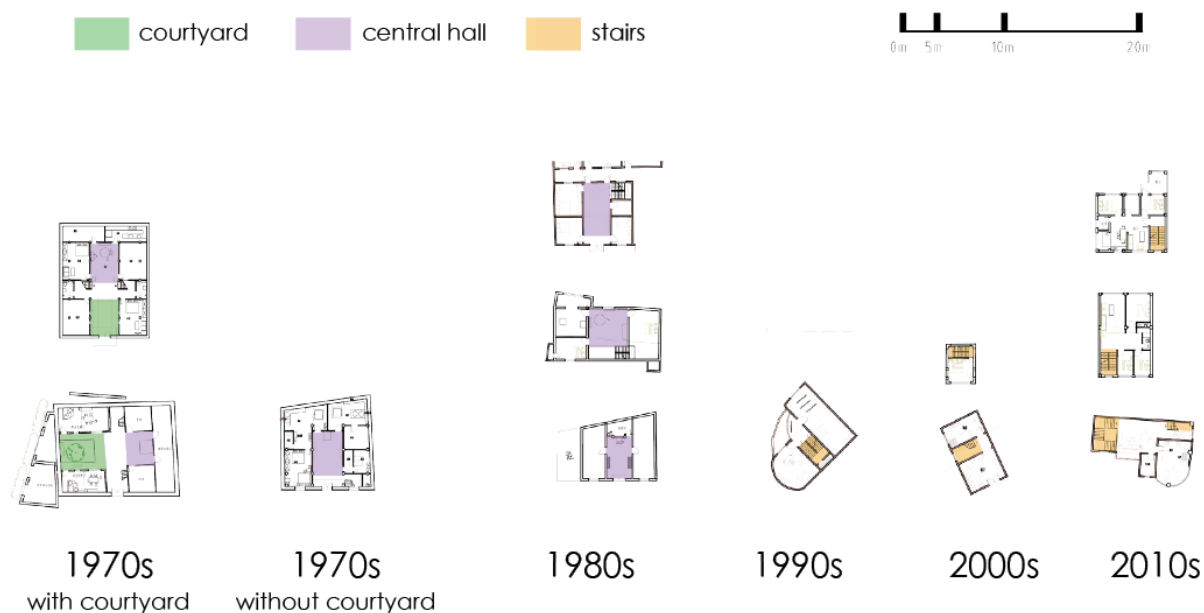


Figure 4: Evolution of Housing Layout Patterns  
Image source: Drawn by the author

### 3.2. Everyday life time

Buildings are always evolving and have a history of interaction with their human and non-human occupants. In this section, we will focus on the internal space of a house and examine how individual behavior shapes and transforms living space through the lens of a family's history. Our approach will be more narrative and microscopic, with an emphasis on the dimension of everyday lifetime.

Sample 06, located at No. 16 Qingwei Road, is chosen as a representative for spatial ethnographic observation. This sample stands out for two reasons. Firstly, it is a traditional-style house constructed in the mid-1970s, representing the pre-industrial era. Secondly, the main family members have continuously lived in this residence for over 50 years, with periodic renovations performed by the owner.

The plan of No. 16, Qingwei Road is an irregular quadrangle. Its outer wall is made of rammed earth, approximately half a meter thick. The tile-faced double slope roof extends slightly beyond the earth walls and rests on a two-story wooden frame. The house is situated at the end of a road, and next to a hill.

The brothers' father and grandfather were skilled carpenters in traditional house building, but unfortunately, this craftsmanship was not passed down to the current generation due to the declining market of traditional wood houses. The elder brother aspired to work in the city but was unable to secure suitable employment due to physical illness, leading him to return home and engage in agriculture. The younger brother is working in the city and only his wife and child are at home. Overall, their economic situation is not very good.

The economic limitations since its inception have forced this house to become a master of space efficiency. First, the homeowner cleverly used the height difference of the space under the sloping roof to build multiple rooms with different elevations which is abnormal in a

similar type of house. So basically, there are 4 different levels in this two-story building. (see Figure 5). The halls in the first floor and second floor have higher heights since the hall plays an important role in both function and etiquette. The rest of the small rooms have a lower height which allows three of them can stack under the roof vertically. Second, the plan is irregular and exactly aligns with the site shape. Third, the owner only builds one staircase (traditionally there would be 2 symmetrical stairs) further demonstrating this house's space efficiency. The builders undoubtedly prioritized maximizing available space and improving the quality of enclosed spaces while maintaining relative dignity for public spaces during its design and construction.

The first main change happened when the father passed away and the two brothers started their own families. So, the big family breaks up into two small families. Sociologists in China view this practice of separation as a symbolic division of family property and the flow of family wealth between generations. As the only property this poor family has, the house was equally divided. The halls are shared. The right part belongs to the elder brother, and the left part belongs to the younger brother. The kitchen is divided into two small kitchens with independent entrance and a stove by a 2-meter-high wall. Independent kitchen stove stands for an independent family. This practice of separating stoves is common in this area, and in some big family houses, the number of kitchens can be more. For instance, Sample 10, a large mansion, has been continuously divided for over a century, resulting in over ten independent kitchens. From this perspective, although No. 16 Qingwei Road may appear to be a single-family residence from the outside, its identity has evolved in people's minds due to the intergenerational flow of family wealth. Separating stoves has become a core symbol of this change.

The second main change happened around the two brothers both get married and their wives moved in. The two small families start to run their lives even more independently. And their respective rooms become more and more different. In rural China, people used to use dry toilets located outside the house. However, with the improvement of people's living standards, people start to build restrooms with flushing toilets inside the traditional houses. The two family located restrooms quite differently. The elder brother simply converted part of the outermost room into a restroom, and the rest kept the same. While the younger brother's toilet is in the innermost room and the bedroom door is also moved, necessitating passing through the kitchen to access both. A small hall is formed after entering the kitchen door. (see Figure 6) The younger brother's unique renovation method has enhanced his small family's privacy and created an independent "house" inside the "big house". Consequently, the older brother's family has largely kept the traditional layout, while the younger brother's ground floor space has undergone significant change.

The third change happened around the birth of the younger generation. The homeowner has given the bedroom the most careful design. The bedroom floor is covered with foam mats, which are cheap yet colorful, practical, and easy to install and replace. The daughter's bedroom features a complete set of pink furniture, wallpaper, curtains, desks, and chairs. If you only look at the bedroom, except for some exposed wooden frames, the layout, decoration, furniture, and daily necessities of this room are almost indistinguishable from those of any urban residence. The materials, interior decoration, and apartment-style plan renovation all imply Chinese farmers' yearning for urbanization.

De Certeau believed that the individual behaviors that are considered insignificant in daily life and overlooked by power structures could be a way for individuals to express themselves

and obtain power [7]. By observing the sample of No. 16, Qingwei Road, we can see that even as a relatively disadvantaged family (in terms of economic status) they actively live their lives with diverse, creative, and flexible daily practices. This attitude can be seen as a form of resistance to their difficult lives, and it demonstrates the power contained within seemingly mundane daily life.

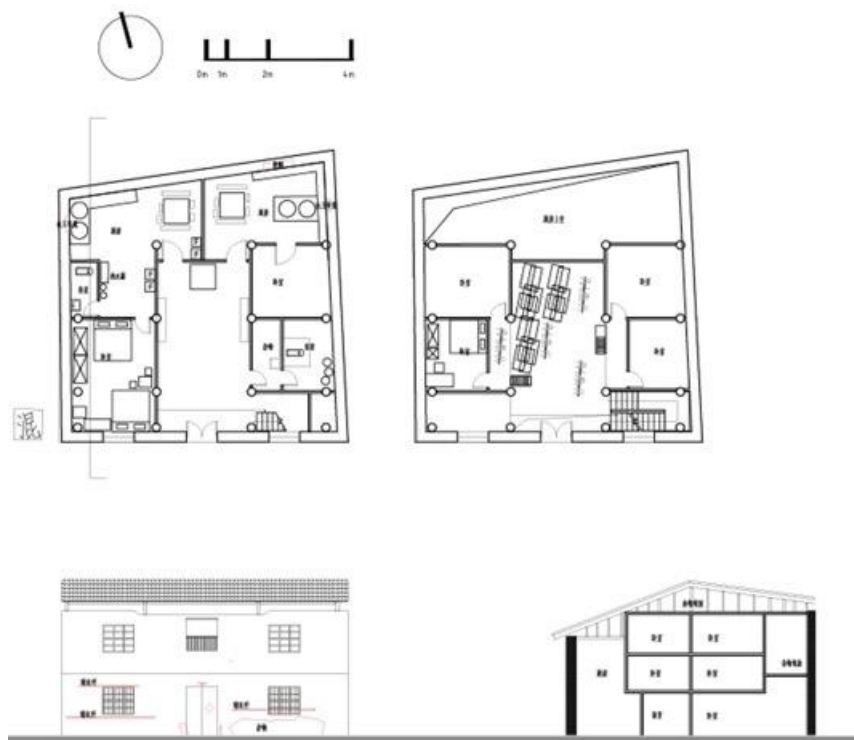


Figure 5: No. 16, Qingwei Road house plan and elevation  
Image source: Drawn by the author

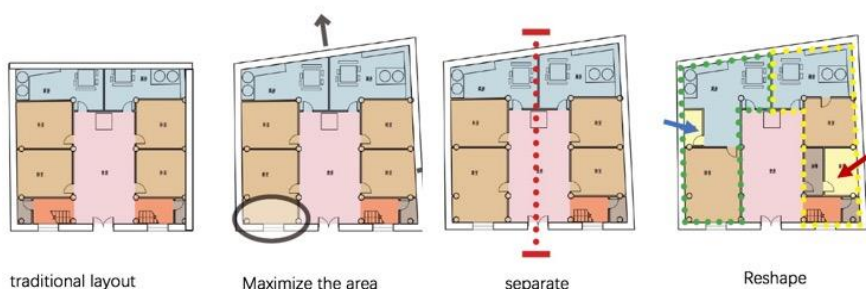


Figure 6: The process of Plan changing of No. 16, Qingwei Road house  
Image source: Drawn by the author



Figure 7: Indoor space of No. 16, Qingwei Road house  
(left: central hall right: daughter's room)  
Image source: Photographed by the author

### 3.3. Immediate time

In the immediate time dimension, the process of space generation or shaping is more fleeting, and the spaces themselves are more temporary. Ordinary architectural components are no longer the maintaining structures of these spaces. Instead, movable objects, sounds, smells, and crowds become the materials from which these spaces are created. In the context of Qingyuan Village, such types of spaces are often associated with specific social activities, such as festive gatherings of a clan, weddings and funerals, housewarming ceremonies, building construction ceremonies, relocation events, and market days. This article takes the market day in Qingyuan Village as an example to observe the temporary spaces.

Qingyuan Village serves as a central gathering point for surrounding villages. On the 15th day of each month, small vendors converge on the main street of Qingyuan Village, known as Jiangcuo Street, which is seven meters wide and is lined with several important public buildings, as well as numerous newly-built residential houses mostly constructed after the 1990s. The ground floor of these houses is often used as commercial shops, while the homeowners reside on the upper floors. During the market day (圩日 *xu ri*), temporary stalls are mainly set up on the sidewalks of Jiangcuo Street, with some stalls occupying the edges of the roadway. Pedestrians move directly in the middle of the road, making it challenging for vehicles to pass through Jiangcuo Street on market days. The market usually starts at 6 am and disperses before noon.

The goods in the market are categorized based on their content, and the historical reasons for this classification are unknown. However, the characteristics of the spaces on both sides of the street to some extent influence the arrangement of the stalls. This is because the street itself is a major commercial street in the town area, with various types of shops distributed on both sides. During market days, in addition to the vendors from surrounding villages and towns, many shop owners on the street also participate in the market. They often occupy the space in front of their shops, displaying their goods outside to increase sales during the market day. Therefore, it is common to see hardware stalls in front of hardware stores and meat stalls in front of butcher shops.

Sound is an important indicator to determine if it is a market day. The bustling sounds of the market can be heard from a distance. With the emergence of new amplifiers, the vendors' voices can be heard louder and for longer durations, adding to the noisy atmosphere of the market day. The sound completely transforms the street, which used to serve mainly as a transportation route, into a marketplace. The function of the street space changes from transit to a place for people to linger. Even if people don't have any purchasing needs, they would still come to the market day to join in the excitement.



The smell also plays a significant role in the spatial distribution of the market. Based on the smell, we can distinguish between clean areas and chaotic areas. Clean areas, even on non-market days, are relatively clean and tidy areas on both sides of the street, such as in front of the town hospital and town government. These areas have relatively clean environmental hygiene. Chaotic areas, on the other hand, are the areas in front of restaurants, groceries, and butcher shops, where there is more environmental clutter and the smell is not very pleasant. Therefore, during market days, products with less smell, such as clothing, daily necessities, and hardware, are mainly located in clean areas. Stall owners in the clothing area even would try to keep the goods off the ground by setting up higher shelves. They would also erect sunshades to enhance the comfort of customers while selecting items. Vegetables, poultry, pork, and other items with distinct smells and relatively "unclean" goods are concentrated in the "chaotic areas." In the arrangement of goods, stalls in the chaotic areas are more casual, directly placing goods in cardboard boxes or foam boxes on the ground, or simply placing the goods on a piece of cloth. After the market day, the chaotic areas would have more debris (such as rotten vegetable leaves and poultry droppings) left behind, while the clean areas can generally return to their usual state without additional cleaning work.

In addition to the typical stalls mentioned above, there are also some atypical stalls. One type is the mini stalls, which sell very small items (such as rat poison or valuable herbs), or the owners themselves are the products, offering personal services such as fortune-telling, mole reading, or tooth extraction. Both do not require much display space. These mini stalls occupy a small area and they are scattered in the gaps between larger stalls.

Although the content and scale of goods sold at the stalls may vary, the construction of the stalls themselves is very simple, even rudimentary. A few plastic stools or plastic boxes, a piece of broken wood board, and a sun umbrella constitute the basic form of a stall. Bricks, bamboo poles, and worn-out cloth can also serve auxiliary purposes. The objects that make up the stalls are not solely intended for the market day; they also serve other functions in temporary activities or the daily lives of villagers, reflecting the habit of reusing items and waste in the rural community. Compared to urban areas, rural communities in China are relatively lacking. Contemporary cheap and low-quality industrial products have mostly flowed into rural areas, forming the current scenery of rural life in China.

Sunshades, sound, smell, stalls, and crowds completely transform Jiangcuo Street in half a day. The linear passageway turns into a gathering space, and the tranquil village suddenly becomes bustling with voices. In rural areas, fixed public spaces like those in cities are missing, and temporary and adaptable spaces play an important role in rural public life.



Figure 8: Qingyuan village market day  
Image source: Photographed by the author

#### 4. Conclusion

Through this article, we have addressed several questions regarding rural Chinese society: Who shapes the space? Whose space is it? Who participates in this space? These questions involve different connotations of space, including place, home, and the public domain. The integration of spatial thinking has transformed the static research paradigm of rural architectural space. The fluidity of vernacular architecture has been exposed. This serves as a complement to the structural perspective in rural studies and embraces the complexities of diverse relationships, contributing to the resolution of campaign-style governance in rural Chinese society.

Another major purpose of this article is to explore the spatial ethnographic method itself. Firstly, the article attempts to apply the specific method of spatial ethnography through examples, incorporating architectural thinking due to the author's disciplinary background, emphasizing the visualization of information. In the contemporary era where visual information has become the mainstream source, is it outdated for ethnography in anthropology to rely solely on the notes of explorers? Is it unsuitable for a non-textual era? This article can be seen as an exploration of the dialectical relationship between presentation methods and content, and indeed, for the specific object-vernacular architecture, through such methods, we have revealed more profound implications and overlooked information about the observed subjects.

Another significant purpose of this article is to discuss the methodology of spatial ethnography itself. Through practical examples, the article attempts to apply specific methods of spatial ethnography. Drawing from the author's background in architecture, the article emphasizes a mode of thinking influenced by architectural thinking, particularly through the visual presentation of information. In today's era, where visual representation has become the dominant source of information, is it outdated for anthropological ethnography to rely solely on the notes of explorers? This article can be seen as an attempt to explore the dialectical relationship between presentation methods and content. Through such an approach, we have indeed revealed more layers of meaning and previously overlooked information about the subjects under observation.

## Appendix

### Samples for detailed spatial ethnography

Number	Year group	address	year	area (m <sup>2</sup> )	floor	structure
01	1990s	Dianmen No. 8	2019	400	4	Brick & concrete
02	2010s	Badou Village No.99	2013	300	4	Brick & concrete
03	2000s	Badou Village No.138	2018	190	4	Brick & concrete
04	1990s	Yangdang No.18-2	2004	360	3	Brick & Concrete
05	1980s	Qingwei Road No.15	1986	250	2	Brick & wood
06	1970s	Qingwei Road No.16	1976	325	2	Rammed earth & wood
07	1970s	Xialuxiang No.13	1974	260	2	Rammed earth & wood
08	Before 1949	Yangdang No.10	/	1200	2	Rammed earth & wood

Sheet 1: Samples for detailed spatial ethnographic.

## References

- [1] Liu D. (1957). *An Overview of Chinese Housing*. Beijing: China Architecture & Building Press.
- [2] Moss M, & She B. (2014). *Sociology and Anthropology*. Shanghai Translation Publishing House.
- [3] Bourdieu P. (2003). The Berber house. In Low, & Lawrence-Zuniga, D, *The anthropology of space and place : locating culture*. Blackwell Pub.
- [4] Sahlins.M, & Zhao B (2002). *Culture and Practical Rationality*. Shanghai People's Publishing House.
- [5] Lévi-Strauss.C, & Zhang Z (2008). *The Way of the Masks*. Renmin University of China Press.
- [6] Ingold. (2000). *The perception of the environment : essays on livelihood, dwelling and skill /*. Routledge.
- [7] Certeau. (1984). *The practice of everyday life /*. University of California Press.
- [8] Sen, A. (2021). Viewpoint: Spatial Ethnography of Devon Avenue, Chicago. *Buildings & Landscapes*, 28(2), 3-24.
- [9] Massey D. B. (2005). *For space*. SAGE.





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