

The Analytic Hierarchy Process - A Survey of “The Desirable Demand” of Graduated Workers in Chiang Mai and Lamphun Province, THAILAND

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Abstract

The survey of “the desirable demand” of graduated workers to meet the needs of employers is one mechanism to improve achievement and learn the characteristics of students who were identified in the quality assurance aspects of teaching and learning of Chiang Mai University (CMU). CMU determines that the graduates of higher education should possess two important qualifications of Thai Qualifications Framework for Higher Education and The Desirable Demand of graduated workers which vary according to the nature or context of the entrepreneurs. The Modern Management and Information Technology (MMIT) of College of Arts, Media and Technology (CAMT), Chiang Mai University (CMU) aims to produce graduates who have the potential for application in information systems and management of enterprises in field of manufacturing and service industries.

This research has applied the Analytic Hierarchy Process (AHP) to identify the data and support the view of employers toward "The potential of the Graduates". The purpose of this research was to study and analyze "The potential of the Graduates" and “the desirable demand” of graduated workers in view of the entrepreneurs.

The research method was a questionnaire and in-depth interviews. Also, the Analytic Hierarchy Process (AHP) was used to measure the level of the decision.

The key aptitude in information technology perspective is the use of Microsoft Office Program. Economics, production, marketing, and management are the key aptitude in Specific Aspects perspective while the key aptitude in Language and personality skill perspective is the negotiation, interaction and leadership skill.

Finally, the results have shown that 1) MMIT’s course should add and focus on courses which strengthen the positive attitude and great personality for students through the practical skills in Cooperative learning or training. 2) MMIT’s course should add management skills and Information Technology together as well as inclusively applied and enhanced the cognitive skills and practice. And 3) Due to the importance of English language in Asian Economics Community (AEC), bilingual courses turn to be a significant approach to improve language skill for students.

Keywords: Analytic Hierarchy Process, Higher Education, Modern Management, Information Technology, Graduated Worker

1. INTRODUCTION

Chiang Mai University, situated in the northern part of Thailand, aspires to reach this goal by combining the best in education with the global-standardized research, encouraging its staffs and students to conduct researches in an inspiring environment as well as yielding high-quality research results and innovation creation in order to become the university of research and world-class research university. CMU determines that the graduates of higher education should possess two important qualifications of Thai Qualifications Framework for Higher Education and the Desirable Demand of a graduated worker which vary according to the nature or context of the enterprises. The Modern Management and Information Technology (MMIT) of College of Arts, Media and Technology (CAMT), CMU aims to produce graduates who have potential to apply information systems and management of enterprises in the fields of manufacturing and service sectors. Therefore, this research has used Analytic Hierarchy Process (AHP) to identify the data and support the view of employers for "The Potential of the Graduates". As a result, the research data is able to lead MMIT to the curriculum and teaching improvement.

2. OBJECTIVE

The purposes of this research were to study and analyze "The Potential of the Graduates" and "The Desirable Demand" of Graduated Workers in the view of enterprises.

3. RESEARCH METHODS AND ANALYSIS

3.1 SCOPE OF RESEARCH

This research, the researchers will conduct research with the enterprises for the graduates who received graduate degrees in the field of Management, Business Administration (BA) and Modern Management and Information Technology (MMIT). It aims to determine the performance of the graduates in the perspective of employers by comparing the three core competencies of Information Technology, Specific Knowledge of Modern Management and Business Administration including Language and personality skills. Additionally, this study attempts to understand the three core competencies which are the most important approaches to the functioning of the enterprises and understanding the organization's criteria for selecting the personnel. Also, Quantitative and qualitative data was collected by in-depth interviews. The investigator will collect data from the enterprises covering a total of 100 enterprises in Chiang Mai and Lamphun province.

3.2 RESEARCH METHODOLOGY

This study used a quantitative research and qualitative research simultaneously. The research method was a questionnaire and in-depth interviews. The Analytic Hierarchy Process (AHP) was used to measure the level of the decision. A questionnaire as a research tool to survey the variables used in the quantitative research while, the form of in-depth interviews was used to analysis of contents in order to confirm the information from the quantitative study and to discuss the findings of the clarity and accuracy.

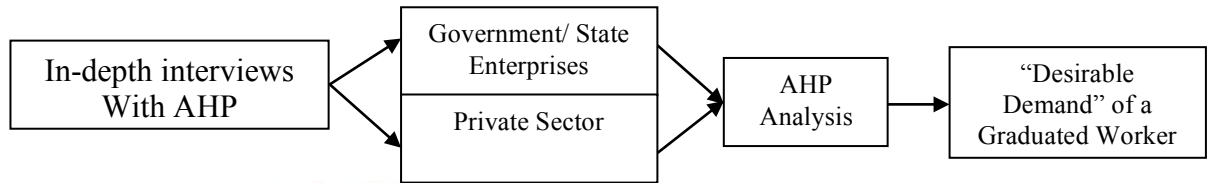


Fig. 1: Research Methodology Framework

3.3 RESEARCH TOOLS

In this study, the research method was a questionnaire and in-depth interviews. The Analytic Hierarchy Process (AHP) was used to measure the levels of decision-making. The content of the questionnaire was divided into 2 sections as follows;

Section 1: The general information which contains types of business or enterprises, position (respondents) and establishment.

Section 2: The query performance data of “the Desirable Demand” of a Graduated Worker in view of the enterprises who graduated in the field of Management, Business Administration and Modern Management and Information Technology.

- a) The core competency of graduated student’s comparison between Information Technology, Specific knowledge and other elements, such as language and personality skills.
- b) The competency of Information Technology perspective compared between Microsoft Office, website and multimedia and database.
- c) The competency of Specific knowledge perspective compared between 1) skills and knowledge of Accounting, Finance, Mathematics, and Statistics, 2) Knowledgeable in Economics, Marketing and Production Management and 3) Related knowledge in field of Social and Political Culture.
- d) The competency of Language and Personality perspective compared between a foreign language, Personality and Negotiation, interaction and leadership.

4. ANALYSIS AND RESULTS

4.1 ANALYSIS

The researcher analyzed the data by using the Analytic Hierarchy Process (AHP) to measure the level of the decision by comparing the "importance" criteria to find the "weight" of the "choice" to evaluate and rank the importance criteria.

Table 1: The hierarchy chart of decision making.

X^1	1	2	3	$X^{1'}$	1	2	3	Weight
1								
2								
3								

Table 2: The calculation table of the hierarchy chart.

X^1	1	2	3	$X^{1'}$	1	2	3	Weight
1	1	A	B	1	11'	21'	31'	W1
2	1/A	1	C	2	12'	22'	32'	W2
3	1/B	1/C	1	3	13'	23'	33'	W3

The method of calculation.

$$\begin{aligned}
 11' &= 1/(1+(1/A)+(1/B)) \\
 12' &= (1/A)/(1+(1/A)+(1/B)) \\
 13' &= (1/B)/(1+(1/A)+(1/B)) \\
 21' &= A/(A+1+(1/C)) \\
 22' &= 1/(A+1+(1/C)) \\
 23' &= (1/C)/(A+1+(1/C)) \\
 31' &= B/(B+C+1) \\
 32' &= C/(B+C+1) \\
 33' &= 1/(B+C+1) \\
 W1 &= (11'+21'+31')/n \\
 W2 &= (12'+22'+32')/n \\
 W3 &= (13'+23'+33')/n \\
 n &= \text{Number of factors (In this study } n=3) \\
 1, 2 \text{ and } 3 &= \text{Factor}
 \end{aligned}$$

Table 3: Scoring of factors in the hierarchy chart of decision making.

Weight	Meaning	Weight	Meaning
9	= Most important	4	= Low
8	= Nearly as possible	3	= Almost at the end
7	= Very important	2	= Least
6	= Moderate very nearly	1	= Equal
5	= Moderate		

4.2 RESULTS

This research collected the totally general information of 70 enterprises, which included 9 enterprises accounting for 12.86% of the government and state enterprises and 61 enterprises accounting for 87.14% of the private sector (See details in table 4.).

This study was conducted with the organizations for the graduates who received a graduate degree in the field of Management, Business Administration (BA) and Modern Management and Information Technology (MMIT). Also, it is desirable to determine the performance of graduates in the perspective of employers. For this reason, Analytic Hierarchy Process (AHP) was used to measure the levels of decision-making by comparing the three core competencies in field of Information Technology (IT), Specific knowledge and other elements, such as language and personality skills. Furthermore, this research aims to understand the three core competencies which are

most important approaches to the functioning of the enterprises and understanding the enterprises' criteria for selecting the personnel. The analysis of data by using AHP has been shown in the Table 4.

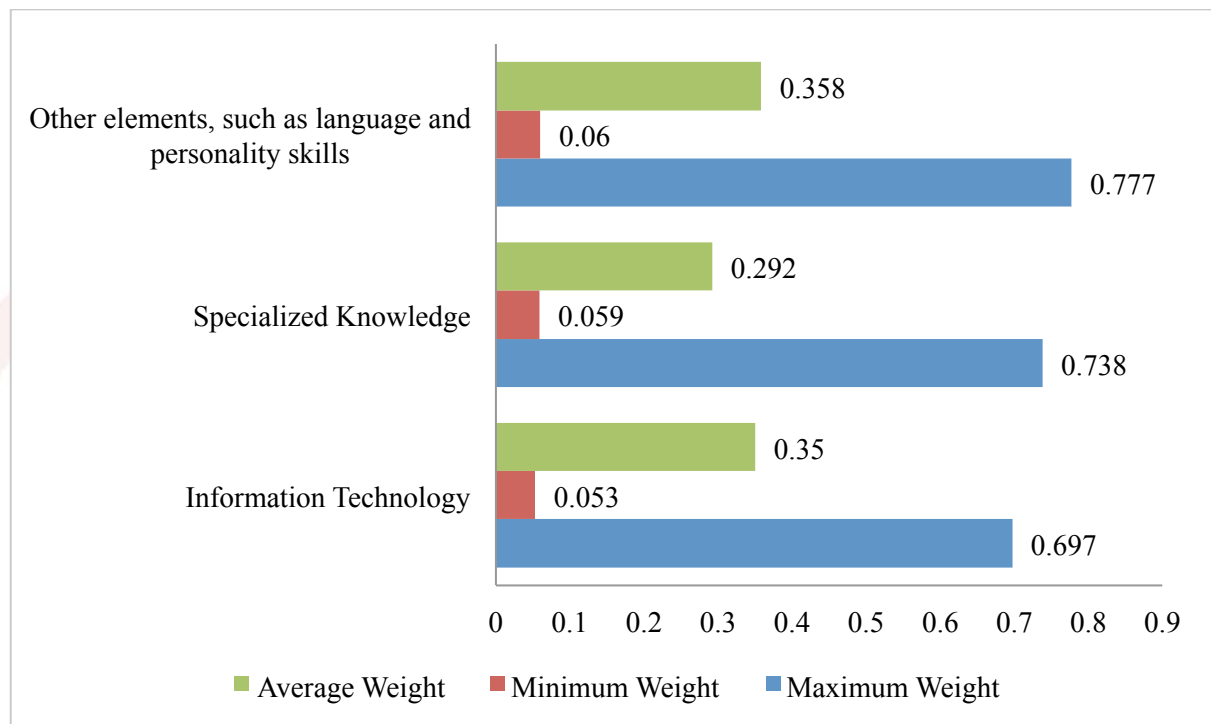
Table 4: The General Information of Respondents.

General Information of respondents.	Quantity	Percentage
<u>1. Types of Business</u>		
- Government/ State Enterprises	9	12.86
- Private Sector	61	87.14
- The manufacturing sector.	17	
- The service sector.	13	
- Unspecified.	31	
Total	70	100.00
<u>2. Jobs</u>		
- Position	40	57.15
- Secretary	1	1.42
- Research Engineer and Development	1	1.42
- Chief Operating Officer	1	1.42
- Chief of Production Technique	2	2.84
- Chief of Staff	1	1.42
- Manager	6	8.52
- General Manager	18	25.56
- Owner	1	1.42
- Product Specialist	1	1.42
- Assistant Production Manager	1	1.42
- International Department	1	1.42
- Personnel Manager	2	2.84
- Head of the Community Division of Information Technology.	1	1.42
- Sale Executive	1	1.42
- Unspecified.	30	42.85
Total	70	100.00
<u>3. The establishment.</u>		
Chiang Mai	66	94.28
Lamphun	4	5.72
Total	70	100.00

Table 5: The "Weight" of the Core Competency of Graduates.

No.	Competency	"Weight" of the decision		
		MAX	MIN	Average
1	Information Technology	0.697	0.053	0.350
2	Specialized Knowledge	0.738	0.059	0.292
3	Other elements, such as language and personality skills	0.777	0.060	0.358

Chart 1. Comparison of the "Weight" of the Core Competency of Graduates.



The results from Table 5 and Chart 1 showed that;

- The highest decision-making of enterprises is Language and Personality skills. The "weight" of the decision is at 0.777.

- The lowest decision-making of enterprises is Information Technology skill. The "weight" of the decision is at 0.053.

An average decision-making of enterprises is Language and Personality skills. The "weight" of the decision is at 0.358.

Table 6: The "Weight" of the Competency of Graduates in IT Perspective.

No.	Competency	"Weight" of the decision		
		MAX	MIN	Average
1	Microsoft Office	0.777	0.065	0.530
2	Website and Multimedia	0.777	0.052	0.225
3	Database Programming Systems	0.777	0.057	0.245

The results from Table 6 showed that;

- The highest decision-making of enterprises in Information Technology perspective are including with Microsoft Office, Website and Multimedia and Database. The "weight" of the decision is at 0.777.

- The lowest decision-making of enterprises in Information Technology perspective is Website and Multimedia. The "weight" of the decision is at 0.052.

An average decision-making of enterprises in Information Technology perspective is Microsoft Office. The "weight" of the decision is at 0.530.

Table 7: The "Weight" of the Competency of Graduates in Specific Knowledge Perspective.

No.	Competency	"Weight" of the decision		
		MAX	MIN	Average
1	Accounting, Finance, Mathematics, and Statistics	0.724	0.059	0.326
2	Economic, Marketing and Production management	0.778	0.059	0.466
3	Related knowledge in field of Social and Political Culture	0.671	0.066	0.208

The results from Table 7 showed that;

- The highest decision-making of enterprises in specific knowledge perspective of graduates is Economics, Marketing and Production Management. The "weight" of the decision is at 0.778.

- The lowest decision-making of enterprises in specific knowledge perspective of graduates are Accounting, Finance, and Mathematics, Statistics and the related knowledge in field of Social and Political Culture. The "weight" of the decision is at 0.059.

An average decision-making of enterprises in specific knowledge perspective of graduates are Economics, Marketing and Production management. The "weight" of the decision is at 0.466.

Table 8: The "Weight" of the Competency of Graduates in Language and Personality.

No.	Competency	"Weight" of the decision		
		MAX	MIN	Average
1	Foreign language	0.69	0.429	0.476
2	Personality	0.71	0.34	0.548
3	Negotiation, interaction and leadership	0.778	0.48	0.607

The results from Table 8 showed that;

- The highest decision-making of enterprises in Language and Personality of graduates is negotiation, interaction and leadership. The "weight" of the decision is at 0.778.

- The lowest decision-making of enterprises in Language and Personality of graduates is personality. The "weight" of the decision is at 0.34.

An average decision-making of enterprises in Language and Personality of graduates is negotiation, interaction and leadership. The "weight" of the decision is at 0.607.

Chart 2: Comparison of "the Weight" that Affecting the Decisions of Enterprises.

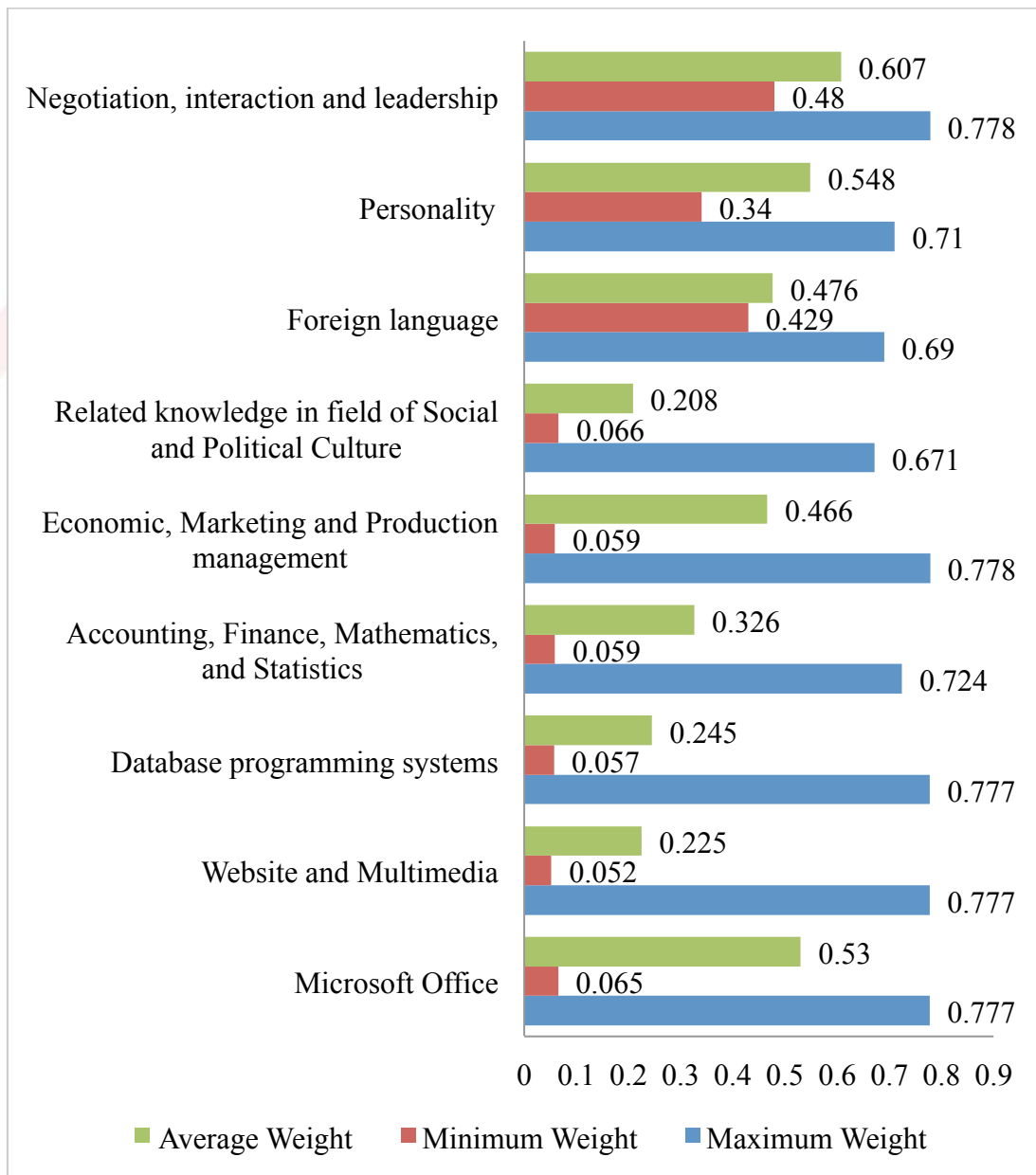


Table 9: Comparison of "the weight" that affected to the decisions of enterprises.

Competency	"Weight" of the decision		
	MAX	MIN	Average
The Core Competency of Graduates	Language and Personality 0.777	Information Technology Skill 0.053	Language and Personality 0.358
The Competency of Graduates in Information Technology (IT) Perspective	Microsoft Office, Website and Multimedia and Database 0.777	Website and Multimedia 0.052	Microsoft Office 0.530
The Competency of Graduates in Specific knowledge Perspective.	Economics, Marketing and Production management 0.778	Accounting, Finance, Mathematics, and Statistics and related knowledge in field of Social and Political Culture 0.059	Economic, Marketing and Production Management 0.466
The Competency of Graduates in Language and Personality.	Negotiation, Interaction and Leadership 0.778	Personality 0.340	Negotiation, Interaction and Leadership 0.607

The results from Chart 2 and Table 9 illustrated that the core competency of graduates which affected the decisions of enterprises is Language and Personality skill. The competency in Information Technology perspective is the use of Microsoft Office Program. Economics, Marketing and Production management are the core competency of Specific knowledge perspective while the competency in Language and Personality perspective are the Negotiation, Interaction and Leadership skill.

5. CONCLUSIONS AND DISCUSSIONS

According to this study, the results also showed that 1) MMIT's course should add and focus on courses which strengthen the positive attitude and great personality for students through the practical skills in cooperative learning or training, 2) MMIT should determine the admission criteria of first year students from transcript and portfolio for the higher quality of students and the courses, 3) MMIT's courses should be add the management skills and Information Technology together to enhance the cognitive skills and practice and 4) English language is essential in Asian Economics Community (AEC) and worldwide. The bilingual course is an important approach to improve language skill for students.

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