

*The Application of AHP Method in the Successful-Elements Selections
in the After-Class School in Taiwan*

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Abstract

The purpose of this paper is to aim at the successful elements on the after-class school in Taiwan. The study adopted the Analytic Hierarchy Process (AHP) techniques as the research methodology. A model has been proposed to evaluate the best treatment and disposal technology. As well, Expert opinions have been incorporated in the selection of criteria. AHP has been used to determine the weights of criteria, followed by available ranking. Through quantitative weightings from the AHP model were calculated to identify the priorities of alternatives. The study provides a simple framework to the complex models. The model identifies A successful after-class school should be familiar in the education market, which can in response to the internal and external changes positively. BY the word of mouth publicity to attract parents to allow students to join the after-class school. Therefore, the key successful element of specialized education will directly affect the future development and direction of the after-class school. The model provides market scale and tuition cost but not education quality as the major elements which influence the after-class school successful or not. Current the education of after-class school already reaches up to a standard level. So that market scale and tuition cost becomes the most important elements. Hence after-class school has to determine the price due to the supply and demand market according to the local market scale. That is the key to keep the successful elements in after-class school market.

Keywords: AHP, Successful-elements, after-class school

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Introduction

Under the challenges of the world's low birthrate, the numbers of after-class school in Taiwan have not only failed to decrease due to the impact of fewer children. The purpose of going to the after-class school are more and more subjects including English, Mathematics, Chinese Piano, Art, Mental Arithmetic, dance and so on. This is due to the cultural influence of the Chinese people in general who push their children to gain the best position. Therefore, how to stand at the top position and to be famous, to become a prestigious and successful operation of the remedial classes is the common goal of the industry.

Literature review

Hasegawa (1998) identified low birth rate is the situation that is on the level of population below the special birth rate and the decline in the birth rate. In the recent years, Young couple decide have no children in Taiwan, The major reasons are the elements of economic ability and social values. There are three reasons which couples made up to have no children or have only one child. They are the concept of aging, and the rise of female consciousness raising and education cost increasing. The low birthrate impacts not only on the family structure but also education industry continuing operations. Hence, a large number of educational institutions to consolidate or close down and numbers of teachers unemployed. For those reason that the after-class school becomes a new tube to release education industry pressure. After-class school is a link of social education. It is education and business, not just as the education industry. After-class school forms the mainstay of the secondary education market under the influence of elements such as educational evolution, social change, cultural development and economic development. (The Workforce Development Agency, 2000; Datong University Strategic and Industrial Research Center, 2008)In the past decade, the market competition of after-class school is fierce. Today, the impact of the low birth rate caused by the decline in the number of students, the market shrink and the concentration of educational resources etc., which makes the after-class school realizes the situation to seek the new business strategy on the transformation. The Labor Department of the Ministry (2012) also emphasized that the business model of the after-class school is gradually heading for the direction of enterprise and chain operation.

Ansoff (1965) suggested that strategy is the rule of making decisions, and depends on the market scale, growth direction and competitive advantage. Business strategy refers to how the enterprise in the environment to its own advantage to enable it to survive in the industry, competitions, and for the future development. Porter (1980) stressed that the enterprise is to obtain a better position in the industry by the competitive strategy either the aggressive or defensive action taken.

Penrose (1959) argued that the enterprise is not only a management unit, but also a center of productive resources with the passage of time to make management decision-making. So that enterprise had to work through the cooperation of the remaining economic benefits of the organization in order to long-term growth and development. The key successful element was the most important competitor and asset in an industry, and that if it were at a disadvantage, it would make it less competitive (Ansoff, 1984).Gluck (1982) indicated that key successful element is a

selected conditions during the limited resources. Boseman (1986) defined that key successful elements as the basis according to the analysis of organizational SWOT. That is the most important foundational organizational strategy. The key element is the unique assets, technologies, resources and activities of the unique enterprise, which enable the enterprise to develop a competitive advantage over the unique and beneficial position of the competitor in management and operation. (Gluck, 1982; Boseman, 1986)

US Educational Weekly (1977) indicated that Education Quality must cover the following index such as student's academic performance, student's learning standard, teacher's teaching quality, study environment atmosphere and study resource. However, current parents only focus on the satisfaction which is reflected on the expectation performance. Especially parents only defined quality of education which is equated to the expectation performance. So that they select the after class school by the particularly high standard on teaching quality. Teachers are an indispensable part of remedial classes, and tutorial classes are often used by teachers to publicize the remedial classes. (Hsu, 2016)

Most of the after class schools of a certain size employ professional and licensed teachers with years of experience and unique teaching skills. The after class school, the amount of time in the education industry for more than fifteen years has a clear market share, and a high degree of customer satisfaction and affirmation. Teaching quality is an abstract concept and it will vary with the purpose of the times and education that will be different. As well, because of different values outcome the different views. Hence the teaching technology and materials can be time or in line with current affairs is also very important.(Jain and Pan, 2012)

In the Informatization era, online class has gradually replaced the physical class. Hardware devices are updated every year such as media system and computer technology. In addition to the decoration and safety equipment classes to enable students in comfort studying. These elements are together in the category, equipment. The selected Location of the after class school has to consider at whether the building having through fire safety and its' safety inspection carefully assessment.(Qiu, 2007)The location of after class schools is related to the market size is mainly at school children. So that the location is better taken at the nearby school districts.

Zhong (2011) indicated that another location selection is the convenience consideration for students to class near the station. It can take the easy transport to reach their own tuition classes for parents in terms of children can be removed from the troubled. Hence, the convenient transportation has to be consideration for the selected Location of the after class school. In the keen competition and the economic consideration, tuition fee become to a major element when selecting after class school. However, the low tuition fee is not the guarantee to have the students. (Huang, Tan and Pan, 2014) The after class school has to take the reasonable tuition fee which provides the valuable education quality and study outcome to meet the expectations what they paid. Market scale mainly refers to the overall size of the target or industry, for the education industry, market scale refers to the number of students and the size of the market included that will be decided how many students to gain by the after class school. As well, low birth rate direct influences on it. So market scale is another key factors to be success on the after-class school. (Zhong, 2011)

Methodology and Discussion

This study adopted AHP (Analytical Hierarchy process) as the methodology. AHP, developed by Thomas Saaty in 1971 (Saaty, 1980; Saaty and Vargas, 2000), is a hierarchical process designed for solving complex problems involving multiple criteria. It is a powerful and flexible decision-making process to help decision-makers set priorities and make the best decision considering both qualitative and quantitative aspects of a problem. Saaty's (1977, 1980) AHP is a popular means to determine the weights in analysis and the AHP decomposes the decision process as a hierarchical structure and also deals with quantifiable and intangible criteria by using pairwise comparison matrices.

While AHP is the methods for multi-criteria assessment (e.g. expert choice). Also, the application of AHP with simultaneous consideration of criteria and their dependence and feedback is missing in the literature. The pairwise comparison matrix and synthesis in AHP help choose a suitable technology effectively with the least cost. The AHP methodology primarily consists of: first, structure the decision into objectives and alternatives; second, measure objectives and alternatives using pairwise comparison; third, synthesize objectives; and fourth, exploit subjective inputs in order to reach a prioritized list of alternatives (Bertolini, Braglia, and Carmignani, 2006).

AHP, the biggest use of procedural methods is to use the nominal scale and to do a simple pairwise comparison assessment. The name scale is based on the basic five-point scale, with the other four in the interval between the scale, and the formation of nine-point scale of the measure. The maximum eigenvalue $\lambda_{max} = n$ of the consistency is matching matrix A. However the paired comparison matrix obtained in the actual evaluation is often unable to achieve complete consistency. So the actual alignment matrix can be regarded as a trace of the consistency matrix Change value. Thus, $\lambda_{max} = n$ corresponds to the actual alignment matrix will be close to n. Therefore, the difference between λ_{max} and n can be called the consistency of high and low criteria. The calculation of C.R. in the AHP is determined by dividing C.I. by R.I., if C.R. ≤ 0.1 and approaches 0, its consistency can be regarded as a satisfactory level.

According to the AHP, this study divided two layers by literature review and expert opinion selection and established a framework. (Figure 1)

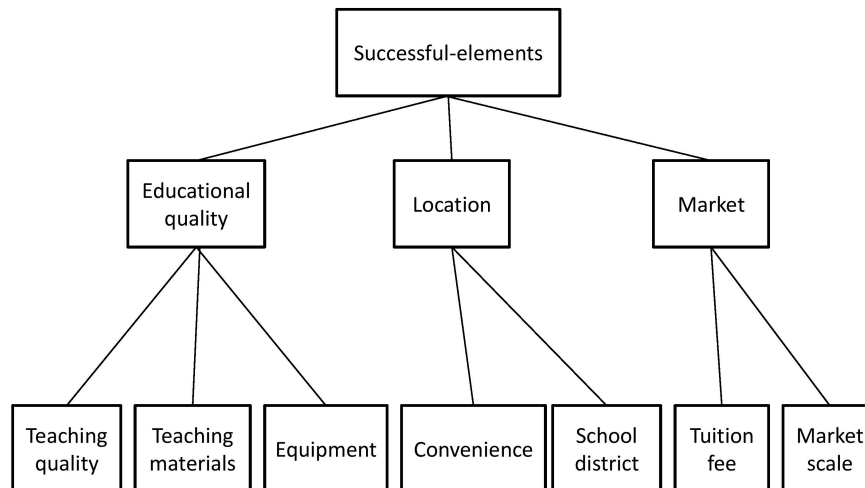


Figure 1: AHP Framework

This study tried to obtain the weights Value by AHP and determine the most important priority factors. The relationship is between the weight of other factors and so on, and to understand the high-level executive education industry that the completion of the industry's key success elements and the reasons. According to the ten experts in the first layer of the weight value of the AHP results, eight experts as the first choice, market is most important. And the other two experts also take market as a second choice. The sum of the averages in market took the highest point, 0.5677 for the first position in total. (Table 1)According to study result found that education quality is not unimportant but it is thought education quality is the basic condition and the essential element for the successful-elements selections on the after-class school. Hence, the successful-elements selections on the after-class school refers to if the market is potential or not.

Table 1: The first layer of the weight value of the AHP results

Level 1	Educational Quality			Location	Market		
Level 2	Teaching Quality (Teacher)	Teaching Materials	Equipment	Convenience	School District	Tuition Fee	Market Scale
Expert 1	0.032	0.253	0.126	0.049	0.167	0.060	0.314
Expert 2	0.045	0.285	0.249	0.107	0.082	0.091	0.141
Expert 3	0.015	0.029	0.510	0.233	0.054	0.080	0.080
Expert 4	0.014	0.026	0.045	0.069	0.139	0.239	0.467
Expert 5	0.016	0.033	0.071	0.053	0.151	0.204	0.472
Expert 6	0.034	0.087	0.145	0.021	0.154	0.095	0.465
Expert 7	0.326	0.022	0.039	0.181	0.085	0.165	0.181
Expert 8	0.029	0.029	0.089	0.131	0.033	0.431	0.259
Expert 9	0.059	0.033	0.082	0.100	0.303	0.198	0.225
Expert 10	0.024	0.052	0.066	0.085	0.222	0.431	0.121
The sum of the averages	0.0594	0.0849	0.1422	0.1029	0.139	0.1994	0.2725
Sequence	7	6	3	5	4	2	1

In the second layer of the weight value of the AHP results BY ten experts, market scale (0.2725) stood up to the first place and flowing is tuition fee (0.1994). The third came on equipment (0.1422) and the forth position is school district (0.139).

Convenience (0.1029) sat at the fifth important and Teaching Materials (0.0849) took the sixth situation. However, it is surprising that teaching quality (teachers) (0.0594) turned out to be the last seat. Through the result found that market scale has the strongest influence on the after-class school management. It is relatively easy to recruit students with a bigger market scale. And another important and direct element on affecting the after-class school management is the tuition fee. (Table 2)

Table 2: The second layer of the weight value of the AHP results

Assessment indicator 1	Factors	Assessment indicator 2	Factors
Educational Quality	2	Teaching Quality (Teacher)	1
		Teaching Materials	2
		Equipment	1
Location	1	Convenience	0
		School District	1
Market	8	Tuition Fee	2
		Market Scale	3

To assess the relative the first layer of the weight value of the AHP results, each element in the three dimensions of education quality, location and market for the successful-elements selections on the after-class school. It outcomes that market is the priority element, and location is the second and least consideration educational quality. The result indicated that the after-class school operation takes the most importance on market management to win the success in the educational industry. Moreover, among the seven key indicators of the key decision-making elements affecting the success elements, the market scale has the greatest impact on the key elements of the success element, which is the first priority, followed by the tuition fee, and the least influential element is teaching quality (Teacher).

For the above analysis, it can be seen that the most important and critical element have been selected by the mid-to-high-ranking experts, as the first and second priority among the seven key indicators, the market scale and the tuition fee which both belong to the market element in the first layer of the weight value of the AHP results. So that market is the most important element affecting the success of the selection of key indicators. However educational quality, under the three types of selection indicators gained the minimum requirements to measure the conditions. Especially teaching quality (Teacher) took the lowest consideration. Because the teacher is already a very basic and standard industry requirements. Therefore, the key elements influencing the success of the after-class school should be market scale, tuition fee, school district and equipment as in order.

Conclusions

The key successful-elements selections on the after-class school is to be the market leader. Through the study result found that educational quality, location and market separately taking the different elements and proportions to build up the key successful-elements on the after-class school. Market is the most important element and also direct influences on the survival of the after-class school. The after-class school paid the recruitment rate as the attention. Hence the market scale become a critical position on how size it is. The tuition fee is another key to select the after-class school due to the economic reason. Students cannot be hold only by low tuition fee. They must be treated with a qualified education and reasonable tuition fee. However, educational quality is considered as the most unimportant. Because teaching quality (teacher), teaching materials and equipment are seen as basic and standard requirements on the after-class school. Students are not satisfied by single equipment provided. Providing New and modern computer equipment and media system become a popular hotspot to attract students.

As the result, in the keen market competition in the after-class school that it can be judged to have a certain level in such a competitive environment. Consequently, if the after-class school can carry out these three framework, (education quality, location and market) to increase their competitiveness, to upgrade the competitive advantages and to improve the shortcomings; the after-class school can win a firm and successful business.

Reference

Alshafer Fattah (2013)" The Mckinsey 7s Model Framework for E-learning System Readiness Assessment", *International Journal of Enterprise Information Systems*, Vol.7, No.4, pp.19-55

Amabile, T.M. (1988) "A model of creativity and innovation in organization. In B.M. Straw., &L.L. Cumming (Eds)," *Research in Organization Behavior*, Vol.10, pp.123-167.

Ansoff, H. Igor, (1965), "Corporate Strategy", *New York, McGraw-Hill*.

Ansoff Igor H., (1984) "Implanting Strategic Management" , *UK: Prentice Hall International LTD*.

Antonicic, B. and Hisrich, R.D. (2003), "Clarifying the intrapreneurship concept", *Journal of Small Business and Enterprise Development*, Vol. 10, No. 1, pp. 7-24.

Bessant,J. and Cayn,S., (1997), "High-Involvement Innovation through Management, " *International Journal of Technology Management*, Vol.14, No.1, pp7-28.

Boseman, Glenn, (1986), "Strategic Management: Text and Cases", *New York: John Wiley and Sons, Inc.*.

Clark,J. and Guy, K., (1998)"Innovation and Competitiveness: A Review," *Technology Analysis and Hasegawa*.

Hsu J.C. (2016), "The Current Situation and Prospect of Remedial Teaching", *Taiwan Educational Review Monthly*, Nov. pp.86-89.

Huang S.J., Tan S.C. and Pan L.C., (2014), "A Study on the Strategies of Different Strategies Group in Cram School", *Journal of Liberal Arts and Social Sciences, Chienkuo Technology University*, Vol.33, No.2, pp 39~52.

Jain and Pan (2012), "A Case Study of the Manpower Development of the Faculty of Teaching and Administration", *Journal of Teacher Education and Professional Development*, Vol. 5, No.2, pp.89-110.

Penrose, E., (1959), "the Theory of the Growth of the Firm", *London: Basil Blackwell*.

Porter, M.E., (1980), "Competitive Strategy: Techniques for Analyzing Industries and Competition", *New York; Free Press*.

Qiu Tai Lin (2007), "A Study on Marketing Strategy of After-Class School", *The Proceedings of Hsinchu University of Education Department of Education*, Vol.12, April, pp 227~250.

Zhong N.N., 2011, "A Study on the Location of Retailers Selection", *China Market Marketing*, No. 45, P22-24.

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