

# The Management of Supply Chain Factors that affect Education Requirement for Master's Degree in an Open University in Thailand

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**Abstract-** The objectives of this research are to study which factors in the supply chain affect the education requirement for Master's Degree in an Open University in Thailand by using the Services Marketing Mixed 7Ps as a main concept. The sample group consists of 208 MBA students. The research tools are questionnaires. The statistics used to describe and analyze the data are means, standard deviations, tested following the research objectives with t-test, F-test, and Pearson Correlation Coefficient. The research results reveal that 1) Personality Factors: have 2 areas with differences; Occupational and Income, with the different levels of importance on overall marketing mix factors with statistically significant level of 0.05, 2) Expectation Factors with correlation to the level of importance on marketing mix factors in all factors with the relationship in the same direction at the low level, 3) The Services Package Factors with correlation to the level of importance on marketing mix factors in all factors with the relationship in the same direction at the moderate level with statistically significant level of 0.05. Thus, all factors of Services Marketing Mixed 7Ps should be enhanced to the higher values as they directly affect the supply chain management factors considering the university students as the Input in the educational process according to the development plan on the educational system of Thailand efficiently further.

**Keywords:** Supply Chain Management, Services Marketing Mixed 7Ps, Master's Degree, Education Requirement, Decision Making

## 1. Introduction

The government has the policy to move Thailand toward Thailand 4.0 [26; 16]. The Ministry of Education focuses on developing the creativity to develop innovation, learning via internet, creating Smart Farmer & Smart Startup and specialized labor include the use of the province-based education enabling Thai society to become a value-based economy so that the country can be self-reliant. The Office of the Higher Education Commission (OHEC) organized the meeting for the provision of educational reform policies to more than 600 senior executives from higher educational institutions across the country on September 15,

2016. The Presidents of the University Councils play the important role in the universities, and can point the direction of university operation in accordance with government policies including the national education plan (2017-2031). Universities are considered the main organizations that are important for the development of Thailand 4.0. Universities must adapt themselves and become the university 4.0 with important roles, which are offering education to develop people in the country as well as conducting research and development for new knowledge and innovation. Both parts will contribute to the economy and society 4.0. Besides, in the higher education management plan for excellence, the goal is re-profiling to adjust the universities' strategies by considering the potential and expertise of the institutes so they can produce and develop high quality and high competent manpower, create research, expand body of knowledge, create innovative works, support future opportunities and challenges to enhance the country's competitiveness [18]. Universities can adjust their internal management systems to be effective by creating participation and social responsibilities. In addition, universities need to take other factors in the operation into account that will result in creating quality students and conform to national development. Regarding the research development aspect, the research needs to be adjusted according to the purpose of Thailand 4.0 in order to meet the economic development and society according to national agenda. There is also the research to develop innovation to meet the needs of private sector primarily from a higher education policy; 1. Educational institutes must define the focus on producing graduates and research works to create excellence and expertise, 2. Educational institutes should have courses that focus on the aptitudes and excellence of each institution. Therefore, the postgraduate Studies in a higher education is important. In 2018, The Office of Education Council has studied the Thai educational performance in the international forum (Office of Education Council, 2018) by using the indexes of International Institute for Management Development (IMD 2018). In 2018, IMD has ranked the competency in 63 countries ranked the

competency in education which is 1 in 5 of the main factors of the infrastructure. It was found that Thailand was ranked 56<sup>th</sup> dropped by 2 points compared to 2017 in terms of pursuing for excellence and building competitiveness of the country with 3 indicators. One indicator has improved which is language skills that respond to the needs of entrepreneurs at 4.58 points (49<sup>th</sup> rank). There are two indicators ranked the same; the educational management can respond to the demand of business sector at 5.41 points (43<sup>rd</sup> rank) and the higher education of Thailand can respond to the competitiveness at 4.99 points (46<sup>th</sup> rank) from the full score of 10 points. In summary, the competencies toward excellence and the creation of competitive capabilities of Thailand in the international forum is still at a poor level including most educational level indicators that tend to decrease in terms of raising the quality of education, educational inequality, in pursuing to excellence and competitiveness as well as improving the educational system to be effective. Therefore, Thailand is classified as a lower-level group with a rank that is not higher than half from all evaluated countries. Based on this information, Thailand needs to accelerate to adjust for a higher competitiveness in education and to have better knowledge and expertise in any field that is higher than bachelor's degree. Even though the higher education will create better competence in the field, individuals should desire to increase their knowledge and abilities. Education creates strength in preparing people so they can be well-adapted to the competition resulting in a large number of higher education institutes both government and private. Thus, there is the high competition [2]. Moreover, from higher education policy, the educational institutes must focus on generating graduates and research to create excellence. However, studies found that although there is support for research projects, good environment and corporate culture, the lack of research initiatives and the limited numbers of personnel are the challenges in creating potential research [20]. It's a today's fact that even there is a competition for higher education in many universities in Thailand and both public and private universities are competing to be one of the leading universities in continue education [36], the need for postgraduate Studies is still small. According to the study on statistics, the number of students entering the education in the master's degree are actually less than the admission plan almost every academic year in science, technology and social sciences for the students studying at the master's degree level of Kasetsart University [19]. This is in accordance with the study that found that Dhurakij Pundit University, which has 22 graduate programs, has number of applicants for postgraduate Studies that does not meet the set goals [4]. For Mahidol

University, Faculty of Environment and Resource Studies, the statistics of applicants for postgraduate Studies steadily decline for a period of 10 years, and is not in accordance with the goals of the admission plan specified by the curriculums [43]. Therefore, the entire process from the source of education must be improved.

The researcher then introduced the principles of supply chain management as a basis for developing higher education levels in response to national policies, and to develop the competitiveness by considering students as the main input. In order to understand the supply chain, the value chain will always be accompanied [27]. The economists have defined its meaning as a systematic way to monitor all of organizational activities, and how those activities affect. The value chain and main activities have been used in various organizations as tools to divide the organization's core activities, to help reducing costs and to identify the source of competitiveness with other organizations. If the organization manages the main activities well, it will result in high customer satisfaction. The value chain in the customer's perspective is the learners and all stakeholders. For the chain of Customer [33], the customers will see the connection as if they were truly different people looking at the raw materials of the organization as well as the operational process until the end which is to create the highest satisfaction for the customers. It means that the service must be free from defects and mistakes. All this will lead to the development of the process according to the national policy effectively.

### *1.1. Research objective*

To study what factors in the supply chain affect the need for further study the master's degree of Ramkhamhaeng University.

## **2. Literature Review**

### *2.1. The Service Package*

Service management is difficult to deal with. The problem is in explaining the nature of the services [15]. This problem is partly due to the nature of services, which is intangible, but can be solved with a creative process to eliminate the concern of receiving the overall experience. Grouping services means a set of services along with complete information available to customers. In these service packs, there are 5 properties of service experience at the center.

1. Supporting facility: The physical resources required to be in place before serving.
2. Facilitating goods: The materials that the customers will buy or the items that the customers want to buy on which the customers create their own purchasing demand.

3. Information: Information that is readily available, sufficient, and efficient for customers to use. The customers then can use that information to apply to suit their needs.

4. Explicit services: Benefits that can be easily realized with sensory and consist of the inherent features of the services.

5. Implicit services: The mental benefits the customers perceive or the psychological benefits that customers may experience clearly, or external features of the services.

All of these features are received by customers as the basis of service recognition which is important for the service providers to offer the overall experiences to the customers so that the customers can receive the exact set of services they need.

2.2. Customer-Driven Organizations

Nowadays, the customers strictly determine the corporate operations [31; 21]. The customers' basic requirements are the expectations on the decision to buy products or services which can be classified into 3 elements; 1. high quality, 2. low-cost, and 3. on time delivery. If it is unable to meet basic

requirements, the organizations will be affected by losing its' competitiveness. Therefore, the expectations are the important factors to be used in this study.

2.3. Grouping Services by Delivery Process

The ideas of service management must be applied to all service-based organizations [15] such as providing specialized professional consulting services like physicians and legal department. These services have only specialized knowledge, but lack the business management knowledge. By exhibiting that problems in the management of the service industry are common, Roger Schmenner classified the service groups in a matrix format by dividing them into 2 dimensions that affect the process of separation according to service delivery natures significantly; 1. Usage level of the number of service providers affected the labor cost, and determine the level of services, 2. The level of service recipients participating in the services, and the demands for the same or similar services are different from the demands in the specified pattern (as shown in Figure 1).

The Service Process Matrix

Degree of labor Intensity	Degree of Interaction and Customization	
	Low	High
Low	<p><i>Service factory:</i></p> <ul style="list-style-type: none"> <li>* Airlines</li> <li>* Trucking</li> <li>* Hotels</li> <li>* Resorts and recreation</li> </ul>	<p><i>Service shop:</i></p> <ul style="list-style-type: none"> <li>* Hospitals</li> <li>* Auto repair</li> <li>* Other repair services</li> </ul>
High	<p><i>Mass service:</i></p> <ul style="list-style-type: none"> <li>* Retailing</li> <li>* Wholesaling</li> <li>* Schools</li> <li>* Retail aspects of commercial banking</li> </ul>	<p><i>Professional service:</i></p> <ul style="list-style-type: none"> <li>* Doctors</li> <li>* Lawyers</li> <li>* Accountants</li> <li>* Architects</li> </ul>

Figure 1. The Service Process Matrix Source From "How can service businesses service and prosper?" by Roger W. Schmenner, Sloan Management Review, Vol 27)3(. Spring 1986.p.25. by permission of publisher.

Using 2 criteria to group the services into 4 groups makes the management in each group different from each other as well (as shown in Figure 2). This research is to study educational services, which is categorized in the Mass Service group )High Labor/ Low interaction and customization(. Thus, the two challenging factors must be managed; 1. High Labor such as recruiting, training, personnel development and control

methods, scheduling, work control in a remote location, starting a new business, business growth; 2. Low interaction and customization such as marketing, creating a warm and friendly services, paying attention to the physical surroundings, organizing standard operating procedures and service-dominant have become the new basis of services called Service Science.

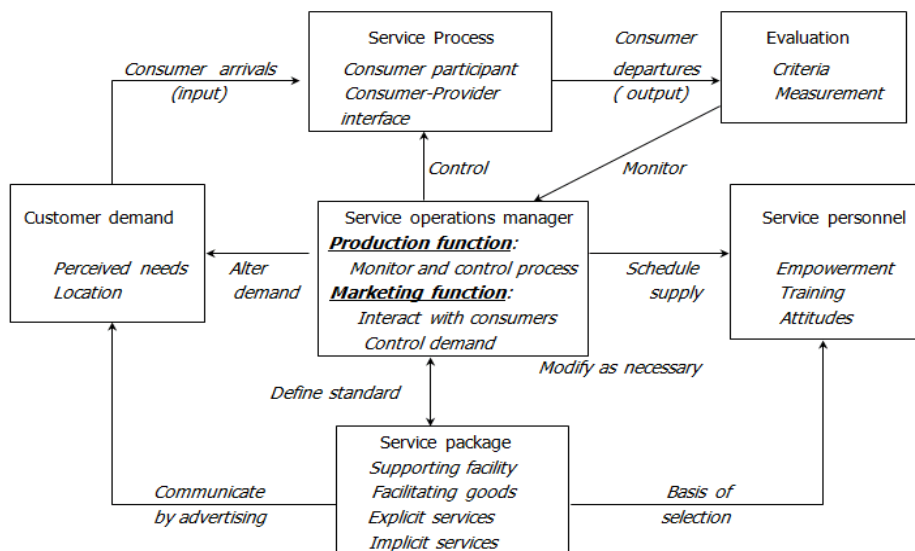


**Figure 2.** Challenges for Service Managers Source From "How can service businesses service and prosper?" by Roger W. Schmenner, Sloan Management Review, Vol 27(3). (Spring 1986.p.27. by permission of publisher.

The cores of service science are the transformation and sharing of the internal and inter-service system resources. The basic functions of the service system are to connect people, technology, and information as well as providing service values with the aim of creating shared values with all participating service systems to systematically exchange resources. Service-based organizations must provide their own unique services that require special management. In creating this distinctive feature, it is recommended to expand the system's view by treating customers as a part of the service processes. The customers will be seen as an input factor that was changed by the service processes,

and become a result that satisfies the customers (output).

Therefore, in the supply chain, the services must first prioritize the customers as the input factor that leads to the output that creates customers' impression. Besides, the expectations before the customers receiving services are very important in evaluating the quality of services. Thus, how the customers receive the information will directly affect the expectations that the service-based organizations must pay attention and take into account in order to manage communication with customers (as shown in Figure 3: The perspective of the service provision system).



**Figure 3.** An Open - Systems View of Services

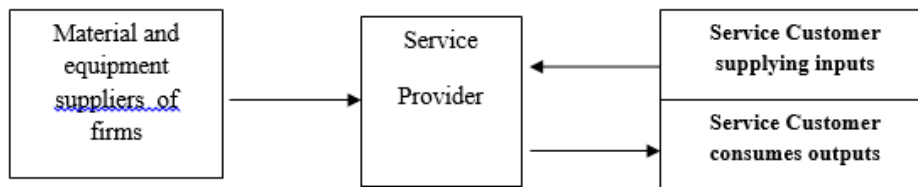
**2.4. Supply Chain Quality in Services**

One of the main differences between physical products and service-based products is the customers' involvement in the process [35] (as

shown in Figure 4). The supply chain of the service-based products is two-way. In many occasions, inputs can be created as information. Therefore, effective communications between customers and organizations is essential to prevent

inadequate response to customers' needs. The supply chain management of services to ensure quality can be achieved by using the idea of eliminating none-valuable input factor and replace it with the quality one to the customers. Moreover, the service providers still have more

responsibilities in validating the information the customers received. Focusing on the link between customers' information communication and service providers will create a unique service provision that will effectively meet expectations. [6; 7; 12; 13; 20]



**Figure 4.** Apply from Bidirectional Services Supply Chain by S. E. Sampson, "A Customer-Supplier for Paradigm Service Science," in Proceeding of the DSI Service Science mini conference, Pittsburgh.

### 2.5. Ideas about factors that affect customers' expectations

As described above, customers are the input factors in the supply chain. In this study, it is an educational organization which is considered a service-based organization. Therefore, it's a difficult choice for the customers. Generally, the services have high purchasing risks because customers require high quality in experiences and credibility [23; 30] resulting in 1. Customers will find the information from word-of-mouth rather than advertising, 2. Customers will consider service quality based on price, persons, and physical surroundings, and 3. Customers will have high loyalty to the organizations that makes them satisfied. Thus, all these have an effect on the customers' decision in choosing the services [25].

### 2.6. Services Marketing Mixed

Regarding the service marketing mixed factors [23], 7 Ps Services Marketing Mixed is one of the main differences between physical products and service-based products. It consists of the same 4 factors found in physical products which are product/services, price, place, promotion with added three more factors: people, process and physical evidence. As every service must be presented by personnel who are able to differentiate the services and satisfy the customers, recruiting, training, and motivating personnel are required. Personnel must fully demonstrate their knowledge and abilities with good attitude towards services. They must respond to the customers' needs immediately, exhibit creativity, possess problem solving ability, and have good values. [5] Organizations must try to demonstrate the quality of services through physical evidence and presentation by developing them and the customer service pattern which recognizes the values the customers want such as cleanliness and speed. Organizations must choose service-delivery processes in various ways [34].

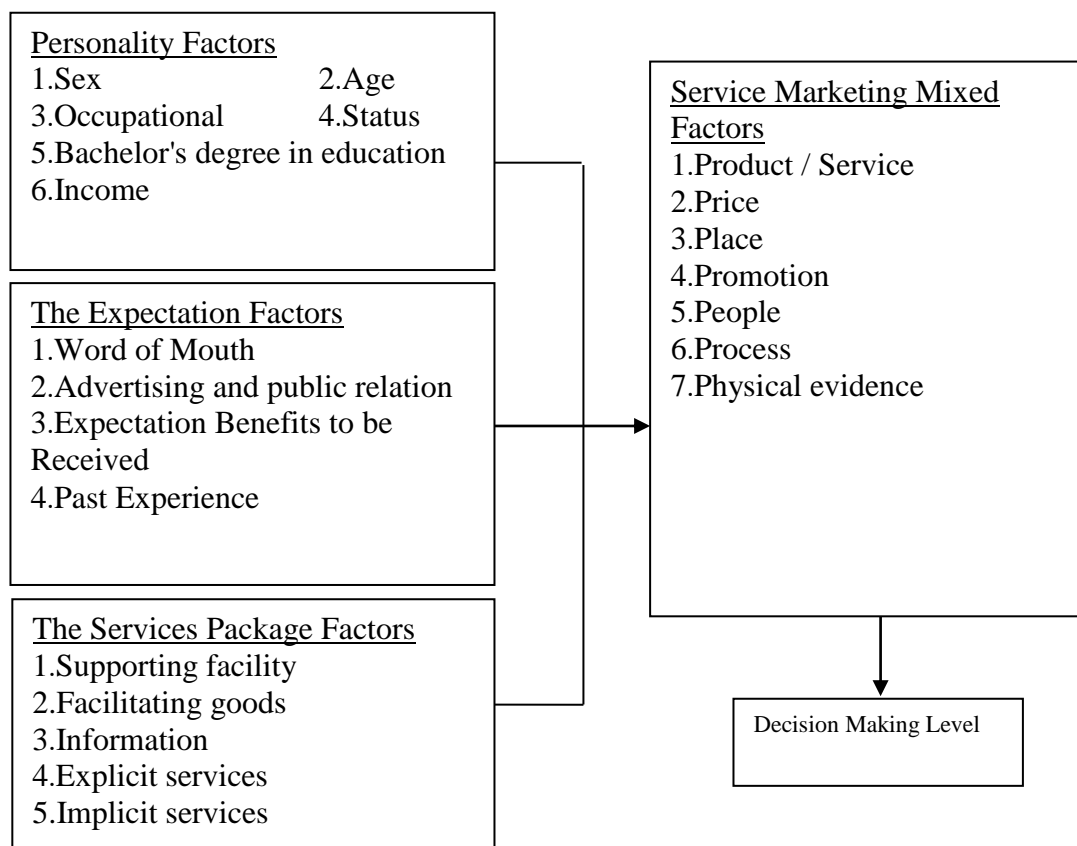


Figure 5. Conceptual Framework

### 2.7. Research methodologies

This research is the descriptive research.

### 2.8. Population and samples to be studied

**Target population** consists of 370 master's degree students enrolled in the Master of Business Administration program, Ramkhamhaeng University, academic year 2018 - 2019 and still have active student status on the date of research data collection.

**Sampling:** The researcher uses the probability sampling method of simple random because it is known where to collect information and there is the likelihood that the population will be equally chosen [14]. The total number of samples to be distributed for the questionnaires that has already been defined are used for collecting the data in full according to the number and the complete samples are separate for further research.

**Sample size determination:** The researcher uses the Probability Sampling Techniques to determine the exact population based on the estimation of proportion defining the error for not more than 0.05 percent at the confidence level of 95 percent. The value from the calculation is 192.21. Therefore, more than 193 samples are determined to be collected.

### 3. Data Collection

The research is conducted by distributing and collecting the questionnaires by providing the box for distributing and collecting questionnaires so that volunteers can receive and return the questionnaires voluntarily without coercion or propose to give any benefits to volunteers. After that, the researcher will examine the integrity of the questionnaires until the amount is correspondent with the calculated sample size. This is the data collection after the questionnaires having passed through the IOC (Index of item objective congruence). The value of Cronbach's Alpha is 0.849. Before collecting the questionnaires, the researcher will follow the process in clarifying the data to the research participants and giving the consent for participating in the research first in every time.

### 4. Data Analysis

The eventual sample whose data are complete totals at 208 individuals. The data are analyzed to find means, standard deviations, and such statistics as t-test and F-test and Pearson Correlation for analysis the research objective. [22] The confidence level is determined at 95-percent level, and the significance level at five-percent. **Outcome measurement** The quantitative method was used

for the objective of the study, **Section 1** Personality Factors 6 items : Sex, Age, Occupational, Status, Subject Field Study, Income **Section 2** The Expectation Factors 4 items : Word of Mouth, Advertising and public relation, Expectation Benefits to be Received, Past Experience **Section 3** The Services Package Factors 5 items : Supporting facility, Facilitating goods, Information, Explicit services, Implicit services **Section 4** The Service Marketing Mixed Factors 7 items : Product / Service, Price, Place, Promotion, People, Process, Physical evidence.

**Research Result and Discussions:** From the overall marketing mix factors, it is found that all student groups have a high level of importance )  $\bar{x} = 4.024$ , S.D. = 0.750(.

1. Student groups with **Personality Factors:** Different Sex, Age, Status and Bachelor's degree in education have non-different level of significance to the overall marketing mix factors. However, there are two different factors. The group with different Income has different level of significance to the marketing mix factors. The group with the income lower than 15,000 baht per month )  $\bar{x} = 4.67$ , S.D.= 0.52( is different from the other three groups; 1. Income of 15,000 - 30,000 baht per month )  $\bar{x} = 4.07$ , S.D.=0.71(, 2. Income of 30,001 - 50,000 baht per month )  $\bar{x} = 3.97$ , S.D.= 0.78(, and 3. Income from 50,000 baht per month or more )  $\bar{x} = 3.87$ , S.D.=0.81( at the significant level of 0.05.

This is because studying in the master degree is costly. The group with low income has to have more efforts than other groups in order to afford the tuition fees. Thus, average of importance is higher or there is higher expectation than other groups that have higher income. This is consistent with the research that the needs of postgraduate students are different in families, current employment, and education costs [8]. In occupational aspects, there is different level of significance to the overall marketing mix factors; 1. Occupations of government officials or state enterprise officials (  $\bar{x} = 4.00$ , SD = 0.75), and 2. Private company employee group (  $\bar{x} = 3.98$ , SD = 0.75). Both groups are different from self-employed business groups (  $\bar{x} = 4.37$ , SD = 0.69). The research results are consistent with the selection to study in the field of business administration because the self-employed business group must apply the knowledge directly to the works. Therefore, the average is at the highest level, and is different from other occupations. The MBA program is an alternative to grow the business knowledge, and living with a variety of course elements that can create competitiveness [17].

2. Student groups with different **Expectation Factors** is correlated with the level of emphasis on the overall marketing mix factors in all factors. There is a low level of correlation and relationship in the same direction with statistical significance at the level of 0.05 (Table 1).

**Table 1.** represents the results of analysis on the Expectation Factors affecting the importance related to the overall marketing mix factors )n=208(

Variables	Average scores		Correlation Coefficient )r( on the marketing mix factors in the overall	p-value
	$\bar{X}$	SD		
<b>Word of Mouth</b>	<b>3.65</b>	<b>.84</b>	<b>.229*</b>	<b>.001</b>
<b>Advertising and public relation</b>	<b>3.92</b>	<b>.77</b>	<b>.381*</b>	<b>.000</b>
<b>Expectation Benefits to be Received</b>	<b>4.50</b>	<b>.59</b>	<b>.280*</b>	<b>.000</b>
<b>Past Experience</b>	<b>3.88</b>	<b>.80</b>	<b>.230*</b>	<b>.001</b>

3. Student groups with different **Services Package Factors** is correlated with the level of emphasis on overall marketing mix factors in all factors. The

correlation is in the moderate level, and is in the same direction with the statistical significance at the level of 0.05 )Table 2(.

**Table 2.** represents the results of analysis on the Services Package Factors affecting the importance related to the overall marketing mix factors )n=208(

Variables	Average scores		Correlation Coefficient )r( on the marketing mix factors in the overall	p-value
	$\bar{X}$	SD		
<b>Supporting facility</b>	<b>4.09</b>	<b>.67</b>	<b>.497*</b>	<b>.000</b>
<b>Facilitating goods</b>	<b>4.34</b>	<b>.62</b>	<b>.446*</b>	<b>.000</b>
<b>Information</b>	<b>4.36</b>	<b>.61</b>	<b>.469*</b>	<b>.000</b>
<b>Explicit services</b>	<b>4.32</b>	<b>.60</b>	<b>.449*</b>	<b>.000</b>
<b>Implicit services</b>	<b>4.32</b>	<b>.64</b>	<b>.418*</b>	<b>.000</b>

In the **2<sup>nd</sup> factor, The Expectation Factors** with 4 items: Word of Mouth, Advertising and public relation, Expectation Benefits to be Received, Past Experience and the **3<sup>rd</sup> factor, The Services Package Factors** with 5 items : Supporting facility, Facilitating goods, Information, Explicit services and Implicit services have the direct correlation and is in the same direction with the factor of Service Marketing Mixed 7Ps. This is correspondent with the idea that the service work can have a process that is created to eliminate the customers' anxiety in receiving the services in terms of the overall experiences. Grouping services means a complete set of services including available information to the customers. The ideas for the management of Grouping Services by Delivery Process can classify the service groups in a matrix format by dividing them into 2 dimensions that significantly affect the process of separation according to the service delivery natures. The education organization is also considered the form of service-based organization [15]. In addition, the provision of public relations on the programs, price management so it is flexible, easy access to instructors, available days and time to chose for studying and provided supporting facility will encourage the decision in the postgraduate Studies [17]. This is in line with the research that the influence from families and the credibility of the teachers are important to the decision on the postgraduate Studies in the Master Degree [9], the research finding that the instructors, curriculums, management, technology used in teaching are important to the decision in the postgraduate Studies [19; 38]. This is consistent with the idea of factors that affect customer expectations. Customers are inputs in the supply chain. Generally, the service has high purchasing risks because the customers require high quality in experience and credibility. Customers will find information from word-of-mouth and advertisements. Customers will consider service quality from price, personnel and physical surroundings. Customers will have high loyalty to the organizations that make them satisfied. All these have an effect on the customers' decision in choosing the services [23]. This is correspondent with the research finding that obtaining sufficient informational communication, credible curriculums, quality of the institute, facilities and career development are important to the decision to continue studying at the master's degree level [1]. The curriculums' factor that is useful to the current work has an effect on the decision to continue studying at the master's degree level [11]. The Service Marketing Mixed 7Ps' factors are applied to evaluate the decision to continue studying at the master's degree level [17; 24; 28]. According to the results of this research, the students focus on the

Service Marketing Mixed 7Ps' factors, and give a higher priority by descending average value as the following; the easy access to apply for a higher education and have comprehensive selections covering all of the needs, have systematic operational management and quick services in every step, interest and creditability of the curriculums, reputation of educational institutes, famous faculty members with credible, social accepted knowledge, staffs who provide complete information and actively and willingly respond quickly to the needs, convenient commute, many options available, provide useful activities on the experiences apart from the regular curriculums, creating relationship among the learners in a network, flexible payment schedules, centrally located or in the community, reasonable costs on education, appropriate and comfortable decoration of the buildings, clean and beautiful environment in the university )  $\bar{x} = 4.38, 4.38, 4.35, 4.31, 4.28, 4.27, 4.26, 4.19, 4.17, 4.12, 4.10, 4.09, 4.03, 4.01$ , respectively. All of these factors must be fully developed covering all factors to increase competitiveness. This is in accordance with the research finding that Total Quality Management (TQM) is related to organizational efficiency and has a positive relationship that affects the Organizational Excellence [10].

## 5. Conclusion and Recommendations

In concluding the research results in details of each area, it is found that students have high attention on the Service Marketing Mixed 7Ps' factors at every level. Thus, it helps supporting the management of supply chain factors from students' expectations in various fields that affect the needs for postgraduate Studies at the master's degree level. They can be classified into 2 groups as follows:

1<sup>st</sup> group( gives priority at the highest level with the descending average values; the easy access to apply for a higher education and have comprehensive selections covering all of the needs, have systematic operational management and quick services in every step, interest and creditability of the curriculums, reputation of educational institutes, famous faculty members with credible, social accepted knowledge, staffs who provide complete information and actively and willingly respond quickly to the needs, convenient commute, many options available, respectively. Therefore, prioritizing to the factors in the group that students have the highest level of attention, it is noticed that most of the factors are related to knowledge, competence, credibility and acceptance of the university which meet the needs of the government policy and the Higher Education Commission that wants to move education toward the 4.0 era, and focus on producing graduates and research to create



excellence. Expertise will be created from these factors.

2<sup>nd</sup> group( gives priority at the high level with the descending average values; useful activities on the experiences apart from the regular curriculums, creating relationship among the learners in a network, flexible payment schedules, centrally located or in the community, reasonable costs on education, appropriate and comfortable decoration of the buildings, clean and beautiful environment in the university, respectively. The university must consider factors in this group as well, because it is another part that students use to make decision to postgraduate Studies. The factors in this group can be used to create uniqueness and marketing strategies by generating added values so that the students are motivated by benefits to be received, or be a better alternative to other universities for their postgraduate Studies. This is clearly a differentiation strategy to create competitiveness.

4 items of The Expectation Factors: Word of Mouth, Advertising and public relation, Expectation Benefits to be Received, Past Experience, and 5 items of The Services Package Factors: Supporting facility, Facilitating goods, Information, Explicit services, Implicit services have a direct correlation in the same direction to the priority given to Service Marketing Mixed 7Ps. Thus, having a good management in each variable will help increasing the interest in studying at the master's degree level. Overall, it is the supply chain management for education by using students as inputs leading to various educational processes until they graduated and applied their knowledge to develop the country (outcome).

However, competition of universities in the educational service industry should consider methods to increase competitive capabilities in the quality of education rather than the numbers of admissions. Because the main objective of promoting higher education is to develop high quality, high performance manpower that leads to the development of the country's true competitive capabilities.

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