

Paper Type: Original Article



Information System Model for Educational Management in Supply Chain for Thai Higher Education Institutions

Artaphon Chansamut* 

¹ Rajamangala University of Technology Krungthep, Thailand.; Email Address: artaphon.c@mail.rmutk.ac.th

Citation:



Chansamut, A. (2021). Information system model for educational management in supply chain for Thai higher education institutions. *International journal of research in industrial engineering*, 10(2), 87-94.

Received: 09/02/2021

Reviewed: 12/03/2021

Revised: 13/04/2021

Accept: 18/05/2021

Abstract

The research about information system model for educational management in supply chain for Thai higher education institutions. The objectives of research to design and to assess the suitability of an information system model for educational management in supply chain for Thai higher education institutions. The sample group consisted of ten experts in the field of information system, supply chain and curriculum. The data is analyzed by means and standardized deviations statistically. The research result shows that information system model for educational management in supply chain for Thai higher education institutions is consisted of 7 key elements which are 1) main elements, 2) raw materials, 3) suppliers, 4) manufacturer, 5) service provider, 6) finished product, and 7) customers. The results from experts' agreement information system model for educational management in supply chain for Thai higher education institutions was a high level. It showed that information system model for educational management in supply chain for Thai higher education institutions could be used to develop information system.

Keywords: Information system model, Educational management in supply chain, Thai higher education institutions.



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1 | Introduction

According to national education act of B.E.1999, the main specifications are the quality of education which is the ultimate goal of educational reforms at all level. Today, the education system have significant, the Thai government has realized the importance of adjusting the country to increase its capability to compete with other countries in every aspect. Especially in educational development that leads to development of quality of the product, the government has formulated the following policy: To develop quality of people, as the people are human resource of the country and the key element in all aspects of development, to reform the whole system of education, to expand education and modify educational structure, to decentralize educational



Corresponding Author: artaphon.c@mail.rmutk.ac.th



10.22105/RIEJ.2021.285518.1225

administration to the provinces so that educational management becomes more thorough and responsive to the local needs [10]. This policy also includes the establishment of private and public higher education institutions to meet the needs for national development, especially the people who are knowledgeable and skillful in various vocations, to work in private and public organizations. Higher education institutions need to produce graduates to meet the needs of the country for joining the ASEAN Economic Community in B.E. 2015. As such, the government has formulated an important policy that “The creation of a stable knowledge-based economy and environmental factors must support Thailand and to be a center of goods and service production in the region based on creative thinking, creation of innovations, and extension of the body of knowledge in order to support the adjustment of the structure of production and service sector in every stage of supply chain. This is to enable the creative economy to be a new mobilizing power that leads toward the balanced and sustainable economy in the long run, together with the creation of the assurance system and the supply chain system, the management of economic risks, and the creation of the free and just atmosphere to facilitate the production, commerce and investment inclusive of the development of new entrepreneurs, the creation of infrastructure and internal logistics networks that connect with other countries in the region.” Based on this policy, the 11th national plan for social and economic development was formulated [10]. The researcher has realized the importance of education development in order to cope with economic changes. Industrial sector the changes have included the movement toward more and more application of the concept of supply chain management information system. This is because industrial sector needs to be highly competitive due to increasingly high competitions from both within and outside the country. In order to be highly competitive, organizations in the sector need to have personnel with knowledge, ability who can work efficiently to increase output and products. The organizations, therefore, need to have sufficient information and resources to increase their values and respond to the demand of their clients. From the status declared directly above; consequently, the researchers are concerned in emerging a supply chain management model for educational management. The researchers understand the perception of supply chain management in order to realize the work’s effectiveness educational. This prototypical will have an original for model expansion of information system for educational management in supply chain for Thai higher education institutions. The objectives of research to design and to assess the suitability of information system model for educational management in supply chain for Thai higher education institutions.

2 | Literature Review

Kham [8] said that education supply chain management needs to consider various elements, which has a relationship between various organizations with a clear goal of reducing the operational process of the system increase service levels leading to efficiency meet the needs of customers in general, the supply chain consists of important points, namely 1) suppliers mean those who send raw materials to service units such as producing quality graduates to society etc., 2) manufacturer means the person who is responsible for transforming the raw materials received from the supplier to have higher value, 3) distribution center means the point that serves to distribute products to the consumer or the customer at the center. One product distribution may have products from many agencies, such as higher education institutions. There will be graduates graduating from many institutions. 4) retailers or customers means the end of the supply chain, which is where the products or services must be used until the value is exhausted and without adding value to that product or service.

Lambert and Enz [5] Supply Chain Management is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders.

Verma and Boyer [11] pointed out that business organizations in the supply chain will work together to turn raw materials into products and deliver to customers. between organizations which will be linked in both physical, data.

3 | Conceptual Framework

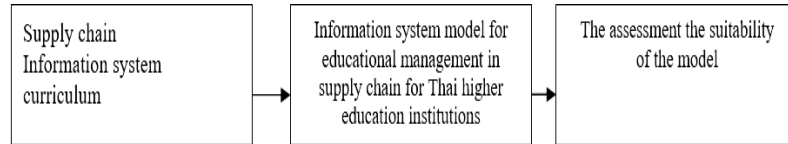


Fig. 1. Conceptual framework about information system model for educational management in supply chain for Thai higher education institutions.

4 | Research Methodology

The methodology comprised 6 steps, as follows:

- Step 1: To analyse and synthesize related documents and research to the components of information system model for educational management in supply chain for Thai higher education institutions.
- Step 2: Defind research framework of information system model for educational management in supply chain for Thai higher education institutions setting.
- Step 3: To design information system model for educational management in supply chain for Thai higher education institutions using data collected from studies and analysis of relevant documents and research.
- Step 4: To propose the models to consultants and experts for consideration by in-depth interviews.
- Step 5: Create tools for assessing the suitability of models.
- Step 6: Data collection and develop questionnaire are sent to the experts in order to ask their opinions on appropriateness of information system model for educational management in supply chain for Thai higher education institutions using the arithmetic mean and standard deviation as the following criteria: 4.51-5.00 at highest of appropriate suitability 3.51-4.50 at a high of appropriate suitability 2.51-3.50 at moderately of appropriate suitability 1.51-2.50 at a low of appropriate suitability 0.00-1.50 at lowest of appropriate suitability [2] and [3].
- Step 6: to improve model based on suggestions from the experts.

5 | Research Results

Research results on the information system model for educational management in supply chain for Thai higher education institutions were presented in Fig. 1.

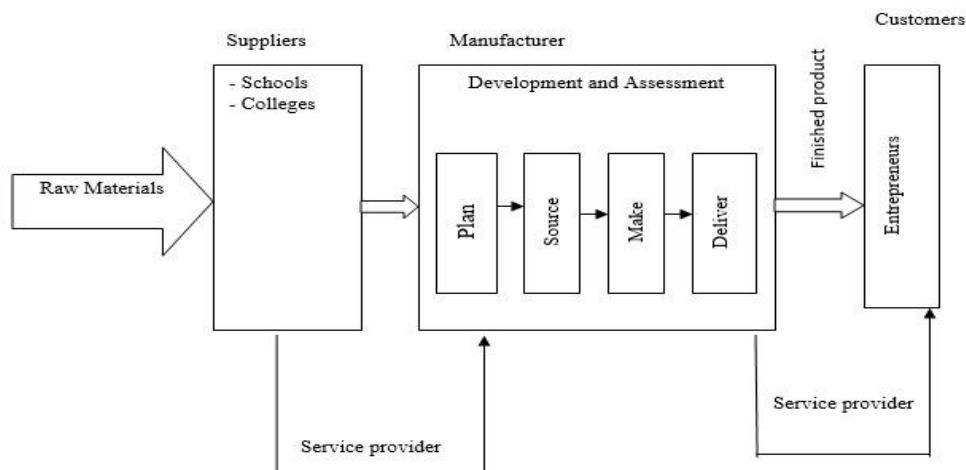


Fig. 2. Information system model for educational management in supply chain for Thai higher education institution.

Stakeholders	Activities	Needs for information
<p>Customers Entrepreneurs</p>	<p>Employer’s satisfaction on graduate evaluate questionnaire with five main components was achieved in the following</p> <ol style="list-style-type: none"> 1. Ethical and Moral Development: Development of: <ul style="list-style-type: none"> -Habits of acting ethically and responsibly in personal and public life in ways that are consistent with high moral standards. -Ability to resolve value conflicts through application of a consistent system of values. 2. knowledge, the ability to understand, recall and present information including: <ul style="list-style-type: none"> -Knowledge of specific facts, - Knowledge of concepts, principles and theories and Employer’s satisfaction on graduate evaluate questionnaire with five main components was achieved in the following. 	<p>- Questionnaires to assess the employer’s satisfaction with the employed graduated student on various aspects of desirable characteristics.</p>
<p>Customers Entrepreneurs</p>	<ol style="list-style-type: none"> 1. Ethical and Moral Development: Development of: <ul style="list-style-type: none"> -Habits of acting ethically and responsibly in personal and public life in ways that are consistent with high moral standards. -Ability to resolve value conflicts through application of a consistent system of values. 2. Knowledge, the ability to understand, recall and present information including: <ul style="list-style-type: none"> -Knowledge of specific facts, - Knowledge of concepts, principles and theories and -Knowledge of procedures. 3. Cognitive skills, the ability to Apply knowledge and understanding of concepts, principles, theories and procedures when asked to do so; and <ul style="list-style-type: none"> -Analyze situations and apply conceptual understanding of principles and theories in critical thinking and creative problem solving when faced with unanticipated new situations. 4. Interpersonal skills and responsibility, the ability to <ul style="list-style-type: none"> -work effectively in groups, and exercise leadership; -accept personal and social responsibility, and -plan and -plan and take responsibility for their own learning. 5. Analytical and communication skills, the ability to <ul style="list-style-type: none"> -use basic mathematical and statistical techniques, -communicate effectively in oral and written form, and -use information and communications technology. 	<p>- Questionnaires to assess the employer’s satisfaction with the employed graduated student on various aspects of desirable characteristics.</p>

5.1 | Principle of the Information System Model for Educational Management in Supply Chain for Thai Higher Education Institutions

5.1.1 | Raw materials

Raw materials mean student who sent from their families or government and private agencies.

5.1.2 | Suppliers

The suppliers mean high school or college that supply raw materials to the manufacturer. Raw materials in this case are students who graduated from high schools or two-year colleges, or students who receive special quotas for admission. They can apply for admission via the computer system that can process data systematically.

5.1.3 | Service provider

Service provider mean support activities that helps the main activities to run smoothly. Support activities consists of organizations infrastructure, human resources management technology development and procurement.

5.1.4 | Manufacturer

The manufacturer means the university that produces graduated students. It performs the duty to transform raw materials into the finished products of qualified graduated students. The university will perform its duty of student development and assessment. It is based on the consideration that all supply chain tasks and activities can be assigned to four fundamental processes - plan, source, make, deliver of each activity, namely. Recruitment of instructors and admission of students, curriculum planning, curriculum development, provision of learning activities for student development, provision of fieldwork experience training, evaluation of learning outcomes, and reporting of curriculum implementation results.

5.1.5 | Finished products

The finished products mean graduated students from the university.

5.1.6 | Customers

The customers mean entrepreneurs or the end-of-process component of the model. They include the society in general and entrepreneurs who receive and/or employ the students who graduated from the university. Finally, the end product of qualified graduated students will add value for customers with supply chain [1], [2], [3], [4], [6], [7], [12], [13], and [15].

6 | Conclusion and Discussion

6.1 | Conclusion

The evaluation result for the information system model for educational management in supply chain for Thai higher education institutions, as shown *Table 2* below:

Table 2. The assessment of the suitability of information system model for educational management in supply chain for Thai higher education institutions.

No.	Items	\bar{X}	S.D.	Suitability
1	Main elements	3.62	0.71	High
2	Raw materials	3.70	1.25	High
3	Suppliers	3.60	0.78	High
4	Manufacturer	3.50	0.70	High
5	Service provider	3.30	0.48	High
6	Finished product	3.60	0.51	High
7	Consumers	3.70	0.48	High
	Total	3.57	0.69	High

From Table 2, that experts agree that information system model for educational management in supply chain for Thai higher education institutions is highly appropriate ($\bar{X} = 3.52$, S.D. = 0.69) that it may develop information system.

6.2 | Discussion

The information system model for educational management in supply chain for Thai higher education institutions is considered to be highly appropriate and the design was according to the review of documents and relevant literature from both within and outside the country on developing research framework.

The efficiency evaluation model was in accord with the related literature from outside the country on supply chain management information system [1]-[4].

6.3 | Suggestions

The limitations of the paper about information system model for educational management in supply chain for Thai higher education institutions, if possible, it should be created database for the developed model in the future.

References

- [1] Chansamut, A., & Piriyastrawong, P. (2019). Supply chain management information system for curriculum management based on the national qualifications framework for higher education. *International journal of supply and operations management*, 6(1), 88-93.
- [2] Chansamut, A. (2016). ICT System in supply chain management for research in higher education institute. *University of the Thai chamber of commerce journal humanities and social sciences*, 36(2), 210-221.
- [3] Chansamut, A. J. (In Press). Information system model for educational management in supply chain for Thai higher education institutions. *International Journal of Research in Industrial Engineering*. DOI: [10.22105/RIEJ.2021.285518.1225](https://doi.org/10.22105/RIEJ.2021.285518.1225)
- [4] Chansamut, A., & Piriyastrawong, P. (2014). Conceptual framework of supply chain management-information system for curriculum management based on Thailand qualifications framework for higher education. *International journal of managing value and supply chains*, 5(4), 33-45.
- [5] Lambert, D. M., & Enz, M. G. (2017). Issues in supply chain management: progress and potential. *Industrial marketing management*, 62, 1-16. <https://doi.org/10.1016/j.indmarman.2016.12.002>
- [6] Habib, M., & Jungthirapanich, C. (2009). Research framework of education supply chain, research supply chain and educational management for the universities. *International journal of the computer, the internet and management (IJCIM)*, 17(24), 1-8.
- [7] Habib, M. (2010). *An empirical research of ITESCM (integrated tertiary educational supply chain management) model*. IntechOpen. DOI: [10.5772/9950](https://doi.org/10.5772/9950)
- [8] Khum, N. A. S. (2012). *Manual for developing logistics and industrial capabilities for mining. 2nd edition (2,000 copies)*. Bangkok: Focus Media and Publishing Company Limited.

- [9] National Economic and Social Development Board Office of the Prime Minister. (2012) . The eleventh national economic and social development plan (B.E. 2011 – 2016) Retrieved May 1, 2021 from https://www.nesdc.go.th/nesdb_en/download/article/article_20151016145556.pdf
- [10] Office of the Commission on Higher Education. (2009). *Thai qualifications framework for higher education*. (In Thai). Retrieved May 1, 2021, from <http://www.mua.go.th/users/tqfhed/news/FilesNews/FilesNews1/7.pdf>
- [11] Verma, R., & Boyer, K. K. (2010). *Operations & supply chain management: World class theory and practice*. Southwestern/Cengage Learning.