

# Supply Chain Information System Model for New Breed of Graduate Management for Higher Education in Thailand

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**Abstract**—The research aim to develop supply chain information system model for new breed of graduate management for higher education in Thailand and an evaluation of the model. Samples are ten experts in the field of information system and supply chain. Ten experts are selected by purposive sampling method. The obtained data are analysed using mean and standard deviation. The research result demonstrates the model consists of five elements namely main components, Supplier, University (Manufacturer), Education Customers and Consumers. The data analysed by using arithmetic mean and standard deviation supply chain information system model for new breed of graduate management for higher education in Thailand using Back-Box technique. The results from ten experts have evaluated the model and commented that the developed model showed high suitability.

**Keywords**— supply chain information system model, new breed of graduate management, higher education in Thailand

## 1. Introduction

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 people because the people are human resource of the country and the key component in all aspects of development, to reform the whole system of education, to expand education and modify educational structure, to decentralize educational administration to the provinces so that educational management becomes more thorough and responsive to the local need but while The Various countries have increased their competitive ability by developing their human resources to equip them with knowledge and skills in order to create quality products in agriculture and industry. One of their strategies is the application of the supply chain management system in human resource development in order to increase competitive ability. As Thailand is a part of world community, it needs to urgently develop its educational system in order to provide more opportunities for people to be educated and increase their potential. As such, the government has formulated an important policy that “The

creation of a stable knowledge-based economy and environmental factors must support Thailand to be a centre 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 application of the concept of supply chain management information system. This is because the business and 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 and skills 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. Thus, the supply chain management process is a key process to support the organization’s whole activities system from upstream to downstream. It enables the organization to promptly check the information system to ensure that the organization operates smoothly and effectively based on the determined strategies.[1] Thus, the researcher had an idea to develop supply chain information system model for new breed of graduate management for higher education in Thailand. The model was tested black box testing found that supply chain information system model for new breed of graduate management for higher education in Thailand. It can add value for consumers.

## 2. Related work

2.1 Supply Chain Management  
Kham Nai (2012) 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. The unit (Manufacturer) means the person who is responsible for transforming the raw materials received from the supplier. To have higher value 3. Distribution Center (Distribution Centers) 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.

Douglas and Matias (2017). 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.

Felea and Albastroiu, (2013) suggested the business enterprise networks include manufacturers, raw material, suppliers, transportation, providers, wholesalers, retailers as well as other intermediaries including customers. Verma and Boyer (2010) 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 and money circulation.

Chansamut and Piriyastrawong (2014) suggested conceptual framework of supply chain management information system for curriculum management based on Thailand Qualifications Framework for Higher Education. The objectives of this research are (1) to synthesize a conceptual framework of supply chain management information system for curriculum management based on Thailand Qualifications Framework for Higher Education; and (2) to evaluate the conceptual framework of supply chain management information system for curriculum management based on Thailand Qualifications Framework for Higher Education. The research sample totaling 10 experts consisted of five experts on supply chain management, two experts on curriculum, and three experts on information technology. The employed research instrument is a questionnaire. Statistics employed for data analysis are mean and standard deviation.

The research methodology consisted of six phases: (1) the studies and syntheses of related documents, research studies, and articles; (2) the drafting of preliminary conceptual framework; (3) the identification of experts; (4) the development of

an evaluation form to assess appropriateness of the conceptual framework; (5) the data collection and analysis; and (6) the final improvement of the conceptual framework based on suggestions of the experts.

Research findings show that the synthesized conceptual framework of supply chain management information system for curriculum management based on Thailand Qualifications Framework for Higher Education comprises four main components, namely, Suppliers, University (Manufacturer), Education Customers, and Consumer. Evaluation results by the experts show the evaluation rating mean of 4.07 with standard deviation of 1.10 indicating that the conceptual framework is considered to be at the good level. Furthermore, evaluation results of appropriateness for sub-components are as follows:

1. The appropriateness rating mean for sub-components of the Supplier component is 4.15, which can be interpreted to be at the good level.

2. The appropriateness rating mean for sub-components of the University component is 4.20, which can be interpreted to be at the good level. This is because the University component contains the sub-components at the decision making level of the educational supply chain.

3. The appropriateness rating mean for sub-components of the Education Customers component is 4.20, which can be interpreted to be at the good level. This is because the Education Customers component contains the sub-components of direct service receivers.

4. The appropriateness rating mean for sub-components of the Consumer component is 4.10, which can be interpreted to be at the good level. This is because the Consumer component contains the sub-component of customers as the end-of-supply chain process that affect the quality of graduates to be delivered to the society.

The overall evaluation result for the synthesized conceptual framework of supply chain management information system for curriculum management based on Thailand Qualifications Framework for Higher Education shows the overall rating mean of 4.14 and standard deviation of 1.00, which means that the synthesized conceptual framework is appropriate at the high level and can be appropriately applied in actual work settings.

## 2.2 Information and Supply Chain

Information and supply is a key process to support the education whole activities system from upstream suppliers to downstream consumers. It enables the organization to promptly check the supply chain and information technology to ensure that the organization operates smoothly and effectively based on the determined strategies. The process consisted of suppliers, manufacturer customers.

2.3 Black box testing

Black box testing is used to test the system against external factors responsible for model. The testing approach focuses on the input that goes into the model, and the output that is produced.

3 Research Methodology

3.1 Relevant papers and research works are studied, analysed, and synthesized to formulate a concept of the model development.

3.2. The model is developed based on the data obtained from the research study used in the formulation of the model development concept.

3.3 The model is presented to expert for consideration and modified it as guided.

3.4 Development of a questionnaire for the experts to evaluate the model's suitability .

3.5. Evaluate supply chain information system model for new breed of graduate management for higher education in Thailand. The statistics utilized in study were rate means and standard deviation following the weighing criteria of suitability of the design using five rating scales of Likert.

4 Research Findings

4.1 Research findings on supply chain information system model for new breed of graduate management for higher education in Thailand consisting of four sub-elements. as shown below:

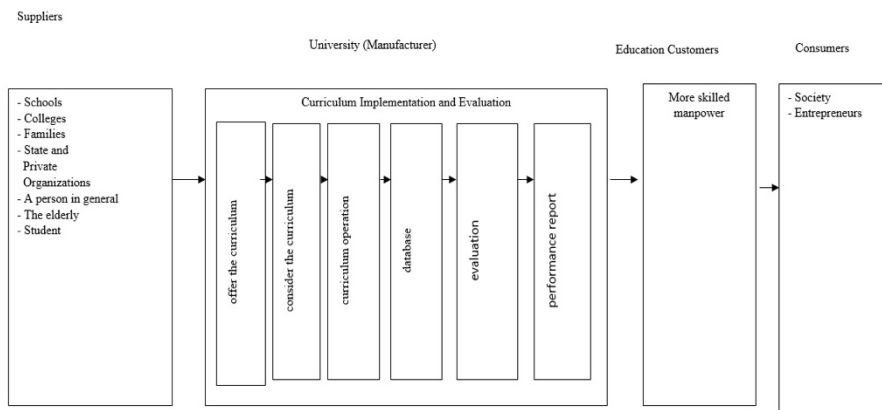


Figure 1: Supply chain information system model for new breed of graduate management for higher education in Thailand

1 Suppliers

Suppliers mean the organizations or a person in general that supply raw materials to the manufacturer. They can apply for admission via the computer system that can process and store the data systematically.

2 University (Manufacturer)

The manufacturer means the university that produces new of breed of graduated . It performs the duty to transform raw materials, , into the finished products. The university will perform its duty of student development and evaluation according to course standards for Higher of each activity, namely offer the curriculum, consider the curriculum, curriculum operation, database, evaluation, performance report.

3 Education Customers

The education customers mean students or a person in general who graduate from from universities with increased work skills.

4 Consumers

The consumers mean the end-of-process component of the model which means that the society and entrepreneurs. [1],[2],[3],[4],[5],[6],[7],[8],[9],[10],[11],[12] and [13]

4.2 The evaluation results about supply chain information system model for new breed of graduate management for higher education in Thailand are shown in Tables 1 – 5 below:

Table 1: The evaluation results of main components about supply chain information system model for new breed of graduate management for higher education in Thailand

Evaluation Lists	$\bar{X}$	S.D.	Suitability
1. Suppliers	3.60	0.51	High
2. University (Manufacturer)	3.60	0.96	High
3. Education Customers	3.70	0.67	High
4. Consumers	3.60	0.51	High
Summary	3.62	0.66	High

The table 1 show that experts agree that main components about supply chain information system model for new breed of graduate management for higher education in Thailand was high suitability. The rating mean of 3.62 with standard deviation of 0.66.

**Table 2:** The evaluation results of suppliers about supply chain information system model for new breed of graduate management for higher education in Thailand

Evaluation Lists	$\bar{X}$	S.D.	Suitability
1. Schools	3.50	0.52	High
2. Colleges	3.60	0.84	High
3. Families	3.60	0.69	High

**Table 2:** (Cont.)

Evaluation Lists	$\bar{X}$	S.D.	Suitability
4. State and Private	3.70	0.67	High
5. A person in general	3.70	0.67	High
6. The elderly	3.70	0.67	High
7. Student	3.70	0.67	High
Summary	3.64	0.68	High

From table 2, it can be seen that all sub-components of the suppliers component was high suitability. The rating mean of 3.64 with standard deviation of 0.68.

**Table 3:** The evaluation results of university ( manufacturer) about supply chain information system model for new breed of graduate management for higher education in Thailand

Evaluation Lists	$\bar{X}$	S.D.	Suitability
1. Offer the curriculum	3.70	0.48	High
2. Consider the	3.70	0.48	High

curriculum			
3. Curriculum operation	3.70	0.67	High
4. Database	3.70	0.48	High
5 Evaluation	3.77	0.67	High
6 Performance report	3.70	0.48	High
Summary	3.71	0.54	High

From table 3 it can be seen that all sub-components of the university ( manufacturer) was high suitability. The rating mean of 3.71 with standard deviation of 0.54.

**Table 4:** The evaluation results of education customers about supply chain information system model for new breed of graduate management for higher education in Thailand

Evaluation Lists	$\bar{X}$	S.D.	Suitability
1 More skilled manpower	3.50	0.84	High
Summary	3.50	0.84	High

From table 4 it can be seen that all sub-components of education customers was high suitability. The rating mean of 3.50 with standard deviation of 0.84.

**Table 5:** The evaluation results of consumers about supply chain information system model for new breed of graduate management for higher education in Thailand

Evaluation Lists	$\bar{X}$	S.D.	Suitability
1 Society	3.75	0.51	High
2. Entrepreneurs	3.70	0.67	High
Summary	3.72	0.59	High

From table 5 it can be seen that all sub-components of consumers was high suitability. The rating mean of 3.72 with standard deviation of 0.59.

**Table 6:** Results for evaluation of supply chain information system model for new breed of graduate management for higher education in Thailand

Evaluation Lists	$\bar{X}$	S.D.	Suitability
1 Main components	3.62	0.66	High
2. Suppliers	3.64	0.68	High
3.University (Manufacturer)	3.71	0.54	High
4 Education Customers	3.50	0.84	High
5 Consumers	3.72	0.59	High
Summary	3.64	0.66	High

Table 6, The experts found that supply chain information system model for new breed of graduate management for higher education in Thailand was high suitability. The rating mean of 3.64 with standard deviation of 0.66.

## 5 Discussion

According to evaluation supply chain information system model for new breed of graduate management for higher education in Thailand is considered to be high appropriate ( $\bar{X} = 3.64$ , S.D. = 0.66), and the design was corresponds to the research of Chansamut and Piriyasurawong has studied supply chain and information system about educational [1] In addition, with the study of chansamut suggesting that supply chain and information system also. [2],[3],[4],[5],[6]

## 6 Conclusion

supply chain information system model for new breed of graduate management for higher education in Thailand is appropriate at the high level development ( $\bar{X} = 3.64$ , S.D. = 0.66). It can support sustainable information system development.

## Recommendation

supply chain information system model for new breed of graduate management for higher education in Thailand is considered to be high appropriate if possible it should create database for the developed model.

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