# Supply Chain Geographic Information System Operation Model for Products Management for Logistics Industry in Thailand

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***Abstract*— The research presents supply chain geographic information system operation model for products management for logistics industry in Thailand is composed of four main element, main suppliers The firm customers. The aim of this research to develop and to assess supply chain geographic information system operation model for products management for logistics industry in Thailand. A sample groups were five experts in supply chain, five experts in geographic information system . . Data analysis was the average mean and standard deviation. The results from experts agreement of supply chain geographic information system operation model for products management for logistics industry in Thailand** was a high level. It showed that **supply chain geographic information system operation model for products management for logistics industry in Thailand support sustainable geographic information system development.**

***Keywords*—***supply chain*** geographic information system ***model, product management, logistics industry , Thailand***

## 1 Introduction

Logistics industry system is very important, and Thailand is a part of world community, it needs to urgently develop industry systems for the development of the country and enhance academic excellence. Environmental factors must support Thailand 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 a balanced and sustainable economy in the long run, together with the creation of the Logistics industry 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. The awareness of a geographic information system operation model for products management for logistics industry in Thai Supply Chain within the study program are expected to manage conflicts of interest in the country and assess the impact of human activity on individual environmental components. Both of these tasks require data analysis and synthesis from various scientific fields. We have to adapt the content and method of our studying to equip our product with the quality to solve these problems. They need to know all relevant input factors and phenomena, acquire and process them efficiently, overlap them logically, subject them to spatial analysis and synthesis and evaluate and interpret the results accurately. Use of several close-knitted systems, the main one being Geographic information systems , provides a comprehensive solution to this problem. Geographic Information Systems is a system of hardware, software, data, people, organizations, and institutional arrangements for collecting, storing, analysing, and disseminating information about areas of the earth Geographic information systems are applied in land-use planning, ecosystems modelling, landscape planning and assessment, transportation and infrastructure modelling, market analysis, visual impact analysis, watershed analysis, facility management, with Geographic information systems many other areas. The use of Geographic Information Systems tools has also become standard in scientific activities and it is an essential part of research for the study in the firm. Based on this realization,[9] thus the researchers had an idea to develop supply chain geographic information system operation model for products management for logistics industry in Thailand for application to increase values of customer satisfaction.

## 2 Related research

A supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of finished products to customers. In today's highly competitive market manufacturers face the challenge of decreasing manufacturing cycle time, delivery lead time and inventory reduction. It is the core interest of decision makers to reduce the cost, expanding the

business improving the customer service, improving the quality of finished goods and reducing the time taken in producing finished goods . In the early 1990s, the phrase“supply chain management” came into use. Supply chain management can be defined as a process of integrating suppliers, manufacturers, warehouses, and retailers, so that the goods are produced and delivered at the right time in the right quantities while minimizing cost as well as satisfying customer requirements. Supply Chain Management is the process of planning and management of materials, information and financial flow in a network consisting of manufacturers, distributors, suppliers and customers with the objective of reducing the costs, increasing the business and improving the customer service. Figure 1 shows the key concepts of supply chain management [12]

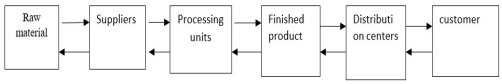


Figure 1 shows the key concepts of supply chain management [1]

Geographic information system in Supply Chain can be very useful in supply chain management. Geography matters a lot when the decision to be taken or the problems to be tackled are spatial in nature. Geographic information system is emerging as a very effective tool in the industries that involve logistics or use the transportation services[10].

Geographic information system can be managed on a holistic level - from determining the need for geographic information system to the implementation of the geographic information system in an organization, or at task level where workflows are used to track and manage geographic information system projects. There is a management model that lies between these two approaches - namely supply chain management.A supply chain encompasses all activities associated with the flow and transformation of goods from the raw materials stage (extraction), through to the end user, as well as the associated information flows.The materials and information flow both up and down the supply chain. To run any type of geographic information system application, the data needs to be sourced form various suppliers; the sourced data must be manipulated by the geographic information system and the geographic information system -product must then be delivered to a client, where the product will be displayed. The sourcing, storing, manipulating of data as well as delivering the geographic information system product indicates a typical supply chain, which necessitates supply chain management to ensure the effective use of geographic information system, especially where large amounts of different data sets are used. A geographic information system has the components of a supply chain, namely: sourcing, manipulation and delivering, and therefore supply chain management may be used to manage geographic information system - products.[11]

Geographic information system can be used as a decision support for effective supply chain management. In the system, the data of the processing units, the customers, the distribution centers, the suppliers, and the topologies of the roads are stored and managed by the geographic information system.

A geographic information system operation Model for products management for logistics industry in Thai Supply Chain will be sources data from various sources, creates the different geographic information system and delivers these products to clients.

## 3 Research Methodology

3.1 Analyze and synthesize document and research studies related of supply chain geographic information system operation Model for products management for logistics industry in Thailand

3.2. Develop. Supply chain geographic information system operation Model for products management for logistics industry in Thailand

3.3. Evaluate supply chain geographic information system operation model for products management for logistics industry in Thailand.The statistics utilized in this study were means ( $\overline{X}$ ) and standard deviation (S.D.) following the weighing criteria of Appropriateness of the design using five rating scales of Likert.

## 4 Results

Geographic information system has the components of a supply chain, namely: sourcing, manipulation and delivering, and therefore supply chain management may be used to manage Geographic information system products.

A client requests a specific geographic information system product from the manufacturer such as the Knowledge Factory or the Chief Directorate: Surveys and Mapping. Information starts to flow from the client to the firm. The firm then looks at the data warehouse, to establish whether the geographic information system product is available or not.If available, the geographic information system product is sourced from the warehouse and delivered to the client.The delivery mechanism is part of the logistics concerning the distribution of the geographic information system product and infrastructure forming part of the distribution planning.

When the geographic information system product is not available in the warehouse, then it needs to

be manufactured by the firm.The geographic information system unit, which is the manufacturing arm of the firm, plans the geographic information system product and sends information to interrogate the inventory for stored data sets.Some of the data sets needed for the geographic information system product are held in inventory but some required data will need to be sourced, either in-house or from outside suppliers.The sourcing request is sent out to the suppliers (in-house or external) and the data sets are delivered to the firm and are kept in inventory until needed for manufacturing the geographic information system product.This part is known as production planning and inventory control.Once the geographic information system product is completed, the firm delivers it to the client , as in the figure 2 .

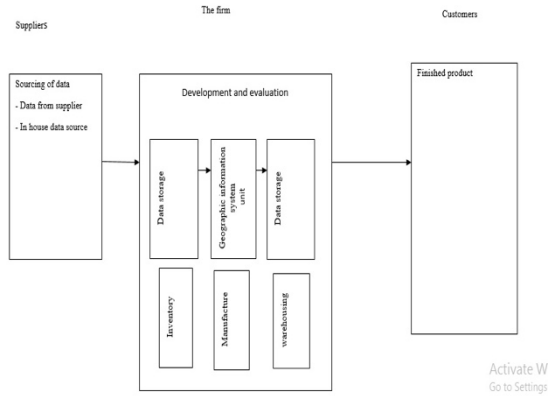


**Figure 2:** Supply chain geographic information system operation model for products management for logistics industry in Thailand [8] and [10]

**Table 1 :** Suitability of main elements about supply chain geographic information system operation model for products management for logistics industry in Thailand

| No. | Items | $\overline{X}$ | S.D. | Suitability |
|---|---|---|---|---|
| 1 | Main elements | 3.70 | 0.48 | High |
| 2 | Suppliers | 3.60 | 0.84 | High |
| 3 | the firm | 3.60 | 0.86 | High |
| 4 | Customers | 3.70 | 0.67 | High |
| | Total | 3.65 | 0.71 | High |

Table 1, it can be seen that all of the main elements of Supply Chain geographic information system operation model for products management for logistics industry in Thailand are rated to be appropriate at the high level. ( $\overline{X}$ = 3.65, S.D. = 0.71).

**Table 2 :** Suitability of the Sub-component of the Suppliers

| No. | Items | $\overline{X}$ | S.D. | Suitability |
|---|---|---|---|---|
| 1 | Data from supplier | 3.60 | 0.69 | High |
| 2 | In house data source | 3.70 | 0.67 | High |
| | Total | 3.65 | 0.68 | High |

From Table 2, it can be seen that the sub-component in terms of the Suppliers is rated to be appropriate at the high level. ( $\overline{X}$ = 3.65, S.D. = 0.68).

**Table 3 :** Suitability of the Sub-component of the the firm

| No. | Items | $\overline{X}$ | S.D. | Suitability |
|---|---|---|---|---|
| 1 | Data storage | 3.60 | 0.69 | High |

**Table 3 :** (Cont.)

| No. | Items | $\overline{X}$ | S.D. | Suitability |
|---|---|---|---|---|
| 2 | Geographic information system unit | 3.60 | 0.51 | High |
| 3 | Data storage | 3.70 | 0.48 | High |
| | Total | 3.63 | 0.61 | High |

Table 3, it can be seen that the sub-component of the firm is rated to be appropriate at the high level. ( $\overline{X}$ = 3.63, S.D. = 0.61).

**Table 4 :** Suitability of the Sub-component of the Customers

| No. | Items | $\overline{X}$ | S.D. | Suitability |
|---|---|---|---|---|
| 1 | Finished product | 3.70 | 0.67 | High |
| | Total | 3.70 | 0.67 | High |

Table 4, it can be seen that the sub-component of the customers is rated to be appropriate at the high level. ( $\overline{X}$ = 3.70, S.D. = 0.67).

**Table 5:** Results for evaluation of Supply Chain geographic information system operation model for products management for logistics industry in Thailand

| No. | Items | $\overline{X}$ | S.D. | Suitability |
|---|---|---|---|---|
| 1 | Main elements | 3.65 | 0.71 | High |
| 2 | Suppliers | 3.65 | 0.68 | High |
| 3 | The firm | 3.63 | 0.61 | High |
| 4 | Customers | 3.70 | 0.67 | High |
| | **Total** | 3.65 | 0.66 | High |

From table 5, that ten experts found that supply chain geographic information system operation model for products management for logistics industry in Thailand is highly appropriate ( $\overline{X}$ = 3.65, S.D. = 0.66).

## 5 Discussion

According to evaluation supply chain geographic information system operation model for products management for logistics industry in Thailand is considered to be high appropriate ( $\overline{X}$ = 3.65, 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 [2] In addition, with the study of chansamut suggesting that supply chain and information system also. [3],[4],[5],[6],[7]

### 6 Conclusion

Supply chain geographic information system operation model for products management for logistics industry in Thailand is considered to be high appropriate ( $\overline{X}$ = 3.65, S.D. = 0.66), The model can support sustainable geographic information system development.

### 7 Recommendation

Supply chain geographic information system operation model for products management for logistics industry in Thailand is considered to be high appropriate if possible it should create database for the developed model.

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