Factors Influencing Successful Educational Management by using Electronic Supply Chain for Higher Education Institution in Thailand

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***Abstract*—The research aim to study factors influencing successful educational management by using electronic supply chain for higher education institutions in Thailand.The research divide into three steps namely the studies and syntheses of related documents and to study about factors influencing successful educational management by in-depth Interview executives , Faculty of Home Economic Technology, Rajamangala University of Technology Krungthep ,including do an in-depth interview of ten experts in three areas, that is, five experts in supply chain, three experts in electronics and technology information, and two experts in curriculum. According to the research study we found that there were six factors successful educational management by using electronic supply chain for higher education institutions in Thailand namely supplied input for educational, Educational management in the university, finished product from university, customers benefit from university, the main activities of educational in supply chain and electronic supporting system. All factors will lead to the development of educational using electronic supply chain for higher education institutions in Thailand.**

***Keywords*—** *Educational management ,electronic supply Chain, higher education institutions in Thailand*

1. Introduction

Higher Education Institutions in Thailand have 4 main missions : (a) to produce graduates, (b) to conduct research studies, (c) to provide academic services to the society, and (d) to preserve arts and culture. A quality assurance system is needed for higher education institutions to succeed in these missions and to meet both short-term and long-term objectives to develop the Nation. Currently, there are many internal and external factors that accentuate the need for higher education quality assurance system. These factors are as follows: 1) The quality levels of higher education institutions and graduates tend to be inequitable due to increasing numbers of newly established institutions. 2) Globalization has become a challenge for higher education. The establishment of the 'ASEAN Community', in particular, will necessitate cross-border educational services and student/graduate mobility. Both issues require educational quality guarantees. 3) Higher education institutions need to build the confidence for community that they can develop body of knowledge and produce capable graduates to complete in national development strategies, enhancing level of competitive capability in international arenas, development of actual production in both industrial and service sectors, career development, and quality of life at the local and community levels. 4) Higher education institutions have to provide public information for the benefits of the stakeholders, i.e. students, employers, parents, government, and the citizen. 5) The society demands a higher education system that provides opportunities for stakeholder participation, transparency and accountability according to the principles of good governance. 6) The National Education Act of 1999 requires all education institutions to establish internal quality assurance system. Moreover, the Office for National Education Standards and Quality Assessment to certify educational standards and assess institutions' quality is established. 7) The Commission on Higher Education announced the Higher Education Standards on August 7, 2006 for use as the national framework to implement standard systems for all units in higher education institutions. 8) The Ministry of Education announced Standards for Higher Education Institutions on November 12, 2008 as a mechanism for enhancing and regulating educational management standards according to 4 group higher education institutions. 9) The Ministry of Education announced the Thai Qualification Framework for Higher Education of 2009 on July 2, 2009. Later, the Commission on Higher Education announced corresponding guidelines on July 16, 2009 to ensure that education management in higher education institutions complies with the Higher Education Standards and to guarantee the quality of graduates at all levels and in all academic disciplines.

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Due to the aforementioned necessities, higher education institutions must [17] need to bring electronic supply chain management is the method of managing educational supply chain activities as well as the management of supply chains. electronic supply chain depends on ability of all supply chain partners to view partner collaboration as a strategic asset; a well-defined supply chain strategy; information visibility along the entire supply chain; speed, cost, quality, and customer service; integrating the supply chain more tightly. Application of electronic supply chain can reduce some problems in supply chain management through sharing of demand by customers with suppliers as part of efficient consumer response, suppliers become responsible for item availability through vendor-managed inventory, human error reduced (checks and balances can be built into system), inventory reduced throughout the supply chain through better demand forecasting and more rapid replenishment of inventory, improved availability of information about potential suppliers and components [1] Thus, The researcher had the idea to study the electronic supply chain for developing educational in higher education institutions to have both connection and cooperation that the university could be supplied to those who need on time. The researcher would use electronics system available at present to support producing graduate students more effectively.

2. Related literature

Supply chain management is coordination of all supply activities of an organization from its suppliers and partners to its customers efficiently and effectively [2],[20]. Electronic supply chain management is collaborative use of technology to improve the operations of supply chain activities as well as the management of supply chains.[20] The main factors that contributed to the transition from supply chain management to Electronic supply chain management are as follows:

1 The need for additional reduction in the costs as well as improvements in the processes through the expansion of the tools for modern management in the organizations from the supplier channels to the customer channels.

2. The introduction of computerization and digitalization of the internal functions of the organizations with new techniques, tools, and management methods.

3. The need for efficiency and agility of the organizations in order that they can respond to the higher demands of the customers whose growing demands and bargaining power continually increases.

4. The effort to optimize the organization by having lower inventory levels both in manufacture and distribution by, in parallel, offering supreme quality and service.

5. The deserting of vertical integration and functional oriented organizations.

6. The tendency for outsourcing of some operational functions that are not the core of the business to other organizations specialized in that field.

7. The explosive expansion of global commerce and the opening of new markets that only few years ago were closed.

8. The Electronic business technologies, particularly internet, have enabled organizations of all sizes to have a network and be closely connected with their partners and conquer and compete for market share which was only possible before for the large corporations.

The success of an to Electronic supply chain management depends on ability of all supply chain partners to view partner collaboration as a strategic asset; a well-defined supply chain strategy; information visibility along the entire supply chain; speed, cost, quality, and customer service; integrating the supply chain more tightly. Application of to Electronic supply chain management can reduce some problems in supply chain management through sharing of demand by customers with suppliers as part of efficient consumer response (ECR), suppliers become responsible for item availability through vendor-managed inventory, human error reduced (checks and balances can be built into system), inventory reduced throughout the supply chain through better demand forecasting and more rapid replenishment of inventory, improved availability of information about potential suppliers and components (for example through online marketplaces). The activities of electronic supply chain management include the following:

1. Supply chain replenishment encompasses the integrated production and distribution processes. Companies can use replenishment information to reduce inventories, eliminate stocking points, and increase the velocity of replenishment by synchronizing supply and demand information across the extended enterprise.

2 Electronic Procurement is the use of web-based technology to support the key procurement processes, including requisitioning, sourcing, contracting, ordering, and payment. E-procurement supports the purchase of both direct and indirect materials and employs several web-based functions, such as online catalogues, contracts, purchase orders, and shipping notices.

3. Supply Chain Monitoring and Control Using RFID. This is one of the most promising applications of RFID (Radio-Frequency Identification).

4. Inventory Management Using Wireless Devices. Many organizations are now achieving improvements in inventory management by using

combinations of bar-coding technologies (or RFID) and wireless devices.

5. Collaborative Planning is a business practice that combines the business knowledge and forecasts of multiple players along a supply chain to improve the planning and fulfilment of customer demand. Collaborative planning requires buyers and sellers to develop shared demand forecasts and supply plans for how to support demand.

6.Collaborative Design and Product Development. It involves the use of product design and development techniques across multiple companies to improve product launch success and reduce time to market. During product development, engineering and design drawings can be shared over a secure network among the contract firm, testing facility, marketing firm, and downstream manufacturing and service companies.

7. Electronic Logistics. It is the use of web-based technologies to support the material acquisition, warehousing, and transportation processes. Electronic logistics enables distribution to couple routing optimization with inventory-tracking information. For example, Internet-based freight auctions enable spot buying of trucking capacity.

The key activities of Electronic supply chain management use a variety of infrastructure and tools. The following are the major infrastructure elements and tools of Electronic supply chain management:

1. Electronic data interchange (EDI). It is the major tool used by large corporations to facilitate supply chain relationships. Many companies are shifting from traditional EDI to Internet-based EDI.

2. Its major purpose is to support inter organizational communication and collaboration.

3.These are the corporate internal networks for communication and collaboration.

4.Corporate portals. These provide a gateway for external and internal collaboration, communication, and information search.

5.Workflow systems and tools. These are systems that manage the flow of information in organizations.

6.Groupware and other collaborative tools. Many tools facilitate collaboration and communication between two parties and among members of small as well as large groups. Various tools, some of which are collectively known as groupware, enable such collaboration. Blogs and wikis are beginning to play an important role. A major purpose of these tools is to provide visibility to all, namely, let people know where items are and when they arrive at certain locations.

7. Identification and tracking tools. These tools are designed to identify items and their location along the supply chain.[19]

Electronic supply chain for higher education institutions is how to efficiently integrate and optimize supply chain operations with dispersed marketplaces and characteristic demands using the latest advances in information technology. electronic Business using Internet technology to facilitate information exchange and communication in business networks has emerged as an innovative approach further exploring value-adding opportunities in supply chains. The e-business approach plans and executes front-end and back-end operations in a supply chain using Web-based applications [13] Incorporating e-business approach in supply chain management has been proved as a competitive method for increasing values to be added and improving process visibility, agility, speed, efficiency, and customer satisfaction.

Electronic supply chain refers to the business activities that incorporate e-business approaches into supply chain processes. e-Supply chain management involves applying e-business technologies to assist and optimize value-adding activities in supply chains. A more detailed definition of e-supply chain management can be found in the description of Norris et al.[16]

Electronic supply chain management is the collaborative use of technology to enhance business-to-business processes and improve speed, agility, real-time control, and customer satisfaction. Not about technology change alone, Electronic supply chain is about culture change and changes in management policy, performance metrics, business processes, and organizational structures across the supply chain." A key feature of e-business equipped supply chain management is network centric. This focuses on connectivity, co-operation, co-ordination and information transparency. Networked supply chain partners share information, knowledge and other resources in real time. The networked relationships change the traditional supply chain information flows from linear transmission to end-toend connections, i.e. information can be transferred directly from any partner of the supply chain to another partner without distortion and delay.

Supply chain integration ensures a supply chain operating seamlessly as an extended enterprise. The integrated supply chain will facilitate agility, shorten lead time, and reduce operation costs. The integration implies that supply chain operations (e.g. product development, materials supply, product manufacturing, assembly, packaging, delivery, stock control, and customer support, etc.) are synchronized with virtual enterprise planning which aims at integration and co ordination of the supply chain operations. It is obvious that supply chain integration focuses on information system integration instead of organizational integration. It is Internet-enabled technologies that makes supply chain integration practically feasible and efficient. An Electronic supply chain is actually an integrated virtual enterprise. Electronic Supply chain integration ensures that supply chain legacy systems and operational systems are seamlessly incorporated into a networked business environment connected

through the Internet and other information and communication facilities. Electronic supply chain integration is at different levels with different focuses. [11]

Ngammongkolwong,& Jeerungsuwan (2014) writes the article about A model of creativity and research management for higher education institutions in Thailand through the electronic supply chain. The aims of this research is developed a model of creativity and research management for higher education institutions in Thailand through the electronic supply chain. The scope of the population as a graduate institution focused on producing and developing arts and cultural institutions 19, Its method is consisted in three steps of the operation. Firstly is to analyze and study from related documents which are review in raw data, concept ideas, theories and the result of previous researches, textbooks, academic journals, dissertations, and the other related documents. An in-depth interview from executive directors of research and development section, about the context of management research and creative work within the higher education, university part with a stratified sampling random and a simple sampling random to the Descriptive analysis. It had shown in five samples institutions. The result of the interviews is presented by the descriptive analysis. The synthesis is the next step of this way that provided with electronics supply chain of the creative and research management model for the higher education institutions, especially university side. The method of this to relate by the data obtained from the analysis of documents and interviews with agency executives, university research groups. The results are summarized the questions from in-depth interviews with experts in various groups of 15 people from a purposive sampling by the data compiled and classified in a systematic way to interpret associate, and construct a sequence of data. The method are gathered to draft a form of managing creative and research work on the higher institutions with is using the electronics supply chain. Thirdly, is the data from the starting synthesis and knowledge acquired into a format for managing to creative and research work of the higher institutions in Thailand with electronics supply chain in the method. And bring it to the 12 experts to determine the suitability of the model. The issues are in the assessment of the four sides. Thus, the Accuracy standard is the one. And follow by the Proprietary standards then the Feasibility standards is the third, and the final side is Utility standard by the purposive sampling. And the researcher has improved upon the recommendation from the experts at is consensus dimensions. In the order to the form complete and appropriate. To apply the results to design and develop the system for creativity and research management work of the institution Thailand with electronics supply chain. According to the theory, SDLC: "System Development Life Cycle" as the results show that;

1. There are three main things is important to the model of creativity and research management for higher education institutions in Thailand by using the electronic supply chain. They are the Research suppliers, the Research service provider, and the Research customers. The electronic systems that support the management of research and creative system is consistent in three main sections, the Research Supplier Service Provider System: RSMS, the Research Service Provider System: RSPS, the Research Customer Management System: RCMS is at the end. All of The process is driven by the quality control management technical method; (Plan-Do-Check-Action: PDCA).

2. The opinions' of all regions experts of higher education institutions shows that the great in all of four areas. It presents the consumption, at 4.32.

The suggestion; The structure of the Information Technology for Management on higher education institutions in Thailand should be flexible and appropriate to the context of each institution.

Ngammongkolwong,& Jeerungsuwan (2013) writes the article about The factors of research and Innovation management using electronic supply chain for Thai Higher education institutions. The purpose of the research study was to study the factors of research and Innovation management by using electronic supply chain for Thai higher education institutions. The research procedures consisted of three Steps : 1) study of the document and related research to create a conceptual framework , 2) study research and innovation management of Thai Higher education institute by in-depth Interview 5 out of 19 Executives of university research offices. Stratified Random Sampling was used as a sampling plan together with semi-structured interviews questionnaire, and 3) do an in-depth interview of 15 professionals in three areas, research and innovation management in the university, supply chain management and electronic, and information technology management. Purposive sampling was used as a sampling plan together with semi structured interviews questionnaire. According to the research study we found that there were six factors of research and innovation management using electronic supply chain for Thai higher education : 1) supplied input for research and innovation, 2) research and innovation management in the university, 3) research and innovation distribution,

4) customers benefit from research and innovation , 5)the main activities of the research and innovation supply chain, and 6) electronic supporting system . All factors will lead to the development of research and innovation management using electronic supply chain model for Thai higher education institutions.

3 Research Methodology

This research was divided into 3 parts

Part 1 The studies and syntheses of texts, and research works, both in Thailand and in foreign countries, concerning the electronics supply chain.

Part2 This part dealt with the in-depth interview with the administrators, Faculty of Home Economic Technology, Rajamangala University of Technology Krungthe. The format used to collect the data in an interview was a form and it was checked for the correctness of the data collected by the advisor.

Part 3: This part dealt with the in-depth interview with 15 experts in 3 areas: that is, 5 experts in supply chain, 3 experts in electronics and technology information, and 2 experts in curriculum. The sampling used for the study was a purposive sampling .[8] The format used to collect the data in an interview was a form and it was checked for the correctness by the advisor. [15] The interviewing was recorded.

4 Results

4.1 Factors influencing successful educational management by using electronic supply chain for higher education institutions in Thailand is shown in figure 1.

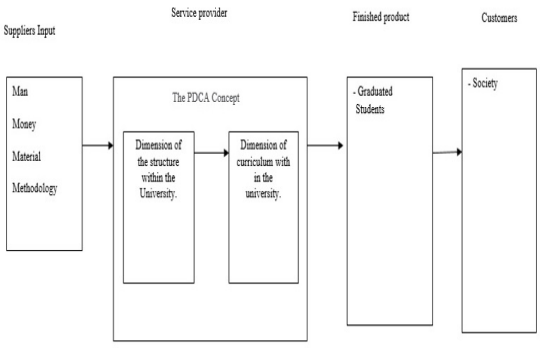

Figure 1 :Factors influencing successful educational management by using electronic supply chain for higher education institutions in Thailand

4.2 Explanation on the factors influencing successful educational management by using electronic supply chain for higher education institutions in Thailand

1 Suppliers

Supplied Input for educational (raw materials) Raw materials include 4 M'S: man, money, materials, methodology [8] 1) Man refers to teacher, people helping teacher works, curriculum advisors, and experts., 2) Money refers to the fund resources for education promotion, both inside the institutions and outside the institutions such as National Research Council., 3) Materials refers to any materials used for conducting education works such as computer, hardware, software., and 4) Methodology refers to knowledge for use in education, such as internal and external resources for education.

2 Service provider

Educational management in higher education institutions includes 2 dimensions: [18]

(1) Duties and responsibilities in the institutions include setting structure, philosophy, vision, mission, and objectives.

(2) Education in higher education institutions include providing innovations, funds for education, improving education and managing education for developing organizations. In order to fulfill the education in higher education institutions, there should be four important steps: (1) Planning (2) Doing (3) Checking (4) Assessment (PDCA)

1 Planning (P) refers to setting strategy, policy, and the plan, both long plan and short plan for developing curriculum works., 2. Doing (D) refers to starting doing curriculum. according to the plan set, promoting teacher, providing texts lab., 3. Checking (C) refers following up the completeness and correctness of curriculum and 4. Assessment (A) refers to the evaluation of standards and quality of curriculum 3 steps: (1) first step (2) middle step (3) last step.

First step dealt with preparing manuals or curriculum methods, planning curriculum development according to the policy of the institutions.

Middle step dealt with the following up and the budget management, and supporting teacher.

Last step dealt with the budget, progress of curriculum, presentation of curriculum works, the assessment of the standards and quality of curriculum, and applying the curriculum and learning and in developing communities.

3 Finished product

Finished product mean graduated from the university.

4. Customer

Customer mean society who receive personnel or graduated student with desirable characteristics including good virtues and morality, good knowledge and intellectual skills, good human relationship skills, good responsibility, good numerical analysis skill, good communication skill, and good information technology usage skills, etc. Finally, the finished product will provide added value to society .[3],[4],[5],[6] and [7]

5. The main activities of curriculum

The main activities of curriculum in supply chain consists of 4 main 1) the utilities procurement and human resource recruitment., 2) Curriculum has develop in the university. 3) Creativities and curriculum distribute to the public .

6 Electronic

Electronic supporting system electronics are used to support supply chain for curriculum. This factor includes 4 systems: (1) electronic procurement such as purchasing materials, goods; recruitment of personnel, advisors, and specialists; (2) electronic data and warehouse curriculum. (3) electronic distribution of curriculum (4) electronic transportation of curriculum to the student who wish to use the results of curriculum in developing organizations. and The four major supply chain drivers with electronic supply chain for higher education institutions show in Figure.2

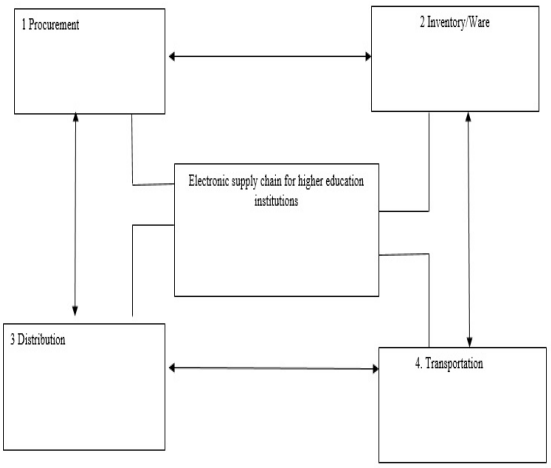

Figure 2 : The four major supply chain drivers with electronic supply chain for higher education institutions

The four major supply chain drivers with electronic supply chain for higher education institutions comprises four components namely procurement, Inventory/ware, Distribution and transportation. They are connect between all of activities and operations in a supply chain. To the extent that this connection is a strong one, (i.e., the data is accurate, timely, and complete), Information is used for two purposes in any supply chain of curriculum can be evaluate in 2 Aspects:

1. Coordinating daily activities related to the functioning of the other four supply chain drivers: procurement; inventory; Distribution; and transportation.
2. Forecasting and planning to anticipate and meet future demands. [13],[14],[17]

5 Conclusion

According to the research study we found that there were six factors successful educational management by using electronic supply chain for higher education institutions in Thailand namely supplied input for educational, Educational management in the university, finished product from university, customers benefit from university, the main activities of educational in supply chain and electronic supporting system. All factors will lead to the development of educational using electronic supply chain for higher education institutions in Thailand.

6 Discussion

From the results of research was relevant to Ngammongkolwong and Jeerungsuwan has studied about the factors of research and Innovation Management using electronic supply chain for Thai Higher education institutions recommended that The factors of research and Innovation management using electronic supply chain for Thai Higher education institutions consisted of three Steps : 1) study of the document and related research to create a conceptual framework , 2) study research and innovation management of Thai Higher education institute and the article about A model of creativity and research management for higher education institutions in Thailand through the electronic supply chain [13],[14] who found that There were six six factors of research and innovation management using electronic supply chain for Thai higher education : 1) supplied input for research and innovation, 2) research and innovation management in the university, 3) research and innovation distribution, 4) customers benefit from research and innovation , 5)the main activities of the research and innovation supply chain, and 6) electronic supporting system . All factors will lead to the development of research and innovation management using electronic supply

chain model for Thai higher education institutions.

7. Acknowledgements

For the research about factors influencing successful educational management by using electronic supply chain for higher education institutions in Thailand. the researcher thanked the expert for helping this research.

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