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Synthesis of Conceptual Framework for Supply Chain Business Intelligence for Educational Management in Thai Higher Education Institutions

Artaphon Chansamut

Office of Dean, Faculty of Home Economic Technology, Rajamangala University of Technology Krungthep, Thailand, Bangkok

[1]artaphon.c@mail.rmutk.ac.th

Abstract— **This objective of paper were to synthesis and evaluate a conceptual framework for Supply Chain business intelligence for educational management in Thai higher education institutions. The research methodology consists of Review documentation and literature, Create preliminary conceptual framework, Propose conceptual framework, Analyze the output data**. The **samples are experts group in arranging supply chain business intelligence and curriculum . The data is analysed by means and standardized deviations. The results is synthesis of conceptual framework for supply chain business intelligence for educational management in Thai higher education institutions find that, It were five components: main component and Minor ingredients namely Suppliers, University (manufacture), Education Customers and Consumer. A conceptual framework of assessment system using Back-Box technique. The overall evaluation result are synthesis of conceptual framework for supply chain business intelligence for educational management in Thai higher education institutions, shows the overall rating mean of 3.58 suggesting that conceptual framework for supply chain business intelligence for educational management in Thai higher education institutions is developed to be in the highly level of the appropriateness and consensus.**

Keywords— *synthesis of conceptual framework for Supply Chain business intelligence***,** *Educational management, Thai higher education institutions*

1. Introduction

Accordingto education management section in national education Act of B.E.1999. the main specifications is the quality of education which is the ultimate goal of Educational s reforms at all level nowadays, 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 , In order for educational institutions to be more inspirational and interesting for prospective students, higher education institutions need to adjust themselves to cope with economic, political and social changes that occur in the country. Meanwhile, the country needs human resource with high level of knowledge and ability, 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 and to prepare the people to be ready for joining the ASEAN Economic Community in B.E. 2015. Thailand needs to urgently develop its educational system for development country. Supply chain and business intelligence for educational management would be an option that 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 include business intelligence, 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 12th National Plan for social and economic development was formulated. [8].The researcher has realized the importance of curriculum development in order to cope with economic, social and political changes. In the business and industrial sector the changes have included the movement toward more and more application of the concept of supply chain management business intelligence. This is because

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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 useful business relevant information to help strategy maker to take business decisions..[7] Therefore, need to have sufficient information and resources to increase their values and respond to the demand of their clients. Supply chain and business intelligence process is a key decision-makers monitor internal inefficiencies and gives them the metric-driven insight to take appropriate support with the organization's whole activities system from upstream to downstream and helps to analytics to specify metrics and data sources, design visualization. it can be found and used for analysis and reporting when required. When storing data the same basic principles apply that one should use to store physical goods that can then be used to inform decision making. Gathering data can come in many formats and basically refers to the automated measurement and collection of performance data plays an important part education institutions which can be synthesized of conceptual framework for supply chain business intelligence for educational management in Thai higher educational institutions for making decisions more efficiently [2].

2. Related research

Mathrani (2014) said that managing supply chains using business intelligence can be analysis of data assets for establishing management decisions. Corporate data captured using enterprise systems (ESs) are leveraged through business intelligence to evaluate digital information for deploying business strategies. This study investigates use of BI in organizations for managing supply chain operations. The current BI practices of manufacturing firms are evaluated for transforming transactional data captured through ESs into organizational knowledge in pursuit of realizing supply chain goals. Findings from a case study reveals that although manufacturing firms have identified business analytic as one of the major necessities for organizational effectiveness, these companies often lack clarity in aligning key measurable against their business processes to utilize vital ES data. This results in underutilization of BI tools and the data assets for establishing business decisions. However, more and more companies are now deploying BI strategies for impromptu decision making in managing supply chains.

Supply chain and business intelligence will support logistics decision making processes and utilizing data has been a major activity in higher education which can be link to the business intelligence usage in such areas of logistics as optimization of supply chain, managerial dashboard design and improvement of business processes efficiency.

3 Research methodology

3.1 Population
Population and Sample were 5 experts in supply chain management, 5 experts in business intelligence and 5 experts on curriculum. Independent variable. The independent variable is synthesis of conceptual framework for supply chain Business Intelligence for Educational Management in Thai Higher Education Institutions. Dependent variable. The dependent variable is synthesis of conceptual framework for supply chain Business Intelligence for Educational Management in Thai Higher Education Institutions.

3.2 Research Tool
A questionnaire to assess the expert's opinions toward synthesis of conceptual framework for supply chain Business Intelligence for Educational Management in Thai Higher Education Institutions. The research methodology has the following steps
3.2.1 Review documentation and literature both within and outside the country concerning synthesis of conceptual framework for supply chain Business Intelligence for Educational Management in Thai Higher Education Institutions.
3.2.2 Create preliminary conceptual framework for supply chain business intelligence for educational management in Thai higher education institutions.
3.3.3 Propose conceptual framework for supply chain business intelligence for educational management in Thai Higher Education Institutions to the 5 experts for assessing the appropriateness.
3.2.4 Analyze the output data by using appropriateness measurement scale based on 5-point Likert Scale as well as means ($\overline{X}$) statistics
4.51 – 5.00 means ranging from means appropriate at the highest level.
3.51 – 4.50 means ranging from means appropriate at the high level.
2.51 – 3.50 means ranging from means appropriate at the moderate level.
1.51 – 2.50 means ranging from means appropriate at the low level.
0.00 – 1.50 means ranging from means appropriate at the lowest level.

4 Results

The results of research are divided into 2 part
4.1 Research findings on the developed conceptual framework
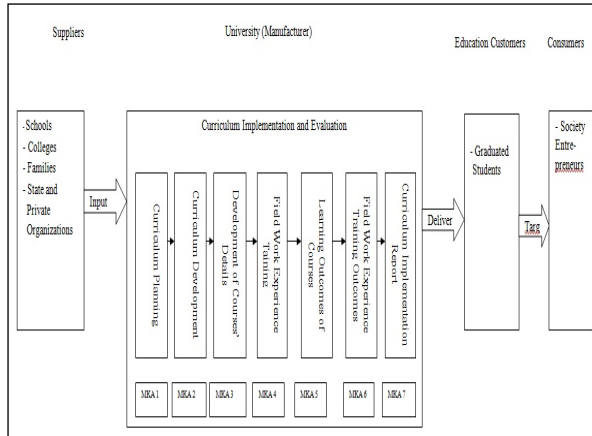
Figure 1. Synthesis of conceptual framework for supply chain Business Intelligence for Educational Management in Thai Higher Education Institutions

Table 1. Stakeholders each process is related to the following activities:

Stakeholders	Activities in supply chain	Needs for data
1. **Suppliers** - School - College - Family -State and private organizations	- Sending graduated students - giving funding and scholarships	Speedy and accurate data processing and analysis.
2. **University (Manufacturer)** Steps of Curriculum Implementation and Evaluation: 1. Curriculum Planning (MKA 1)	- Recruiting teachers and students the curriculum	Speedy and accurate data processing and analysis.

Table 1. (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. **University (Manufacturer)** Steps of Curriculum Implementation and Evaluation: 2. Curriculum Development (MKA 2)	-Planning for and development of including its objectives, scope, structure, contents, , course description, evaluation system, and required resources - learning - Provide teaching resources for students and teachers such as buildings, laboratories, classrooms, libraries, internship sites.	Speedy and accurate data processing and analysis.
3. Development of Courses Details (MKA 3)	- Fund allocation, safety standard system, textbooks, documents, media electronics Computer program, lecturer, advisory teacher Place of internship, mentor, etc.	Accurate data
4. Fieldwork Experience Training (MKA 4)	- Professional experience training	Accurate data

Table 1. (Continued)

Stakeholders	Activities in supply chain	Needs for data
2.University (Manufacturer) Steps of Curriculum Implementation and Evaluation: 5. Learning Outcomes of Courses (MKA 5)	- Reporting of learning outcomes in each domain including the knowledge, intellectual skill, attitude, morality, interpersonal relationship, numerical analysis, information technology usage, etc. - Evaluation of learning outcomes of students - Reporting of instructional evaluation of instructors.	- To be easily accessible.
6. Fieldwork Experience Training Outcomes (MKA 6)	-Learning Outcomes of Field Experience Training Evaluated using scores 1-5 based on the assessment criteria.	- To be easily accessible.
7 Curriculum Implementation Report (MKA 7)	- Number of students who graduate before the completion of curriculum implementation. - Number of students who graduate within the duration of curriculum implementation. - Number of students who	- To be easily accessible.

Table 1. (Continued)

Stakeholders	Activities in supply chain	Needs for data
2.University(Manufacturer) Steps of Curriculum Implementation and Evaluation: 7 Curriculum Implementation Report (MKA 7)	graduate according to the curriculum. - Number of students who graduate in each major field of study. -Occupatio-ns taken up by graduate students from the university. - Level of satisfaction of final year students with the curriculum.	Storage of large amount of information for accessibility.
3 Education customers -Graduated students	1. Having good knowledge in their field of study. 2. Having work performance skills. 3. Having all desirable characteristics.	Number of graduated students.
4 Consumers -Entrepreneurs	Employing graduated students with desirable characteristics including ethical and morality development, knowledge,	

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Table 1. (Continued)

Stakeholders	Activities in supply chain	Needs for data
4.Consumers -Entrepreneurs	cognitive skills ,interpersonal skills and responsibility Analytical and Communication Skills, etc.	Questionnaires to assess the employer's satisfaction with the employed graduated student

4.2 Explanation on components of developed conceptual framework:

4.2.1 Suppliers

Suppliers of the student (High school/college) , Supplies of the family (Parents, Siblings) , relatives, etc. government and private organizations (Scholarship).The suppliers mean the organizations 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 business intelligence software applications that can be defined as a collection of approaches for gathering, storing, analysing and providing access to data that helps users to gain insights and make better business decisions.

4.2.2 University (Manufacturer)

Manufacturer mean the university is regarded as a service provider university that produces graduated students. It performs the duty to transform raw materials, or entering students, into the finished products of qualified graduated students. The university will perform its duty of student development and evaluation based upon Thailand Qualifications Framework for Higher Education (MKA 1 – MKA 7) 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, All activities are reported in real-time dashboards and reports makes it easier for analysing the data is presented in a comprehensive set of formats—graphs show trending visibility, and radial dials display performance within ranges—based on type of data and data elements.

4.2.3 Education customers

The education customers mean graduate student with desirable quality from the university.

4.2.4 Consumers

Graduate student identifies the society as the end customer or the consumer in this integrated supply chain. As universities are part of the society, the final outcomes of this supply chain, including graduates with desirable quality outcomes are delivered   to   the   society .[1],[2],[3],[4],[5],[9],[10],[11]

4.3 The results of evaluation synthesis of conceptual framework for supply chain business intelligence for educational management in Thai higher education institutions, as shown table 2 below:

Table 2. The results of evaluation synthesis of conceptual framework for supply chain business intelligence for educational management in Thai higher education institutions

Evaluation Lists	$\overline{X}$	S.D.	Level of Appropriat eness
Main component	3.55	0.79	high
Suppliers	3.63	0.76	high
University (Manufacturer)	3.53	0.85	high
Education customers	3.66	0.61	high
Consumers	3.53	0.61	high
Summary	3.58	0.72	high

The examination by the experts shows that experts agree synthesis of conceptual framework for supply chain business intelligence for educational management in Thai higher education institutions is highly appropriate.($\overline{X}$ = 3.58, S.D. = 072)

5. Conclusion and discussion

Synthesis of conceptual framework for supply chain business intelligence for educational management in Thai higher education institutions have five components: main component and Minor ingredients namely Suppliers, University (manu-facture) , Education customers an**d** Consumer after the experts have evaluated, it was found that

Synthesis of conceptual framework, they give the opinion that synthesis of conceptual framework for supply chain business intelligence for educational management in Thai higher education institutions shows the overall rating mean of 3.58 and standard deviation of 0.72 , which means synthesis of conceptual framework for supply chain business intelligence for educational management in Thai higher education institutions is developed to be in the high level of appropriateness and consensus .Also,the design was according with chansamut and piriyasurawong [1],[2] who found that supply chain and information system are consists of suppliers, manufacturer, customers and consumers and research of chansamut and Kaewngam, Chatwattans & Piriyasurawong as well.[3],[4],[5] ,[6],[11]

6. Recommendations

Synthesis of conceptual framework for supply chain business intelligence for educational management in Thai higher education institutions comprises five main components Main component and Minor ingredients namely Suppliers, University manufacture, Customers and Consumer are highly appropriate ,but it has not been actually implemented in any colleges. Therefore, if possible it should build supply chain business intelligence for Educational Management in Thai Higher education institutions for the developed conceptual framework.

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References

[1] Chansamut, A., Piriyasurawong., P. Supply Chain Management Information System for Curriculum Management Based on The National Qualifications Framework for Higher Education. International Journal of Supply and Operations Management. Vol 6 No 1, 88-93. 2019.

[2] Chansamut, A., Piriyasurawong., P. 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 (IJMVSC) . Vol 5 No 4 , 33-45. 2014

[3] Chansamut, A., Supply Chain operation Model in Digital for Curriculum Management Based on Thailand Qualifications Framework for Higher Education. International Journal of Supply Chain Management (IJSCM) . Vol 10 No 4, 71-75.2021.

[4] Chansamut, A., An Information System Model for Educational Management in Supply Chain According to Career standards on Thailand Qualifications Framework for Vocational Education. International Journal of Supply Chain Management (IJSCM) . Vol 10 No 4, 51-55.2021.

[5] Chansamut,. A. An information System model for research management in supply chain for higher education institute. Academic Journal Council of University Administrative Staff of Thailand. Vol 9 No 2, 210-221. 2020.

[6] Chansamut,. A. ICT System in Supply Chain Management for Research in Higher Education Institute.University of the Thai Chamber of Commerce journal humanities and social sciences. Vol 36 No 2, 112-121. 2016.

[7] Ghosh,A.Business intelligence in supply chain Supply chain management. Asian Journal of Science and Technology. Vol .07 ,Issue 12 , 3980-3991. 2016.

[8] Office of the National Economic and Social Development Board, (2021) , The Eleventh National Economic and Social Development Plan (B.E. 2017 – 2021) . Available at : http://www. nesdb.go.th./Portals/0 /news/plan/p11/plan11.pdf. (accessed: 13 Sept 2021).

[9] Office of the Commission on Higher Education., (2009). National Qualifications Framework for Higher Education. Available at: http://www. mua.go.th /users/tqf- hed. (accessed: 13 Sept 2021).

[10] Habib, M. and C. Jungthirapanich. (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). Available at http:// assumption- univ.academia. edu/Mamun-Habib. (accessed: 06 June 2021).

[11] Kaewngam, A., Chatwattans, P and Piriyasurawong,P . Supply Chain Management Model in Digital Quality Assurance for

ASEAN University Network Quality Assurance (AUN-QA). Canadian Center of Science and Education. Vol 9. No 4, 12-20. 2019.

[12] Mathrani., S. 2014.Managing Supply Chains Using Business Intelligence. 25th Australasian Conference on Information Systems. Available at https://www.researchgate.net/publication/ 271519562_Managing_Supply_Chains _Using_Business_Intelligence/link /5f5bfa0e4585154dbbcb2a61/download