

# Supply Chain Business Intelligence Model for Quality Assurance in Educational Management for ASEAN University Network Quality Assurance

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**Abstract**— This research was conducted to study and develop supply chain business intelligence model for quality assurance in educational management for ASEAN University Network Quality Assurance .The objective of this study were to study and evaluate supply chain business intelligence model for quality assurance in educational management for ASEAN University Network Quality Assurance . The research methodology consists of study, analyze, and synthesize the contents, develop a proces supply chain business intelligence model for quality assurance in educational management for ASEAN University Network Quality Assurance , present the constructed model, conclude the results and analyse the model's results evaluation by using mean and standard and deviation .The fifteen experts selected by purposive sampling. The sample groups were collected with rational and the needs of the researcher under various restrictions i.e. times, places and cooperation. The data were analyzed by standard deviations and means. The model development process has five components: main component and Minor ingredients namely Suppliers, University manufacture, Customers and Consumer. This model helps to support sustainable business intelligence development As, the overall model was shown at a very good level, the experts agreed.

**Keywords**— *supply chain business intelligence model, quality assurance in educational management, Thai ASEAN University Network Quality Assurance*

## 1. Introduction

Education system is the process whereby individuals acquire knowledge and other qualifications that promote their social survival. Therefore, a consideration of education quality should be based on educational goals, e.g. qualifications of graduates, which should include knowledge, skills and other characteristics as prescribed by the curricula. Since testifying these qualifications requires time, a good effective and sustainable administrative management, it is important to assure

guardians, stakeholders and other involved parties that students who are graduated from a particular institution will be decent, competent and happy in society and take part in social development that progresses in line with the pace of globalization. To answer all the questions of education quality, it should be set up as principles or elements which a comparison can be made to inform development, supervision, examination and assessment of quality. Therefore, the standards of higher education, and student education as announced herein, are the requirements of education quality for all higher education institutions and student educations to utilize as goals or a directional framework to develop sustainable quality of the institutions, and to use in self-assessment every year, or for a specified period of time, in order to learn whether educational administration has achieved its goals. These standards are also important for educational service areas or host units to employ as goals in supervision, examination and assessment of quality as a whole to inform quality improvement planning. The awareness of the supply chain business intelligence model for quality assurance can be practical as a method . To accomplish work procedures, actions and affairs within the organization. It starts from planning, providing accurate information at the time of need, practicing and maintenance, distribution or destruction by giving priority to information exchange, data analysis and sharing in order to achieve productivity through the development. The nature of supply chain and business intelligence will be derived to play a role in changing work processes to be more computerized in order to style occupied custom of technology not only carrying supply chain and business intelligence to work but also be able to determine the organization inevitably. supply chain and business intelligence Increasing work proficiency, diminish work period, and help strategy maker to take business decisions.. Therefore, need to have sufficient information and resources to increase their values and respond to the demand of their clients. [1] 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. Thus, the researcher has an idea to develop supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance 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

The population of this study consisted of 5 experts in supply chain management, 5 experts in business intelligence and 5 experts on quality assurance in educational.

Variable of research . Supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance was independent variable.

The assessment of the model's suitability was dependent variable.

### 3.2 The research process has the following

3.2.1 To study ,scrutinize, and combine previous research and documents related to the elements of the supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance .

3.2.2 To develop Supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance by using collected data from relevant research and documents.

3.3.3 To present Supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance via in-depth interviews to experts and advisors for there consideration.

3.2.4 To create evaluating tools for model suitable.

3.2.5 Presenting the developed Supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance to 15 experts in fields as supply chain, business intelligence and quality assurance in educational.

3.2.6 Improving the design of model base on the experts' suggestions.

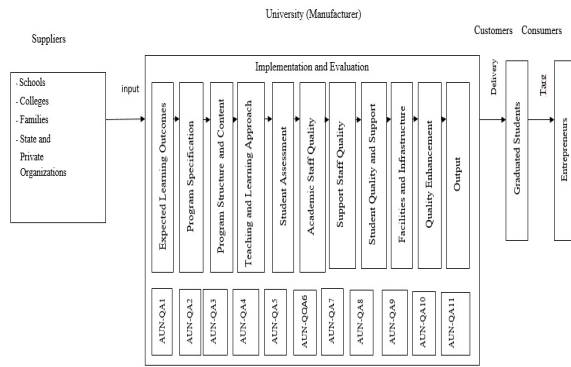
3.2.7 Presenting the diagram with reports of model.

3.2.8 Analysing the model's results evaluation by using mean and standard deviation .A 5-point rating scale based on the Likert scale was used to design evaluation form.[6]

## 4 Results

The results of research are divided into 2 part

4.1 Research Findings on the developed supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance for making decisions more efficiently



**Figure 1:** Supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance

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

Stakeholders	Activities in supply chain	Needs for data
<b>1. Suppliers</b> 1. School 2. College 3. Family 4. State and private organizations	- Sending graduated students - Sending self-supported students - giving funding and scholarships	Speedy and accurate data processing and analysis.
<b>2. University (Manufacturer)</b> Steps of quality assurance in educational Implementation and evaluation: 1. Expected Learning Outcomes (AUN-QA 1)  2. Programme Specification (AUN-QA 2)	- The expected learning outcomes have been clearly formulated and aligned with the vision and mission of the university. –  The expected learning outcomes cover both subject specific and generic (i.e. transferable) learning outcome.	Speedy and accurate data processing and analysis.

**Table 1: (Continued)**

Stakeholders	Activities in supply chain	Needs for data
<b>2. University (Manufacturer)</b> Steps of quality assurance in educational Implementation and evaluation:  2. Programme Specification (AUN-QA 2)	-The expected learning outcomes clearly reflect the requirements of the stakeholders.  -The information in the programme specification is comprehensive and up-to-date -The information in the course specification is comprehensive and up-to-date -The programme and course specifications are communicated and made available to the stakeholders.	Accurate data

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
<p>2. University (Manufacturer) Steps of quality assurance in educational Implementation and evaluation:</p> <p>3. Programme Structure and Content ( AUN-QA 3)</p>	<p>-The curriculum is designed based on constructive alignment with the expected learning outcome</p> <p>-The contribution made by each course to achieve the expected learning outcomes is clear.</p> <p>-The curriculum is logically structured, sequenced, integrated and up-to-date .</p>	Speedy and accurate data processing and analysis.
4. Teaching and Learning Approach ( AUN-QA 4)	<p>-The educational philosophy is well articulated and communicated to all stakeholders.</p> <p>-Teaching and learning activities are constructively aligned to the achievement of the expected learning outcomes.</p> <p>-Teaching and learning activities enhance life-long learning.</p>	Accurate data

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
<p>2. University (Manufacturer)</p> <p>Steps of quality assurance in educational Implementation and evaluation:</p> <p>5. Student Assessment ( AUN-QA 5)</p>	<p>- The student assessment is constructively aligned to the achievement of the expected learning outcomes</p> <p>-The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading are explicit and communicated to students.</p> <p>-Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student assessment</p> <p>-Feedback of student assessment is timely and helps to improve learning.</p> <p>-Students have ready access to appeal procedure.</p>	Storage of large amount of information for accessibility.

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. University (Manufacturer) Steps of quality assurance in educational Implementation and evaluation: 6. Academic Staff Quality (AUN-QA 6)	-Academic staff planning (considering succession, promotion, re-deployment, termination, and retirement) is carried out to fulfil the needs for education, research and service - Staff-to-student ratio and workload are measured and monitored to improve the quality of education, research and service. - Recruitment and selection criteria including ethics and academic freedom for appointment, deployment and promotion are determined and communicated. - Competences of academic staff are identified and evaluated.	Accurate data

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. University (Manufacturer)  Steps of quality assurance in educational Implementation and evaluation: 6. Academic Staff Quality (AUN-QA 6)  7. Support Staff Quality (AUN-QA 7)	- Training and developmental needs of academic staff are identified and activities are implemented to fulfil them.  - Performance management including rewards and recognition is implemented to motivate and support education, research and service. - The types and quantity of research activities by academic staff are established, monitored and benchmarked for improvement -Support staff planning (at the library, laboratory, IT facility and student services) is carried out to fulfil the needs for education,	Accurate data

**Table 1: (Continued)**

Stakeholders	Activities in supply chain	Needs for data
<p><b>2. University (Manufacturer)</b> Steps of quality assurance in educational Implementatio-n and evaluation: 7. Support Staff Quality (AUN-QA 7)</p>	<p>research and service.</p> <ul style="list-style-type: none"> <li>- Recruitment and selection criteria for appointment, deployment and promotion are determined and communicated</li> <li>- Competences of support staff are identified and evaluated. Training and developmental needs of support staff are identified and activities are implemented to fulfil them.</li> <li>-Performance management including rewards and recognition is implemented to motivate and support education, research and service.</li> </ul>	Accurate data

**Table 1: (Continued)**

Stakeholders	Activities in supply chain	Needs for data
<p><b>2. University (Manufacturer)</b> Steps of quality assurance in educational Implementatio-n and evaluation: 8. Student Quality and Support (AUN-QA 8)</p>	<ul style="list-style-type: none"> <li>-The student intake policy and admission criteria are defined, communicated, published, and up-to date.</li> <li>- The methods and criteria for the selection of students are determined and evaluated.</li> <li>- There is an adequate monitoring system for student progress, academic performance, and workload.</li> <li>-Academic advice, co-curricular activities, student competition, and other student support services are available to improve learning and employability.</li> <li>-The physical, social and psychological environment is conducive for education and research as well as personal well-being.</li> </ul>	Accurate data

**Table 1: (Continued)**

Stakeholders	Activities in supply chain	Needs for data
<p><b>2. University (Manufacturer)</b> Steps of quality assurance in educational Implementatio-n and evaluation: 9.Facilities and Infrastructure (AUN-QA 9)</p>	<p>-The teaching and learning facilities and equipment (lecture halls, classrooms, project rooms, etc.) are adequate and updated to support education and research. - The library and its resources are adequate and updated to support education and research. - The laboratories and equipment are adequate and updated to support education and research. -The IT facilities including e-learning infrastructure are adequate and updated to support education and research. -The standards for environment, health and safety; and</p>	<p>Accurate data</p>

**Table 1: (Continued)**

Stakeholders	Activities in supply chain	Needs for data
<p><b>2. University (Manufacturer)</b> Steps of quality assurance in educational Implementatio-n and evaluation: 9.Facilities and Infrastructure (AUN-QA 9)  10. Quality Enhancement (AUN-QA 10)</p>	<p>access for people with special needs are defined and implemented.  -Stakeholders' needs and feedback serve as input to curriculum design and development. - The curriculum design and development process is established and subjected to evaluation and enhancement. - The teaching and learning processes and student assessment are continuously reviewed and evaluated to ensure their relevance and alignment.</p>	<p>Accurate data</p>

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
<p><b>2. University (Manufacturer)</b> Steps of quality assurance in educational Implementatio-n and evaluation:</p> <p>10. Quality Enhancement (AUN-QA 10)</p>	<p>-Research output is used to enhance teaching and learning.</p> <p>-Quality of support services and facilities (at the library, laboratory, IT facility and student services) is subjected to evaluation and enhancement.</p> <p>-The stakeholder's feedback mechanisms are systematic and subjected to evaluation and enhancement.</p>	Accurate data
<p>11. Output (AUN-QA 11)</p>	<p>-The pass rates and dropout rates are established, monitored and benchmarked for improvement.</p> <p>-The average time to graduate is established, monitored and benchmarked for improvement.</p> <p>-Employability of graduates is</p>	

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
<p><b>2. University (Manufacturer)</b> Steps of quality assurance in educational Implementatio-n and evaluation:</p> <p>11. Output (AUN-QA 11)</p>	<p>established, monitored and benchmarked for improvement.</p> <p>- The types and quantity of research activities by students are established, monitored and benchmarked for improvement.</p> <p>- The satisfaction levels of stakeholders are established, monitored and benchmarked for improvement.</p>	Accurate data
<p><b>3 Customers</b> Graduated students</p>	<p>Having work performance skills.</p>	
<p><b>4. Consumers</b> Entrepreneurs</p>	<p>Employing graduated students with desirable characteristics including good virtues and morality, good knowledge and intellectual skills, good</p>	



**Table 1: (Continued)**

Stakeholders	Activities in supply chain	Needs for data
4. Consumers Entrepreneurs	numerical analysis skill, good communication skill, and good information technology usage skills, etc. [2],[3],[4],[5],[6]	- Questionnaires to assess the employer's satisfaction with the employed graduated student on various aspects of desirable characteristics.

4.2 Principle of supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance

#### 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 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 (AUN-QA 1– AUN-QA 117) of all activity. 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 Customers

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

#### 4.2.4 Customers

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. [2],[3],[4],[5],[6]

4.3 The evaluation result for supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance , as shown table 1 below:

**Table 1:** Conclusion of evaluation results on appropriateness Of supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance

No.	List of Evaluated Items	$\bar{X}$	S.D	Appropriate Level
1	Main component	3.55	0.79	high
2	Suppliers	3.63	0.76	high
3	Manufacturer	3.60	0.93	high
4	Customers	3.60	0.93	high
5	Consumers	3.53	0.51	high
	<b>Total</b>	3.59	0.72	high

The model's appropriateness evaluation was done by fifteen experts as presented in Table 1. And, they agreed with the value of overall suitable on the list that had great results is highly appropriate. ( $\bar{X} = 3.59$ , S.D. = 072)

## 5. Conclusion and discussion

Supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance have five components: main component and Minor ingredients namely Suppliers, University manufacture, Customers and Consumer, after the experts have evaluated, it was found that Supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance, they

give the opinion that Supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance shows the overall rating mean of 3.59 and standard deviation of 0.72 , which means Supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance is developed to be in the high level of appropriateness and consensus .Also,the design was according with chansamut and piriyasurawong [3] who found that supply chain and information system are consists of suppliers, manufacturer, customers and consumers and research of chansamut. [2],[3],[4],[5] and Kaewngam, Chatwattans & Piriyasurawong; Habib and Sopapradi, &Piriyasurawon as well. [6],[7],[9]

## 6 Recommendations

Supply chain business intelligence model for quality assurance in educational management for asean university network quality assurance 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 quality assurance in educational management for asean university network quality assurance for the developed model.

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