

# Supply Chain Management Model in Digital Quality Assurance for ASEAN University Network Quality Assurance (AUN-QA)

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## Abstract

This research aims were to (1) design the supply chain management model in digital quality assurance for ASEAN quality assurance network (AUN-QA), and (2) assess the suitability of the supply chain management model. The sample group consisted of five experts in the field of information technology and communication for education and quality assurance of the ASEAN university network. Data analysis was the average mean and standard deviation. The research was found that (1) supply chain management model consists of six components: 1) Applicant, 2) University, 3) Graduate, 4) Employers, 5) Satisfaction, and 6) Feedback. (2) The results from experts agreement of the supply chain management model was a high level. It showed that the supply chain management model could be used to develop digital quality assurance for AUN-QA.

**Keywords:** Supply chain, digital quality assurance, ASEAN University Network Quality Assurance, AUN-QA

## 1. Introduction

The development of education under the framework of Thailand 4.0 policy into the 21st century. The Education administration is obligation content by undergraduates and encounters to generate a learning procedure designed for students under education within the 20-year strategic framework (2017-2036). Institutes and academies necessity design actions to provide the national strategic framework in six areas: 1) steadiness, 2) competitiveness, 3) investment in human resources, 4) opportunities, equality and social gap, 5) quality of life, and 6) public government. One of the policies that arranged the basis for long-term national expansion and it is the initial point for powerful into a nation-state that is stable, prosperous and sustainable.

King Mongkut's University of Technology North Bangkok is an educational institute that realizes the status of educational quality assurance in agreement with the policy of the Office of Higher Education Commission in 1996. In order to promote ideas about educational quality assurance which takes part in the foundation for educational quality assurance with policy formulation and educational quality assurance measures (Quality Assurance Guide, KMUTNB. 2015)

Quality assurance in educational institutes is developed to guarantee that all parties manage education take quality and preserve the standards (AUN-QA Ver.3). The Ministry of Education, therefore, has reformed the assessment model and educational quality assurance. To Improve standards and has fewer numbers of indicators, reliable and genuinely reproduce the superiority. It underlines the valuation interpretation of the condition, not complicated, and then launch the standard of the assessment model. It decreases the problem of data storing, as well as plummeting the groundwork of documents used in the assessment. After that, developing internal inspectors are standardized, respectful, and able to provide guidance and coaching to educational institutes to meet the straightforward educational standards that are recently in step, so there are not many guiding principles. For determining the quality of educational institutes will focus on accumulating quality data in synchronization with the circumstances of educational institutes. It does not increase the drain of assembly documents for educational institutes together with developing internal inspectors to be standardized, respectful, able to provide

guidance and coaching to educational institutes. Alter the assessment paradigm with the goal and evaluation, the development of assessment based on the framework of the institute. Educational standards of the institute are, therefore, the preliminary point for human capital development and it is the most important issue which the stakeholders should know. All departments, every person in the institute should distinguish and work in the accountability to accomplish the goal. It is the standard that educational institute controls and take part in the obligation of the educational management that occurs. Quality Assurance Office Faculty of Engineering. (2018).

The development of quality assurance is the whole thing for flexibility. With this flexibility, so it is requisite to rehearsal information and assistance to spread over to access innovative technologies and modernizations. The researchers consequently comprehended the position of the challenges that will benefit the effort to perceive the procedure obviously. Supply chain management for educational quality assurance was ease of work which is well thought-out the achievement of progression the excellence of the work of the superlative quality assurance.

Internal quality assurance is the structure of a model and instrument for the expansion, monitoring, assessment of the procedure of educational institutes in agreement with the policy, goals and quality levels according to the morals conventional by educational institutions and formations. The agency and the educational institute required the quality assurance model within the educational institution and measured internal quality assurance as part of the educational administration procedure that must be carried out continuously. An annual report is an internal quality assessment report that is presented to the institute council, intervention, agency.

Moreover, related activities to contemplate and release to the public to principal to the progress of quality and educational standards and provision peripheral quality assurance ASEAN University Network. (Bureau of Standards and Higher Education, 2014).

The awareness of the supply chain management Model for quality assurance can be practical as a method or tactic for dealing with quality assurance. 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 technology 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 digital technology to work but also be able to determine the organization inevitably. Increasing work proficiency, diminish work period, and costs are the heart of the progression organization in the digital age. Useful strategy and evidence technology are attaching with the work experience of staffs complicated in the supervision of quality assurance work with an incorporated work process. To increase work competence and generate additional value for the association to continue the quality and standard of education in higher education. It is very important at the progress level. The ASEAN Quality Assurance Network (AUN-QA) is an ASEAN university network that is a collaboration of higher education institutes between member countries consisting of the National Association Of East Asia, South Chiang Mai or ASEAN with the aim of establishing to promote educational cooperation which is an essential mechanism for creating a foundation for society and regional unity. (AUN-QA Guide Ver.3).

From the status declared directly above; consequently, the researchers are concerned in emerging a supply chain management model in digital quality assurance for the ASEAN quality assurance network. The researchers understand the perception of supply chain management to spread on and sustenance digital quality assurance in order to realize the work's effectiveness vis-à-vis quality assurance. This prototypical will have an original for model expansion of supply chain management in digital quality assurance for the ASEAN university quality assurance network. This research aims to design the supply chain management model and assess the suitability of the supply chain management model in digital quality assurance for ASEAN quality assurance network (AUN-QA Guide Ver.3).

## **2. Literature Review**

### *2.1 Supply Chain Management*

Kham Nai (2011) 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.

### 2.2 Quality Assurance

Quality assurance is the process of determining the quality standards of education and the assessment process to meet the educational quality standards )Murgatroyd and Morgan, 1994(Internal quality assurance refers to guidelines for assessing the quality of education within the university mission, as graduate production including academic research, academic services, preservation of arts and culture, and management )Pridi, Sanya and Witthaya, 2015(Matei and Iwinska )2016 (recommended that educational quality assurance can be used to describe all activities and mechanisms which related to quality, both at the system level and the level of teaching in higher education institutions

### 2.3 Quality Assurance of ASEAN University Network (AUN-QA)

AUN-QA criteria define a curriculum development based on AUN-QA criteria indicating the department must follow teaching strategies and evaluation of quality indicators. To improve the program, it should have a course map showing the balance proportion of content, skills and courses along with expert that expected to learning outcomes and to use teaching approaches interrelated to innumerable assessment methods (Suharmanto, Hidayati and Zen. 2013)

AUN-QA criteria are the presence of a university that is a property of a vast country, and it has a strategic plan in efforts to improve the quality and competitiveness of the country. Consequently, it is necessary to attempt the strength and increase the role as well as a role in the future. One way to progress the quality of education, it needs to produce graduates with quality of teaching and learning that meets university standards which should be changed. They can start with the improvement of the curriculum in each educational program (Rino. 2012)

The quality assurance Model and criteria for the ASEAN University Network (AUN-QA) are being a quality assurance Model that does not define the technique of action for the course.

### 3. Research Framework

The conceptual framework of the research on supply chain management in digital quality assurance for the ASEAN Quality Assurance Network (AUN-QA), as shown in figure 1.

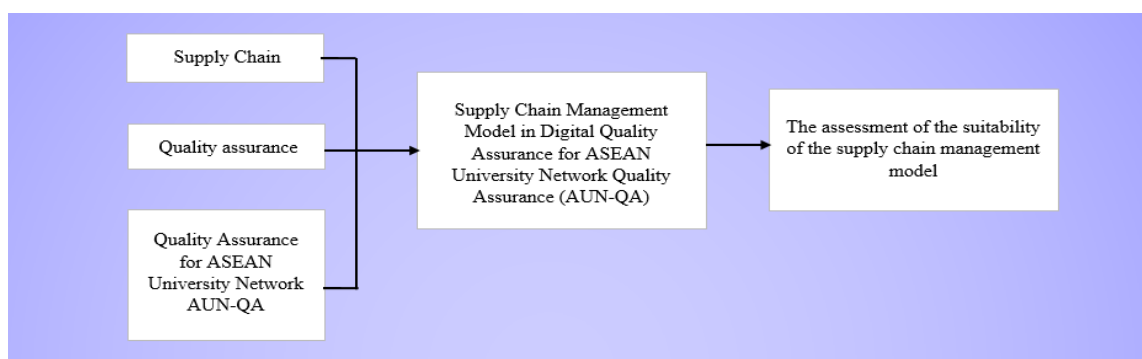


Figure 1. Research Framework

#### **4. Research Methodology**

*4.1 Population Consists of experts in Information and Communication Technology for Education and Quality Assurance, ASEAN University Network (AUN-QA)*

*4.2 Samples are Five Experts with Three Years' Experience in the Field of Experience in Information and Communication Technology for Education and Quality Assurance, ASEAN University Network (AUN-QA)*

*4.3 Variables*

4.3.1 Independent Variables are Supply Chain, Quality Assurance and Quality Assurance for ASEAN University Network.

4.3.2 Dependent Variables are the Supply Chain Management Model in Digital Quality Assurance for the ASEAN Quality Assurance network (AUN-QA).

#### **5. Methodology**

*5.1 The First Phase is the design of Supply Chain Management Models in Digital Quality Assurance for the ASEAN Quality Assurance Network (AUN-QA). This Phase Consists of the Following Steps*

1) To analyse and synthesize related documents and research to the components of the supply chain management model in digital quality assurance for the ASEAN Quality Assurance Network (AUN-QA).

2) To design the supply chain management model in digital quality assurance for the ASEAN Quality Assurance Network (AUN-QA) using data collected from studies and analysis of relevant documents and research.

3) To propose the models to consultants and experts for consideration by in-depth interviews.

4) To create tools for assessing the suitability of models

*5.2 The Second Phase of this Research is to Evaluate the Model as the Following Steps*

1) To propose a model of supply chain management in digital quality assurance for the ASEAN Quality Assurance Network (AUN-QA) for advisors.

2) To modify the model from the advice of the advisor.

3) To propose the models to experts in the field of information and communication technology for education and quality assurance of the ASEAN University Network (AUN-QA) for five persons.

4) To analyse the suitability of the supply chain management model in digital quality assurance for the ASEAN Quality Assurance Network (AUN-QA) using the arithmetic mean and standard deviation as the following criteria:

4.51-5.00 at highest of appropriate suitability

3.51-4.50 at a high of appropriate suitability

2.51-3.50 at moderately of appropriate suitability

1.51-2.50 at a low of appropriate suitability

0.00-1.50 at lowest of appropriate suitability

#### **6. Results**

6.1 The Supply Chain Management Model in Digital Quality Assurance for the ASEAN Quality Assurance Network (AUN-QA) Comprises Six Components as Followings

Element 1. Applicant are those who have graduated or graduated from school, universities in public and private sectors They are from public and private organizations or family and others who want to apply to study at the graduate level in order to receive the applicant analysis service by applying via a digital Model.

Element 2. University is the person who produces quality graduates under the quality assurance of education. To creating quality management service standards of educational institutions, it had to continuously improve the quality of learners. Moreover, it builds the confidence for service recipients directly and indirectly, including learners, parents, and indirect service recipients, such as institutions, individuals, and society. The production process for the quality assurance process AUN-QA comprise eleven steps as followings:

AUN-QA.1 (Expected Learning Outcomes)

1.1 The expected learning outcomes have been clearly formulated and aligned with the vision and mission of the university

1.2 The expected learning outcomes cover both subject specific and generic (i.e. transferable) learning outcomes

1.3 The expected learning outcomes clearly reflect the requirements of the stakeholders

#### AUN-QA.2 Program Specification

2.1 The information in the programme specification is comprehensive and up-to-date

2.2 The information in the course specification is comprehensive and up-to-date

2.3 The programme and course specifications are communicated and made available to the stakeholders

#### AUN-QA.3 Program Structure and Content

3.1 The curriculum is designed based on constructive alignment with the expected learning outcomes

3.2 The contribution made by each course to achieve the expected learning outcomes is clear

3.3 The curriculum is logically structured, sequenced, integrated and up-to-date

#### AUN-QA.4 Teaching and Learning Approach

4.1 The educational philosophy is well articulated and communicated to all stakeholders

4.2 Teaching and learning activities are constructively aligned to the achievement of the expected learning outcomes

4.3 Teaching and learning activities enhance life-long learning

#### AUN-QA.5 Student Assessment

5.1 The student assessment is constructively aligned to the achievement of the expected learning outcomes

5.2 The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading are explicit and communicated to students

5.3 Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student assessment

5.4 Feedback of student assessment is timely and helps to improve learning

5.5 Students have ready access to appeal procedure

#### AUN-QA.6 Academic Staff Quality

6.1 Academic staff planning (considering succession, promotion, re-deployment, termination, and retirement) is carried out to fulfil the needs for education, research and service

6.2 Staff-to-student ratio and workload are measured and monitored to improve the quality of education, research and service

6.3 Recruitment and selection criteria including ethics and academic freedom for appointment, deployment and promotion are determined and communicated

6.4 Competences of academic staff are identified and evaluated

6.5 Training and developmental needs of academic staff are identified and activities are implemented to fulfil them

6.6 Performance management including rewards and recognition is implemented to motivate and support education, research and service

6.7 The types and quantity of research activities by academic staff are established, monitored and benchmarked for improvement

#### AUN-QA.7 Support Staff Quality

7.1 Support staff planning (at the library, laboratory, IT facility and student services) is carried out to fulfil the needs for education, research and service

7.2 Recruitment and selection criteria for appointment, deployment and promotion are determined and communicated

7.3 Competences of support staff are identified and evaluated

7.4 Training and developmental needs of support staff are identified and activities are implemented to fulfil them

7.5 Performance management including rewards and recognition is implemented to motivate and support education, research and service

#### AUN-QA.8 Student Quality and Support

8.1 The student intake policy and admission criteria are defined, communicated, published, and up-to-date

8.2 The methods and criteria for the selection of students are determined and evaluated

8.3 There is an adequate monitoring Model for student progress, academic performance, and workload

8.4 Academic advice, co-curricular activities, student competition, and other student support services are available to improve learning and employability

8.5 The physical, social and psychological environment is conducive for education and research as well as personal well-being

#### AUN-QA.9 Facilities and Infrastructure

9.1 The teaching and learning facilities and equipment (lecture halls, classrooms, project rooms, etc.) are adequate and updated to support education and research

9.2 The library and its resources are adequate and updated to support education and research

9.3 The laboratories and equipment are adequate and updated to support education and research

9.4 The IT facilities including e-learning infrastructure are adequate and updated to support education and research

9.5 The standards for environment, health and safety; and access for people with special needs are defined and implemented.

#### AUN-QA.10 Quality Enhancement

10.1 Stakeholders' needs and feedback serve as input to curriculum design and development

10.2 The curriculum design and development process is established and subjected to evaluation and enhancement

10.3 The teaching and learning processes and student assessment are continuously reviewed and evaluated to ensure their relevance and alignment

10.4 Research output is used to enhance teaching and learning

10.5 Quality of support services and facilities (at the library, laboratory, IT facility and student services) is subjected to evaluation and enhancement

10.6 The stakeholder's feedback mechanisms are Model atic and subjected to evaluation and enhancement.

#### AUN-QA.11 Output

11.1 The pass rates and dropout rates are established, monitored and benchmarked for improvement

11.2 The average time to graduate is established, monitored and benchmarked for improvement

11.3 Employability of graduates is established, monitored and benchmarked for improvement

11.4 The types and quantity of research activities by students are established, monitored and benchmarked for improvement

11.5 The satisfaction levels of stakeholders are established, monitored and benchmarked for improvement

Elements 3 Graduate is the quality graduated students who have passed the education for the criteria of the complete curriculum and get graduated.

Elements 4 Employers define as business owners or entrepreneurs who evaluate the satisfaction of graduate students in terms of qualifications and characteristics of desirable graduate students.

Elements 5 Satisfaction refer to an important factor in doing any prosperous work. To generate satisfaction for the business owner or entrepreneur, the evaluation of satisfaction in the products and services with the customers or to evaluate the satisfaction of graduates in terms of qualifications are assigned.

Elements 6 Feedback is the Information obtained from satisfaction analysis with the relationship between productivity and customers which will be feedback to expected learning outcomes and curriculum details for the development and improvement of the learning process are much better (as shown in Figure 2).

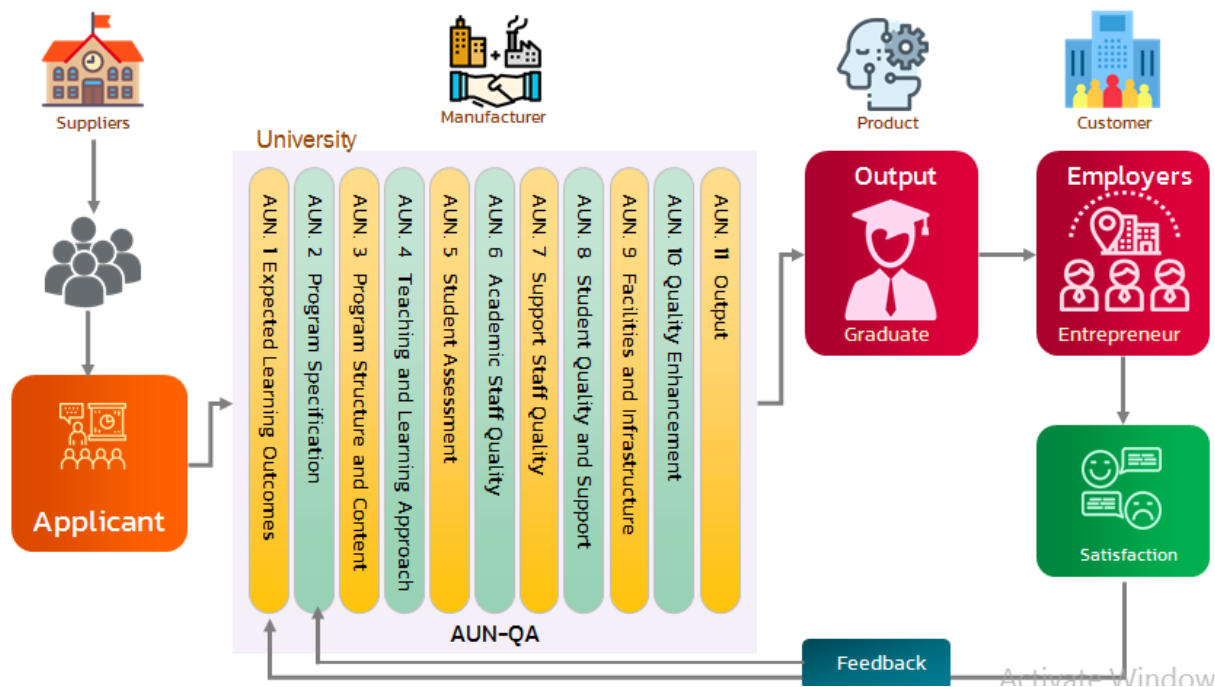


Figure 2. Supply Chain Management Model in Digital Quality Assurance for ASEAN University Network Quality Assurance (AUN-QA)

6.2

The evaluation of the suitability model shows that all five experts are consistent in evaluating the overall suitability of the model at a high level (average = 4.50, SD = 0.48). In terms of suitability of Applicant is at the highest level (average = 4.60, SD = 0.51). University is at the highest level (average = 4.70, SD = 0.48). The Graduate is at a high level (average = 4.20, SD = 0.42). The Employers are at a high level (average = 4.50, SD = 0.52). The satisfaction is at the highest level (average = 4.60, S.D. = 0.49). The feedback is at a high level (average = 4.40, S.D. = 0.49) as shown in the table 1.

Table 1. The assessment of the suitability of the supply chain management model in digital quality assurance for the ASEAN Quality Assurance Network (AUN-QA)

Items	Evaluation		Suitability
	$\bar{X}$	S.D.	
Applicant	4.60	0.51	Highest
University	4.70	0.48	Highest
Graduate	4.20	0.42	High
Employers	4.50	0.52	High
Satisfaction	4.60	0.49	Highest
Feedback	4.40	0.49	High
Total	4.50	0.48	High

7. Conclusion and Recommendation

The research found that the model of digital quality assurance management for the ASEAN Quality Assurance Network (AUN-QA) was evaluated by a group of experts at a high level. As Khum Nai's (2011) indicated that supply chain management in education need to consider the various elements that are related between different organizations with a clear goal of reducing the operational process of the model and increase service levels leading to efficiency by meeting the needs of customers. The quality assurance of education as Pridi, Sanya, and Wittaya (2015) recommended that the internal quality assurance is the guidelines for assessing the quality of education within the mission of university including producing graduate students, researches, academic services, preservation of arts and culture and management. The evaluation forms divided into three areas: input, processes, and outputs. The input and output that would guidelines for evaluation are the same. The assessment will specify

the standard criteria as a percentage or arithmetic mean. Therefore, the guidelines for assessment will be different if the educational institute enters this assessment process and prepares both for writing reports. Even though documents will be able to improve the quality of private education and pass the evaluation criteria related to the American Society for Quality (2011). Quality assurance is a planned and Model atic activity applied in the quality Model to ensure quality requirements for that product or service are valid. In general, quality assurance is a set of activities that the organization performs to ensure that their results meet the standards that are addressed by customers or other essential controllers and certification institutes.

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