Digital Supply Chain System Model for Quality Assurance in Educational Management in Higher Education According to ASEAN University Network Quality Assurance

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Abstract— The purposes of this research study were design and to evaluate digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance.The research procedures were divided into three part. The first part was study the related document, The second part was design digital supply chain system model for quality assurance in educational management in higher education according to asean university network . and the three part was to evaluate digital supply chain system model. The sample group in this study consisted of fifteen experts consisted five experts on supply chain , five experts on information technology and five experts on curriculum and instruction. The research findings show that digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance comprises seven main main elements , namely, main components, suppliers , university ,finished product ,customers ,satisfaction and Return. Evaluation results by the 15 experts show the evaluation rating mean of 3.69 with standard deviation of 0.73 that mean digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance private universities is appropriate at the high level and can be appropriately applied in actual work settings.

Keywords*— digital supply chain system model, quality assurance in educational management, higher education according to asean university network quality assurance*

1. Introduction

The quality of higher education is also a major concern of the entire community of management organizations and of scientists around the world. Education is particularly important for the growth of a rising nation. Growth in current countries depends primarily on human capital-educational goods Higher education plays a significant role in the development of high-quality human capital to meet the needs of regional transformation. In addition, in the current sense of globalization of human resources and international integration of education, the quality of higher education meets not only national standards but also regional standards [8] While the agency needs knowledgeable people and ability that promote their social survival. Therefore, a consideration of education quality should be based on educational goals, e.g. teaching and academic programmes, research and scholarship, staffing, students, buildings, facilities, equipment, services to the community and the academic environment. Internal self-evaluation and external review, conducted openly by independent specialists, if possible with international expertise, are vital for enhancing quality [6] which collected include knowledge, these qualifications requires time, a good effective and sustainable administrative management, it is important to assure stakeholders and other involved parties that quality assurance who are sended from a particular institution will be useful 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. 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. The quality assurance are also important for social areas as goals in supervision, examination and assessment of quality as a whole to inform quality improvement planning. The awareness of the supply chain management information system 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. supply chain and digital will be derived to play a role in changing work processes to be more computerized in order to style occupied custom of digital transformation not only carrying supply chain and digital transformation to work but also be able to determine the organization inevitably. supply chain and digital Increasing work proficiency, diminish work period, and costs are the heart of the progression organization about supply chain and digital . 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. From the status declared directly above; consequently, the researchers are concerned in emerging digital transformation for quality assurance in research management for asean university network quality assurance . [1] The researcher had an idea to design and to evaluate digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance for add value and increase satisfaction of consumers.

2. Related Work

1 Quality Assurance

Quality assurance is the process of determining the quality standards of education and the assessment process to meet the educational quality standards **[8]** 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.The 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 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 [9]

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 [10]

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.

4

Kham 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) manufacturer means the person who is responsible for transforming the raw materials received from the supplier to have higher value, 3) distribution center 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. [10]

Verma and Boyer said that 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.[11]

Kaewngam,, Chatwattans, & Piriyasurawong, (2019) aim to write the article about Supply Chain Management Model in Digital Quality Assurance for ASEAN University Network Quality Assurance (AUN-QA) 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.

Chansamut (2021) aim to write the article about Supply Chain operation Model in Digital for Curriculum Management Based on Thailand Qualifications Framework for Higher Education and qualification framework for higher education is important for the effectiveness of the model as well as the application in actual work settings. Literature on supply chain management and digital in higher education institute was reviewed. Supply chain operation model in digital is composed of seven principal components, namely ,Raw materials , Suppliers , University , Finished product , customer , Satisfaction , Feedback. The objective of this research was to develop and evaluate the supply chain operation model in digital for curriculum management base on Thailand qualification framework for higher education. The sample are fifteen experts selected by purposive sampling. The data is analyzed by means and standardized deviations. The measurement and the evaluation of model are based on Black-Box Testing, which is the test of total system function in order to see whether the working procedures are correct and in compliant with the desired objectives or not. All experts, after evaluating the model, agreed that supply chain operation model in digital for curriculum management base on Thailand qualification framework for higher education was appropriate in
a good level.

Supply Chain is the key business processes from end user through original suppliers that provides products, services, and information that add value for customers.

3 Research Methodology

3.1 Research hypothesis

Digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance is evaluated to be appropriate at the high level.

3.2 Research scope

1. Population and Sample. The research sample of evaluators of digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance consisted of fifteen experts consisted five experts on supply chain , five experts on information technology and five experts on curriculum and instruction

2. Independent Variable. The independent variable is digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance

3. Dependent Variable. The dependent variable is the evaluation result of digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance.

3.3 This research has three part

1 The part one content analysis

1.1Study and analyze related documents and research to the components digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance .

1.2 Drafting of digital supply chain system model for develop of asean university network quality assurance at institutional level as drawn from part 1.

2 The part two design the model

2.1 Design digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance .

2.2 Propose digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance ..

2.3 Create the tool for assessing the suitability of digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance .

.3 The part three Evaluation of suitability of model

3.1 propose the designed digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance to the fifteen experts for assessing suitability.

3.2 Analyze the output data by using appropriateness measurement scale based on five-point of Likert scale consists of five answer options. as follows:

The rating of 5 means most appropriate.
The rating of 4 means highly appropriate.
The rating of 3 means moderately appropriate.
The rating of 2 means lowly appropriate.
The rating of 1 means least appropriate.

3.3 Data collection and analysis. The developed questionnaire was sent to the experts in order to ask their opinions on appropriateness of developed digital supply chain system model for quality

assurance in educational management in higher education according to asean university network quality assurance from the experts were analyzed to find the mean and standard deviation of each component. Criteria for interpretation of the means are as follows:

The rating means ranging from 4.51 – 5.00 means appropriate at the highest level.
The rating means ranging from 3.51 – 4.50 means appropriate at the high level.
The rating means ranging from 2.51 – 3.50 means appropriate at the moderate level.
The rating means ranging from 1.51 – 2.50 means appropriate at the low level.
The rating means ranging from 0.00 – 1.50 means appropriate at the lowest level.

4 Results

4.1 Research results about digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance private universities as consists of six elements, as followings

Element 1 Suppliers re those who have 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 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 consists of 12 standards and is concretized into 42 criteria as followings

Standard 1: Regarding policies, including 3 criteria with the following contents: the university has clear policies, have a clear official strategy on internal quality assurance, the role of stakeholders is clearly described.

Standard 2: Regarding supervision, including 4 criteria with the following contents: learners' progress, system to track the progress of learners, systematic feedback from the labor market, systematic feedback from former students.

Standard 3: Regarding periodically reviewing core activities (teaching, researching, and serving the community), including 3 criteria with the following contents: periodically review of teaching/learning activities episode, periodically reviewing research activities, periodically reviewing contributions to society and the community.

Standard 4: Regarding the quality of learning activities, including 4 criteria with the following contents: criteria for the examination and evaluation, examination and evaluation processes, provisions for quality assurance of the examination and evaluation, complaint procedures.

Standard 5: Regarding quality assurance of officials and employees, including 3 criteria with the contents: the process of appointing officials and employees, staff cadre evaluation system, officials and employees training activities.

Standard 6: Regarding quality assurance of learning resources, including 3 criteria with the following contents: testing of computer systems, check library system, testing laboratory systems.

Standard 7: Regarding quality assurance of student support services, including 5 criteria with the following contents: providing information for learners, counselling for learners, policy regime for learners, dormitories for learners, yard, gym

Standard 8: Regarding self-assessment, including 5 criteria with the following contents: self-assessment of the internal quality assurance system, self-evaluation of teaching and learning activities, self-assessment of scientific research activities, self assessment of contribution to society and community, self-assessment of university.

Standard 9: Regarding internal evaluation, including 4 criteria with the following contents: internal evaluation of teaching/learning activities, internal evaluation of research activities, internal evaluation to contribute to society and community, internal evaluation of university.

Standard 10: Regarding information systems, including 3 criteria with the following contents: general management information system, management information system for teaching and learning, management information system on research activities

Standard 11: Information disclosure, including 3 criteria with the following contents: information disclosure about the school, publish information about training programs and qualifications, publish information about research activities.

Standard 12: Regarding quality manual, including 2 criteria with the following contents: quality assurance manual, handbook is disseminated to teachers and students.

Element 3 Finish product mean graduate is the quality graduated students who have passed education for the criteria of complete curriculum and get graduated.

Element 4 Customers mean entrepreneurs are assess employer’s satisfaction with the employed graduated student on various aspects of desirable characteristics.

Element 5 Satisfaction refer to an important

factor in doing any prosperous work. To generate satisfaction for entrepreneur, the evaluation of satisfaction in products and services with customers .

Element 6 Return is information obtained from satisfaction analysis with the relationship between productivity and customers. [1],[2],[3],[4],[5],[10]

In figure 1 for the whole digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality as shown below

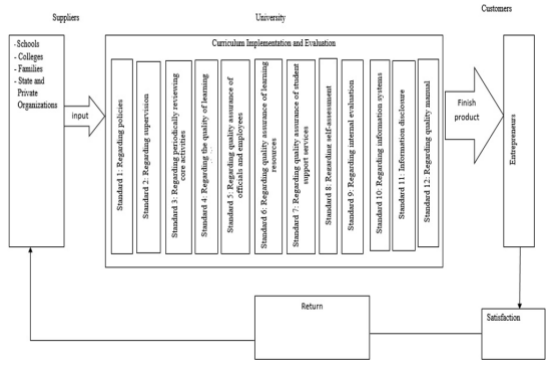

Figure 1 digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance .

4.2 The evaluation of the suitability model shows that all 15 experts are consistent in evaluating the overall suitability of the model shown in the table 1-8

Table 1. Appropriateness of main components of the digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance

List of Evaluated Items	$\overline{X}$	**S.D.**	Appropriate Level
Suppliers	3.73	0.59	High
University	3.73	0.45	High
Finish product	3.60	0.98	High
Customers	3.73	0.96	High
Satisfaction	3.73	0.70	High
Return	3.73	0.70	High
Total	3.71	0.73	High

From Table 2, it can be seen that the overall rating mean for all of the main components of the digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance at the highly appropriate level. The arithmetic mean is 3.71 and standard deviation is 0.73.

Table 3. Appropriateness of sub-elements of the Suppliers Component

List of Evaluated Items	$\overline{X}$	**S.D.**	Appropriate Level
School	3.66	0.61	High
College	3.73	070	High
Family	3.60	0.85	High
State and Private Organizations	3.73	0.59	High
Total	3.68	0.69	High

From Table 3, it can be seen that all sub-components of the suppliers elements are rated to be appropriate at the high level. The arithmetic mean is 3.68 and standard deviation is 0.69.

Table 4. Appropriateness of Sub- elements of the University Component

List of Evaluated Items	$\overline{X}$	**S.D.**	Appropriate Level
Implementation and Evaluation	3.75	0.57	High
Total	3.75	0.57	High

From Table 4, it can be seen that all sub-components of the university elements are rated to be appropriate at the high level. The arithmetic mean is 3.57 and standard deviation is 0.57.

Table 5. Appropriateness of Sub- elements of the Finished product component

List of Evaluated Items	$\overline{X}$	**S.D.**	Appropriate Level
Finished product	3.62	0.80	High
Total	3.62	0.80	High

From Table 5, it can be seen that all sub-components of the Finished product element are rated to be appropriate at the high level. The arithmetic mean is 3.62 and standard deviation is 0.80.

Table 5. Appropriateness of Sub- element of the Entrepreneurs Component

List of Evaluated Items	$\overline{X}$	**S.D.**	Appropriate Level
Entrepreneurs	3.62	0.80	High
Total	3.62	0.80	High

From Table 5, it can be seen that all sub-components of entrepreneurs element are rated to be appropriate at the high level. The arithmetic mean is 3.62 and standard deviation is 0.80.

Table 6. Appropriateness of sub- element of the Satisfaction component

List of Evaluated Items	$\overline{X}$	**S.D.**	Appropriate Level
Satisfaction	3.75	0.77	High
Total	3.75	0.77	High

From Table 6, it can be seen that all sub-components of satisfaction element are rated to be appropriate at the high level. The arithmetic mean is 3.75 and standard deviation is 0.77.

Table 7. Appropriateness of sub- elements of the Return component

List of Evaluated Items	$\overline{X}$	**S.D.**	Appropriate Level
Return	3.75	0.77	High
Total	3.75	0.77	High

From Table 7, it can be seen that all sub-components of return component are rated to be appropriate at the high level. The arithmetic mean is 3.75 and standard deviation is 0.77

Table 8. The assessment of the suitability of digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance

Evaluation Lists	$\overline{X}$	**S.D.**	Appropriate Level
Main elements	3.71	0.73	High
Suppliers	3.68	0.69	High
University	3.75	0.57	High
Finish product	3.62	0.80	High
Customers	3.62	0.80	High

Table 8. The assessment of the suitability of digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance (Cont.)

Evaluation Lists	$\overline{X}$	**S.D.**	Appropriate Level
Satisfaction	3.75	0.77	High
Return	3.75	0.77	High
Total	3.69	0.73	High

From Table 8, it can be concluded that digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance is highly appropriate, with the total rating mean of 3.69 and standard deviation of 0.73. Also, its main elements, , sub- main elements of the university element, , sub- elements of satisfaction an elements and sub-component of the return element, sub-components of the finished product element , sub- elements of the consumers elements and sub- elements of the suppliers componentry highly appropriate, with rating means of 3.75, 3.68, 3.62 respectively.

5 Conclusion

After the fifteen experts have evaluated digital supply chain system model for quality assurance in educational management in higher education according to asean university network quality assurance ,they give the opinion the model is high appropriate and can be appropriately applied in actual work settings.

6 Discussion

The model design was relevant to Chansamut and Piriyasurawong has studied supply chain and information system about educational [1] In addition, with the study of Kaewngam, Chatwattans and Piriyasurawong and study of Chansamut [2] ,[7] recommended supply chain in digital for curriculum management as well.

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