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A Digital Service Supply Chain Model for ASEAN University Network Quality Assurance at Institutional Level

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Abstract—The objectives of research was to design a digital service supply chain model for ASEAN University Network Quality Assurance at institutional level and to assess a appropriate of a digital service supply chain model. The sample group consisted of fifteen experts in the field of information system ,supply chain and research. The data is analyzed by means and standardized deviations statistically. The research result shows that a digital service supply chain model for ASEAN University Network Quality Assurance at institutional level is consisted of 8 key elements which are 1) main elements 2) suppliers /services 3) university 4) customers 5) consumer 6 Satisfaction 7 Feedback. The results from fifteen expert a digital service supply chain model for ASEAN University Network Quality Assurance at institutional level which mean that It could be used to service digital quality assurance for ASEAN University Network Quality Assurance.

Keywords— *A digital service supply chain model, ASEAN University Network Quality Assurance* at *institution level.*

1. Introduction

Service in the University in Thailand is to leverage its knowledge and expertise to create new value for society through collaboration and societal commitment the University in Thailand have different experiences from collaborations with industry and government agencies and institutions contribute to realising this ambition, among other things through a strong commitment to providing consultancy services. In order to develop university in Thailand   have jointly prepared general framework for the quality assurance of university in Thailand   research-based consultancy services. It is based on the experience, procedures and paradigms which already exist at departments which have been involved in research-based consultancy. The description of a general quality assurance system at faculty level is to establish a common framework and ensure learning and improvements across departments and faculties in the University in Thailand The quality assurance system builds on in university practices [10].Researchers have given the importance to service 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 skills who can work efficiently to increase output and products. The organizations, therefore, need to have sufficient information and resources to increase their values and respond to the demand of their clients. Thus, the supply chain management process is a key process to support the organization's whole activities system from upstream to downstream.   It enables the organization to promptly check digital system to ensure that the organization operates smoothly and effectively based on the determined strategies. Based on this realization,[1] the researcher has decided to design and to assess a digital service supply chain model for ASEAN University Network Quality Assurance at institutional level for application to increase values of society.

2. Related Literature

The service supply chain handles the supply of service parts, materials, people, and services required for efficient service delivery that maximizes equipment utilization and asset uptime.

A service supply chain in digital is the part of the supply chain dedicated to providing service on products. It addresses the supply of parts, materials, personnel and services needed to provide timely and effective product service,

The service supply chain in digital involves the logistics required to return a product for repair, servicing, replacement or recycling, a process called reverse logistics. Many manufacturers often turn to third-party logistics providers to manage part of the service supply chain. A service chain in digital focuses more on the "chain" of services themselves and the people who provide those services, in addition to the physical side. It is analogous to supply chain management, but instead of finished goods, it involves the flow of services to the customer.[8]

3. Research Methodology

3.1, Relevant papers and research works are studied, analysed, and synthesized to Formulate a concept of the model development.

3.2, The model is developed based on the data obtained from the research study used in the formulation of the model development concept.

3.3, The model is presented to thesis advisor for consideration and modified it as guided.

3.4, Create a tool for assessing the model suitability.

3.5, The model is submitted to the experts for review and evaluate the suitability

3.6, The model is modified according to the experts' suggestions.

3.7, Analyze the output data by using appropriateness measurement scale based on 5-point Likert Scale

4. Results

4.1 Research results about a digital service supply chain model for ASEAN University Network Quality Assurance at institutional level were presented in figure 1 .
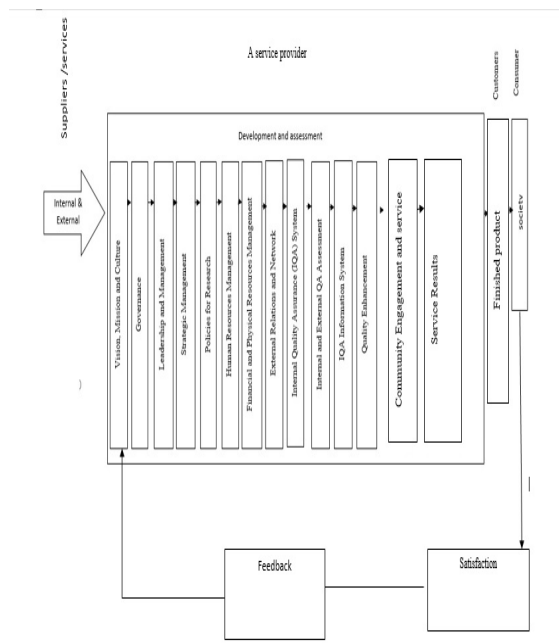
Figure 1: A digital service supply chain model for ASEAN University Network Quality Assurance at institutional level

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

Stakeholders	Activities in supply chain	Needs for data
1. **Suppliers** 1. University -Suppliers of Internal Research Projects 2. State and Private Organizations - External Research Projects	Submit a raw materials, parts and components	-quick responses.

Stakeholders	Activities in supply chain	Needs for data
2. university Development and Evaluation 1 Vision, Mission and Culture	1 Senior leaders ensure that the vision and mission meet stakeholders' needs and to their satisfaction. 2 Senior Leaders foster culture including a set of values to align with the vision and mission of the institution. 3 The vision, mission and culture are articulated, cascaded and demonstrated for implementation. 4. Review of the vision, mission and culture is carried out to meet stakeholders' needs and to their satisfaction.	- To be filed and stored systematically to prevent the loss of information.

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 1 Vision, Mission and Culture 2 Governance	5 The vision, mission and culture, and their development processes are improved to meet stakeholders' needs and to their satisfaction. 1 Governance system including board, council, senate and/or advisory committee is established to set strategic directions given the specific context of the institution, and to ensure accountability, sustainability and transparency as well as to mitigate potential risks. 2 Decisions from governance bodies are translated into action plans, policies and guidelines for implementation 3 Review of the governance system of the institution is carried out. 4 The governance system of the institution is improved for institutional effectiveness and	- Correct and complete evaluation reports. -quick responses.

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 2 Governance	better risk management.	- To facilitate speedy and accurate data
3 Leadership and Management	1 Senior Leaders establishes management structure with defined roles and responsibilities, decision-making, communication and reporting to achieve the vision, mission and culture; and strategic goals of the institution. 2. Senior leaders involve in communicating and engaging stakeholders in driving the vision, mission and culture; and strategic goals of the institution. 3 Review of the leadership and management structure of the institution is carried out. 4 The leadership and management structure of the institution are improved for	- To facilitate speedy and accurate data

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 3 Leadership and Management	management effectiveness and to achieve desired levels of organizational performance 1 Strategy planning is carried out to fulfill the vison, mission and culture as well as the strategic goals of service.	- Reduction of time wastage.
4 Strategic Management	2. Strategic plan is cascaded and translated into long and short-term action plans for implementation. 3. Key performance indicators and targets are established to measure the performance of strategic goals of the institution. 4 The strategic planning	- To be easily accessible

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
	process as well as key performance indicators and targets are improved to meet the strategic goals of the institution.	

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 5 Policies for service	1 System to formulate policies for service is established. 2 Process to monitor the compliance of policies is documented, communicated and implemented. 3 Review of policies for service is carried out. 4 Policies for service are improved for institutional effectiveness and to meet stakeholders' needs and to their satisfaction. 1 Human resource planning (considering succession, promotion, redeployment, termination, and retirement) is carried out to fulfill the needs for service. 2. Recruitment and selection criteria including ethics and academic freedom for appointment	- reduction of time wastage.
6 Human Resources Management		- To be easily accessible.

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 6 Human Resources Management	deployment and promotion are determined and communicated. 3. Competences including leadership skills of various staff categories are identified and established. 4. Training and developmental needs of staff are identified and activities are implemented to fulfill them. 5. Performance management system including rewards, recognition and coaching/mentoring schemes is	- reduction of time wastage.

Stakeholders	Activities in supply chain	Needs for data
	implemented to motivate and support service. 6 Review of the human resource plans, policies, procedures, and schemes is carried out. 7. The human resource plans, policies, procedures, and schemes are improved to support service.	- To be easily accessible.

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 7. Financial and Physical Resources Management	1 System to plan, implement, audit and improve the financial resources of the institution to support its vision, mission and strategic goals in service is established and implemented. 2 System to plan, maintain, evaluate and improve the physical facilities and infrastructure such as teaching and learning facilities, laboratories, equipment and tools etc. to meet the needs of service is established and implemented. 3 System to plan, maintain, audit and improve the IT facilities and infrastructure such as computers, networks, backup, security and access rights to meet the needs of service is established and implemented.	- reduction of time wastage. - To be easily accessible.

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 7. Financial and Physical Resources Management	4 System to plan, maintain, evaluate and improve the academic resources such as library resources, teaching aids, online databases, etc. to meet the needs of service is established and implemented 5 System to plan, implement, evaluate and improve the environment, health and safety and access to people of special needs is established and implemented.	- reduction of time wastage.

Stakeholders	Activities in supply chain	Needs for data
8. External Relations and Networks	1 Plan for external relations, networks and partnerships is established to achieve the vision, mission and strategic goals of the institution. 2 Policies, procedures and agreements to foster external relations, networks and partnerships are implemented. 3 Review of the external relations, networks and partnerships is carried out.	- To be easily accessible.

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 8. External Relations and Networks	4. External relations, networks and partnerships are improved to achieve the vision, mission and strategic goals of the institution.	- reduction of time wastage.
9 Internal Quality Assurance (IQA) System	1 Structures, roles and responsibilities and accountability of IQA are established to meet the strategic goals and quality assurance of the institution. 2. Strategic QA plan encompassing strategies, policies, stakeholders' engagement and activities as well as QA promotion and training is established to meet the strategic goals and quality assurance of the institution. 3. The strategic QA plan is cascaded and translated into long and short term action plans for implementation. 4 System to document, review and communicate QA policies, systems, processes and procedures is implemented.	- To be easily accessible.

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 9 Internal Quality Assurance (IQA) System 10 Internal and External QA Assessment	5 Key performance indicators and targets are established to measure the performance of the quality assurance in the institution. 6. The strategic QA planning process and key performance indicators and targets are improved to meet the strategic goals and quality assurance of the institution. 1 Plan for internal and external QA assessment is established. 2. The internal and external QA assessment is regularly carried out by trained and independent staff and/or experts. 3 The findings and results of the internal and external QA assessment are reviewed. 4. The internal and external QA assessment processes are improved to meet the strategic goals of the institution.	- reduction of time wastage. -quick responses

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 11 IQA Information Management	1 Plan for IQA information management including collection, processing and reporting data and information to and from stakeholders in supporting service is established. 2 IQA information including data analytics is relevant, accurate and readily available to stakeholders in a timely manner that aid decision making while assuring integrity, confidentiality and security of them. 3 Review of IQA information management system, and the quantity and quality of data and information as well as the integrity, confidentiality and security of them is carried out. 4. The management of IQA information and their plans processes and policies are improved to support service.	- reduction of time wastage.

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 12 Quality Enhancement	1 Plan to continually enhance institutional quality including policies, systems, processes, procedures and resources to seek best practices in service is established. 2 Criteria for selecting comparative and benchmarking information and partners to improve performance are established. 3. Comparative and benchmarking information to enhance QA practices and encourage innovation is carried out. 4 Review of the process for selection and use of comparative and benchmarking information is carried out. 5 The process for selection and use of comparative and benchmarking information is improved to continually seek best practices in service	- reduction of time wastage. - To be easily accessible.

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 13 Community Engagement and service	. 1 Plan to engage community and to provide service to meet the vision and mission of the university is established 2 Policies and guidelines for community engagement and service are implemented 3 System to measure and monitor the community engagement and services is carried out 4 The provision of community	. - To be easily accessible.

Stakeholders	Activities in supply chain	Needs for data
	service and community engagement is improved to meet stakeholders' needs and to their satisfaction	

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
2. A service provider Development and Evaluation 14. Service Results	1 The type and volume of community engagement and service; and contribution to society are established, monitored and benchmarked for improvement 2 The societal impact and achievement of the community engagement and service; and contribution to society are established, monitored and benchmarked for improvement 3 Impact on students and staff of community engagement and service is established, monitored and benchmarked for improvement 4 The satisfaction of stakeholders in community engagement and service; and contribution to society is established, monitored and benchmarked for improvement	- To be easily accessible. - To be easily accessible.

Table 1: (Continued)

Stakeholders	Activities in supply chain	Needs for data
Customers Finished product	- Useful finished product	- To facilitate the filing and storage of large amount of information for accessibility.
Consumers Society	The satisfaction of stakeholders in community engagement and service; and contribution to society [7]	To stored systematicall-y to prevent the loss of data

4.2 Explanation on elements of a digital service supply chain model for ASEAN University Network Quality Assurance at institutional level

1 Suppliers /services

A supplier is a person or business that provides a product or service to another entity. The role of a supplier in a business is to provide high-quality products from a manufacturer at a good price to a distributor or retailer for resale. A supplier in a business is someone who acts as an intermediary between the manufacturer and retailer, ensuring that communication is forthcoming and stock is of sufficient quality.

2 University

A service provider is a university or manufacturer It performs the duty to transform raw materials into the finished products. A service provider will perform its duty of product development and assessment .It is based on the consideration that all supply chain tasks and activities.

3 Customer

Customers mean finished product from the university

4. Consumers

The customers mean entrepreneurs or the end-of-process component of the model. They include the society in general and entrepreneurs who sended finished product from the university. Finally, the end product of product will add value for customers with supply chain.[1],[2],[3],[4],[5],[6].

5. Satisfaction

Satisfaction levels of stakeholders are established, monitored .

6 Feedback

Feedback is the data obtained from satisfaction analysis with the relationship between finished product and customers.

Table 2: Results of appropriateness evaluation of a digital service supply chain model for ASEAN University Network Quality Assurance at institutional level

No.	Items	$\overline{X}$	S.D.	Suitability
1	Main elements	3.56	0.81	High
2	Suppliers /services	3.63	0.70	High
4	University	3.66	0.48	High
5	Customers	3.53	3.53	High
6	Consumers	3.60	0.73	High
7	Satisfaction	3.53	3.53	High
8	Feedback	3.60	0.73	High
	Total	3.58	1.50	High

From table 2, that fifteen experts agree that a digital service supply chain model for ASEAN University Network Quality Assurance at institutional level is highly appropriate ($\overline{X}$ = 3.58, S.D. = 1.50).

5. Discussion

According to evaluation by experts, the a digital service supply chain model for ASEAN University Network Quality Assurance at institutional level is considered to be high appropriate ($\overline{X}$ = 3.58, S.D. = 1.50), and the design was corresponds to the research of Chansamut and Piriyasurawong has studied supply chain and information system about educational [1],[3],[4],[5],[6] In addition, with the study of Kaewngam, Chatwattans and Piriyasurawong [9] suggesting that supply chain and digital also.

6. Conclusion
A digital service supply chain model for ASEAN University Network Quality Assurance at institutional level is considered to be high appropriate ($\overline{X}$ = 3.58, S.D. = 1.50) which mean that It could be used to service digital quality assurance for ASEAN University Network Quality Assurance.

7. Recommendations
There should be case studies of higher education institutions that develop the pattern effectively, if any

8. Acknowledgements

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