The Supply Chain Quality Management in High Education: A Case Study in Indonesia

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Abstract- **The purpose of this research is to formulate the supply chain quality management model by identifying the importance factors which contribute the success of supply chain quality management practice in the operational academic process. Reseach design: This research is exploratory in nature using case study in the supply chain member of study program academic process. The approach is by identifying the framework parameter of supply chain quality management. Focus of study is cross sectional to the member of study program's supply chain which includes new student admissions centers, head of study program, quality assurance centers and career development centers. The information collected by in depth interview and analyzed data from academic process business document. Data analysis is done by open coding, axial coding, and selective coding, indentifying relevant concepts and classifying them into several categories. Result of this paper is the identification of the key elements that support the success of academic business process of study program in implementing supply chain quality management and presenting the supply chain quaity management model implementation, support by the essential elements found. Research Contributio: This research present the importance input for the concept regarding the integration of total quality management and supply chain management implementation of study program's operationa academic process in high education. This study compiling the development of the concept of supply chain quality management implementation concept and proposition in the form of a causal model that links the influence between several related concepts in supply chain quality management. The results of this study is also valuable for other service industry especially services which have strong involvement between client and server.**

Keywords; *Supply chain management, quality management, academic performance, leadership, information system support.*

1. Introduction

Total quality management in education is a very important and decisive factor for increasing the qualifications of educational institutions as well as being an important factor for improving the quality of graduates especially in the digital age facing the global economy and dynamic competition, as stated by [1-8]. In Indonesia, all higher education institutions that have a national accredited already have a quality assurance center that monitors the operational academic process, including the progress of each study program. Monitoring activities are carried out consistently to guarantee the quality of service and performance. The implementation of quality assurance is more oriented to the monitoring process.

However, the monitoring process carried out by the quality assurance center is less related to improve the competitiveness of higher education institutions including the study programs in it, since it only monitors the processes that have occurred in the past. Whereas now every university is demanded to increase its competitiveness, both nationally and internationally. So it requires a way or mechanism to integrate quality improvement with strategic objectives and university competitiveness, including the study program.

[9] state that supply chain management tactics integrated with quality management can improve the competitiveness and qualifications of study programs within universities. Initially the concept of supply chain management was used in the manufacturing industry. But now the concept of supply chain is also applied to the service industry, called service-based supply chain, including academic services [10] declare that studies on the integration of supply chain management and quality management have been carried out and the results show that supply chain management and quality management integration determines performance improvement and improves organizational competitiveness [11-15]. conducted a study on the integration of supply chain management and quality management in educational organizations, and showed that the factors that determine the success of integrating supply chain management with quality management between one organization to other organization are not the same.

Supply chain quality management is a challenge regarding trust for information sharing, integration and leadership. The implementation success rate of TQM and SCM integration in an organizations is not the same. Factors that influence the success of implementation are corporate culture, investment, business relationships and organizational maturity,

organizational characteristics, size, and level of certification management system [1].

The purpose of this study is to explore factors whict drive the success in the implementation of integrated

supply chain management and quality management for study program, especially in the operational academic of study programs in university. The results of this study is to formulate a model of supply chain quality management integration in operation academic of study programs.

2. Literature review

The definition of supply chain management has evolved in line with the development of modern business management concepts that focus on supply chain systems to enhance the organization's capacity to achieve its strategic objectives. Supply chain is an interconnection of a group of organizations that together create and deliver products or services to end consumers. SCM is meant as a systemic medium and as a strategic coordination function of an organization. SCM concept also became an important in interconnecting among the units in it to achieve the success of an organization. The importance of supply chain quality practice and its relevance to management practices has received more attention in the literature recent years. Framework of supply chain and TQM practice can be implemented with respect to an organizational structure, environmental conditions and identification of customer orientations [8, 13, 16]. Some studies of Supply chain and quality management is done by [5, 7, 17, 18]. An interesting topic by [5], stated that TQM is Supply chain management, suggest a future research about the application of TQM and Supply Chain management, especially focus on management's role in TQM and SCM, information system and technology to support TQM and SCM, organization structure of education and training, performance measurement and cultural and behavioral as well.

[18] conducting research assessing the level of supply chain management and total quality management practice in the automotive industry, found that Although SCM and TQM have become critical management system to achieve competitive advantage in the global market, their contribution can be varied by the degree of success in their implementation [4]. conducted a research on university supply chain

education. His studies include empirical studies with a holistic view, including inputs, processes and outputs from the educational supply chain.

[2], develop the theoretical research in supply chain and quality management, and found that the synergy of quality management and supply chain management will have a significant beneficial for organization. [19] also investigate the influence of supply chain quality management practice on quality performance in manufacturing company. The result of the research indicate that statistically confirm the hypothesis for the impact of SCQM practice to performance. This result support the research found by [20,21] about the integration of supply chain and quality management as an effective way to improve the overall competitiveness.

[11], conducted a study introducing supply chain quality management (SCQM) concept in education. The study found that education is a SCM system. SCQM on education is an important challenge, with regard to trust for information sharing, integration and leadership. Instead, the authors found some good practices to be developed in a more systematic SCQM implementation. TQM practice have known as a concept that support the successful of organization, the principles of TQM and its techniques will also be successful in coupling inter-functional activities within the organization. In line with the increasing needs of inter-relationships and inter-organizations in modern organizations, it requires SCM as a decisive factor. Research in SCQM is conducted in many research obyects, even in specific obyect like disaster relief supply chain quality management [9], about total supply chain and quality management [10, 19].

In General education organization sector have a supply chain integration problem, its need to develop SCQM model to improve performance [12].

3. Research method

This research uses qualitative inductive theory building approach through single case study. Inductive theory building is used to construct propositions on unexplored phenomena. This research will focus on the management of higher education that has implemented TQM, which has a quality assurance organization, also has the quality standard and has conducted quality audit process. This research will develop theories naturally, so the goal to produce accurate knowledge, parsimonious, generalizable theories.

The implementation of a single case study was conducted at Universitas Sebelas Maret Solo (UNS), by interviewing academic staff of the related fields in the formation and achievement

of academic excellence on a study program. Interviewees were the head of the study program, the faculty quality assurance team, the university's new admissions center, and the career development center as the final estuary in the supply chain process in the sutdy program as well as the university. Several methods are used in conducting data collection.

Semi-structured interviews conducted with quality assurance managers who have responsibility in managing quality assurance in higher education, leaders related to the process of quality assurance practices. Each interview process takes 45-90 minutes duration, recorded, and transcribed. Data analysis was performed with open coding, axial coding, and selective coding to build the Supply Chain Quality Management model. Analysis begins with open coding to identify relevant concepts of data and group them into categories. The analysis continued with axial coding to develop the relationship

between categories and sub-categories. The concepts and categories derived from open coding and axial coding are then linked to the main categories using selective coding. The whole process of coding is done using NVivo 11 Pro software. The concepts and categories and their relationships that arise from the results of coding compared with the concepts of Supply chain quality management.

3.1 Trustworthiness

Four criteria for maintaining trustworthiness of qualitative research are; credibility, transferability, dependability, and confirmability. To maintain research credibility, triangulation of data sources, triangulation theory were used. To maintain transferability, concepts and categories emerging from interview transcripts, field notes, and archive documents are exported to a spreadsheet file. To maintain research dependability, data collection is done until it reaches saturation conditions to produce a consistent category. Field studies and interview with informans, member of supply chain management that contribute in managing the study program were conducted in order to explore all of the supply chain activities in a study program. All interviews are recorded in field notes, recorded, and transcribed to avoid bias and influence from the researcher so as to maintain confirmability of the research.

4. Result

The results of interviews with several informants presented in two sections. First,

investigating the existence of total quality supply chain management activities. Second,

analyzing the supply chain management practice toward the achievement of academic performance in the study program.

Analysis of open coding, axial coding and selective coding produce concepts that determine the creation of supply chain quality management practices in the operational academic process of a study program. The research found five categories in supply chain quality quality management practices, namely; leadership and management, information systems and technology, operational academic systems, performance measurement systems, and application behavior.

4.1 Category-1: Leadership and Management

The first category is, leadership and management that will support the achievement of performance. Learder that has a high commitment to achieve an improved university rankings and able to create a condusive university environment, to be able to make the achievements that continue to increase in accordance, with established criteria. The high commitment of leader and management of the Faculty level will support the improvement of program studies performance. This high leadership commitment is demonstrated through the high effort to achieve maximum performance through limited resources.

Culture is then internalized to the entire academic community. This category of Leadership and Management has two concepts that shape it, namely: improving the ranking and the culture of the university.

Figure-1 shows the results of open coding and axial coding for the first category of Leadership and Management.

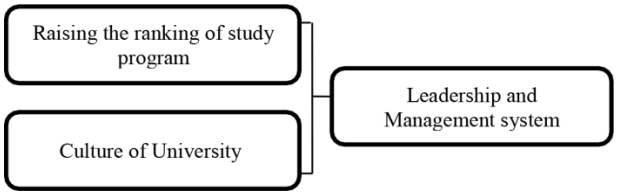

Figure 1. Conceptualization and Categorization of Supply Chain Quality Management for Categories of Leadership and Management System

4.2 Category 2: System and Information Technology

Supply chain management activities can be described with three components: supply chain configuration, supply chain relationship and supply chain coordination. Supply chain configuration is known as supply chain architecture to support the creation of strategic decision implementation in an organization. Supply chain is also inter connecting groups in organizations that create and deliver products or services to end consumers. Supply chain as a systemic medium and as a strategic coordination function of an organization as well. Its need information system and technology to support integration of TQM and SCM in organization. Result of open coding and axial conding analysis of information systems and technology category consist of three supporting concepts, namely: the usefulness of information systems and technology, application of systems and information technology, and the capacity of information systems and technology. Figure 2 shows the results of open coding and axial coding for the second category of Information Systems and Technology.

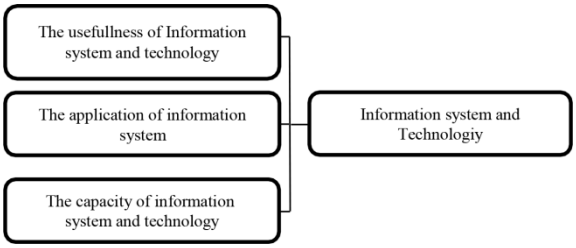

Figure 2. Conceptualization and Categorization of Supply Chain Quality Management for Categories of Information Systems and Technology.

4.3 Category 3: Operational Academic System

Lecturer and student are the most importance role and become the mayor part in the operational academic process. Lecturers are an integral part of the learning process that determines student achievement and graduate quality. The role the lecturer is to determine the instructure material and to run the knowledge delivery through an innovative teaching process. Students are also a major component of the academic operational system. The success of an academic operating system indicate by the achievement of the length of study, the prestation index and the achievement of learning outcome.

Figure 3 shows the results of open coding and axial coding for the third category of Operational academic Systems.

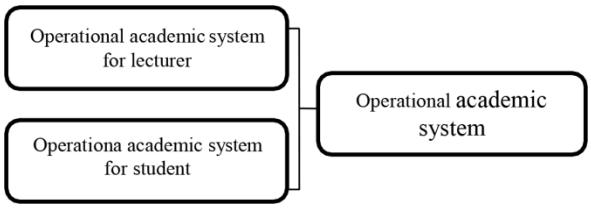

Figure 3. Conceptualization and Categorization of Supply Chain Quality Management for Academic Operational System Category.

4.4 Category 4: Performance Measurement System

A performance measurement system is an activity used to monitor progress over time and to keep the process at a track in line with the achievement of the course objectives. Performance measurement is based on the evaluation of the direct superior and peers. Meanwhile, for modern performance measurement is done for the objective components, so it can be measured with information system and information technology support. The more components that can be assessed objectively, the role of modern performance measurement becomes greater proportion than traditional performance measurement.

Figure 4 shows the results of open coding and axial coding for the fourth category of Performance Measurement Systems.

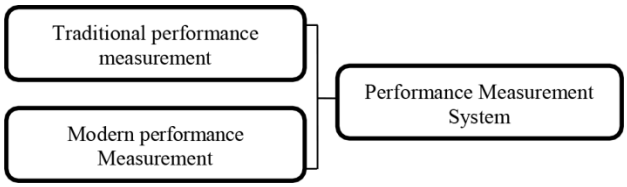

Figure 4. Conceptualization and Categorization of Supply Chain Quality Management for Category of Performance Measurement System

4.5 Category 5: Supply Chain Quality Management Behaviour practice

Student incoming is a supply sight in the SCM of education, specially for study program. In public university of Indonesia, admission of new students, first from external selection through a new student admissions national system. Second, from the internal selection which conducted to suit prospective students by the study program, especially with regard to talent owned by prospective lecturers and students in order to achieve qualified graduates in accordance with the field of knowledge, as well as the right career in accordance with the field. Figure 5 shows the results of open coding and axial coding for the fifth category of SCQM Implementation Behavior.

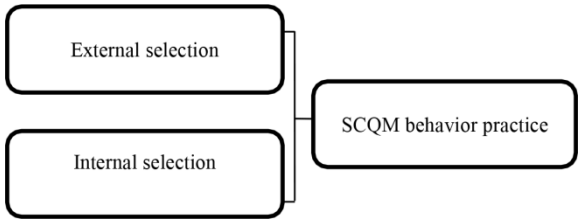

Figure 5. Conceptualization and Categorization of Supply Chain Quality Management for SCQM Behavior Categories

5. Discussion

The five categories supply chain quality management practices (i.e. leadership and management, information systems and technology, operational academic systems, performance measurement systems, and supply chain quality management behavior practice, shape relationships and the interactions among the five categories. The commitment of top management in SCM is shown by various concepts such as: corporate culture change, management support, participatory management, and cooperation, but in the SCM and TQM case the concept is the same. Similarly, customer focus in TQM includes: customer complaints, satisfaction, close partnership with customers, and customer responsiveness are similar to those found in SCM.

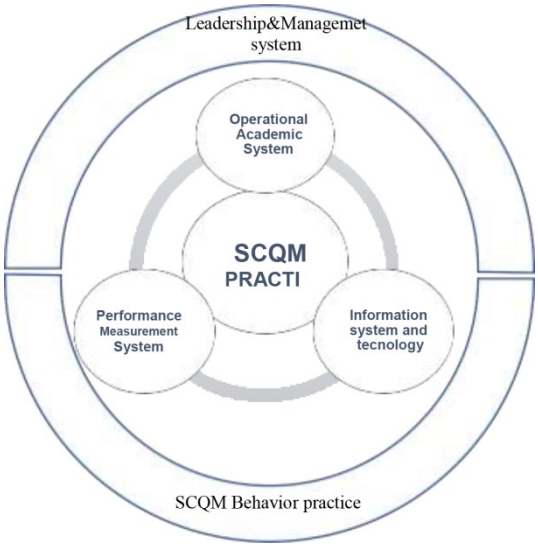

Figure 6. Supply Chain Management Model for academic business process

In Indonesia, the study program that earned an "A" rating from National Accreditation Board of Higher Education has generally run quality assurance. Based on the observations on some management programs that have been rated "A", all of them have quality assurance center, but there is no study program that utilizes supply chain management concept in their strategy design to achieve its performance.

This research resulting the model of SCQM which integrating total quality management and supply chain management practice to support the study program's performance to achieve academic excellence. The implementation of supply chain quality management starts from leadership and management role. Leadership and management build a systems to support the supply chain quality management practice. First built the operational academic system, followed by performance measurement system. After both systems are constructed, leadership and management builds information system technology to support the running of the operational academic system and performance measurement system. The behavior of all members in the study program of the university in running the systems will affect the success of the system. The interaction of these five categories call as supply chain quality management model as an enabler to achieve performance of the study program in the university.

6. Finding

Based on the results of the above analysis, several categories are identified, and organized in a structured such the stages of inductive research built by Gioia [3]. The results of this study are identifying the five important components, and step of the implantation of supply chain practices and quality management practice to achieve the study program performance.

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