

Environmental Information System: Conceptual Framework of Supply Chain Process

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Abstract— The purpose of this study is to review the conceptual framework for supply chain process of EIS. Two supply chain process of EIS (technology and processes) had been identified. This study used IBM Statistical Package for Social Sciences (SPSS) Statistics and analysed the data by using SPSS and Structural Equation Modelling (SEM) technique. For practical implications, this research provides important guidelines for manufacturer and related companies to implement the supply chain process of EIS in order to improve the supply chain and information system. Therefore, the identification of EIS is significant to the Malaysian manufacturing industry in order to improve the supply chain process.

Keywords— Supply chain, environmental information system, conceptual, manufacturing industry, Malaysia

1. Introduction

Many manufacturing industry have struggled the pressures of supply chain process by becoming increasingly technology and processes [1]. The process of producing and distributing products and services is becoming the most effective and efficient way for companies to be successful and is central to the implement supply chain process of environmental information system (EIS) in the Malaysian manufacturing industry.

Supply chain process as a tool which is not only to improve the effectiveness and efficiencies of the operations [2, 3] but also can improve the EIS based on the technology and processes in the Malaysian manufacturing industry. In order to encourage the growth and implementation of

supply chain process of environmental information system amongst of manufacturers in Malaysia, the identification and analysis of factors that affect the implementation of supply chain process of EIS should be identified.

Research that investigates the supply chain process in manufacturing industries is still in its early development [4]. First, for the improvement of the supply chain process in terms of technology and processes would play a major role. Second, the improvement of the supply chain process also closely related to the EIS implementation. The supply chain process of EIS is to generate effective and efficient supply chain operation. With the implementation of supply chain process of EIS, it could provide to improve the business operational environment.

Hence, Malaysian manufacturing industry can implement supply chain process of EIS in order to improve the information system. Therefore, supply chain process of EIS is expected to improve the supply chain in the Malaysian manufacturing industry.

2. Literature Review

In current business environment, the implementation of supply chain process in business operation is becoming important especially in the manufacturing industry. It benefits has contributed to organization's supply chain process with the efficiency and effectiveness [5], particularly in the Malaysian manufacturing industry. Thus, researchers have been broadly defined the

understanding towards supply chain process in this study.

The implementation of supply chain process enables organizations to improve the supply chain management and overall performance [6, 7, 8]. The implementation of supply chain process can be divided into three parts, which are processing, planning, and delivery [9, 10]. Hence, the implementation of supply chain process enable organizations in reducing wastes and costs, delivery time, and improve quality and integrate the resources, particularly in the Malaysian manufacturing industry.

EIS plays an important role in environmental decision making. EIS refers to the information system that provides information for the operation, management, and decision making in the organization. The implementation of EIS has been increased with the development of information systems [11, 12]. Furthermore, EIS is one of the technical systems for obtaining and making effective environmental information in the organization [13]. Thus, EIS is to analyze and to improve environmental information that contributes to the effective environmental management and protection.

2.1 EIS: Supply chain process

In this study, supply chain process of EIS focused on technology and processes for managing the information system in the Malaysian manufacturing industry.

One of the supply chain process of EIS is the technology. The development of technology is including installation, implementation, and management of the information for conducting business through the integration of communications and computer application [14]. In short, technology can be understand as a set of tools, processes, and methods, such as database and software used to collect, store, transmit, manipulate, process, and information. Thus, technology is important to supply chain process of EIS, particularly in the Malaysian manufacturing industry.

Technology has been defined as a key of business resource and competitive advantage for improving the EIS [15]. The successful companies exploit their technology capabilities to redesign their products and services. It is particularly important for organization to made change on supply chain

process of EIS, particularly in the Malaysian manufacturing industry.

Second, supply chain process of EIS assists in the production processes with the assist of manufacturing activities and it can create, redesign or improve supply chain processes in the Malaysian manufacturing industry. Processes as dealing with the planning for development, management, and use of information system tools to assist organizations to perform all tasks related to information processing and management [16]. In practice of processes in EIS, it should be able to simplify prompt decision making in the Malaysian manufacturing industry.

Evidence suggests that the technology and processes model is a valuable tool for describing and explaining how EIS can improve the supply chain process in the Malaysian manufacturing industry. In fact, EIS consists of technology and processes of supply chain process in the Malaysian manufacturing industry. Therefore, technology and processes can be considered in EIS in order to improve the supply chain process. Figure 1 presents the conceptual framework for supply chain process of EIS.

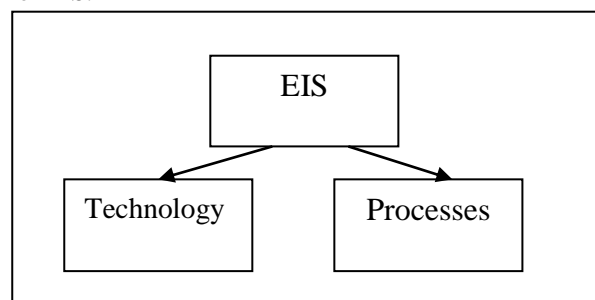


Figure 1. Conceptual framework

3. Methodology

The research activities that were designed are to achieve objectives of this study. Firstly, the existing literature was reviewed to compile background of knowledge and identify the research question. To answer the research questions, a conceptual model was developing based on the literature review. The model consisting of constructs and variables was operating for the purpose of subsequent questionnaire development for examines the implementation of supply chain process of EIS in the Malaysian manufacturing industry.

The second phase is data collection. The questionnaire was sent to the experts' panel for

validation purpose and conducting a pilot study. The researcher had also to improve the questionnaire based on the expert's comments and suggestions. Finally, this study implements the full survey to the Malaysian manufacturing industry.

The third phase focuses on activities to analyze data collected. The data was obtained included in IBM Statistical Package for Social Sciences (SPSS) Statistics, and analyzed the data by using SPSS and Structural Equation Modeling (SEM) technique. The results of the analyzed data will be made discussion based on the previous studies. Finally, this study provides conclusions and recommendations for future research.

The conceptual model was assessed using the SEM technique. For factor analysis in SEM, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) will used for the measurement model of SEM analysis. As for EFA, Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity test were examined, in which the appropriateness of the data for conducting EFA was determined by a KMO value of 0.6 or above and a significant Bartlett's test [17, 18, 19, 20]. Using CFA, the measurement model was assessed by determining the relationship between the items and their constructs [21]. Assessment of the measurement model involved examining the fit of the measurement model to the data using CFA and, assessing the reliability and validity of the constructs [22, 23, 24]. Therefore, this study focused on the factor analysis which is EFA and CFA.

4. Conclusions

A supply chain process of EIS model was conducted in the Malaysian manufacturing industry to fulfil the research objectives. Two supply chain process of EIS (technology and processes) had been identified. The contribution of the research is not only limited for academic purposes but also for practitioners as well, especially in the Malaysian manufacturing industry. From the academia perspective, the implications of this study would add value to the current body of knowledge in the subject matter, particularly for supply chain process of EIS. From the organization perspective, the model of supply chain process of EIS (technology and processes) as indicated by survey results and supported by the previous results are imperative to Malaysian manufacturing industry that pursue

supply chain process of EIS as capability to achieve better performance. Therefore, the identification of EIS is significant to the Malaysian manufacturing industry in order to improve the supply chain process.

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