

An Evaluation of Supply Chain Management Performance and its Impact on Production Companies in Sierra Leone, taking G. Shankerdas and Sons Ltd

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Abstract

The study aimed to evaluate supply chain management (SCM) performance and its impact on production, using G. Shankerdas & Sons Sierra Leone Ltd as a case study and clarified the key success factors that led the company to achieve high supply chain performance. Supply chain management (SCM) is a link that connects each element of the manufacturing processes right from the production phase to the delivery phase and to the end-user (customers) with fulfilling the quality triangle; that is, within optimized cost, minimal time and required quality. The key success factors comprise the relationships with customers and suppliers, information technology (IT), material flow management, corporate culture and performance measurement. Questionnaires were the main instruments for the study, and distributed to participants. The study employs descriptive analysis and explanations of data. The findings show that relationships exist between IT, management support, Environmental Uncertainty, Value-Added process and performance measurement and SCM performance, but not for corporate culture. It would be of recommendation that future study will determine additional success factors that are pertinent to the firm's current SCM strategies and directions, competitive advantages and missions.

Keywords

Supply Chain (SC), Production, Performance, Information Technology, Management Support

1. Introduction

Research aims include adding value, reducing cost, or lowering response time in different parties involved in the supply chain (Habib, 2014). In today's rapidly changing business environment, people are increasingly focusing on providing value to customers at the lowest possible cost. Production company regardless of the size, one must focus on how to provide products and services while keeping costs low. The ultimate purpose of establishing a profit organization is to maximize profit for shareholders. In other words, all organizations are trying to increase their revenue and reduce costs. Manufacturers, distributors, wholesalers and retailers frequently deal with large amounts of supply chain of various types. According to Mofokeng et al. (2017) Improving performance, particularly supply chain performance, is essential, and in recent years, there has been a trend towards identifying ways in which supply chains can become more competitive. With so many supply chain management issues to deal with, items can easily be misappropriated, misplaced or lost. These days, the new source of business competition lies outside the walls of organizations, and it has been determined by how effectively companies link their operations with their supply chain partners (Petrovic-Lazarevic et al. 2012). The supply chains may require specialized systems that keep track of everything in an organized manner. As such, the associated cost of carrying a supply chain represents a significant portion of the cost of running most businesses. In this context, this research attempts to use G. Shankerdas & Sons to

evaluate supply chain management and its impact on production. This paper gives an overview of the study. It specifically examines the background information on supply chain management and its impact on production. It reviews G. Shankerdas & sons Sierra Leone Ltd as a case study relating to their supply chain management and its impact on production. It further looked at the existing problems warranting this study, but more specifically it focuses at certain key objectives it may want to achieve. This paper further provides additional evidence for why such a study should be conducted. Various challenges in their SC processes particular during the covid-19 pandemic. The improvement initiatives provided in this paper will serve as a baseline for the company's SC continued resilience and performance during disruptions.

1.2 Statement of the problem

Supply chain management signifies the management of upstream and downstream activities, resources, and relationships with suppliers and customers, which are necessary to deliver products or services. In theory, if supply chain management is done well, it will provide a competitive advantage through differentiation and lower costs, thereby promoting the development of specific factories. The process of controlling what transpires in the supply chain outside businesses, especially those that are related to quality, is becoming more and more difficult (Thi Duc Nguyen 2019). Any weaknesses in supply chain management can severely affect production and delivery of products to the end-users, which the study strongly agree has negative impacts on the profitability of the processing firms. Lack of awareness of upcoming technologies impediments and energy supplies unreliable. Full package production and fast replenishment demand adequate IT systems to connect the buyer and supplier. This requires a modern and reliable telecommunications infrastructure, and backup from IT professionals. This prompted the study to look into the factors that influence supply chain management and organizational performance. As mentioned by Rahman et al. (2013), In this current and competitive global market, presenting products with a shorter life cycle, increased customer expectations and intense competition among enterprises have forced institutions to invest more heavily in their supply chains.

1.3 Objectives of the Study

The central focus of the paper is to evaluate supply chain management performance and its impact on production, using G. Shankerdas & sons as a case study. As world competition rises in SC, the objective of businesses is to extend their reach into foreign markets, which will be more dependent on their supply chains (Crandall et al. 2009). This paper addresses other key objectives:

- I. To evaluate the supply chain management procedures currently in use by G. Shankerdas & sons
- II. To examine the relationship between supply chain level and production margin
- III. To assess the types of problems encountered by G. Shankerdas & sons in their supply chain management.

2. Literature Review

Literature review helps researchers to discover what is already known about a field of study, from different means of research like published text, grey literature, and other official bodies. The study is intended to examine the impact of supply chain management on the performance of production industries. Supply chain management (SCM) is a combination of key business processes that start from the end-user and go to the original supplier who provides products, services and information, thereby adding value to customers and other stakeholders (Desai & Rai 2016). Supply Chain Management also deals with the management of money, raw materials, and information within and across the supply chain to maximize customer satisfaction and to get an edge over other competitors. According to Kiran Bala (2014), "Supply chain management has always been a melting pot of all aspects, influenced by logistics and transportation, operations management and materials and distribution management, marketing and procurement and information technology (IT)". Supply chain management discusses a set of methods used to effectively integrate suppliers, manufacturers, warehouses and stores to produce and distribute goods in the right quantity, at the right location and at the right time, so as to reduce the cost while satisfying the service level customers (Kleverlaan 2008). In the past few years, by integrating supply chain management practices into its normal operations, more emphasis has been placed on local and international organizations gaining competitive advantage. Many organizations have realized the essence of establishing integrated relationships with suppliers and customers. The process, which is a network of organizations that are geographically dispersed across multiple sites and that work together in order to reduce costs and increase the speed of processes and activities between suppliers and customers, is known as supply chain management (Lhassan & Daa noune 2019). The study of SCM is based on planning and management of all

activities related to conversion, sourcing and procurement, and all logistics management activities. As explained by Sunil & Peter (2016), "Supply chain management comprises all parties directly or indirectly involved in meeting customer requirements. The supply chain comprises not only manufacturers and suppliers, but also transporters, warehouses, retailers, and even customers themselves".

2.1 The Role of Supply Chain in the Beverage Industry

The leading industry makes known the concept of SCM as a new and important tool to perform the business process in a systematic and well-defined way to save time, enhance quality and realize a profit in the production industry. The paper is centered on the roles and responsibilities of SCM in the manufacturing industry, as well as the successful implementation of SCM and lessons learned by various industry sectors. As worldwide competition rises, production companies should be more involved in how their customers and suppliers operate their businesses. In order to compete successfully in a current challenging business environment, production companies should effectively integrate the internal functions within their companies and effectively link them with the external operations of suppliers, including their supply chain members and their final consumers (Agus 2011). Efficiency is a key aspect to any successful SCM in the beverage industry. Strategy planning aids to minimize risk while strategic implementation of technology can help to boost existing systems to edge out the competition. Nowadays, beverage companies must actively participate in planning measures to optimize production capacity, inventory management, transportation efficiency in order to ensure quality and drive a competitive advantage. As mentioned by Li et al. (2006), they propounded that effective supply chain management (SCM) has become a potentially valuable method to gain competitive advantage and improve organizational performance because competition is no longer a competition between organizations, but a competition between supply chains.

2.2 The Issues and Challenges in Supply Chain Management

For organizations to be successful when implementing SCM, it must be closely dependent upon the need for breaking down barriers that are not beneficial. Supply chain management has adopted a significant importance and calls for serious research attention, as organizations struggle to find ways to meet ever-rising customer hopes at a reasonable cost (Kiran Bala 2014). The success of SCM is also associated with the challenging development of a new culture which depends on empowerment, ongoing and shared learning and continuous improvement. Another challenge and difficult feature that SCM has claimed in modern days is that competition is no longer between single companies. The competition is now known to be between supply chains. SCM relates to the emergence of the network organization, which can lead to a complex web of linkages being properly coordinated and managed. Firms' current challenge is not only to adopt a supply SCM concept, but also to successfully implement it. An informatics view is vital since information flow is an integral part of SCM and material flow is closely dependent on information flow (Grozniak & Trkman 2015).

2.3 Barriers, Bridges and Benefits in Implementing SCM

SCM implementation is always difficult if there is no proper structure within an organization. Other obstacles which have a great impact on implementation are management differences in the opinions for the final product within the supply chain, raw or obsolete information present in the SC process, which results in misunderstanding of the requirements. Another factor could be the coordination among the team members, distributed information between the different stakeholders. One major obstacle which has a great effect on the implementation is the different management opinions for the final product within the SC. Barriers could be the coordinator among the same team members and the distribution of information between different stakeholders. There are different other factors/barriers that block the path of firms during the process of implementing integrated Supply Chain practices and processes. According to Mofokeng et al. (2017), firms method integration with the motive of obtaining benefits such as upgraded quality, decrease in production costs, increased supply chain efficiency and strategic advantage over competitors. It is also believed that supply chain integration is critical for achieving economic and environmental goals, as improving business practices alone will not suffice (Mofokeng et al. 2017). The barriers bridged and the benefits of SCM have to do with the supply chain strategy that organizations must implement in order to gain a competitive advantage over their competitors. Despite the growing interest in SCM and the benefits, obstacles and bridges to success, supply chain managers and management scholars need to develop solutions and strategies to ensure that they avoid or remedy the barriers to strategic SC success (Fawcett et al. 2008). The SCM helps in reduction in inventory, correct information sharing and developing trust among the Supply Chain partners. With all these important benefits, organizations continue to face a barrier that hinders them from effective implementation of the supply chain. These barriers are known as SCM barriers (Parmar & Shah 2016). However, researchers argue that for strategic supply chains to be

successful, managers and scholars don't only need to focus on one facilitator, but rather they need to make sure they also consider the barriers and bridges in combination (Fawcett et al. 2008). In the managerial complexity category, Fawcett et al. (2008) noted the subsequent barriers in order of significance IS/IT deficiencies, organizational structure/culture, lack Supply Chain measurement and lack of alliance guidelines. These problems are both found at the enterprise and SC level in which there is a need to tackle them at both sides. According to Fawcett et al. (2008) "Once the obstacles to the successful realization of SCM are identified, the bridge can be designed and implemented to obtain the desired benefits. However, for such bridges, research shows that management needs to redesign its problem-solving methods-SC collaboration needs". Fawcett et al. (2008) reviewed important benefits of SCM planned in literature and took note of the following in order of their importance: increased inventory turnover, increased revenue, SCM cost reduction. product availability Reduced order cycle time, responsiveness, economic value-added, capital utilization, shorter time to market, and lower logistics costs.

3. Methodology

This paper gives a complete understanding and explanation of the research techniques and the reason for choosing the particular technique. It covers a wide range of the SC production activities of G. Shankadas & Sons. It describes the methodology used in collecting and analyzing the data to evaluate supply chain management and its impact on production. Rahi (2017) stated that in Cross-sectional study data could be collected once at a time. The paper used a crossed sectional survey design that uses both primary and secondary data.

3.1 Research Design

The paper adopted a descriptive research design to investigate the impact of supply chain management on production. Kothari (2004), descriptive research studies are those that deal with identifying the characteristics of a specific individual or group. The descriptive research design was used to conduct a survey that used a structured questionnaire to collect data from G. Shankerdas & Son Sierra Leone Ltd. The research design provides a platform that holds the research project together. A research design is used to structure the research in order to indicate how the major parts of the research project work to address the central research questions. The research approach adopted for the study was based on the objective of the study. The objective was based on the combination of deductive and inductive approach.

3.2 Targeted Population

Population refers to all people or items that one wishes to understand (Rahi 2017). The targeted population for this research includes members from the G. Shankadas and Sons Sierra Leone Ltd and its branches. The output was used to generalize the whole population. This research targeted 25 respondents from G. Shankadas and Sons Sierra Leone Ltd.

3.3 Sampling Technique and Sample Size

A sample is a small proportion of the population that is chosen for observation and analysis (Best & Kahn 2006). The research used a purposive sampling technique to choose a sample size of 25 respondents from G. Shankadas and Sons Sierra Leone Ltd who are in the production process. According to Rahi (2017), sampling is a process of choosing a sector of the population thorough investigation. The sample of this research includes 5 from Production department. The purpose of the sample is to enable the research to facilitate the receipt of information necessary to conduct the study.

3.4 Data Collection

Data collection refers to the act of collecting and measuring information on variables of interest, in a recognized orderly manner that allows one to answer stated research questions, test and evaluate outcomes (Kabir 2018). The researcher used both primary and secondary. According to Kothari (2004), primary data are those which are collected afresh for the first time, where secondary data refers to those which have already been collected by another person. The research develops an online questionnaire through the use of Google forms. The researchers also made phone calls to some respondents to ask questions to avoid missing out on very important issues and then recorded the responses through note-taking. The questionnaires prepared was divided into various sections with the task of providing the study with the required information on how G. Shankadas and Sons Sierra Leone Ltd was structured and perceived in evaluating the impact of supply chain management performance on their production process. The questionnaires were presented on a Likert scale of 1 to 5 with the scale labelled Strongly disagree [1] to Strongly Agree [5].

3.5 Data Analysis Procedures

This paper used descriptive statistics. Mean, variance and standard deviation were used to summarize the responses, which integrate both qualitative and quantitative techniques through the use of tables and figures which are more efficient. In Hassani et al. (2010) a descriptive statistics offer summaries about the sample that the statistical measures of depression and central tendency. Aborisade (2013) mentioned that analyzing interview data is cumbersome, hectic, complex, and time-consuming. The analysis of this work was done through a software package for social scientists (SPSS) in order to know how the impact of supply chain management of G. Shankerdas & Sons process is performed by taking into account the objectives of this work.

3.6 Conceptual framework

The study was guided by a conceptual framework as shown in figure 1. According to the conceptual framework, assessing the impact of supply chain management performance of this research includes Information Technology, Environmental Uncertainty, Management Support and Value-Added Process. For supply chain management to be effective in carrying out its objective, it must ensure that it attains the performance of the company by fulfilling the needs of its customers and the shareholders.

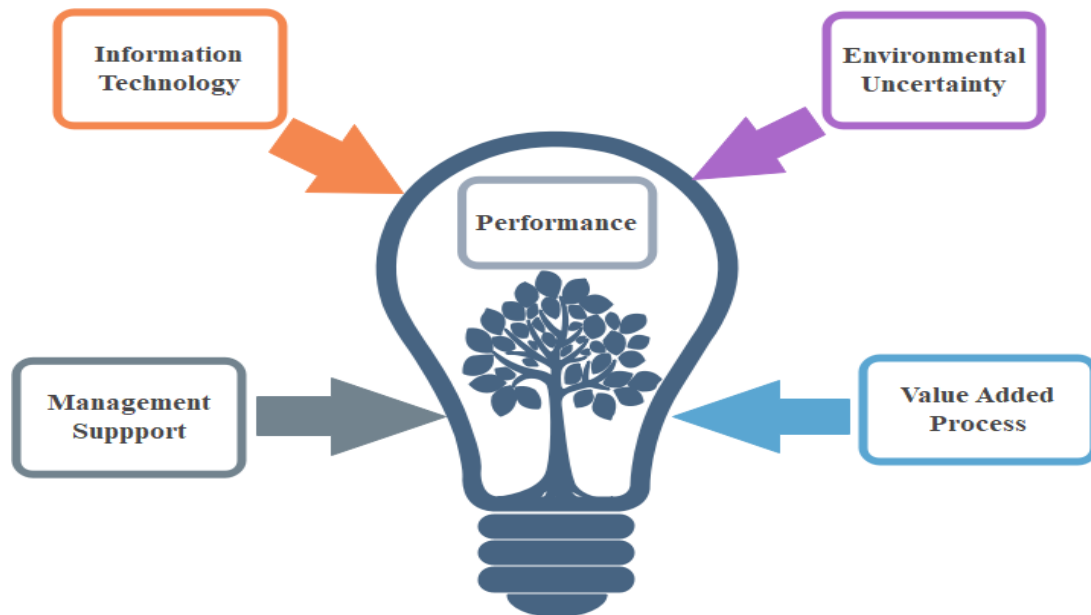


Figure 1. Conceptual framework

4. Results and Discussions

The process of any production industry in understanding the wants of their customers plays a great role in helping the company to deliver good products and services for their customers. The paper sought to evaluate the process of SCM performance on production companies in Sierra Leone. Table 1 explains the summarized output on the performance of SCM which helps the SC processes that help to determine the less performing areas and identify possible improvement in the areas of Information Technology, Environmental Uncertainty, Management Support, Value Added process and performance.

4.1 The Impact of SCM improvement process and its implementation on Production

The researchers are interested in knowing the major ways to measure supply chain performance in order to evaluate and inspect the supply chain processes which will help to determine the weak links and identify possible improvement in different supply chain activities of G. Shankadas & Sons Ltd in areas like Information Technology, Environmental Uncertainty, Management Support, Value Added process and performance. The researchers posed certain questions on a scale of 1-5 where 1 strongly disagreed and 5 strongly agreed on different SCM processes. The respondents were

requested to rate the variables based on their level of experience working in the company. The results obtained were analyzed for the different variables.

Table 1: Descriptive statistics and Reliability Estimate

	Mean	Standard Deviation	Variance	Cronbach alpha
Information Technology	3.728	.881	.776	.780
Environmental Uncertainty	3.848	.942	.888	.894
Management Support	3.904	.897	.804	.885
Value-Added Process	3.760	1.044	1.090	.868
Performance	3.896	.740	.547	.669

The descriptive statistics displayed in table 1 above provides the mean, standard deviation, variance and the Cronbach alpha values for each of the five variables (Information Technology, Environmental Uncertainty, Management Support, Value Added Process and Performance). The measure of central tendency for environmental uncertainty has a mean of 3.848, while the measure of variability for standard deviation is 0.942 and the variance is 0.888. Management support has the highest mean of 3.904 when compared to the others, while the variability of its standard deviation is 0.897 and variance is 0.804. Information Technology has a mean of 3.728, which is the smallest when compared to the others. It has a standard deviation and a variance of 0.881 and 0.776 respectively. The mean for Value Added Process is 3.760 with a standard deviation and a variance of 1.044 and 1.090 respectively, while the mean for Performance is 3.896, a standard deviation of 0.740 and a variance of 0.547.

Reliability is when two or more indicators in one construct are strongly correlated with each other. It is also the share of measurement of a construct that is tested using the coefficient alpha. In this study, reliability was calculated using Cronbach's alpha, which was done by entering all the valid questionnaires that gave the reliability values for each variable. Cronbach Alpha should be 0.6 or higher, and composite reliability values of 0.7 or higher are considered valid (Hair et al. 2017). The result for reliability is shown in table 1 above, where Information technology Cronbach alpha is 0.780, Environmental uncertainty has the highest value of 0.894, Management support 0.885, Value-added process 0.868 and Performance 0.667. As seen from the above table 1, only performance has the lowest value. For composite reliability, all the values had reliability statistics greater than 0.7, which indicates that all the variables used were reliable for this study.

Table 2: Corrolation of the variables

		Information Technology	Environmenta l Uncertainty	Management Support	Value Added Process	Performance
Information Technology	Pearson Correlation	1	.809	.755	.686	.223
	Sig. (2-tailed)		.000	.000	.000	.283
	N	25	25	25	25	25
Environmental Uncertainty	Pearson Correlation	.809	1	.890	.857	.273
	Sig. (2-tailed)	.000		.000	.000	.187
	N	25	25	25	25	25
Management Support	Pearson Correlation	.755	.890	1	.862	.251
	Sig. (2-tailed)	.000	.000		.000	.227
	N	25	25	25	25	25
Value Added Process	Pearson Correlation	.686	.857	.862	1	.273
	Sig. (2-tailed)	.000	.000	.000		.187
	N	25	25	25	25	25
Performance	Pearson Correlation	.223	.273	.251	.273	1
	Sig. (2-tailed)	.283	.187	.227	.187	
	N	25	25	25	25	25

To an extent to know the relationship that exists among the following variables: information technology, Environmental uncertainty, Management support, Value- Added process and Performance in table 2 above, a correlation analysis tests was done to know the relationship between two continuous variables in terms of how strong

the relationship is, and in what direction the relationship goes. The strength of the relationship lies between -1 to +1. In order to know whether the relationship is strong or weak, the research used this rule of thumb. From -1 to 1 the correlation is strong, from -0.9 to -0.7 up to 0.7 to 0.9 the correlation is strong, from -0.6 to -0.4 up to 0.4 to 0.6 the correlation is moderate, and from -0.3 to -0.1 up to 0.1 to 0.3 the correlation is weak. The negative and positive reflect the direction of the relationship. A negative correlation implies that as the values of one variable increases, the value of the other variable decreases, while for positive correlation means that as one value of one variable increases, the value of the other variable will also increase.

The correlation coefficient for Information technology and Environmental uncertainty is positive 0.809. Regarding the strength of the correlation, 0.809 has a strong correlation. Since the P-value (0.000) is less than (0.05) it therefore suggests that the correlation is statistically significant at a 5% level.

Information technology and Management support have a positive correlation of 0.755. The strength of the correlation 0.755, in this case, is strong. Since the P-value (0.000) is less than 0.05, it indicates that the correlation is significant at a 5% level. The correlation coefficient that exists between information technology and Value-Added Process is positive 0.686. Since the P-value (0.000) is smaller than 0.05, it means that the correlation is statistically significant at a level of 5%. The result shows that there is a moderate linear relation between enabling infrastructure and performance.

The Pearson correlation for Environmental uncertainty and Management support is 0.890. P-Value = 0.00. The table indicates that the strength of association between the variables is very high ($r = 0.890$), and that the correlation is positive and highly significant for $P < 0.05$.

The descriptive analysis results revealed that the correlation between Environmental uncertainty and Value- Added Process at 2 tail that is ($r = 0.857$, $P < 0.05$). This implies that there is a strong positive relationship between Environmental uncertainty and Value- Added Process.

The correlation coefficient for Management support and Value- Added Process is positive 0.862 which means that the relationship between Management support and Value- Added Process have positive properties. The strength of the correlation is strong because the P-value (0.000) is smaller than (0.05). This implies that the correlation between Management support and the Value- Added Process is statistically significant at 5% level

5. Conclusions

Based on the topic under consideration, a problem statement was developed with a specific objective in mind, and data was collected, presented, analyzed, and interpreted. From the research findings, it is concluded that the SCM systems have a very great impact on the aspects of productivity, profitability and the overall performance of the operations. outsourcing, IT, strategic partnership and management support affected the performance of the production sector. In terms of outsourcing, lack of expertise, high-quality services and strict timelines influenced performance to a great extent; lack of expertise in the production industries affected the performance of production in mobilization to executing competitive strategies. As a result, the role of IT influenced the implementation of competitive strategies in the manufacturing industries because it pushed for the adoption of appropriate roles that improved the company's performance. Proper strategic partnerships affect the performance of production companies. Finally, it can be said that globalization affects performance through its advantages and its roles. The researchers also believes that the operations of the unit are caused by several problems but have hastened to suggest recommendations through which these problems can be mitigated.

6. Recommendations

Based on the findings of the study, it is recommended that institutions should improve the mode of outsourcing for them to meet the needs of their customers and to ensure they receive their goods on time. They should choose a mode that is appropriate and will maximize the goals and objectives of the organization to enable the execution of the competitive strategies in place that enhance performance. Further, it is recommended that using technology that does not support the crucial realization of objectives should be sidestepped by first ensuring that all employees are well inducted into their roles and space in service delivery by using the appropriate technology. Because information technology is the primary source of improvement in the supplier-customer relationship, the flow of information and access to information should be a top priority. The company should also ensure they frequently embark on training staff in the form of workshops in other to overcome the challenges that hinder production. Finally, the management

of the company should ensure there is a cordial relationship between and among staff in order to speed the operational activities of the company.

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Sallieu Koroma is a full-time lecturer and researcher at four ah bay college, university of sierra Leone. He has served as a lecturer for over 12 years in the department of Accounting and Finance. He has taught courses in Human Resource Management, Financial Management, Procurement, Financial Reporting etc. He is currently serving as the course coordinator for all undergraduate programs in the department. He lectures courses in both undergraduate and post graduate programs. He also supervises and examine dissertations and theses. He has wealth of experience in the corporate world (that is, from the manufacturing industry, service industry and from the NGO world.)

Alpha Umaru Bah is a Sierra Leonean from the West Coast of Africa. He holds a bachelor's degree in Accounting and Finance from Fourah Bay College, University of Sierra Leone in May 2015. During his days at the university, he was engaged in giving academic and tutorial services to fellow students in the department which led him to become a research and teaching assistant (RTA) upon graduation in the accounting and finance department between May 2015 and September 2015. In October 2015, he was employed at Zenith bank Sierra Leone Limited as an Enterprise Risk Management (ERM) officer until August 2018 when he got an opportunity to pursue his academic journey in Indonesia. Currently, he is about to graduate in Operations and Supply Chain Management in the Department of Industrial Systems and Engineering at the Institut Teknologi Sepuluh Nopember (ITS), Surabaya, Indonesia.