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Influence of Operations and Processes on Performance of Manufacturing Firms in Kenya

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Abstract

Purpose: The purpose of this study was to analyse the influence of operations and processes on performance of manufacturing firms in Kenya.

Methodology: In this study, descriptive and cross-sectional research designs were used. According to the directory, there are 461 large-sized registered members. In order to sample 160 large industrial companies from the entire population, this study used Cochran's formula. Data was gathered using a standardized questionnaire, and both qualitative and quantitative analysis were performed on it. Both a descriptive and an inferential data analysis were used in this investigation. Tables, graphs, and pie charts were used to present the analysed data.

Results: The findings of the study revealed that the relationship between operations and processes and performance was significant at 5% level of significance. The model summary in the hypothesis testing revealed that the R^2 for the model was 0.305. This is to imply that 30.5% of the variations in performance of manufacturing firms in Kenya are as a result of operations and processes. The p-value for the variable was 0.000 which is less than the standard P-value of 0.05. This is to mean that operations and processes had a significant influence on the performance of manufacturing firms in Kenya. To this end, we therefore, reject the null hypothesis that there is no significant relationship between operations and processes and performance of manufacturing firms in Kenya.

Unique contribution to theory, practice and policy: While the existing Supply Chain Operations Reference (SCOR) Model used in this study was validated, the study recommends that the policy makers and management of manufacturing firms should come up with policies

and legislations that cover the concept of supply chain operations and processes as an essential driver to the performance of the manufacturing sector in the country. The policy makers hold a major role in determining how key sectors such as the manufacturing sector are run. The regulators and the legislators formulate policies and guidelines that guide on how manufacturing firms should carry out their operations including supply chain processes. The study also recommended that manufacturing firms policy makers should develop a policy and regulatory framework to accelerate effective implementation supply chain processes and operations to enhance their performance.

Keywords: *Operations and processes, Supply Chain Alignment, Organizational Performance, Manufacturing Firms*

1.0 BACKGROUND TO THE STUDY

Supply chain alignment is increasingly being recognized as the integration of key business processes, avid scheduling and routing across the supply chain (Storey *et al.*, 2015). Chi, Huang, and George (2020), for instance, assert that organizations should integrate processes between functions now that they have been implemented within the company: "Streamlining cross-company processes is the next great frontier for reducing costs, improving quality, and speeding operations" (Vonderembse & Dismukes, 2015). It is the scene of the battles over supply chain productivity this decade. The organizations that can adopt a fresh perspective on operations and collaborate closely with partners to build and manage capacity plans and procedures that cross conventional company boundaries were victorious. They were the ones who invested in cutting-edge dispatch and expediting systems to make the transition from efficiency to super efficiency (Akkermans, Bogerd & Vos, 2009).

According to Feizabadi *et al.* (2019), the focus on the importance of avid scheduling and capacity planning alignment to supply chain was crucial. A thorough characterization of the procedures that make up supply chain alignment appears to be missing from the literature (Kim *et al.*, 2011). If there is a lack of mutual understanding among firms regarding crucial business operations and processes, such as optimal loading and routing, how can they achieve supply chain alignment? It appears that firms must develop a common set of supply chain processes in order to strengthen ties among supply chain participants (Carrillat, Jaramillo & Locander, 2014).

Although management of all organizations in each supply chain should see them as the basic operations and processes, according to George, Freeling and Court (2010), the relative importance of each process and the precise activities covered may vary. The specified sub processes and activities were created with an organization located close to the supply chain's centre in mind. At both the strategic and operational levels, each procedure and operation are described (Council, 2012). The establishment and strategic management of capacity and scheduling make up the strategic portion, which also serves as a roadmap for implementation. In order to integrate the organization with other supply chain participants, this is an essential initial step. Once the process has been formed by actions like loading, routing, and subsequently dispatching, it is actualized as the operational phase (Storey, Emberson, & Reade, 2015).

1.1 Statement of the Problem

Organizations need to improve the performance of their supply chains due to the rising level of competition and globalization in the global economy. Many businesses spend millions of dollars on process reengineering, new systems, and personnel training to enhance the effectiveness of their supply chains (Dubey *et al.*, 2018). Globally, a lot of research on supply

chain alignment have been done. For instance, Doyle (2014) polled 174 companies in the UK and discovered that, despite 92% of respondents claiming it, supply chain alignment did not appear to have decreased transaction costs. Rashid and Aslam (2012), for example, conducted a study in Malaysia to evaluate the effect of supply chain alignment on business performance in Malaysia.

According to World Bank statistics from 2016, the unstable operating climate has caused Kenyan manufacturers' profitability to stagnate and decline over the last five years. Additional data from the Kenya Association of Manufacturers revealed that several businesses indicated plans to close their facilities and move their operations to Egypt as a result of lower profitability (KAM, 2014). Malaysia. Moreover, the studies have not feature the aspect of quality control, despite this being an essential driver of processes in the manufacturing industry. The results of this study will eventually aid in identifying what is required to prevent manufacturing companies from failing, stalling in performance, or leaving Kenya, which would result in job losses, and to keep them operating for the foreseeable future. It is against this backdrop, the present study sets out to analyse the influence of supply chain operations and processes on performance of manufacturing firms in Kenya.

1.2 Objective of the Study

The aim of this study was to analyze the influence of operations and processes on performance of manufacturing firms in Kenya.

1.3 Research Hypothesis

H_0*:* Operations and Processes have no significant influence on performance of manufacturing firms in Kenya

2.0 LITERATURE REVIEW

2.1 Supply Chain Operations Reference (SCOR) Model

This paper was anchored on Supply Chain Operations Reference (SCOR) Model. The Supply Chain Council produced the SCOR model, which includes key processes, metrics, and standard characteristics and has been widely and successfully used in processes performance management (Rezaei, Akbarpour & Karimi, 2017). It has also been extensively researched in academics as well as in industry and services. SCOR has several uses in literature, business, and services (Sha & Chen, 2012). According to the Supply Chain Council, the SCOR model combines the strategic ideas of business process re-engineering, operations, and process measurement into a cross-functional framework made up of: standard process descriptions; a framework of relationships among the standard processes; standard scheduling metrics to measure process performance; loading and routing management techniques that produce best-in-class performance; and a cross-functional framework (OECD, 2010). Source, Make,

Deliver, and Plan are the four SCOR processes that are described in greater detail (Storey, Emberson & Harrison, 2012).

Three levels of process details are present in the SCOR model. The highest level, level one, deals with various operations and process kinds. The second level, known as configuration, is where operations and process categories are discussed. The lowest level in the scope of the SCOR model is level three, which is the level for operations and process elements (Spekman, Kamauff & Myhr, 2012). By connecting the values of scheduling, capacity planning, routing, dispatching, and expediting to crucial metrics to be monitored to assure attainment and effective performance of supply chain alignment, this theory supports the variable refined operations and processes.

2.2 Empirical Literature

According to Akkermans *et al.* (2009), the capacity planning process is in charge of responding to both internal and external events at the operational level. Recognizing the organization's capacity is the first step. Although it can seem unimportant, the need to be proactive makes this a difficult aspect of running the organization. The operational department must be well-versed in the firm's supply chain activities in order to anticipate how a specific incident would affect both the firm's internal operations and its customers.

In fact, Carmignani (2009), claims that the implementation of the chosen route requires a lot of coordination because it frequently involves other business process owners or function managers. The operation's genuine response is now put into action. The dispatch and expediting procedure also include reporting on process performance and monitoring. This sub-process entails documenting the procedure in a database for future use and keeping track of its development to determine how well the reaction has been executed.

Gianakis (2012), noted that the customer relationship management and supplier relationship management teams receive feedback on the operations' and processes' performance. Creating backup plans for internal or external activities and procedures that could upset the equilibrium of supply and demand is another crucial step in the supply chain alignment process. The company creates policies or regulations to address unforeseen demand or supply disruptions (Buhner, 2012).

According to Galbraith (2012), the supply chain operations and processes should be established in accordance with the customer expectations defined in the customer relationship management process, as well as with input from production flow and supplier relationship management. Since they respond to client issues when these supply chain operations and processes take place, the customer service management team receives the instructions from the supply chain and relays them to them. The organization creates a framework of metrics to be used to gauge and track the performance of the processes, just as it did with the other processes. Forecast error and capacity utilization are examples of common process measurements (Boiral & Roy, 2010).

2.3 Conceptual Framework

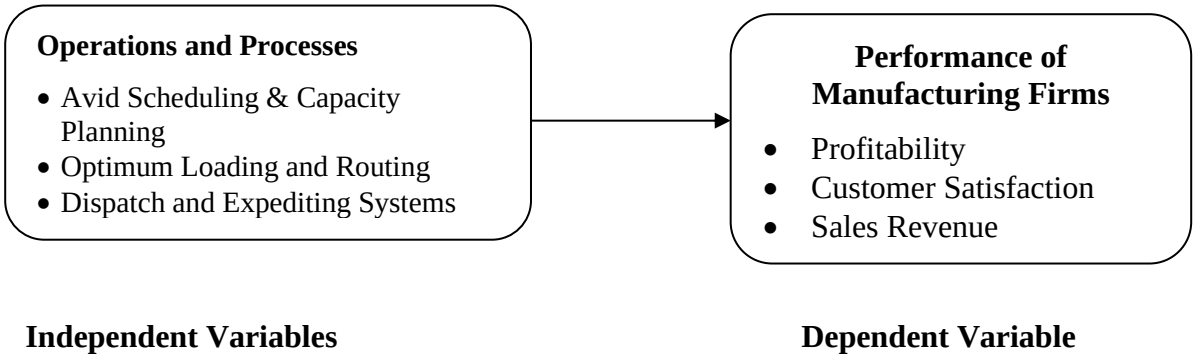

Figure 1: Conceptual Framework

2.4 Research Gaps

Although there have been numerous studies in the field of supply chain operations and processes promotion all over the world researchers have focused on addressing one fundamental research question; how collaborative and coordinative issues in supply chains can be promoted. Some studies have attempted to identify critical supply chain processes and operations factors and emerging issues in supply chain management area, and demonstrated how to improve intervention effectiveness, increase particular relational behaviours like elimination of transactional trading, how inventory ownership analysis promotes supply chain alignment, and how various predictive variables can prevent misalignment (Baier, Hartman & Moser, 2012).

Other studies have concentrated on the construction industry and the medical supply chains and the few studies in manufacturing firms have looked into the relationship between supply chain alignment factors and organizational performance or effects of a single variable such as information sharing on the alignment of value chains. In addition, only a few studies in supply chain alignment in the value chains have been carried in Kenya and these studies are inclined more towards effects supply chain management practices on performance of firms.

Most of these studies are also either case studies of certain firms or regions leaving a research gap (Attia, 2015). This study has clearly addressed the recommended knowledge gap by bridging it with new knowledge on the influence of role played by alignment of supply chain through operations and processes on the performance of manufacturing firms in Kenya and suggesting recommendations on ways to implement supply chain operations and processes so as to enhance performance of manufacturing firms.

3.0 METHODOLOGY OF THE STUDY

The study used descriptive and cross-sectional research designs. Descriptive research design enabled collection and analysis of quantitative and qualitative data, while giving the study an ability to intensively answer the research questions (Kothari, 2014). Cross-sectional research design was on the other hand used to establish the relationship between the study variables. The study targeted 461 large manufacturing firms in Kenya. The unit of observation is selected because they are the ones involved in execution of the firms' supply chain management practices and thus stands high chances of providing reliable information on influence of supply chain alignment on performance of manufacturing firms in Kenya. Using Cochran (1977) formula, a sample size of 160 respondents was obtained from the 461 firms. The respondents were picked through stratified random sampling, where the 12 sub-sectors of the manufacturing firms were the strata. A proportionate number was picked from each of the stratum and the respondents picked randomly. The research utilized a structured questionnaire to collect data. The collected data was analysed with the aid of the Statistical Package for Social Sciences (SPSS) Version 26. This study adopted a descriptive data analysis and inferential data analysis. Descriptive data analysis was adopted for this study because descriptive analysis was used to describe the basic features of the data in a study. The analyzed data was presented using tables, graphs and pie charts.

4.0 RESULTS AND DISCUSSIONS

4.1 Descriptive Results on Operations and Processes

The objective of the study was to establish the relationship between operations and processes and performance of manufacturing firms in Kenya. The respondents were asked to reply to claims made about the procedures and operations. A Likert scale was used to assess the replies, with 1 representing strongly disagree and 5 representing strongly agree. The scores "strongly disagree" and "disagree," which correspond to a mean score of 0 to 2.5, have been taken to signify a statement that is not universally agreed upon. The score of "neutral"—which translates to a mean score between 2.6 and 3.4—has been taken to indicate an agreed-upon remark. The responses "agree" and "strongly agree" have been interpreted to signify that the assertion is generally accepted and has a mean score between 3.5 and 5. Table 1 shows the findings.

The results revealed that majority of the respondent with a mean of (3.49) agreed with the statement that their respective companies had a plan for scheduling its supply chain activities and operations. The measure of dispersion around the mean of the statements was 0.907 indicating the responses were varied. The findings revealed that majority of the respondent as indicated by a mean of (3.84.) agreed with the statement Optimum loading and routing plays a significant role in cost reduction. The standard deviation for the comment for poor performance was 1.003 showing a variation. The result revealed that majority of the respondent (3.79) agreed with the statement Salvage related costs play a significant role in cost reduction. The results were varied as shown by a standard deviation of 1.94. Further results indicated managers agreed to Avid scheduling and capacity planning play a significant role in improving productivity. The mean for this comment was 3.90 accompanied by a varied response of 0.87. Results indicated that managing distribution routes was done effectively for efficiency and timesaving in most of the surveyed firms.

The results indicated expediting systems plays a significant role in improving productivity. The mean for this comment was 4 accompanied by a varied response of 0.89. Results indicated that avid scheduling and capacity planning play a significant role in improving lead time. The mean for this comment was 3.93 accompanied by a varied response of 0.961. The findings further revealed that the respondents were of the opinion that modern technological-based systems had been adopted in their respective companies to ensure effective communication and flow of processes and that dispatch and expediting systems played a significant role in improving lead time.

Table 1: Descriptive Results on Operations and Processes

Measuring Aspect	N	Mean	Std. Dev.
Our company has a plan for scheduling its supply chain activities and operations	127	3.49	0.90
There is a prior plan made to ensure effective flow of operations within the firm	127	3.84	1.01
The adopted schedules and pans are adjustable to emerging issues and constraints	127	3.79	1.94
A proper analysis is carried out to establish the appropriate loading framework	127	3.9	0.87

Managing distribution routes is done effectively for efficiency and timesaving	127	3.91	0.88
The company has embraced strategies that ensure the loading and routing of the supplies is cost efficient	127	4.01	0.89
There is effective communication across the supply chain framework in our company	127	3.93	0.96
Modern technological-based systems have been adopted to ensure effective communication and flow of processes	127	4.02	0.91
Dispatch and expediting systems plays a significant role in improving lead time	127	4.08	0.93

4.2 Correlation Analysis

The correlation analysis to determine the association between process and operations and performance of manufacturing firms in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there was a strong and positive relationship between operations and processes and performance of manufacturing firms in Kenya as shown by a Pearson Correlation coefficient of 0.552. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

Table 2: Summary of Pearson's Correlations

		Performance
Performance		1
Operations and Processes	Pearson Correlation	.552
	Sig. (2-tailed)	.000

4.2 Hypotheses Testing

*H_O: There is no significant relationship between **o**perations and processes and performance of manufacturing firms in Kenya*

The objective of the study was to establish the relationship between operations and processes and performance of manufacturing in Kenya. The linear regression model analysis results are as herein shown in form of model summary, ANOVA test and regression coefficients. The model summary shown in Table 3 revealed that the R^2 for the model was 0.305. This is to

imply that 30.5% of the variations in performance of manufacturing firms in Kenya are as a result of operations and processes.

The ANOVA results are as shown in Table 4. As the findings reveal, the F-statistic for the model is 54.817 at a significance level of 0.000<0.05. This is an implication that operations and processes significantly influences the variations in the performance of manufacturing firms in Kenya.

The regression coefficients as shown in Table 5 on the other hand revealed that the Beta coefficient for operations and processes was 0.577. This implies that a unit change in operations and processes would lead up to 57.7% increase in the performance of manufacturing firms in Kenya. The p-value for the variable was 0.000 which is less than the standard P-value of 0.05. This is to mean that operations and processes had a significant influence on the performance of manufacturing firms in Kenya. To this end, we therefore, reject the null hypothesis that there is no significant relationship between operations and processes and performance of manufacturing firms in Kenya. The results confirm the argument by Yasin *et al.* (2015), that aligning the operations and processes of supply chain network enables the manufacturing entity to have a more effective way of running their internal processes. Vonderembse and Dismukes (2015), alludes that enhancing the operations and processes of a firm is the main process that a company can utilize its capacity fullest for better performance.

Table 3: Model Summary for Operations and Processes

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.552[a]	.305	.299	.56895

a. Predictors: (Constant), Operations and Processes

Table 4: ANOVA Results for Operations and Processes

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.745	1	17.745	54.817	.000[b]
	Residual	40.463	125	.324		
	Total	58.208	126			

a. Dependent Variable: Performance of Manufacturing Firms

b. Predictors: (Constant), Operations and Processes

Table 5: Regression Coefficients for Operations and Processes

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.492	.254		5.885	.000
	Operations and Processes	.577	.078	.552	7.404	.000

a. Dependent Variable: Performance of Manufacturing Firms

5.0 CONCLUSION AND RECOMMENDATIONS

The study sought to determine the influence of Operations and Processes on performance of manufacturing firms in Kenya. The study also concluded that operations and processes have a significant relationship with performance of manufacturing firms in Kenya. The sub-constructs of operations and processes that is avid scheduling and capacity planning, optimum loading and routing, dispatch and expediting systems influence performance positively. The study recommended that manufacturing firms should put in place strategies to have operations and processes as it has a positive effect on performance. The firms should encourage and put in place measures that promote dispatch and expediting systems, optimum loading and routing as they influence performance positively.

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