

Influence of Information Sharing on Performance of Manufacturing Firms in Kenya



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ABSTRACT: Information has emerged as a key resource that improves manufacturing companies' performance and helps a company efficiently satisfy consumers' expectations. The goal of the study was to ascertain how information sharing affected the performance of manufacturing companies. The study was backed by the stakeholder theory and the systems theory. The explanatory research design was used in the study. The sample size was 264 procurement managers from Kenyan manufacturing enterprises, with 766 procurement managers as the target population. Respondents were chosen using stratified, simple random, and purposive sampling methods. The primary data collected using questionnaires. Data analysis was done using descriptive statistics (means, standard deviations) and inferential analysis (linear regression analysis) with the aid of SPSS program. The regression model showed that ($R^2=0.276$), indicating that the information sharing predicted 27.6% of the firm performance. The information sharing ($\beta=0.417$, $P=0.000$) had positive and significant effect on performance of manufacturing firms. The study concludes that information sharing has significant effect on performance of manufacturing companies in Kenya. It has been determined that the implementation of information sharing, the quality of the shared information, the kind of shared information, and the technology used to communicate this information all affect how much information businesses exchange throughout supply chains. According to the report, industry participants in the manufacturing sector should collaborate closely in order to improve the quality of the information that they share with other providers.

KEYWORDS: Information Sharing, Performance, Manufacturing companies

INTRODUCTION

More and more managers, consultants, and academics are realizing how crucial supply chain performance is to their companies' success. Efficiency along the supply chain necessitates thorough knowledge of every minute mechanic included in each stage of a product's journey as well as a comprehension of how these intricate mechanics successfully support the whole operation (Peterson, 2016). The capacity of the supply chain to create income, save costs, boost asset productivity, and raise customer satisfaction levels has caused the majority of sectors to consider it from a strategic perspective.

Because of the shifting environmental pressures, firms currently confront a difficulty in guaranteeing the seamless operation of their supply chains (Ha, Tian & Tong, 2017). Although a firm has some control over its internal environment, it has less control over external forces such as suppliers. Suppliers are one of the external environmental aspects that a firm may not be able to directly control, thus it is critical to develop and maintain strong relationships with them (Singh, 2015). According to Wachira (2013), the effectiveness of these connections is influenced by how information is shared between the company and its stakeholders, such as suppliers. Information is now one of the resources that businesses use to boost their performance, particularly industrial enterprises (Cai, Huang, Liu, & Liang, 2016). An company may minimize costs and lead times and more efficiently address the requirements and wishes of consumers, which improves the performance of manufacturing enterprises (Rucha & Abdallah, 2017).

Information has shown to be a key resource that improves manufacturing company efficiency and helps a company efficiently satisfy client expectations (Hsin, Chang, Tsai & Hsu, 2013). Supply chain performance is a term used to describe the quality, responsiveness, and cost savings that emerge from effective information exchange between the buying business and its suppliers (Leuschner, Rogers & Charvet, 2013). Today's businesses want to share information with their suppliers, but they also want that information to be useful and timely when it comes to ordering and replenishment, which will improve the performance of

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manufacturing companies (Kembro, Näslund, & Olhager, 2017). Manufacturing companies work to ensure that raw resources are converted into goods that varied end consumers want. Materials must be available continuously for processes to run well, and final goods must be ordered promptly (Liu, Ke, Wei & Hua, 2013). Today's manufacturing businesses face intense competition as a result of the shifting wants and desires of the consumer, which creates demand uncertainty. Kenyan manufacturing companies must promptly communicate information with suppliers in order to overcome this obstacle.

Information sharing (IS) in a supply chain refers to how much confidential or important information is made available to all participants. IS happens when a company can access data from many supply chains, leading to collaboration that minimizes supply chain inefficiencies (Waithaka & Waiganjo, 2015). Njagi and Shalle (2016) contend that the information exchanged between key parties is made more difficult by the interaction between customers and providers, which is becoming increasingly complicated. Businesses have adopted technologies like the internet and electronic data exchange to get around these issues (EDI). These technologies make it simple for participants in the supply chain to exchange information. Waithaka and Waiganjo (2015) contend that the internet and EDI are the primary drivers of IS inside the supply chain because they enable real-time data and information sharing between enterprises and, as a result, cost reduction. The use of information technology in supply chains helps organizations to make rapid, real-time decisions that allow them to satisfy the demands of their customers (Singh, 2015).

Tan, Wong, and Chung (2016) investigated global information exchange and its influence on knowledge leakage throughout the supply chain. Direct contact between IS and Supply chain responsiveness (SCR) was discovered. Kembro, Näslund, and Olhager (2017) conducted study on IS and its influence on Supplier chain responsive. The study discovered a beneficial relationship between responsiveness and information sharing. In response to the multidimensional nature of information sharing, Madlberger (2012) developed four operational measures, including the type of information shared, the frequency of information sharing, the specifics of the information to be shared, and the "up-to-dateness" of the information to be shared. These four factors are assumed to determine the extent and quality of shared information in supply chains as a whole. Information interchange happens at multiple levels and in variable amounts across the supply chain, according to Sahin and Robinson (2005). Wu, Chuang, and Hsu (2014) investigate information sharing in terms of the benefits and value of IS, enabling technologies, shared information quality, and shared information content. As these analyses concentrated on other wealthy nations outside of Kenya, contextual gaps start to appear.

Mensah, Diyuoh, and Oppong (2014) conducted a research at Kasaspreko Company Limited (KCL), a manufacturing company in Ghana, and found that the goal of every supply chain is to reduce costs while achieving customer satisfaction. The higher sales performance at KCL between 2004 and 2010 is proof that supply chain risk management has a major impact on company performance, according to the research. In their 2011 study, Naude and Badenhorst-Weiss looked at issues with South African automobile component manufacturers' supply chains. According to the report, issues with the supply chain might result in inefficiencies that have an influence on the competitive advantage of the manufacturers of automotive components. The performance of South African manufacturing companies fell by 1.5% in 2015, a 0.5% decrease from the previous year (2014). (STANLIB, 2015). The labor market turbulence, electricity shortages, and devaluation of the South African Rand versus the US dollar were all major contributors to the industrial sector's difficulties in South Africa. Due to their geographical hurdles and high transportation costs, African nations like Uganda, Botswana, and Zambia frequently encounter material flow delays in their industrial sectors (landlocked countries).

Locally, Waithaka and Waiganjo (2015) looked on how state enterprises' supply chains performed in regard to the development of supplier-buyer relationships. The study found that providing information is one approach to build relationships with suppliers. A contextual gap exists since this study's focus was on state businesses rather than industrial companies in particular. Bonuke (2015) examined how IS affected the relationship between supply chain links and performance while concentrating on flower farms in Kenya.

Sharing information is how businesses are able to deal with demand uncertainty. Sharing information enables a firm to promptly fulfill consumer orders (Wachira, 2013). Additionally, information exchange enables a company to have up-to-the-minute knowledge on when to place orders and restock stock levels. Replenishment is a crucial choice since it aids a company in reducing stock outs (Waithaka & Waiganjo, 2015).

Kenya Association of Manufacturers (KAM), a lobbying organization that unites manufacturing companies in Kenya, represents the concerns and interests of its members (Naliaka & Namusonge, 2015). Kenyan manufacturing companies work in a variety of industries, including agriculture, construction, transportation, and health. The enterprises involved in converting raw materials into finished items make up Kenya's manufacturing industry.

According to reports from Price Waterhouse Coopers (2013) and the Kenya Investment Authority (2013), Kenya has a sizable manufacturing industry that caters to both the domestic market and export markets in East Africa and throughout the world. Kenya's manufactured goods are available to these markets through regional markets like the East African Community (EAC) and

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the Common Market for East and Southern Africa (COMESA), as well as through the importation of raw materials from the markets. Kenya is one of the Sub-Saharan African nations that is permitted by the African Growth Opportunity Act to export textile goods to the United States (AGOA). The Kenyan Embassy in Japan (2013) said further that between 2003 and 2004, production in Kenya's manufacturing sectors grew. The manufacturing sector is also a significant driver of economic growth in Kenya, with its contribution to GDP rising from 13% in 2002 to 14.2% in 2003 and 15.7% in 2007. Manufacturing companies have the potential to boost our nation's economy, but they have to contend with a number of obstacles, including supply chain hazards.

The Kenyan government acknowledges the manufacturing industry's contribution to the industrialization of the country and, consequently, to economic growth. As a result, the government provides incentives (such as a value-added tax exemption) to lure more investors into the manufacturing business and take advantage of the finest markets, such as the EAC (Kenya Investment Authority 2013). Kenya is also the leading East African country in terms of manufacturing sector growth (UK AID, 2016)

STATEMENT OF THE PROBLEM

To make money, manufacturing companies turn raw materials into completed goods that customers want (Brandt & Morrow, 2017). As of December 2018, the manufacturing industry contributed 8.4% to the nation's GDP (KNBS, 2018). Over 15% of Kenya's total employment comes from the manufacturing sector (KNBS, 2019). The government expects to increase the manufacturing sector's contribution to the GDP from 9.2% in 2016 to 15% by 2022. Indeed, manufacturing firms are currently among the pillars of the national government's Big-4 agenda (Nimeh, Abdallah & Sweis, 2018). However, given the constraints we are now experiencing, including our restricted capacity to invest in technology that would allow us to communicate information with suppliers, this is not practical. Additionally, these manufacturers face intense rivalry as well as shifting consumer preferences and tastes for the goods they produce (Naliaka & Namusonge, 2015).

Additionally, the bulk of manufacturing companies are struggling with the increasing demand unpredictability brought on by inaccurate forecasting and informational accessibility (Yuen & Thai, 2017). Information exchange between these industrial companies and their suppliers is crucial for them to remain competitive and improve performance, and this is the major focus of the current study. Given that a growing corpus of research has concentrated on the relationship between information sharing and company performance, several of these studies were conducted in various international contexts. Other research found no association between business responsiveness and information sharing and organizational success.

THEORETICAL REVIEW

The systems theory and the stakeholder theory supported the study as illustrated below:

Systems Theory

This idea was developed by Shultz (1987), according to which a system is an interplay of parts that work together to achieve the firm's stated aims. There are two types of systems: open and closed. These two sorts of systems differ fundamentally in how well they can communicate with their surroundings. The open systems have close interactions with their environments as opposed to the close systems.

An organization, as a social system (open system), takes resources from its surroundings and turns them into completed items. Communication is critical for the system to function as it interacts with the environment. A business cannot operate without suppliers (who are part of the outside or external forces). Constant interaction between a firm and its supplier strengthens that bond (Ali, Babai, Boylan, Syntetos, 2017). The hypothesis demonstrates how knowledge sharing affects manufacturing organizations' performance. The parties involved in supply chains may be seen as components of the system, and efficient responsiveness to each party's demands depends on information exchange. System theory demonstrates how information exchange within supply chains enables the entity to efficiently address environmental concerns.

Stakeholder Theory

This idea, which Freeman established in 1984, highlights important stakeholders who impact a company's performance. These stakeholders include the government, suppliers, investors, lobbying organizations, and employees. People who are interested in how an organization runs are called stakeholders. Freeman (1984) defined stakeholders as everyone who affects the existence and expansion of the company. Numerous academics have criticized the hypothesis.

Williamson (1993) asserts that the theory primarily concentrates on the firm's financial and moral elements. Despite this critique, the idea describes how the company interacts with suppliers as one of the business's stakeholders.

Information sharing, which is the major emphasis of the current study, is the best way to promote this interaction between the entities and their trade payables. According to the stakeholder hypothesis, businesses should have positive relationships with all of its stakeholders, including their suppliers. The right flow of information is necessary for developing positive relationships with suppliers, and that was the main focus of this study. In light of this, the theory provided an explanation for how information sharing

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creates beneficial connections between an entity and its stakeholders, including its suppliers, and how this influences organizational performance.

The study was supported by the easy application of the stakeholder theory and the systems theory. According to the systems theory, an organization is made up of a number of interconnected parts that act as a whole to achieve the stated objectives. As a result, the qualities of the system itself are determined by the interaction and operation of its pieces (Ahrne, 1994). On the other hand, the stakeholder theory contends that businesses interact with a variety of stakeholder groups, including suppliers, workers, consumers, and lobbying organizations (Freeman & Evan, 1990). Communication of information is crucial in this interaction between the company and its stakeholders.

LITERATURE REVIEW

Sharing of information occurs when important information is made available to individuals or systems inside companies. Madlberger (2009) defines four characteristics of information sharing: the kind (content), frequency, detail, and timeliness of the information provided. These variables were specified collectively as measures of the quality of the shared knowledge (Ramanathan, Gunasekaran & Subramanian, 2011). Information sharing has been operationalized across several dimensions, including the type of information transmitted, its execution, the quality of sharing, and the use of technology (Goswami, Engel & Krcmar, 2013).

Quality is a broad notion that has been given several definitions by academics. Quality refers to a company's capacity to meet client requirements in comparison to requirement specifications in the context of supply chain management (Ramanathan & Gunasekaran, 2014). Several indications, such as how pertinent, accurate, thorough, current, timely, coherent, accessible, compatible, available, and valid the information is, may be used to gauge and assess the quality of information sharing (Nudurupati, Bhattacharya, Lascelles & Caton, 2015).

The tool or channel that makes it easier for parties to exchange information is referred to as information sharing technology. Electronic data exchange (EDI), point-of-sale terminals, and the internet are the main information sharing technologies (Pettit, Croxton, & Fiksel, 2013). The IS technology used most frequently in supply chains is EDI. Other important technologies that facilitate information exchange include wireless communications, ERP, and relational data base management systems (DBMS) (Imad, Khufash, Hebah, Nasereddin, 2015).

The application of information sharing emphasizes the need of a company investing in information sharing throughout its supply chains. According to Pereira, Christopher, and Silva (2014), knowledge sharing reduces expenses in an organization's supply chain. Furthermore, investing in IS would result in shorter lead times and smaller batches, lowering operating costs (Kong, Rajagopalan & Zhang, 2017).

A variety of information is transmitted to supply chain partners. Inventory, revenue, sales projections, orders, product availability, manufacturing and delivery dates, and capacity are examples of critical information exchanged along the supply chain. The most widely communicated piece of supply chain information is about inventories. Inventory data is exchanged, which reduces stock levels. Sales data may show the exact amount of customer demand while avoiding losses caused by shortages (Li, Fan, Lee & Cheng, 2015).

By exchanging inventory data, a vendor managed inventory system (VMI) is put into place, in which the company hands over complete responsibility for inventory replenishment to its suppliers. Having access to order tracking information enables customers to precisely monitor their orders (Lotfi, Sahran, Mukhtar, Zadeh, 2013). A manufacturing company can improve the existing production schedule by utilizing the supplier's delivery schedule (Kache & Seuring, 2014).

Sharing information has become a critical strategy for firms looking to succeed in the industry. For example, Marinagi, Trivellas, and Reklitis (2015) argue that the flow of information via supply chains is the only option for enterprises to prosper and increase their competitive advantages in a changing business climate. According to Kumar, Pugazhendhi, Muralidharan, and Murali (2018), one strategy to boost the firm's competitiveness and responsiveness is through information exchange. Competitive enterprises in an industry are deemed responsive.

RESEARCH METHODOLOGY

The research design was explanatory. The study's primary objective was measuring a link or purposefully comparing groups in order to find a cause-and-effect relationship, making the explanatory research design appropriate. There are around 766 registered manufacturing companies in Kenya, according to the Kenya association of manufacturers (K.A.M). The target population consisted of all the procurement managers from the 766 manufacturing enterprises that had registered with the government of Kenya, selected from the 14 major subsectors. All 766 manufacturing companies from 14 important industrial sub-sectors were used as the sample frame for this study and were found in the Kenya Association of Manufacturers directory (2014).

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Using Yamane's (1972) sample size formula at 95% confidence level, $P = 0.5$, the sample size is computed hereunder:

$$n = \frac{N}{1 + N(e)^2}$$

Where;

n = the sample size,

N = the population size,

e = the acceptance sampling error

$$= 766/1+766(.05)^2$$

$$= 264 \text{ respondents}$$

The manufacturing enterprises were divided into 14 strata in the research using the stratified sampling approach, with each sub-sector creating a stratum. The use of stratified random sampling was acceptable since it allowed the researcher to accurately represent both the general population and important subgroups within it. Managers of procurement were carefully chosen from Kenyan industrial companies. The sample size for the investigation was decided using a straightforward random sampling procedure.

Questionnaires were employed as the research tool in this study. The seven (7) likert scale was used to rate the performance of the company in the questionnaire. Cronbach's Alpha is used to measure the reliability of the research instrument, and expert judgment is utilized to assess the content validity. The researcher then performed data cleaning, which involves identifying any erroneous or incomplete replies and fixing them to raise the quality of the responses. The Statistical Package for Social Sciences was used to code and feed the data into the computer for analysis (SPSS). In order to accommodate the likert scales that were utilized in the study, the descriptive statistical analysis was performed, which included mean, percentages, standard deviation, and frequencies. To examine the hypotheses, linear regression analysis was utilized.

RESULTS

Regression Analysis

According to the linear regression model, information exchange was responsible for 27.6% of the success of manufacturing companies ($R^2 = .276$). Information sharing, a predictor included in the model, influenced how well manufacturing companies performed, as seen in Table 1.

Table 1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.526 ^a	.276	.273	.54209

a. Predictors: (Constant), information

The analysis of variance was used to test whether the model could significantly fit in predicting the outcome as shown in (Table 2). Information sharing and the performance of manufacturing enterprises are significantly correlated, as shown by the regression model using information sharing as a predictor that was significant ($F=93.197$, $p \text{ value} = 0.001$).

Table 2: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.387	1	27.387	93.197	.000 ^b
	Residual	71.702	244	.294		
	Total	99.088	245			

a. Dependent Variable: performance, b. Predictors: (Constant), information

Table 3 shows the estimates of β -value and gives contribution of the predictor to the model. The β -value for information sharing was positive, depicting positive relationship with performance of manufacturing firms as summarized in the model as:

$$Y = 2.61 + 0.417x + \epsilon \text{ Equation 1}$$

Where: Y = Performance, X = information sharing, ϵ = error term

Table 3 Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.614	.149		17.564	.000
	information	.417	.043	.526	9.654	.000

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a. Dependent Variable: performance

The study hypothesized that there is no significant influence of information sharing on performance of manufacturing firms. The study's results revealed a substantial positive association between information sharing and manufacturing businesses' performance ($r=0.417$, $p = 0.05$). H_0 , the null hypothesis, was not accepted. The performance of manufacturing enterprises was therefore shown to be significantly impacted by knowledge sharing. This suggests that there is an increase in manufacturing company performance for every increase in information exchange.

The study found that information sharing significantly and favorably impacts a firm's performance. This finding is in line with that of Pereira et al. (2014), who found that information sharing lowers costs throughout an organization's supply chain. Additionally, according to Kong et al. (2017), investing in IS would lead to a decrease in lead times and batch sizes, which would save operational costs. According to the study, trustworthy, pertinent, accurate, and sufficient information sharing by manufacturing companies with other stakeholders throughout supply chains is ensured by information sharing quality. This concurs with Nudurupati et al. (2015), that a variety of variables, including the information's relevance, accuracy, completeness, timeliness, coherence, accessibility, compatibility, availability, and validity, may be used to assess the quality of information sharing.

CONCLUSION

One of the most important factors affecting the operation of the companies is information exchange across supply chain partners. Even though the majority of manufacturing companies share information with their suppliers, more is needed to improve their performance. The study concludes that there was an increase in manufacturing company performance with every increase in information exchanged.

RECOMMENDATIONS

The research suggests that managers foster and maintain information exchange across suppliers, customers, and manufacturers inside their organizations. According to this report, industry participants in the manufacturing sector should work together to raise the standard of information that they communicate with other providers. The majority of businesses have difficulties when attempting to communicate information with other parties in supply chains. The problem of information leakage, which negatively impacts the confidentiality of the shared information, is of paramount significance. In order to prevent unwanted parties from accessing the stolen information, the research advises that precautions be taken, such as encrypting the transmitted information.

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