



INFLUENCE OF LOGISTICS PRACTICES ON PERFORMANCE OF FOOD MANUFACTURING FIRMS

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Abstract:

The study's general objective was to evaluate the influence of logistic practices on the performance of food manufacturing firms in Kenya. The study used a descriptive design. The study was limited to the food manufacturing firms in Kenya. The food manufacturing companies included in this study consist of 234 firms registered as of 2018. The target population was 234 managers in registered food manufacturing firms in Kenya. Census sampling was used, thus a sample size of 234 respondents. The researcher used questionnaires to collect data. The study established that food manufacturing firms in Kenya utilized logistics practices, including material handling, inventory management, transportation management, and information flow. Material handling and inventory management have a significant influence on the performance of food manufacturing firms in Kenya. Transport management also had a significant influence on performance, followed by inventory management. Information flow had no significant influence on the performance of food manufacturing firms in Kenya. The study recommends that food manufacturing firms should relook their transport management to ensure that it contributes to their overall logistics performance. Food manufacturing firms in Kenya need to adopt an integrated ICT controlled system.

Keywords:

Logistics, Inventory, Material Handling, Information Flow

1. Introduction

Modern firms have concentrated on conveying customer value through logistics as a proportion of staying unchallenged. It has been grasped from the globalization of business sectors and tasks (Varsei et al., 2014). It brings forth new points of view of different administrative capacities inside the firm conditions portrayed by production networks and indeed appropriated global procedures (Green et al., 2012). It has been exacerbated by elements in the present customers' international demands, such as better costs, increasingly advantageous customer administrations, and an army of available choices (Green et al., 2012). Firms should focus their resources on production network tasks, for example, logistics, to reinforce their global competitiveness. Distress in the performance of a company's production network affability of wasteful logistics exercises brings about serious misfortunes and can eventually prompt breakdown (Varsei et al., 2014). Logistics assumes a critical job in seeking after the supply chain, which will prompt a redesigned company performance (Dheeraj and Vishal, 2012).

Logistics is the commitment to plan and manage the infrastructure to control the development and situating of unpolished supplies, work-in-process, and finalized stocks at a low cost. Logistics management is characterized as the SC section that plans, actualizes, and controls the industry (Luthra et al., 2011). It adequately forward and turns around the movement and capacity of products. It also benefits and related data from the role of manufacture and its purpose to fulfill customers' needs. Logistics is a link intra-authoritatively between creating and promoting the capacity and inter-hierarchically between traders (Carter et al., 2007). Logistics is rising as a vital basis of competitive edge and the main purpose behind critical partnership connections among organizations and their logistics suppliers. A logistical framework is comprised of an enormous number of partners. They include the traders, makers, wholesalers, merchants, and retailers.

In a global economy, severe and dynamic conditions, logistics administration is a significant vital factor for expanding intensity. The importance of logistics management (LM) had grown from an inactive and cost minimization situation to a critical achievement factor. In this manner, there was a rising agreement about organizations' requirements to deal with logistics in conjunction with monetary and business issues. Logistics practices success is regularly identified with conveyance administration, logistics cost, and tied-up capital (Luthra et al., 2011). Customers progressively expected shorter conveyance times and increasingly specific services. Logistics administration was maybe most effortlessly conceptualized in assembling since there was a physical progression of merchandise. The evolving significance of logistics emerged from organizations turning out to be globalized to access new markets, acknowledge more noteworthy creation efficiencies, and tap innovative skills past their land margins (Kilasi et al., 2013).

Kenya's logistics achievement has weakened. Low logistics effectiveness is a crucial concern and business risk for organizations bringing in to or trading from Kenya. Kenya's infrastructure markers looked moderately significant contrasted with other low-salary nations in Africa. However, they stayed beneath the levels found in the bourgeoisie states in Africa. Taking Kenya's system up to the middle-income countries' status raised yearly development by an excess of 3%. Kenya's advancement plans included notable developments to railroads, seaports, air terminals, roads, and water and health, as the nation endeavors to build its intensity in the international market. Rail and road networks with neighboring nations were as yet constrained. However, Kenya could be a significant territorial center for air transport, port, and railroads.

Kenya had a considerable manufacturing segment serving both the domestic market and East African exports. This segment had been developing since the last part of the 1990s and in the 2000s. Production by Kenya food manufacturing was generally innumerable, and they comprised: raw materials processing, canning of meat and organic product, wheat flour and cornmeal, processing, and sugar refining. Globalization critically affected manufacturing, both domestically and globally. Through widening the commercial center and expanding rivalry, globalization drove customers to put more unique demands on producers to build quality, usefulness, and adaptability while keeping up competitive expenses. One of the methods of improving the effectiveness of food manufacturing firms was to improve logistics achievement. Therefore, if manufacturing firms expected to get proficient and adaptable in their manufacturing techniques, they required various procedures to deal with the development of products from the point of processing to the final consumer.

2. Literature Review

Material handling ensures that each machine and workstation get the correct item in the right amount and quality at the ideal time. Material handlings can work in existing just as new plants (Drum, 2009). Firms' inventory management is legitimately connected to the organization's framework and the ideal customer service level (Kleber, 2006). A firm could stock each product sold in each department devoted to serving every buyer. However, not many businesses could manage such a costly stock placement procedure due to high total costs. Inventory management aims to accomplish the required customer assistance with the least stock responsibility (Narayan and Subramanian, 2008).

Transport Logistics has advanced commonly into a head supplier of 3PL administrations, representing considerable authority in giving its customers practical, innovative answers for the most requesting SC difficulties (Schoinsleben, 2016). In certain conditions, ease and slow transportation are acceptable, while quicker help might be fundamental to accomplishing work objectives. Transport management is the scheduling, controlling, and dynamic of the operational zone of logistics that geologically moved and situated stock (Achahchah, 2019). The information flow is characterized as information progression in various ways with variable substance between different organizational divisions (Inderfurth et al., 2013). Before the information moves in, logistics became indispensable as it empowered chains to react to continuous and precise information. The movement of precise and timely logistics information is essential to the material movement (Carr & Kaynak, 2007). This information movement allows logistics to turn into a significant weapon in the company's armory to intensify the fundamentals' value.

In the USA, Zhang and Lim (2005) evaluated the effect of logistics adaptability on consumer loyalty in manufacturing companies. They reviewed 273 manufacturing firms. The results demonstrated that logistics adaptability had a huge, positive, and direct effect on buyer loyalty. Firms could accomplish consumer loyalty by creating logistics adaptability. It enables a quick refill of input materials and quick conveyance of completed

merchandise to customers. Another study in the US by Green et al. (2008) explored logistics performance on firm performance in an inventory network setting. It uncovered that logistics performance accomplished assembling performance, future development, and new item performance. Along these lines, the assembly industry's opposition was inside the span of production network capability, comprised of a logistics system.

Rosenzweig (2009) also studied the US and reviewed the operational and logistical presentation in estimating manufacturing firms' performance. The study examined various aspects, such as production costs, quality of goods, inventory management, and finished product delivery. He related provider determination and association strategies effect and manufacturing achievement. The study's findings affirmed that logistics success had a remarkable impact on business objectives and overall manufacturing. Still, in the same country, Tontini and Zanchett (2010) examined the connection between logistics success and organizational performance. The study also targeted the manufacturing industry. The outcome showed that the logistics work all strived to limit the proportion of materials used against determined results, achieve pre-characterized goals, gain prevalence when thought about over opponents, and capacity to meet consumer loyalty. The study asserted the impact logistics had on a firm's success.

Vijayaraghavan and Raju (2008) analyzed the relationship between logistics abilities, logistics achievement, and financial performance. The outcomes indicated that both logistics capacity and achievement impacted the fund achievement of a firm. This investigation doesn't consider different firm achievement estimations, including development, overall industry, and consumer loyalty. Those factors couldn't give the right outcomes on firm achievement estimations. Some of the studies reviewed were some years back, and numerous logistics things probably have changed at that point, thus getting extremely hard to consent to these discoveries.

3. Theoretical Framework

The study was guided by four theories: resource-based view theory, game theory, and constraints theory. Resource-based view (RBV) theory aspires to explain a firm's internal sources sustained competitive edge. As per the theory, firms' resources act as a competitive advantage (Barney and Clark, 2007). The theory assumes that assets and capacities are heterogeneously disseminated among firms. RBV was used to explain logistic management significance to a firm by Ganotakis and Love (2010). They indicate that organization adaptability and productivity were viewed as a wellspring of innovative firms' upper hand. Responsibility for explicit resources empowered an organization to build up an upper hand. They also discovered that an organization's upper hand was gotten from its capacity to collect and adventure an appropriate mix of assets (Ganotakis and Love, 2010).

Game theory is the conventional investigation of decision-making where a few participants must decide on behalf of others (Peters, 2015). It is a legitimate investigation of contention and participation. Ideas of the theory apply at whatever point the activities of a few operators are related (Romp, 1997). These pros may be entities, social occasions, firms, or any blend of these. Game theory ideas give a language to design structure, separate, and appreciate indispensable circumstances. Game theory is separated into two major lines: the cooperative and non-cooperative (Brown and Shoham, 2008). Today participation is ending up increasingly more urgent to improve the global exhibition of coordination. As the enhancement of standard vertical collaboration, another cooperation model, the level support is compelling to diminish overall cost and enhance organization rate in associations. Game theory is linked to transport management and the performance of food manufacturing firms. The improved efficiency in transport through reduced transport costs as champion by the game theory can enhance manufacturing firms' performance (Brown and Shoham, 2008).

The theory of constraints (TOC) expresses that each firm ought to have, at any rate, one requirement (Ronen, 2005). Grouping firms imparted obligations and advantages to their upstream and downstream accomplices to make the upper hand. Since competition is among the SCs, the primary objective of the SCM was to arrive at an answer with streamlined benefit for every one of SC's accomplices; this must be acknowledged with the assistance of the coordinating board since there was the frequency of extraordinary divergence between potential advantages and the training. Different partners may have created essential conditions that should have been met to enable the framework to keep working. The TOC motivates managers to distinguish what kept them from accomplishing their objectives (Ronen, 2005).

4. Research Methodology

The study utilized a descriptive research design. Descriptive design is a design used to obtain information concerning the current status of the phenomena and to describe "what exists" concerning variables or conditions in a situation (Creswell, 2013). Through descriptive research, one can garner new information on the theme by describing people, items, and event occurrences (Cooper and Schindler, 2006). The study design helps the researcher describe data and characteristics about the population and phenomenon under study. The study obtained data in a quantitative form from the use of questionnaires.

The food manufacturing companies included in this study consisted of those listed in the KAM directory 2018 and are strictly food processors or manufacturers. There are only 234 companies that are food manufacturers or processors, making the target population. The participants of this study were the management and staff in food manufacturing firms. Using census sampling, the total sample size for the study was 234 managers in food manufacturing companies. Questionnaires were the main form of the primary method. The questionnaire can be designed in such a way that it accommodates both open-ended and close-ended kinds of questions.

The researcher made arrangements with respective food manufacturing firms in Kenya to set dates of their convenience. The researcher then hired two assistants and took them through the data collection process. On the days of data collection, the assistants, together with the researcher, visited firms and dropped the questionnaires to relevant logistics departments' appropriate personnel. The respondents were taken through the document and allowed time to fill the survey. However, to save time, the tools were left with the participants and collected later.

Statistical package for social sciences (SPSS) version 24 software was used in this study. Therefore, the use of mean, percentages, and standard deviations was considered in order. The data collected was analyzed using the below model. The multiple regression formulae to be used are: -

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where,

Y is the dependent variable (performance of food manufacturing firms)

X1 is the first independent variable represented by Material handling

X2 is the second independent variable represented by Inventory management

X3 is the third independent variable represented by Transport management

X4 is the fourth independent variable represented by Information flow

β_0 is the regression constant or intercept,

β_1 , β_2 , β_3 , and β_4 are the unknown parameters (regression coefficients)

ϵ is the error term

5. Results

The study aimed at finding out information on material handling, inventory management, transport management, and information flow in food manufacturing firms in Kenya.

Table 1: Material Handling in Food Manufacturing Firms

Material Handling	Mean	Std. Dev
Materials handling practices affect the quality of products produced by food manufacturing firms in Kenya	4.11	.874
Production levels are affected by material handling practices	3.40	1.127
Material handling practices affect sales volumes	4.23	.705
Customer expectations are met through effective material handling practices.	3.76	.920

Material handling in manufacturing firms enables the quality of products to be improved	3.30	1.328
Overall mean	3.76	

Findings show that the respondents agreed that material handling practices affected sales volumes (mean=4.23, SD=0.705) and materials handling practices affected the quality of products produced by food manufacturing firms in Kenya (mean=4.11, SD=0.874). They further agreed that customer expectations were met through effective material handling practices (mean=3.76, SD=0.920). They were unsure whether production levels were affected by material handling practices (mean=3.40, SD=1.127) and whether material handling in manufacturing firms enabled the quality of products to be improved (mean=3.30, SD=1.328).

Table 2: Inventory Management in Food Manufacturing Firms

Inventory Management	Mean	Std. Dev
Regular inventory check affects product and process quality in food manufacturing firms	4.06	.924
Inventory control has a positive effect on organization profits in food manufacturing firms in Kenya	4.03	.848
Regular cycle counting can impact production and distribution costs in food manufacturing firms	4.20	.788
Warehousing activities are automated in this organization	4.25	.663
Warehousing activities have an impact on organizational efficiency in food manufacturing firms	4.05	.813
Overall mean	4.12	

The study established that most of the respondents had agreed that warehousing activities were automated in that organization (mean=4.25, SD=0.663). Regular cycle counting could impact production and distribution costs in food manufacturing firms (mean=4.20, SD=0.788). Regular inventory checks affected product and process quality in food manufacturing firms (mean=4.06, SD= SD=0.924). They further agreed that inventory control had a positive effect on organization profits in food manufacturing firms in Kenya (mean=4.03, SD=0.848) and that warehousing activities impacted organizational efficiency in food manufacturing firms (mean=4.05, SD=0.813).

Table 3: Transport Management in Food Manufacturing Firms

Transport Management	Mean	Std. Dev
The fleet management system has a positive effect on delivery time for most manufacturing firms	3.75	.947
Adherence to vehicle inspection schedules impacts on fleet costs in food manufacturing firms	4.34	.657
Transport management affects product damages while on transit in	3.90	1.037

food manufacturing firms		
Vehicle inspection schedule is key for any manufacturing firms that want to enhance its performance	4.38	.486
Preventive maintenance can impact transport management in the food manufacturing firms	3.90	1.283
Overall mean	4.05	

From the results shown in Table 3, many respondents agreed that vehicle inspection schedule was key for any manufacturing firms that want to enhance its performance (mean=4.38, SD=0.486), adherence to vehicle inspection schedules impacted fleet costs in food manufacturing firms (mean=4.34, SD=0.657) and preventive maintenance could impact transport management in the food manufacturing firms (mean=3.90, SD=1.283). They also agreed that transport management affected product damages. In contrast, on transit in food manufacturing firms (mean=3.90, SD=1.037) and that fleet management system positively affected delivery time for manufacturing firms (mean=3.75, SD=0.947).

Table 4: Information Flow in Food Manufacturing Firms

Information Flow	Mean	Std. Dev
Information flow across all logistics functions can have a positive effect on the performance of manufacturing firms.	3.57	.966
Practicing internal information sharing can impact organization revenue, market share, and customer satisfaction	3.73	1.207
The organization has invested in information communication systems	2.28	1.282
Information flow can impact demand forecasting in food manufacturing firms.	2.95	1.585
Information flow affects achieving timely response to customer preferences in food manufacturing firms.	3.22	1.454
Information flow impacts achievements of optimal inventory levels in food manufacturing firms.	3.98	.785
Information flow allows manufacturing firms to achieve a smooth flow of materials and products	3.92	.922
Overall mean	3.38	

The respondents agreed that information flow impacted optimal inventory levels in food manufacturing firms (mean=3.98, SD=0.667). Information flow allowed manufacturing firms to achieve a smooth flow of materials and products (mean=3.92, SD=0.922). They also agreed that internal information sharing could impact organization revenue, market share, customer satisfaction (mean=3.73, SD=1.120), and information flow across all logistics functions could positively affect the performance of manufacturing firms (mean=3.57, SD=1.060). They were undecided whether Information flow affects the timely response to customer preferences in food manufacturing firms (mean=3.22, SD=0.836) and whether information flow can impact demand forecasting in food manufacturing firms (mean=2.95, SD=0.780). They disagreed that the organization had invested in information communication systems (mean=2.28, SD=0.894).

Table 5: Relationship Between Logistics Practices and Performance

Model	Unstandardized Coefficients		Standardized	t	Sig.
	B	Std. Error	Coefficients Beta		
(Constant)	1.560	.892		1.750	.082
Material handling	.285	.188	.159	1.515	.032
Inventory management	.924	.229	.427	4.034	.000
Transport management	.717	.205	-.283	-3.502	.001
Information flow	.053	.127	.028	.414	.679
R	0.467				
R ²	0.218				
Adjusted R ²	0.200				
Sig	0.000				

Inventory management has the greatest significant influence on Kenya's food manufacturing firms ($\beta=0.924$, $p=0.000$). It is followed by transport management ($\beta=0.717$, $p=0.000$) and material handling ($\beta=0.285$, $p=0.032$). R2 is 0.218, indicating that the independent variables explain only 21.8% of the influencers' performance in Kenya's food manufacturing firms.

6. Discussion of Findings

Findings established that material handling practices affect sales volumes and materials handling practices affect the quality of products produced by food manufacturing firms in Kenya. Customer expectations are met through effective material handling practices. It is unclear whether production levels are affected by material handling practices and whether material handling in manufacturing firms enables the quality of products to be improved. Thus, the study found material handling in food manufacturing firms to be effective. Findings by Ballou (2003) indicated that products are packaged to serve the marketing needs of branding and promotional purposes. It also protects the product from loss and damage as it is reached to its required destination in the right condition.

The study established that warehousing activities are automated in that organization. Regular cycle counting can impact production and distribution costs in food manufacturing firms, and regular inventory check affects product and process quality in food manufacturing firms. Inventory control positively affects organization profits in food manufacturing firms in Kenya, and warehousing activities impact organizational efficiency in food manufacturing firms. According to Lysons and Farrington (2012), the firm inventory management's main aim is to keep costs at a minimum. The findings are also in line with Sandberg and Abrahamson (2011) that for most firms, a rise of activity

has surged around logistics practices, encompassing a broad sweep of corporate supply-demand strategies that stretch from the raw materials to the ultimate customer and productivity-boosting tools.

A vehicle inspection schedule is key for any manufacturing firm that wants to enhance its performance. Adherence to vehicle inspection schedules impacts fleet costs in food manufacturing firms. Preventive maintenance can impact transport management in food manufacturing firms. It was also established that transport management affects product damages while on transit in food manufacturing firms. The fleet management system has a positive effect on delivery time for most manufacturing firms. Transport management in manufacturing firms has been adopted. The practice of transportation by food manufacturing companies, to a large extent, concur with the arguments of Wisner et al. (2011) that transportation is a vital link between firms in a supply chain and that it must be managed effectively to meet customer due dates.

It was also established that information flow impacted achievements of optimal inventory levels in food manufacturing firms. Information flow allowed manufacturing firms to achieve a smooth flow of materials and products. Practicing internal information sharing could impact organization revenue, market share, customer satisfaction, and information flow across all logistics functions that could positively affect manufacturing firms' performance. It is unclear whether information flow affects the timely response to customer preferences in food manufacturing firms and whether information flow can impact demand forecasting in food manufacturing firms. Food manufacturing firms had not invested in information communication systems. It is unclear whether information flow has been achieved in food manufacturing firms in Kenya. The study's finding concurs with Azevedo et al. (2007) that information flow must enhance the firm's logistics processes by planning, controlling, coordinating, and monitoring the logistics process to be effective and efficient.

7. Conclusions

The study established that food manufacturing firms in Kenya utilized logistics practices, including material handling, inventory management, transportation management, and information flow. Inventory management is the most significant attribute of logistics practices in food manufacturing firms. First is the automation of warehouses. Companies that have automated warehouses save on time and labor usage in the long-run. Second, firms that have installed regular counting perform better than their counterparts who haven't. Third, for food manufacturing firms to ensure better inventory management, they must regularly check on the raw and finished goods. All activities that happen in a warehouse should be taken seriously while at the same time ensuring that inventory is controlled.

Material handling is another logistic practice that highly influences food manufacturing firms. Material handling influences the sales volume of a company. Material handling practices also determine the quality of the finished products. Of importance also in any company is meeting customer expectations, facilitated by material handling practices. Companies may also identify the improvements that need to be made in the quality of goods and production levels through material handling practices. The study established positive beta coefficients with only two variables, material handling and inventory management, based on the regression analysis. Thus, the study concludes that the most significant factors to consider in logistics management is inventory management and material handling. The study concludes that transport management has no significant influence on performance. Information flow also does not contribute to the performance of food manufacturing firms.

The food manufacturing firms should relook their transport management to ensure that it contributes to their overall logistics performance. In Kenya, food manufacturing firms need to adopt an integrated ICT controlled system, enabling clear monitoring and administration of logistical operations and boosting its overall efficiency. There is a need to improve transport management in food manufacturing firms in Kenya. Though the study indicated a negative influence of transport management on food manufacturing firms' performance, there is still room for improvement. The firms need to deliberate on possible ways of improving transport infrastructure to enhance their performance.

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