INFLUENCE OF LOGISTICS PRACTICES ON PERFORMANCE OF MANUFACTURING FIRMS IN KENYA

A SURVEY OF MANUFACTURING FIRMS IN KENYA

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ABSTRACT

This study examined the influence of logistics practices on the performance of manufacturing firms. The specific objectives of the study were to examine the influence of information flow management on the performance of manufacturing firms, to determine the influence of Reverse Logistics on the performance of manufacturing firms, to examine the influence of transport management on the performance of manufacturing firms and to establish the influence of Inventory Management Practices on the performance of manufacturing firms. The study used a descriptive design. The target population for this study was the manufacturing firms in Kenya. The study population was the manufacturing firms registered by the Kenya Nation Burial of Statistics and the respondents were the heads of logistics management of these firms. A structured questionnaire was administered through e-mail and hand delivery. The questionnaire was tested for validity and reliability before administering to the respondents. Both quantitative and qualitative techniques were used to analyze the data with the assistance of the SPSS software program version 21. The presentation was in form of tables. The findings of the study were that: The organizations are yet to ensure that the information on demand forecast is shared with logistics partners; there is low receipt and address of customer complaints and feedback regarding service provision; Organizations have not yet established a level-down strategy on how to recall faulty products; Organizations use the electronic system to track all products that are transported to customers and that performance of firms in Kenya is highly dependent on information flow management, reverse logistics, transport management, and inventory management. The study concluded that logistics practices have a significant contribution to the performance of manufacturing firms in Kenya. The recommendations were that: The firms should integrate their information systems with their business partners such as the suppliers to ensure the information on demand forecast is shared with their logistics partners. The organization should have a well-established collection point in different towns for returnable packages; vehicles should have a scheduling system to avoid idle driver time. . Moreover, cycle counting should be periodically conducted to reduce and or avoid discrepancies between the recorded and actual inventories in the organization.

Keywords: *Firm Performance, Information Flow, Information technology, Inventory Management Logistics.*

1.0 INTRODUCTION

Firms exist in an external environment, and the turbulence of the environment and the level of competition tend to shift the strategies of firms and organizations' operations. In a global world of business, firms and organizations look towards some of the many options available in the form of opportunities and strategies to deal with the challenges that will deny them the chance of being market leaders. The ultimate objective of the strategy, according to De Kluyver and Pearce (2006), is "long-term, sustainable superior performance." The ability of a manufacturing company to become a fully integrated partner within a supply chain environment is now necessary for such exceptional performance (Cooper et al., 2014). Manufacturing, buying, selling, logistics, and the distribution of real-time, seamless information to all supply chain partners are a few examples of business operations that must be connected (Cohen & Roussel, 2005). The Japan Institute of Logistics System (2011) discovered that through achieving customer satisfaction, reducing unprofitable inventory and its transfer, and lowering supply costs, logistics practices synchronize, improve business performance, and boost corporate value. The idea of having the appropriate product at the right place paired with the correct promotion and availability in the right place and all leading to customer happiness is integrated into logistical practices through marketing efforts to support business goals (Vogt et al., 2006).

Firms need a long-term plan that focuses on sustainability and the challenges of achieving exceptional performance if they want to perform better. Additionally, the factors that promote such sustainability must be considered. Companies will need to consider these concepts for managing their logistics operations and procedures because doing so will result in cost savings, resource efficiency, and even higher-quality service delivery. Traditional manufacturing, purchasing, and logistics methods have developed over time and changed into broader approaches to managing materials and distributions known as supply chain management.

Fast-moving consumer goods companies chose this method to deliver their goods throughout Kenya and beyond, putting less emphasis on other manufacturing sectors, which contributed to the continuous growth of the importance of logistics management in Kenya (Katuse, 2020). Furthermore, the majority of those companies used third-party logistics (3PL) in their operations and showed little interest in enhancing logistics management. Njambi and Katuse (2013) assert that the use of logistics has become a crucial component for firms in establishing a competitive edge in an era of shortening product life cycles, proliferation of product lines, shifting distribution chains, and quickly evolving technological innovation. This was the case because logistics management combines two fundamental goals: high service quality and low operating costs, which are the goals of every other company.

1.1 Statement of the Problem

In many emerging economies especially in Asia, the manufacturing industry had been the economic growth engine and was the major tradable sector in those economies (Steven, 2004). However, Kenya's manufacturing industrial sector enjoyed modest growth rates averaging 4 percent over the last decade (KAM, 2012). In the year 2000 manufacturing sector was the second largest sub-sector of the economy after agriculture (RoK, 2008) but in 2010, it was in fourth place behind agriculture, wholesale and retail trade, transport, and communication (World Bank 2012). As a result, the sector had seen a reduction in its contribution to GDP from 13.6 percent in the early 90's to 9.2 percent in 2012, (RoK, 2013).

Kenya Vision 2030 emphasizes the need for an appropriate manufacturing strategy for efficient and sustainable practices as a way of making the country globally competitive and prosperous nation (RoK, 2007). Nevertheless, most manufacturing firms in Kenya operate at a technical efficiency of about 59 percent compared to their counterparts in Malaysia which average about 74 percent raising doubts about the sector's capacity to meet the goals of Vision 2030 (RoK, 2007). While all the previous studies tended to focus more on the developed world (McKinnon, Edwards, Piecyk & Palmer, 2009; Sanchez-Rodrigues, Cowburn, Potter, Naim & Whiteing, 2009). Evidence showed that the cultural, social, economic, and environmental aspects of each country did influence the link between logistics management and performance (Arasa & Achuora, 2020).

Keebler and Plank, (2009) agreed that the findings of US firms could not represent the universe of companies nor be generalized to other countries. Furthermore, the first world such as Europe, America, and part of Asia had more developed infrastructure and business structures that easily supported the implementation of logistics as opposed to

developing countries. The effort to achieve generalization of the causal relationship between logistics management and the performance of manufacturing firms called for empirical confirmation in diverse environments, especially developing economies such as Kenya. This study, therefore, intended to empirically examine how transport management, inventory management, order process management, and information flow management influenced the performance of manufacturing firms in the Kenyan setting.

1.2 Objectives of the Study

1.2.1 General Objective of the Study

The general objective of the study was to establish the influence of logistics practices on performance of firms. A case study of manufacturing firms in Kenya.

1.2.2 Specific Objectives of the Study

1. To establish the influence of information flow management on performance of manufacturing firms in Kenya.
2. To determine the influence of Reverse Logistics on performance of manufacturing firms in Kenya
3. To examine the influence of transport management on performance of manufacturing firms in Kenya
4. To establish the influence of Inventory Management on performance of manufacturing firms in Kenya

1.3 Significance of the Study

Findings from this study shall form a foundation for implementing effective logistics practices.

The finding of this research forms a reference basis for researchers, scholars, and students in the same area of study. The study shall be valuable to them in identifying areas that need more research in the view of literature reviews and identifying existing gaps. The primary findings enable the policymakers in manufacturing firms and other sectors of the economy to understand how logistics practices influence the performance of the industries and consequently come up with criteria that can be used by the regulators to attain better logistics performance amongst the firms and logistic service providers.

1.4 Scope of the Study

The focus of this study was on the logistics practices of manufacturing firms in Kenya. This was divided into three strata: Nairobi, Mombasa, and the rest of the country. The target population for the study was the employees of these manufacturing firms due to their understanding of the logistics practices in their respective manufacturing firms. This involved representative sample manufacturing firms selected from the three strata.

1.5 Conceptual Framework

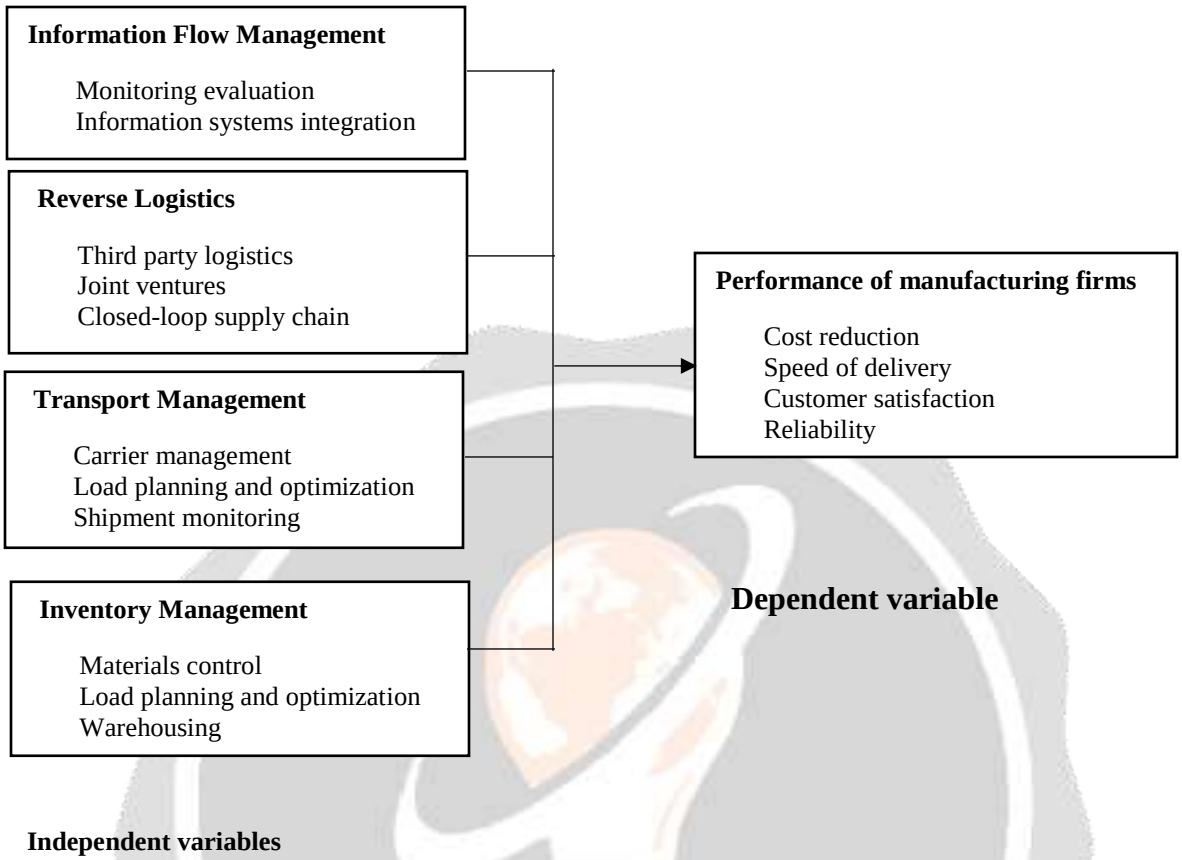

Figure 1.1. Conceptual Framework

2.0 RESEARCH METHODOLOGY

2.1 Research design

A descriptive Cross-sectional survey design was employed in this study. A descriptive survey is described by Cooper & Schindler, (2007) as a scientific method that involves observing and describing the behavior of a subject without influencing it in any way. Mugenda and Mugenda (1999) define a survey as a strategy used to collect information from a large population using structured interviews, and questionnaires among other methods. This research design is suitable for this study because it is an efficient way of collecting information from a selected number of respondents targeted from a given population. Cross-sectional studies involve data collection from a population, or a selected subset, at one specific point in time (Cooper & Schindler, 2007).

2.2 Target population

The target population refers to the subjects under study (Cooper and Schindler, 2001). The target population usually has varying characteristics and it is also known as the theoretical population. (Robson, 2003). The population of this study consisted of all the manufacturing firms in Kenya. The target population was all manufacturing firms in Kenya that are members of Kenya KAM. According to the Kenya manufacturers and exporters, 2017 directory KAM has 774 members.

2.3 Sampling Frame

Kothari (2004) defines a sampling frame as a list of the population from which a sample is drawn. It is the source material or device from which a list of all elements within a population that can be sampled is drawn and may include individuals, households, or institutions. It's a published list with a set of directions for identifying a population (Malalan & Zikmund, 2019). A sampling frame facilitates the formation of a sampling unit that refers to one member of a set of entities being studied which is the material source of the random variable (Bailey, 2008). For this study, the sampling frame was drawn from the lists of manufacturing firms in Kenya which are members of Kenya KAM.

Table 2.1: Key Manufacturing Sectors and number of firms to be sampled

Subsector	**Total population**	**Sample**
Service & consultancy	77	8
Building, Mining & Construction	62	6
Chemical & allied sector	74	7
Energy, Electrical & Electronics	40	4
Food & Beverages	81	8
Leather & Footwear	18	2
Metal & Allied Sector	75	8
Motor Vehicle & Accessories	40	4
Paper & Board Sector	69	7
Pharmaceutical & Medical Equipment	43	4
Plastics & Rubber	69	7
Fresh Produce	24	3
Textile & Apparels	63	6
Timber, Wood & Furniture	39	4
Total	**774**	**78**

KAM 2017

2.4 Sample and Sampling Technique

2.4.1 Sample Size

Saunders *et al*., (2019) refer to the sample as a subset of the target population. A sample can be used to derive inferences about the population if appropriate sample size and sampling techniques are used. The sample size is the number of units of observation that the researcher intends to collect information from. In this case, it is the number of manufacturing firms that the researcher collected data on logistics management and firm performance. A sample size of seventy-eight firms was selected for this study which represented about 10% of the total population.

2.4.2 Sampling Technique

This study employed a proportionate stratified random sampling technique. This technique was preferred because manufacturing firms in Kenya fall under 14 sectors according to KAM. This technique was appropriate because the elements to be sampled from each sector were proportional to their representation in the total population.

2.5 Data collection instrument

The data collection instrument used in the research was the questionnaire**.** A questionnaire is a general term to include all techniques of data collection in which each person asked to respond to the same set of questions in a predetermined order (Saunders, 2009).

2.6 Data collection procedure

In conducting this study, the researcher collected data from a primary source. Raw data was collected from logistics staff. The study adopted this method because, with questionnaires, a large amount of information is collected in a short period and in a relatively cost-effective way (Mohammed, 2014). Drop and pick method shall be used as a method of administering the questionnaires so that the respondent fills the questions at their convenience time.

2.7 Pilot test

Before the actual research, a pilot test was conducted by some manufacturing companies in Nairobi. Mugenda and Mugenda (2003) argue that reliability is the measure of the degree to which a research instrument yields consistent results or data after repeated trials. Ten (10) percent of the population of the study was used in the pilot study.

2.8 Data Processing and Analysis

Before performing the data analysis, the raw data was collected from the field and cleaned, edited, and then coded. This exercise transformed the data into information. Mukherjee (2019), defined data analysis as the computation of certain measures along with searching for patterns of relationships that exist among data groups. Data processing and analysis are essential to ensure that all relevant data is gathered for making contemplated comparisons and analyses (Mugenda & Mugenda, 2003). The researcher used descriptive analysis to analyze the quantitative data. According to Mbwesa (2006) and Sije (2017) descriptive analysis involves finding numerical summaries to provide a deeper insight into the characteristics and description of the variables under study. Kombo and Tromp (2006) observed that data can be presented using statistical techniques, graphical techniques, or a combination of both to come up with comprehensive conclusions. Quantitative data was presented using statistical techniques such as tables while qualitative data were presented descriptively in this study.

3.0 RESULTS AND DISCUSSION

3.1 Response Rate

A total of 78 questionnaires were issued to the study respondents out of which 62 were correctly filled and returned. This translated to a response rate of 79%. Only 21% of the questionnaires were never returned and or were not fully and correctly filled.

3.2. Demographic Information

3.2.1 Job Position

Table 3.1 Job Position

Job position	Frequency	Percent
operation Manager	8	12.9
warehouse manager	42	67.7
Others	12	19.4
Total	62	100.0

From table 3.1 above, the findings about the respondents' job positions indicated that 12.9% (8) of the respondents were at the operations manager level, 67.7% (42) were at the warehouse management level and those from other positions were at 19.4% (12). The findings above show that the information gathered was all-inclusive since employees from various job levels were involved.

3.2.2 Education Level

Educational level information is critical in assessing the respondents' understanding of the subject of study.

Table 3.2 Education Level

Education Level	Frequency	Percent
secondary	1	1.6
college diploma	8	12.9
university degree	44	71.0
post graduate degree	9	14.5
Total	62	100.0

From table 3.2 above, 1 (1.6%) respondent indicated to be of up to secondary level. While 12.9% (8) of the respondents indicated being up to college diploma level. Those of university degree level was at 71.0% (44) while those who possessed post graduate degree were 9 respondents representing 14.5%. The findings show that majority of the respondents are in possession of university degrees and postgraduate degrees showing that they were in a good position to easily understand the information required of them.

3.2.3 Years of Working

3.3 Years of working

Years of Working	Frequency	Percent
below 5 years	2	3.2
between 6-10 years	20	32.3
between 11-15 years	25	40.3
16-20 years	11	17.7
above 20 years	4	6.5
Total	62	100.0

When asked about the number of years that the respondents worked in the organization, the majority of the respondents indicated to have worked between 11-15 years with a representation of 40.3% (25). 32.3% (20) of them had worked for a period of between 6-10 years while 17.7% (11) had worked for a period of between 16-20 years. 6.5% (4) indicated to have worked for a period of above 20 years while only 3.2% (2) respondents showed an experience of below 5 years.

3.3 Information Flow Management

Table 3.4 Information Flow Management

Statement	Mean	Std. Deviation
Information on delivery schedules is communicated to our clients before delivery is made	3.7742	.71102
Information on demand forecast is shared with our logistics partners	3.4516	.66966
Any change in delivery is communicated to our customers	2.9516	.81838
Our organization receive and address feedback from the customers	2.7097	.71028

Information flow management was the first variable of the study. The study established that the respondents agreed with the statement that information on delivery schedules is communicated to the clients before delivery is made as shown by a mean of 3.7742 and a standard deviation of 0.71102. There was a neutral response to the statement that information on demand forecast is shared with the logistics partners as depicted by a mean of 3.4516 and a standard deviation of 0.66966. However, the respondents disagreed with the statements that any change in delivery is communicated to our customers and that our organization receives and addresses feedback from the customers each with a mean of 2.9516 and 2.7097 respectively. These findings agree with Ojugo and Eboka (2019), who found that with the emergence of ICT, information flow provides a special advantage to linking one activity with the others and make real-time data created in activity widely available, both within the firm and with outside suppliers, channels, and customers. For information flow to be effective and efficient; it must enhance the firm's logistics processes by planning, controlling, coordinating, and monitoring the logistics process.

3.4 Reverse Logistics

Table 3.5 Reverse Logistics

Statement	Mean	Std. Deviation
We have a level down strategy on how to recall faulty products in our organization	3.4355	.59011
We have collection points in different towns for returnable packages	3.1613	.70580
We have appointed carriers in different regions to facilitate frame of returnable package	3.0000	.47907

Upon request to give their information regarding reverse logistics practices in their organization, the respondents gave a neutral agreement to all the statements showing that they neither agreed nor disagreed with the statements. As to the statement that the organization has a level-down strategy on how to recall faulty products in our organization, a mean of 3.4355 shows a neutral response. Other statements recorded neutral responses each. On the statements that we have collection points in different towns for returnable packages and that we have appointed carriers in different regions to facilitate the frame of a returnable package, the study realized a mean of 3.1613 and 3.0000 respectively. The findings do not agree with Villafuerte (2006), who in their study concluded that increasingly, stringent environmental and packaging regulations are forcing companies to become more accountable for residual and final products, long after the final product is sold and is in the hands of the customers.

3.5 Transport Management

Table 3.6 Transport Management

Statement	Mean	Std. Deviation
Our organization uses electronic system to track all products that are transported to customers	4.0323	.47797
We have route planning for collection and delivery of orders	3.8065	.53832
We have vehicle scheduling system to avoid idle driver time	2.8548	.50722

When asked about various transport management practices, the respondents gave their responses as tabulated above. The respondents agreed (mean= 4.0323, standard deviation= .47797) similarly, there was also an agreement on the statement that we have route planning for collection and delivery of orders with a mean of 3.8065. However, the respondents disagreed with the statement that 2.8548. The findings agree with those of Kumarage (2021), the Transportation system is the most important driver in logistics and practical means of achieving transportation objectives such as low costs, timely delivery of transportation-related information to the rest of the enterprise and to customers, increase transportation velocity while making optimum use of the firm's resources depends on the state of the transportation systems in use.

3.6 Inventory Management

Table 3.7 Inventory Management

Statement	Mean	Std. Deviation
We make JIT deliveries to our customers	3.0000	.62725
We have VMI strategy for managing the spare parts of our vehicle.	3.3710	.51958
We use ABC analysis to categorize our inventory for proper management	4.3548	.57536
Our organization conducts cycle counting to reduce discrepancies	3.9677	.65205

The respondents of the study were required to give their responses regarding inventory management practices. On the statement that the organization makes JIT deliveries to the customers, the respondents gave a neutral response as shown with a mean of 3.0000. Similarly, they gave a neutral response to the statement that they have a VMI strategy for managing the spare parts of the vehicles with a mean of 3.3710. However, on the statement that we use ABC analysis to categorize our inventory for proper management and that our organization conducts cycle counting to reduce discrepancies, there was agreement recorded as depicted by a mean of 4.3548 and 3.9677 respectively. According to Lysons and Farrington Ogbo and Ukpere (2014), measuring the effective and efficient performance of inventory depends on to what extent the firm has the right quantity of inventory in the right place and at the right

time which is dependent on the inventory management technique in place. The indicators to measure such inventory are the lead time, the service time (safety stock), and the rate of stock turn, stock-outs in a given period, and stock cover.

3.7 Performance of Firms

Table 3.8 Performance of Firms

Statement	Mean	Std. Deviation
There is customer satisfaction as transport costs are managed to the bare minimum	3.9419	.67594
Use of JIT minimizes stockholding costs in our firm	4.1290	.71251
Our organization has expanded its market share.	3.9903	.63082
Speed of delivery has been improved with proper transport management	3.9032	.80388

The performance of the firms is the dependent variable of the study. The respondents were asked for information leading to the interrelation between the independent and the dependent variables of the study. There was a general agreement in the relationship between the study variables. When asked whether there is customer satisfaction as transport costs are managed to the bare minimum, the respondents agreed at a mean of 3.9419 and a standard deviation of 0.67594. A mean of 4.1290 was recorded on the statement that the use of JIT minimizes stockholding costs in our firm. There was also an agreement to the statements that our organization has expanded its market share and that Speed of delivery has been improved with proper transport management marked by a mean of 3.9903 and 3.9032 respectively. The findings of this study agree with Mutuku and Morongo (2020), who investigated the influence of logistics being the independent variable, on the performance of manufacturing firms being the dependent variable. The study used both descriptive and explanatory research designs. A semi-structured questionnaire was administered through e-mail survey and hand delivery. The study found out there is a positive relationship between logistics and the performance of manufacturing companies in Kenya.

4.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

4.1. Summary and Findings

Information connects the organizations' functional units and the whole organization to external stakeholders. Information flow provides a special advantage to linking one activity with the others and makes real-time data created in activity widely available, both within the firm and with outside suppliers, channels, and customers. The organizations are yet to ensure that the information on demand forecast is shared with logistics partners since there is low information sharing at the moment. There lacks communication of change in delivery to the customers. Moreover, there is low receipt and address of customer complaints and feedback regarding service provision. Reverse logistics is a strategy that provides value-recapturing ways to ensure that cost reduction, profit maximization, and environmental conservation have all been achieved simultaneously. Organizations have not yet established a level-down strategy on how to recall faulty products. There are no well-established collection points in different towns for returnable packages. Moreover, there are minimally appointed carriers in different regions to facilitate the frame of a returnable package Transportation system is the most important driver in logistics and practical means of achieving transportation objectives such as low costs, timely delivery of transportation-related information to the rest of the enterprise and customers, increase transportation velocity while making optimum use of the firm's resources depends on the state of the transportation systems in use. Organizations use the electronic system to track all products that are transported to customers. There is also established route planning for the collection and delivery of orders. However, organizations do not have a vehicle scheduling system to avoid idle time. Measure the effective and efficient performance of inventory depends on to what extent the firm has the right quantity of inventory in the right place and at the right time which is dependent on the inventory management technique in place. The performance of firms in Kenya is highly dependent on information flow management, reverse logistics, transport management, and inventory management. This was proven in the research since there was an agreement on the relationship between the performance of the firms and the aforementioned independent variables.

4.2 Conclusions

Logistics practices have a significant contribution to the performance of manufacturing firms in Kenya. Manufacturing firms have achieved a lot due to the implementation of these strategies. However, there still exists an

enormous opportunity to even achieve more performance if the implementation of logistic strategies will be handled with the seriousness that it deserves. Information flow management is a function that connects the business to the external and internal environment.

4.3 Recommendations

The firms should integrate their information systems with that of their business partners such as the suppliers to ensure the information on demand forecast is shared with their logistics partners. Furthermore, any change in delivery should be communicated to the customers on time to enable them to go for contingency plans. Finally, the organization should have a well-structured system of receiving and addressing feedback from the customers. This will go a long way in boosting customer satisfaction and loyalty. Reverse logistics is a very important strategy for tracing and collecting back value in the supply chain. The organization should have a well-established collection point in different towns for returnable packages. There should be appointed carriers in different regions to facilitate the frame of returnable packages. As a way of reducing fuel costs, the organization should have route planning for the collection and delivery of orders. This also helps in ensuring proper vehicle usage and maintenance. The vehicle should have a scheduling system to avoid idle driver time. Vehicles should only be used when necessary. The firm should employ the use of JIT deliveries to their customers. This will require good information communication and commitment. Vendor-managed Inventory strategy should as well be used for managing the spare parts of vehicles in the organization. Moreover, cycle counting should be periodically conducted to reduce and or avoid discrepancies between the recorded and actual inventories in the organization. Improvement of firms' performance can even be better improved if the specific logistics practices are perfected. Market share will be expanded, better delivery and improved transport management services. This will eventually boost the customers' satisfaction.

4.4 Areas for further research

There still exist a number of areas that need to be studied. Logistics practices in government parastatals are one of the key areas especially because government set-up is service-oriented and not profit maximization and cost reduction. Another area is logistic practices in the Non-governmental organizations which are donor-funded. The two areas are quite different from the manufacturing set-up, therefore worth researching on.

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