American Journal of
Supply Chain Management
(AJSCM)

EFFECT OF TRANSPORTATION MANAGEMENT SYSTEMS ON SUPPLY CHAIN PERFORMANCE OF FMCG IN KENYA

Muhalia Eric Jepherson, Dr. Patrick Karanja Ngugi and Dr. Makori Moronge

American Journal of Supply Chain Management

Vol.6, Issue 1 No.1, pp 1 - 12, 2021

www.ajpojournals.org

EFFECT OF TRANSPORTATION MANAGEMENT SYSTEMS ON SUPPLY CHAIN PERFORMANCE OF FMCG IN KENYA

[1*] Muhalia Eric Jepherson
[1]Post Graduate Student: Jomo Kenyatta University of Agriculture and Technology
*Corresponding Author's E-mail: emuhalia626@gmail.com

[2] Dr. Patrick Karanja Ngugi
Lecturer: Jomo Kenyatta University of Agriculture and Technology

[3] Dr. Makori Moronge
Lecturer: Jomo Kenyatta University of Agriculture and Technology

Abstract

Purpose: The purpose of this study was to determine the effect of transportation management systems on supply chain performance of FMCG in Kenya

Methodology: The study adopted descriptive research design. The unit of observation was the operations manager of the 51 FMCG manufacturers located in Nairobi. The sampling frame of the current study consisted of operations managers in the manufacturers of the FMCGs in Nairobi. The study used the census method to select 51 manufacturers of the FMCGs in Nairobi, thus the sample of the study was 51 respondents. Primary data was used in the study. The study used questionnaires to collect data. Mixed methods technique of analyzing data was used where both descriptive and inferential analysis were used. The data collected from the field was analyzed using SPSS 23 program. The questionnaires were referenced and the items in them coded for easier data entry. The presentation of the findings was done using tables.

Results: The study found that transport management systems positively and significantly influences Supply chain performance of FMCG in Kenya. The study established that transport management systems provides trade compliance information and documentation; transport management systems make it easier for businesses to manage and optimize their transportation operations, whether they are by land, air, or sea; transport management systems ensures timely delivery of freight and goods; transport management systems provides visibility into day-to-day transportation operations; and transportation management systems helps to streamline shipping process.

Unique contribution to theory, practice and policy: The study recommended that companies should automate their scheduling process this will lead to fewer interventions by the management and therefore lowering any chances of delays. The study also suggests that companies can embrace the technology of Radio Frequency Identifications in boosting up their performance in regard to effectiveness and efficiency of manufacturing and performance of supply chain

Key words: *Transport Management Systems, Supply Chain Performance, Fast-Moving Consumer Goods*

1.0 INTRODUCTION

The process where goods and products are shipped from the supplier to a warehouse of to a sale location is referred to as transportation (Kenyon & Meixell, 2011). Transportation Management Systems imply the use of technology to achieve the objective of transportation such as low costs, delivery on time, and increase in velocity of transportation and at the same time optimizing the use of resources of the organization (Stock & Lambert, 2010). There is overriding objectives of transportation which is to move a product from one point to another i.e. from A to B.

Transportation acts as a very crucial link between a company in SC and it needs proper management in order to meet the needs of clients in time and their requirements of shipping at affordable prices (Wisner *et al*, 2012). Transportation in logistics is what provides flow of materials, products and persons between facilities of production, warehouses, centers of distribution, terminals, and clients (Kasilingam, 2010). In transportation management, the value chain comprises the shippers, suppliers, and logistics service providers (Sandberg & Abrahamsson, 2011). Most humanitarian organizations succeeds in logistics management because they incorporate supply chain in their logistics management to effective collaboration with their clients, suppliers and providers of transportation increasing efficiency, accuracy and timely delivery (Kiraga, 2014).

The advantage of applying the use of few carriers who are dedicated is that it lowers complexity of requirements of administration, develop relationship as well as liaisons with partners in supply partners, negotiating more favorable tariffs for freight based on volumes such that high volumes can be charged lower, transforming carriers or forwarding into key partners, creating vested interests for the carriers and forwarding to retaining business, improving the level of services and lowering general cost of transportation (Aberdeen Group, 2015). With the aim of maximizing efficiencies in term of cost and timeliness, a company needs to consider the modes that are most effective, uses equipment efficiently in routing, packaging and containerization techniques (Cozzolino, 2012).

The only activity providing time and place utilities through inbound and outbound logistics are transportation. If the company does not have an efficient system of transport it might incur high costs in delivering products to their customers and therefore result to losses; and it is important for the transport system used in an organization to have the ability of addressing major issues of selection mode and routine and size of the fleet because it is the vital competition force for companies (Goldsby, 2014).

Li and Visich (2006) researched on Radio Frequency Identification (RFID): Impacts of SC and Challenges of Implementation. In their research they found that the RFID systems implementation has the potential of revolutionizing dynamics of SC through significant increase in transparency in SC by disseminating a large amount of accuracy and real time information. They added that the data could be applied in enhancing process of making decisions through SC with the aim of increasing efficiency in SC and lowering lead time and levels of inventory and at the same time minimize stock outs, overstocks and shrinkage. Through such improvements, there is increased level of customer satisfaction, increased sales and profitability and sustainable competitive advantage.

Michaelides (2010) did a case study on optimization of logistics operations using GPS technology solutions. The study found that the key to consignment sharing of information and confirmation of deliveries is Web-enablement and GPS mobile tracking. The study also found that efficiency is also improved by having daily automated vehicle checks. Automation of scheduling process is advantageous because it leads to fewer interventions by the management and therefore lowering any chances of delays. Managers in charge of transport get to focus on drivers and other business issues like performance of individuals, optimal procedures, and new services to customers rather that calling of the drivers manually to establish where they are located, their status and schedule. As a result of this, managers are able to run their supply chain in a more efficient manner.

Cheema (2011) studied the impact of RFID on performance of an organization: The Mediating Role of SC Performance. The focus of the study was examining the effect of RFID used on effectiveness and efficiency of manufacturing in organizations and its ultimate effect on performance of an organization using performance of SC. The findings pointed that the use of RFID results in improved effectiveness and efficiency in manufacturing, and therefore improving SC in the organization. It was also suggested that companies can embrace the technology of RFID in boosting up their performance in regard to effectiveness and efficiency of manufacturing and performance of SC.

In Australia, a report provided by Bureau of Transport Economics (BTE) (BTE 2011) indicated that the economy of Australia is greatly affected by logistics system's performance: it had influence on the structure of cost and Australia's producers' revenue, their competitiveness in time of delivery and quality of products and responsiveness of producers to requirements of customers. Wilson (2017) did note that changes in the logistic service in the US from simple means of reducing cost of transport cost to one stop solution to service encompassing transport, storage, consultation and management of information. Because of globalization, ability of responding to the requirements of customers fast is important to have sustainable competitive advantage.

China faces the challenge of shortage of logisticians who are capable mainly because of longstanding issues with their training systems. Unlike other countries in Asia such as Singapore, Korea and Taiwan where their employees have high qualifications and are well educated; in Chinese companies workers in low positions tend to have low level of education especially in the case of logistic industry (Wang & Sarkis, 2013). Though there is high level of development in transport and logistics industry in United Kingdom with more than 2 million individuals in England working in the transport and logistics industry while over 0.57 million individuals deal with the transportation of passengers. Currently, there is shortage of skilled employees in some areas and throughout UK jobs are available. This implies that with proper training, there are opportunities to work both abroad and at home (Rantasila, 2010).

In Nigeria, human development in the transport and logistics sector has been pursued for many years, and incorporates both training and education but it is still far from attaining the needs of the industry while the most important aspect in development of human capital in transport sector is maintaining efficiency of performance at satisfactory levels. For instance, Ajiboye (2017) note that the efficiency of transport has become the yardstick by which socio-economic development of a country is measured. The government of Nigeria embraced integrated SCM in its policies of public

procurement. The aim of integrated SCM is adding value in every single stage from demand to acquisition of goods and services, management of logistics process and lastly after use to their disposal. By doing that, deficiencies in current practices that relate to procurement, management of contracts, inventory and control of assets and obsolescence planning are addressed (Ochonma, 2010).

In the year 2008, South Africa recorded percentage of GDP attributed to logistic cost at its lowest, compared to the previous measurement in the year 2003. The cost figure of total logistics in the year 2008 was R339 billion which translates to 14.7% of GDP which was a decrease of 1.2% from the years 2003 (Havenga, Van Eeden & Simpson, 2010). The decrease in the cost of logistics compared to GDP could be attributed to efficiencies realized in the transport industry.

There has been continuous growth in logistic management in Kenya with companies dealing with FMCG opting to this form of delivery for their products countrywide and beyond but it isn't the case in the manufacturing industry (Njambi & Katuse, 2013). Most of those companies embraced 3PL for their operations and didn't care much on improving their management of inter logistics. Njambi and Katuse (2013) indicated that in this era that the life cycle of production is shrinking, there is shift in chain of distribution, proliferation of product line, fast change in technology, logistics has become important for any organization that wants to attain competitive advantage.

Performance

Organization performance is described as the way in which a firm accomplishes its market-based objectives and additionally its financial objectives (Chesire & Kombo, 2015). Performance is an ongoing process and flexible procedure which includes manager and those they manage. They take a role of partners in a system created to empower them accomplish the required outcomes. Practicing strategic management can be supported as long as it enhances the firm's performance. Performance in itself is the final product of the activities that it incorporates and the actual outcome of the strategic administration process. Organizational performance is attainment of ultimate goals of the organization as set out in the key Organizational plans (Wheelen & Hunger, 2013).

Organization performance is a multidimensional construct operationalized by a variety of financial measures (which include sales, value of net assets and profit) and non-financial measures which include number of workers, market share and overall customer satisfaction. In addition, factors such as overall satisfaction and non-financial goals of the firms are also very important in evaluating performance. Organization performance cannot be adequately determined without considering both financial and nonfinancial measures (Alder, 2012).

According to Chesire and Kombo (2015), organizational performance comprises of three distinct areas of company results: Financial performance, commodity market performance and shareholder return. Harzing (2013) noted that an organization performance may essentially be a reflection of changes in the market size or financial conditions rather than sales figures alone. A company's performance in respect to competitors can be measured by its share in the market. Firms try to build their business with respect to competitors essentially expanding their share in the market to profit from the economies of scale. Economies of scale can contribute in working up a cost advantage. Sales increase in a slow industry is the inspiration to enlarge the market share.

Fast-Moving Consumer Goods Manufacturers (FMCG)

FMCG are the products that sell very fast without incurring a high cost. They can also be defined as the essential or nonessential goods that are purchased frequently (Mandrinos, 2014). There is a wide range of products that are classified as FMCGs, which include soaps, shaving products, toiletries, detergents, soft drinks, processed foods, consumables, glassware, batteries, cosmetics, and plastic goods among others (Wasonga, 2012). The shelf life of FMCG products is very short. There short shelf life is partly attributed to the fact that most of these products are perishable and get bad rapidly. For instance, FMCGs such as fruits, meat, baked goods, and vegetables are highly perishable. From the marketers' point of view, FMCG also has extensive distribution network (Nyaga, 2014).

The distribution chain for FMCG is the interdependent collection of processes and related resources. They include manufacturers, warehouses, suppliers, logistics service providers, wholesalers and distributors and all the other parties within the supply chain network. The Kenya's FMCG has been experiencing faster growth in the last few decades. The growth of the industry has resulted in many companies, both local and foreign entering the industry to take a share of the market (Wasamba, 2008). Currently, there are many FMCG manufacturing companies in Kenya based in Nairobi. Some of the companies are Interconsumer Limited, Bidco Oil Refineries, Kapa Oil, Finlay, Kenya Seed Company, Kenya Nut Company, Dawa Group, Maisha Flour Mills, Melvin Marsh International, Nestle Foods Kenya, Eveready East Africa, Premier Food Industries, Proctor & Allan (E.A), Coca-Cola, PepsiCo, Ramzco, and HACO Industries (K) among many others (Njambi & Katuse, 2013). These among other companies manufacture a variety of FMCG that is sold both locally and internationally.

Currently, Bidco is the largest FMCG in Kenya commanding about 24% of Kenya's oil and fat products (Euromonitor, 2015). In this segment of the FMCG, they are followed by Kapa Oil Refineries that controls about 12% of the market share while Unilever Kenya comes third with 9% with the ranking done according to production capacity (Euromonitor, 2015). Like in other countries, some of the former Kenyan FMCG giants are facing hard times due to increased competition and technological advancements that have rendered some of the products obsolete (Wasonga, 2012). There is also a challenge with complex logistics management especially due to the high distribution network at a faster speed. For instance, Eveready East Africa, which was once a leader in FMCG in Kenya, collapsed and exited the Kenyan market due to high costs and poor performance (KAM, 2017).

Resource-Based View Theory

This theory was first proposed by Wernerfelt in the year 1984 and later in the year 1991 it was advanced by Barney. This theory indicates that the ultimate source of competitive advantage in any organization is the resources they have, both tangible and intangible, (Tukamuhabwa, Eyaa & Derek, 2011). The theory further indicates that in order for the organization to attain its goals, it is important for the resources to be aligned properly in a way that they complement each other. It is also important for the organization to yearn for diversity and increase their resources so that they can be more beneficial.

The assumption of this theory is that each company has their unique resources and if they utilize them appropriately, they will have added advantage in regard to competitive advantage. This is however not the usual case because resources are not homogeneous because they are imitated by competitors. Therefore, to attain operational advantage it is important to have unique resources that cannot be easily copied by competitors (Karia & Wong, 2011). Businesses operations are well integrated when IT is adopted in logistics and transportation practice, (Seuring *et al.*, 2010). Those resources that are created by integrating IT in transport and logistics are more valuable than individual resources of a company.

The theory's relevance lies in its argument that organizations involved in assimilation of systems of IT are granted more benefits and effectiveness as a result of reduced costs related to operations. This theory indicates the advantage of resource re-alignment so that they can complement each other and attain the results that are desired. Thus, adopting logistics management systems is important in order to optimize SC performance of FMCG manufacturers. The theory suggests that organizations should use logistics management systems to improve their supply chain performance.

1.2 Statement of the Problem

Under logistical supply chains, speed is of the essence hence the time from picking to delivery of outputs to customer's point of collection is very critical when it comes to quality customer service and satisfaction. It is the responsibility of logistic managers manning supply chains to ensure that both inputs and outputs get to where they are required within the shortest time and in the right quantity in order to satisfy customer's needs. According to statistics, it is estimated that in Kenya, 90% of logistic related processes in companies are done manually (Miheso, 2013). Mitullah and Odek (2010) indicate that a significant number of firms in Kenya are still lagging behind in the use of information technology incorporation in logistics management. KAM (2017) states that it is disturbing to witness decline in performance and states that eroded competitiveness and compromise for the aspiration of the government of up to 20% of growth which could enable Kenya to be prosperous.

Kenya is Africa's second biggest formalized retail economy after South Africa; 30% of Kenyans do their shopping in retail outlets hence boosting the FMCGs. There is hence potential for the FMCGs manufacturers in Kenya, but, in the recent times, some FMCGs manufacturers like Cadbury Kenya did shut down its plant in Nairobi because of its poor performance (RoK, 2014) while others such as Eveready found it hard to cope in the Kenyan market and have seen their net profit fall by 58.7 per cent (Kandie, 2014). With Fast Moving Consumer Goods having a short lifespan which can lead to increased wastage and loss of goods on transit due to ready market there is a need for effective logistics management such as adoption of logistics management systems which can enhance supply chain performance.

This study sought to fill some of the existing knowledge gaps in studies by Wacuka (2015) who investigated the relationship between inventory management control and supply chain performance of FMCG, Wambui (2015) who focused on the relationship between lean management practices and SC performance of FMCG as well as Onyango (2017) who focused on the relationship between inventory management practices and performance of FMCG in Nairobi

County. These studies have focused on FMCG but have not linked transportation management systems to its performance.

2.0 METHODOLOGY

The study adopted descriptive research design. The unit of observation was the operations manager of the 51 FMCG manufacturers located in Nairobi. The sampling frame of the current study consisted of operations managers in the manufacturers of the FMCGs in Nairobi. The study used the census method to select 51 manufacturers of the FMCGs in Nairobi, thus the sample of the study was 51 respondents. Primary data was used in the study. The study used questionnaires to collect data. Mixed methods technique of analyzing data was used where both descriptive and inferential analysis were used. The data collected from the field was analyzed using SPSS 23 program. The questionnaires were referenced and the items in them coded for easier data entry. The presentation of the findings was done using tables.

3.0 RESULTS

3.1 Descriptive Findings

3.1.1 Transportation Management Systems

From the findings in table 1, the respondents agreed that transport management systems provides trade compliance information and documentation (M=3.979, SD=0.675); transport management systems make it easier for businesses to manage and optimize their transportation operations, whether they are by land, air, or sea (M=3.957, SD=0.624); transport management systems ensures timely delivery of freight and goods (M=3.915, SD=0.880); transport management systems provides visibility into day-to-day transportation operations (M=3.915, SD=0.583); and transportation management systems helps to streamline shipping process (M=3.872, SD=0.647). The study finding concurs with the findings of Michaelides (2010) that efficiency is also improved by having daily automated vehicle checks. Automation of scheduling process is advantageous because it leads to fewer interventions by the management and therefore lowering any chances of delays. It also agrees with Cheema (2011) that the use of RFID results in improved effectiveness and efficiency in manufacturing, and therefore improving SC in the organization.

Respondents also explained the challenges faced in the use of technology to manage transportation activities. There has been improvement in business process with advancement in technology. This is a challenge facing logistics companies because they have to be at par with these changes and advancements. The companies should take advantage of these advancement, which sounds very exciting but adopting them and implementing them can be challenging. Companies are faced with several technologies they need to implement; this mean outsourcing of resources and experts. Despite the fact that these technological improvements are beneficial to the company, the company faces the challenge of how they will pay and who will help in implementing or making the required improvements. Another challenge is lack of effective coordination; this is mainly because several parties like manufactures, drivers and managers are involved and it's not possible to have a centralized control system and therefore fragmentation comes in place which causes inefficiency.

Table 1: Transportation Management Systems on Performance of Supply Chain

Statement	1	2	3	4	5	Mean (M)	Std. Dev.(SD)
Transport management systems provides trade compliance information and documentation	1	1	1	40	4	3.979	0.675
Transport management systems make it easier for businesses to manage and optimize their transportation operations, whether they are by land, air, or sea.	1	1	2	37	6	3.957	0.624
Transport management systems ensures timely delivery of freight and goods	1	1	1	42	3	3.915	0.880
Transport management systems provides visibility into day-to-day transportation operations	1	2	1	41	2	3.915	0.583
Transportation management systems helps to streamline shipping process	2	2	2	39	3	3.872	0.647

3.2 Regression Analysis

The study sought to investigate the effect of transportation management systems on supply chain performance of FMCG in Kenya. The regression model for this objective was $Y= \beta o + \beta_3 X_3 + \varepsilon$. From the fining presented in table 2, the value of adjusted R^2 was 0.768 which implies that 76.8% of variations in supply chain performance can be attributed to changes in transportation management systems. The remaining 23.2% variations in supply chain performance can be attributed to other aspects other than changes in transportation management system. The findings also show that transportation management system and supply chain performance are strongly and positively relates as indicated by a correlation coefficient (R) value of 0.879.

From the Anova findings, the p-value obtained was 0.000 which is less than 0.05, an indication that the model was significant. The findings also show that the f-calculated value was 153.487 which is greater than the F-critical value ($F_{1,45}$=4.057). Since the f-calculated value is greater than the f-critical value it shows that transportation management system is reliable and can be used to predict supply chain performance in fast moving consumer goods companies in Nairobi.

From the coefficients table, the following model was fitted;

$$\mathbf{Y= 1.347 + 0.857\ X_3 + \varepsilon}$$

From the equation above, when transportation management system is held to a constant zero, performance of supply chain will be at a constant value of 1.347. The findings also show that a unit increase in transportation management system will lead to a 0.857 increase in supply chain performance in FMCG in Nairobi. The findings also show that the t-statistic (12.389) has a p-value (0.000) which is less than the selected level of significance (0.05). Therefore we accept the second null hypothesis ($\mathbf{H_{A3}}$) and conclude that transportation management systems positively influences supply chain performance of Fast Moving Consumer Goods manufacturers in Kenya.

Table 2: Regression Analysis for Transportation Management Systems

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.879[a]	.773	.768	.08476

a. Predictors: (Constant), Transportation Management Systems

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.103	1	1.103	153.487	.000[b]
	Residual	.323	45	.007		
	Total	1.426	46			

a. Dependent Variable: Supply Chain Performance

b. Predictors: (Constant), Transportation Management Systems

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.347	.250		5.388	.002
	Transportation Management Systems	.857	.069	.879	12.389	.000

a. Dependent Variable: Supply Chain Performance

4.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The study established that transport management systems provides trade compliance information and documentation; transport management systems make it easier for businesses to manage and optimize their transportation operations, whether they are by land, air, or sea; transport management systems ensures timely delivery of freight and goods; transport management systems provides visibility into day-to-day transportation operations; and transportation management systems helps to streamline shipping process. The study also identified some of the challenges faced in the use of technology to manage transportation activities. There has been improvement in business process with advancement in technology. This is a challenge facing logistics companies because they have to be at par with these changes and advancements. The companies should take advantage of these advancement, which sounds very exciting but adopting them and implementing them can be challenging. Companies are faced with several technologies they need to implement; this might mean outsourcing of resources and experts. Despite the fact that these technological improvements are beneficial to the company, the company faces the challenge of how they will pay and who will help in implementing or making the required improvements. Another challenge is lack of effective coordination; this is mainly because several parties like manufactures, drivers and managers are involved and it's not possible to have a centralized control system and therefore fragmentation comes in place which causes inefficiency.

Conclusion

The study found that transportation management systems have a positive influence on Supply chain performance. The study also established that the influence was significant Therefore, improvements in transportation management systems will results to improvement in supply chain performance of fast-moving consumer goods manufacturers in Kenya. Based on the findings, the study concluded that transportation management systems positively and significantly influence Supply chain performance of FMCG in Kenya.

Recommendations

Transportation management systems enhance performance of supply chain in FMCG manufacturers. The study therefore recommends companies to automate their scheduling process this will lead to fewer interventions by the management and therefore lowering any chances of delays. The study also suggests that companies can embrace the technology of Radio Frequency Identifications in boosting up their performance in regard to effectiveness and efficiency of manufacturing and performance of supply chain.

REFERENCES

Aberdeen Group (2015). *Inbound transportation management, industrial best practices,* Analyst Insight-Aberdeen Group,1-6.

Ajiboye, A.O (2017). The impact of transportation on agricultural production in a developing country: a case of kolanut production in Nigeria. *International Journal of Agricultural Economics and Rural Development,* 20(2).

Bureau of Transport Economics (2011). *The Economic Significance of the Australian Logistics Industry.* Retrieved from https://austlogistics.com.au/wp-content.

Cheema, R. (2011). *Effect of RFID on Organizational Performance: The Mediating Role of Supply Chain Performance.* Retrieved from https://www.semanticscholar.org/paper.

Cozzolino, A. (2012). *Humanitarian logistics and supply chain management. In humanitarian logistics,* Springer Berlin Heidelberg.

Euromonitor. (2015). Kenya's fats and oils. Retrieved from http://www.euromonitor.com/oils-and-fats-in-kenya/report.

Goldsby, T. J., (2014). *The Critical Role of Transportation in Business and the Economy,* Financial Times Press, 1 Lake Street, Upper Saddle River, USA, NJ

Havenga, J. H., Van Eeden, J. & Simpson, Z. (2010). *The Centre for Supply Chain Management Cost Model.* Stellenbosch. Unpublished internal project documentation.

Kandie, K. (2014). *Sustained Investments In Electricity Needed To Power The Economy*. Economic Review

Karia,L. & Wong, K. .(2011). assessment of the associational advantage of logistic service that manufacturers perceive in SC. *IJPE*, *132*(1), 58-67.

Kasilingam, R.G. (2010). *Logistics and transportation*. Great Britain: *Kluwer* Academic Publishers.

Kenyan Association of Manufacturers (KAM)(2017). *Ten policy priorities for transforming manufacturing and creating jobs in Kenya.* Retrieved from, http://www.kam.co.ke/Docs/

Kenyon, . N., & Meixell, M.J. (2011). Success Factors And Cost Management Strategies For Logistics Outsourcing. *Journal Of Management & Marketing Research*, 7, 1-17.

Kiraga, R. (2014). *Transport management practices and logistics performance of humanitarian organizations in Kenya*. unpublished MBA Project, University of Nairobi

Li, S. & Visich, J.K. (2006). Radio frequency identification: Supply chain impact and implementation challenges. *International Journal of Integrated Supply Management,* 2(4), 407-424

Mandrinos, S. (2014). International practices of FMCG products: research on PDO products: Greece's feta cheese.

Michaelides, R. (2010). *Optimization Of Logistics Operations Using Gps Technology Solutions: A Case Study*. University of Liverpool.

Miheso, S. C. (2013). *Adoption of Integrated Financial Management Information System (ifmis) By The National Government In Kenya.* Doctoral dissertation, University of Nairobi.

Miller, R. (2010). Inventors Control: Theory and Practice. New Jersey: Prentice Hall

Mitullah, W. & Odek , P.(2010). *Employment Creation in Agriculture & Agro-Processing Sector in Kenya in the Context of Inclusive Growth: Political Economy & Settlement Analysis.* Partnership for African Social and Governance Research Working Paper No. 020, Nairobi, Kenya.

Njambi, E., &Katuse, P. (2013). 3PL in efficiency of delivery for competitive advantage of Kenya's FMCG organizations. *International Journal of Social Sciences and Entrepreneurship, 1*(8), 15-27.

Nyaga, J. (2014). Aspects that affect the distribution of FMCG in Kenya: EEA. *Journal of Social Sciences and Entrepreneurship, 1*(12), 290-302.

Ochonma, O. E. (2010) *Procurement and supply chain management –emerging concepts, strategies and challenges:* ISBN 978-978-909-288-8

Rantasila, K. (2010). *Measuring national logistics costs: designing a generic model for assessing national logistics costs in global context.* Turku School of Economics Master's Thesis. Retrieved from http://info.tse.fi/julkaisut/Thesis2010/12927.pdf.

Republic of Kenya, (2014). Economic Survey 2014. Nairobi, Kenya: Kenya National Bureau of Statistics.

Sandberg, E., & Abrahamsson, M. (2011). Logistics capabilities for sustainable competitive advantage. *International Journal of Logistics: Research & Applications, 14(1)*, 61-75.

Seuring, S. & M. Muller, M. (2010). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of cleaner production*, 16 (15) 1699-1710

Stock J.R. & Lambert, D.M. (20101). *Strategic Logistic Management*. New York: McGraw-Hill.

Tukamuhabwa, B. R., Eyaa, S., & Friday, D. (2011). Interest Rate Caps around the World Still Popular, but a Blunt Instrument. *Policy Research Working Paper*, *1*(1).

Wacuka, K. (2015). *Association between management of inventory and performance of SC of FMCG*. Masters Dissertation, University of Nairobi.

Wambui, K. (2015). *Relationship between lean management practices and supply chain performance of FMCG.* Masters Dissertation, University of Nairobi.

Wang, Z. & Sarkis, J. (2013). Investigating the relationship of sustainable supply chain management with corporate financial performance. *International Journal of Productivity and Performance Management*, 62(8), 871-888.

Wasamba, I. O. (2008). *Strategies applied by manufactures dealing FMCG in motivating their members: Kenya's supermarkets.* Thesis, University of Nairobi, Nairobi.

Wasonga, P. (2012). *Factors that affect perception of consumers of manufacture's dealing with FMCG in EAC*; Laundries detergent products.

Wilson, J.A. (2017). Unfree shipping: the racialization of logistics labour**.** *Work Organization, Labour & Globalization*, 13(1), 96-113

Wisner, J. D, Tan, K-C., & Leong, G. K. (2012). *Principles of supply chain management: a balanced approach* (3rd edition). Mason, Ohio: South-Western Cengage Learning.