



**FACTORS AFFECTING EFFECTIVE LOGISTICS MANAGEMENT IN THE MANUFACTURING INDUSTRY IN KENYA: A  
CASE OF SAMEER AFRICA LIMITED**

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**ABSTRACT**

*Logistics management function is critical to an organizations success, competitive advantage and customer satisfaction. Effective logistics management of goods, services, and works involves certain processes starting from recognition of need, delivery to end users and payment to the suppliers. The study focused on Factors affecting effective logistics management in the manufacturing industry in Kenya a case of Sameer Africa limited. The research objectives of the study were: To find out how inventory management affected effective logistics management in the manufacturing industry in Kenya and to establish how technology affected effective logistics management in the manufacturing industry in Kenya. The study adopted a descriptive survey design and targeting, Sameer Africa Limited. The population of the study targeted 46 logistics employees working in the logistics management department. Primary data was collected by use of questionnaires. Data was analyzed using statistical package for social science (SPSS) software version 20. According to the analysis of findings, (81%) majority of the respondents indicated that in general Technology used was old, outdated and obsolete. Further findings indicated that inventory management system used had a lot of challenges with (95%) majority of the respondents rating it as poor and that they run out of stock weekly. The study established that change in Technology was the most related factor affecting effective logistics management measured in terms of productivity, quick responses and costs reduction followed by Inventory management being the least related. The study recommended that Sameer Africa limited should fully replace the old, outdated and obsolete technology and equipment with modern ones and carry out regular upgrading of Technology. Further the study recommended that there was need for a total overhaul or improvement of the existing inventory management system in order to optimize resources and achieve a balance of not wanting to hold too little as to run out of stock. Finally the study recommended as far as employees demographic characteristics is a concern, that the Human Resource department should motivate and promote employees in the logistics management department in order to reduce high rate of job turnovers.*

**Key Words:** Inventory Management, Technology, Logistics Management, Manufacturing Industries

## INTRODUCTION

Logistics management practices are an integrative philosophy to manage the total flow of a channel from the earliest supplier of raw materials to the ultimate customer, and beyond including the disposal process (Baziotopolous, 2008). Interest in logistics management practices have steadily increased since the 1990's when firms saw the benefits that could be derived from its implementations (Gimenez and Ventura, 2003). According to Baile et al, (2004) logistics management facilitates materials and information flows both up and down the supply chain. The supply chain includes; Systems management, operations and assembly, purchasing, production scheduling, or reprocessing, inventory management, transportation, warehousing and customer service. Supply chains are essentially a series of linked suppliers and customers; every customer is in turn a supplier and to the next downstream organization until a finished product reaches the ultimate end user.

Logistics management enables the integration of supply chain activities through improved relationships to achieve a sustainable competitive advantage (Monezka et al, 2006). It involves the strategy of the product or services. In today's fast paced economic climate many firms increasingly realize that globalization has made the world smaller and more competitive, a change in one place impacts another quickly and customers seeks product that can respond well to their specific needs. As such, firms are now looking at securing costs, quality, technological and other competitive environment as a strategy to pursue in a globally competitive environment. One currently popular competitive advantage for firms is to promote and provide value for its customers by performing its supply chain activities more efficiently than competitors. As a result, one area of increasing

focus is on the effective logistics management of a firm's set of operations. For effective logistics management to be realized then, crucial factors with direct contacts to the customers and suppliers must be appropriately utilized (Cachon and Fisher, 2006).

Logistics entails planning and organizing all movement of said product or service. The aim is to optimize the supply chain in the most cost-effective way, helping companies to build a competitive edge. Managing and securing the movement of goods as wells as essential control thereof from supplier to customer has become an ever increasing need within companies across the globe. Supply chain and logistics management is integral in contributing towards the profitability of any organization.

Supply chain managers oversee some of the most essential business processes affecting the profitability of corporations today. These managers are responsible for synchronizing the flow of products, information, and funds between their organizations and both their suppliers and customers in a way that adds value for the end consumers of their products. In today's turbocharged competitive environment, supply chain managers are increasingly part of their organization's strategic management teams that work to competitively position their organization and their supply chain in a global marketplace.

East African community comprises of eight countries. These countries include; Kenya, Uganda, Tanzania, Rwanda, Burundi, Ethiopia, Eritrea and Djibouti. There is a tremendous development in terms of logistics and logistics management. East Africa has amongst the highest freight and transport costs in the world - freight logistics costs in East Africa per Km are more than 50% higher than the USA and Europe. These costs seriously erode the

competitiveness of goods exported by East African countries and raise the cost of living. For landlocked countries transport costs can be as high as 75% of the value of exports. In the end, it is the producer, a farmer or a business that pays. The World Bank estimates these high costs reduce growth rates by up to 1% per annum and account for 40% of higher consumer prices across East Africa and its neighbors, affecting a consumer base of more than 250 million people. Transit times are also an important determinant of trade and the competitiveness of firms.

A recent World Bank study found that transit times have the most significant effect on exports and also result in firms having to carry higher levels of stocks making them less efficient. It is estimated that a reduction of one day in transit times leads to a 7% increase in export. Transit times are high in East Africa for example; the 1600km journey from Mombasa to Kigali takes on average 422 hours (17.6 days). The trucks stop at two border posts and are likely to encounter 45 road blocks which involve delays and costs. Trade is growing up to 8% per annum across the region and economic growth is picking up. Without the transport and logistics management sector becoming more efficient, growth would be severely constrained. Apart from reducing cost and time of transport, logistics management would increase trade, reduce the cost of living, contribute to higher exports and faster growth and create jobs.

Logistics management practices are needed in developing a set of metrics to monitor the supply chain so that it is efficient and effective, cost less and delivers high quality and value to customers. The increasing importance of effective logistics management practices is forcing organizations to rethink their distribution, purchasing and sourcing strategies, (Wallenburg, 2005). The evolutionally nature and the complexity of logistics management

practices are also reflected in the logistics management research.

The Eastern Africa transport and logistics management industry trails behind in operations the most efficient industries of Southern Africa in efficiency and technological innovation. Its large number of small and medium enterprises (SMEs) has yet to take advantage of the breakthrough in ICT, invest in modern transport and handling equipment and develop skilled human resource needed to be highly productive. Even the large businesses are not competitive against their counterparts in Southern Africa. These shortcomings result partly from constraints within the industry but are also due to a less than enabling environment with high levels of bureaucracy, regulatory restrictions and high cost finance.

Some of the key challenges facing logistics management in hospitality industry in Kenya is the state of the country's transport infrastructure (Jones and Riley, 2005). At present, despite some large scale projects, Sameer Africa limited in the region complain of insufficient integration of transport networks, warehousing and distribution facilities. Outside of the main economic centers, the logistics management sector tends to be of low quality, highly inefficient and with little technological competence.

### **Logistics management**

The study explored factors affecting effective logistics management in manufacturing industry in Kenya. To address these factors, Sameer Africa was used as a pilot test to clear the wind that has been raised on effective logistics management. These factors in question are Technology, Inventory management, Communication and Quality inspection which remain a research imperative. Logistics as a business concept evolved only in the

1950s. This was mainly due to the increasing complexity of supplying one's business with materials and shipping out products in an increasingly globalized supply chain, calling for experts in the field who are called Supply Chain Logisticians. This can be defined as having the right item in the right quantity at the right time for the right price and is the science of process and incorporates all industry sectors. The goal of logistics work is to manage the fruition of project life cycles, supply chains and resultant efficiencies (Herbert 2002).

The term logistic is used for describing logistic processes within an industry. The purpose of logistics management is to ensure that each machine and workstation is being fed with the right product in the right quantity and quality at the right point in time. The issue is not the transportation itself, but to streamline and control the flow through the value adding processes and eliminates non-value adding ones. Manufacturing in an existing plant is a constantly changing process. Machines are exchanged and new ones added, which gives the opportunity to improve the production logistics system accordingly. Production logistics provides the means to achieve customer response and capital efficiency (Lambert 2002).

Logistics management is that part of the supply chain which plans, implements and controls the efficient, effective forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customer and legal requirements (Tracey, M.2008).

### **Profile of Sameer Africa limited**

Sameer Africa Limited, under the name Firestone East Africa (1969) Limited, was established in Kenya in 1969 by Firestone Tyre and Rubber Company of

the USA and the Government of Kenya to produce tyres for the East African market. Sameer Investments Limited, a Kenyan company, later purchased a significant part of the shareholding from Firestone Tyre and Rubber Company. The Company's corporate identity changed to Sameer Africa Limited in April 2005. This change created an independent tyre producer based in Kenya that aims to supply the East African and COMESA markets.

### **Statement of the Problem**

The inclusion of logistics management department in organizations has changed the daily routines of businesses as well as their survival, (Manio, 2002). Logistics management plays a key role in supporting organizations as they strive for more efficient management systems, (Cozzolina, 2012). As in business practices, the inefficient and ineffectiveness in logistics management systems together with the inefficient internal management would disable the organization to respond to the needs of customers with the lowest price at the shortest feasible time frame including the quality level which does not meet customers' expectations and would lead the organization to the competitive disadvantage situation against their rivals. Armstrong and Associates, (2012) estimates that the global logistics management practice constitutes to gross revenue of \$133.8billion.

According to the investigation of Kenya industrial chamber of commerce (KICC) in 2000 the cost of quality on average accounted for 16.5% of market revenue and 24% of logistics management costs. The total costs of logistics management for Sameer Africa limited, Nairobi is 30-35% of sales and is growing due to increasing logistics complexities, (Company annual report, 2013). Thus there is an increased focus to control and manage this trend. These costs make it difficult for Sameer Africa

limited in maintaining the delicate balance of increased stocks against the expectations of improved services level mandated by customers. There has been an intense competition among tyre manufacturing industries over their market share for the past three years, (Kibowen, 2012) and this has put more pressure on Sameer Africa limited to initiate logistics management practices through which they will continue holding their market share.

According to Wambugu, (2010) new technology had several advantages over traditional one while Osmonbekov et al, (2002) found that electronic interconnections between organizations are important in a bid to enhance logistics management efficiency and effectiveness. Even stock outs or overstocking negatively affects logistics management and therefore the need for organizations to come up with mitigation measures, (Waweru, 2009). A number of studies have been done on the area of logistics management; Woeppel, (2001); Huang and lin, (2000); Bakker et al, (2008); Kaufterus, (2000) but little has been written about effective logistics management in Kenya more specifically Manufacturing industry. This called for the need of critically looking at the factors affecting effective logistics management in manufacturing industry in Kenya with a special reference to Sameer Africa limited.

### **Objectives of the study**

The study sought to investigate the factors affecting effective logistics management in the manufacturing industry in Kenya. The specific objectives of the study were:

- To find out how inventory management affect effective logistics management in the manufacturing industry in Kenya.

- To establish how technology affect effective logistics management in the manufacturing industry in Kenya.

## **LITERATURE REVIEW**

### **Theoretical Review**

#### **Theory of inventory management and production**

The theory of inventory management and production is described as specialty in operations research and is commonly referred to as the mathematical theory of inventory and production by Hillier and Lieberman, (2001). The theory supports the variable inventory management and is concerned with the development and adoption of inventory and production systems that are effective and that will results in the minimization of organizational costs and improvement in the effectiveness of logistics management. According to Hillier and Lieberman, (2001), organizations should follow the following steps in order to have an effective inventory management system:

Develop a mathematical model which describes the behavior of inventory; Design and adopt an optimal inventory policy with respect to the firms mathematical model; Develop a computerized information processing systems that will provide information on the current inventory level; Use the current inventory levels information to apply the optimal inventory policy to replenish existing inventory levels. In addition, the theory of inventory management and production considers and uses the following measures; ordering costs, shortage cost, holding costs, salvage cost, discount rates and revenues. The study used the theory of inventory management and production to assess if the inventory levels are optimized and how well they can be utilized to significantly improve a production

function with respect to stock out, overstocking and cost reduction.

### **Transaction theory**

This theory supports the variable Technology whose use has facilitated the reduction of coordination cost, which has been extensively documented in the literature (Bakker et al,2008).For example electric market places facilitated through technology reduce the cost of searching and obtaining information about a product offering and prices. Also communication facilitated by information sharing can lower transactions costs as companies can thereby reduce supply chain uncertainty and thus the cost of contracting. This can be explained with an example: If a supplier is unable to accurately predict the price of its product inputs, it will be reluctant to enter into a contract, which locks it into a fixed price for an extended period of time (Arrowsmith, 2002). Uncertainty in the context of logistics management specifically in manufacturing is caused by supply uncertainty, demand uncertainty, new product development uncertainty and technology uncertainty (Koufterus, 2000).

Supply uncertainty relates to unpredictable events that occur in the upstream part of supply chain. Among the causes to supply uncertainty are the shortages of materials and late deliveries. Clearly, supply uncertainty can disrupt manufacturing and have an adverse effect on sales, where distributors and retailers down the chain are also affected. Demand uncertainty can be defined as unpredictable event that occur in the downstream part of the supply chain (Koufterus, 2001). Demand uncertainty can result from seasonality, volatility of fads, new product adoptions or short product life cycle (Johnston, 2005). Furthermore (Choi and Krause, 2005) identifies three sources for the uncertainty of demand arising .Another uncertainty related to manufacturing concerns new product

development. New product development uncertainty can stem from unpredictable events during the process of market research, product design and product prototyping. Finally, technology uncertainty refers to the fuzziness in the selection of a suitable technology platform (Koufterus, 2001). An example is the trade-off between a fool-proof manufacturing technology (perhaps dated ) compared to a prospective technology offering better price to performance but whose viability is not certain (Klein,2007).

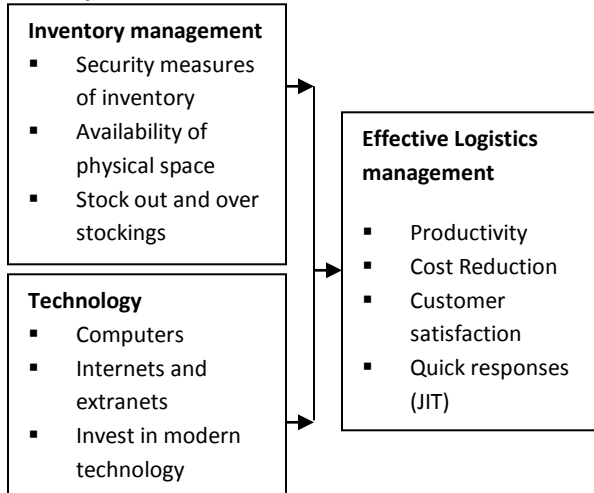
Furthermore, uncertainty can also arise from politics, social and natural causes (Johnston, 2005). Approaching the concept of uncertainty from the transaction cost economics (TCE) point of view might provide further insight into the value of information sharing between organizations. The concept of uncertainty is central to TCE, which assumes that individuals have bounded rationality and act opportunistically. The early transaction cost literature did not make a distinction between different forms of uncertainty. More recent literature has aggregated the construct of uncertainty (Melville et al, 2004). For example (Wendin, 2001) who built on (Khalifa and Shen, 2008) distinguished between primary and secondary uncertainty. Primary uncertainty refers to the underlying transactions and arises from mainly exogenous sources such as uncertainty relating to natural events, consumer preferences, regulations and technology (Sulek et al, 2006).

Primary uncertainty may lead to problems of communication, technological difficulties and coordination problems that can as a consequence adversely impact the execution of transactions (McManus, 2002). Behavioral uncertainty refers to the risk of opportunism on transactions that are executed through incomplete contracts. Similarly, (Sulek et al, 2006) classified uncertainty as primary, competitive and supplier uncertainty. Primary

uncertainty is consistent with Wendin, C.2011) and refers to “lack of knowledge of state of nature”. Competitive uncertainty arises from the innocent or strategic actions of potential or actual competitors (McManus, 2002). Supplier uncertainty is essentially behavioral uncertainty and refers to possible opportunism by upstream or downstream partners. The presence of demand uncertainty and lack of information sharing can lead to a problem known as bullwhip effect: the amplification of demand variability as orders move up the supply chain (Featherman and Pavlov, 2003).

Johnston & Whang, (2002) provide evidence for this finding from food industry, whereas (Nagle et al, 2006) report on the bullwhip effect in the automotive sector. Thus, limiting uncertainties through information sharing can in turn reduce companies internal risks as companies can optimize inventory, production and capacity. This theory was picked as it instigated the second research question; what extent does Technology affect effective logistics management. The theory provided the opportunity for analysis of Technology acceptance and an evaluation of how individuals base their acceptance decisions on the usefulness of Technology, rather than ease of use.

### Conceptual framework



**Independent variables      Dependent variable**

**Fig 1: Conceptual Frame Work.**

### Inventory management and effective logistics management

Inventory or stock refers to the goods and materials that a business holds for the ultimate purpose of resale or repair, (Montgomery, 2009). Inventory management is a science primarily about specifying the shape and percentage of stocked goods, (Demon, 2005). It is required at different locations within a facility or within many locations of a logistics network to precede the regular and planned course of production and stock of materials. The scope of inventory management concerns the fine lines between replenishment, carrying cost of inventory, asset management, inventory forecasting, inventory valuation, inventory visibility, future inventory price forecasting, available physical space of inventory, replenishment, returns and defective goods and demand forecasting.

Balancing these competing requirements leads to optimal inventory levels which is an on-going process as the business needs shift to effective logistics management, (Simchi-levi and Kaminsky, 2007). There are a number of people who argues that the success of logistics management depends on its ability to control their inventory hence effective inventory control should always become the first priority in breeding effective logistics management systems,(Stank,2001).

A company should pay more attention to their inventory control as it is the key to improve customer services as well as reducing excess costs. Having too much inventory will make the company to save production costs via inventory control. In order to reach such efficiency, each company must



always have the knowledge of logistics management, inventory costs as well as product demand,(Stank; Keller and Daugherty,2001).

### **Technology and effective logistics management**

Technology has been described as the practical application of knowledge especially in a particular area; and a capability given by the practical application of knowledge, (Merriam Webster, 2009). Technology refers to anything related to computing such as networking, hardware's, software and the internet. This refers to the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numeric information by micro-electronics-based combination of computing and telecommunications, (Lysons et al, 2003).

Effective Logistics management can be enhanced by the managers through introductions of modern technology to carry out logistics functions in an organization. This includes having computers and internet in an organization. New concepts like materials requirement planning (MRP) and Just in time (JIT) are being embraced for synchronized production and reduction of stocking costs. Instead of having messengers in an organization the use of e-mails is incorporated to fast track processes and is cost effective. Logistics managers increase employee's productivity by equipping them with modern technology.

The world is changing in a staggering rate and technology is considered the key drivers for these changes around us, (Papers 4you.com, 2006). An analysis of technology and its uses shows that it has permeated in almost every aspect of our life. Many activities are handled electronically due to the acceptance of information technology at home as well as work place. Internet can be seen as a truly global phenomenon that has made time and

distance irrelevant to transactions, (Terro et al, 2004). The transformation from the traditional banking toward e-banking has been a leap change, (Hekki et al, 2002). The evolution of e-tendering, e-cataloguing, e-payments started after the introduction of automatic teller machine (ATM) and has passed through telephone banking, direct bill payment, electronic fund transfers and the revolutionary online banking, (Alter, 2002).The future of electronic procurement according to some is the acceptance of online banking and interactive TV-banking, (Petrus & Nelson, 2006). However it has been forecasted that among all the categories online banking in logistics processes in the future of electronic financial transactions for all logistics departments.

### **Effective logistics management**

According to the Kenya Economic Survey (2011) logistics management has a direct effect on each and every sector of the economy as well as a great potential on promoting economic growth in Kenya. It is one of the leading sectors contributing to the Gross Domestic Product (GDP) in Kenya. It represents a significant part of the economy between 5-15% of the GDP. Bryson et al,(2006) propose that logistics management is an integral part of any organization and an effective logistics system can ensure efficient achievement of business goals of the organization.

The logistics department may be characterized as the unit that conceives and implements logistics solutions for its customers, adding value to their products at all stages of the supply chain. Indeed ,logistics management outsourcing has been observed as a global phenomenon as reported by Littler et al,(2005) and Monczka et al,(2010) in U.S, Lamming et al,(2004) in Europe, Quintens et al,(2006) in Australia, and Park et al,(2010) in Asia.

The effectiveness of logistics management depends on the quality of information it takes in and the capacity of the company's information technology (Chaffy and wood, 2005).

Improvements in information systems over recent years mean that feedback can be much more frequent and in some cases can be almost instant, thus providing real time control capabilities. There are multiple approaches to IT, but the objectives is invariably two folds: to enable the wide varieties of purchasing transactions on which every company depends and to arm decision makers at every level with meaningful and actionable information in a predictable, easily accessible manner(Kima & Shunk,2004).

### **Empirical Review**

Goodwin,(2005) notes that empirical review is the authors review of information and theories currently available concerning the topic under study in order to demonstrate the authors thorough understanding of the topic which he is conducting research. Further, it shows that the problem being studied had not been done before or has not been done before in the way proposed by researcher.

Empirical evidence has emerged suggesting that some logistics services providers are less than enthusiastic about the supposed benefits of effective logistics management, (Devaraj et al, 2007).Empirical evidence indicate that firms can indeed obtain competitive advantage by effectively managing its logistics department,( Molm,2004; Chen et al,2012). The fact that communication is not universal and research has revealed the difficulties of generating consensus around an idea within an individual organization, (Kilger & Wagner,2008) and shown that consensus formation is negatively correlated with both the size and diversity of the group involved,(Muriithi,2000;

Rwoti,2005). Gichuru, (2004) list of effective logistics management bonders on: commitment, trust, communication, quality and collaboration.

Motwani & Vogel, (2006) studied the role of technology in effective logistics management in China in hospitality industry. Their key success factors were: communication, new product development, two way information sharing and involvement. Their research framework was tested from the questionnaire survey in China logistics industry. The questionnaire contained questions about internal factors, external factors, the adoption of innovation in logistics technologies and company basic information.

Except the company's basic information, the other items were measured using the five point Likert scale anchored by "strongly disagree and strongly agree". The willingness to innovate or acquire new logistics technologies were used a measurement of adoption of technological innovation. Based on the theory of planned behavior or the technology acceptance model the intention of acquiring innovative logistics technologies may have positive influences on the actual behavior in acquiring the technologies. In addition the utilization of new logistics technologies was also asked in the questionnaire to investigate the application of logistics technologies for the logistics industry in China.

Canez et al, (2004) identified the following success factors for effective logistics management between suppliers and customers: improved communication, clarification of needs, elimination of problems and concerns, consistent performance and creation of competitive advantage. Advanced procurement and purchasing studies identified the following key characteristics: two way information sharing, top management support, shared goals, early communication of changes to suppliers, total

quality management, and just in time initiatives. As noted by Motwani & Vogel, (2006) a number of empirical studies on logistics management have mostly been conducted in Asia that have explored their importance.

The literature on effective logistics management provides empirical evidence of their benefits in terms of cycle times and new product development time, (Monczka et al,(2010), delivery performance, flexibility, and customer satisfaction,(Littler et al, 2005). It is also alluded to the potential of effective logistics management support with regards to reduction in transaction costs,(Liu et al,2013) and improvement in access to technology,(Powers, 2007) and technology transfers,(Trent & Monczka,2003).

### **Inventory management**

Mathaba, Dlodlo, Smith and Adigun,(2011) in a study on the role of store securities to improve inventory management in South African's enterprises found that inventory management was the backbone for almost all enterprises, to define the growth, survival of the success of a business. Unfortunately not all enterprises had proper inventory management in place. These enterprises faced problems like product misplacement, counterfeited products, and replacement of stocks shelves. Stock outs are estimated at 30% which affects retail sale by 5% to 18% ,(Xin,2009). This study proposed the use of store securities such as store keepers and security department in keeping inventory managers informed at anytime and anywhere.

According to Chaffy and wood, (2005) inventory management in whatever sense it applies to an institution, can be done manually of course but can almost certainly be done faster, cheaper and better by automating some or all of the inventory control

processes. According to Kotelnikor, (2007), inventory in almost organizations is the largest single investment. It is therefore sensible that the management understands what it is and also effectively controls it. Effective inventory management is therefore about implementing strategies to meet or exceed customer expectations to products availability by maintaining a sufficient stock of each item, which will also maximize the convenience of organizations profits. Automation of inventory will effectively maintain a sufficient buffer stock for the smooth running of the organization.

According to Demon, (2005) inventory control in the store business is important because these businesses depend on the rapid turn-over of inventory items with a limited shelf life at relatively small margins. The store should not have a large amount of capital tied up in the inventory items lying in the store. Inventory is the value of the firm's current assets that are shown on the balance sheet, generally at a cost. Periodic inventory system is a physically count inventory usually made at the end of the accounting period, which does not maintain a detailed record of the actual investment kept during the accounting period. Persons in charge of managing the inventory in a business must follow certain steps and perform an accurate inventory control system in order to avoid highly costs due to over stocking matters, (Wxom and Watson, 2001).

### **Technology**

Karplus, (2007) in a study on innovation in China's energy sector revealed that Technology was a major factor affecting logistics management in China energy sector. It was found that there was extensive reliance on imported or older, more labor intensive technologies and had led to introduction of older versions of technologies as in the case of auto parts or natural gas turbines. It was established that due to market competition,

enterprises in competitive industries spent more on marketing than technology and often faced difficulties of high cost of production and obsolescence.

A study carried out by Littler et al, (2005) stated that through the use of technology such as the websites, organizations can build value and improve the effectiveness of logistics management. Liu (2013) concluded that technology systems among them electronic data Interchange (EDI), enterprise resource planning(ERP), Internet and extranets provides the capability for collaboration and exchange of transactional among organizational involved in logistics management. Therefore Technology can be viewed as an enabler of cooperation that provides a stable platform for inter-organization collaboration, (Kaufman et al., 2007).

Technology interfaces with the web in its attempt to satisfy the management goals and logistics processes effectiveness, (Blacharski, 2008). Technology is an umbrella term which is a collective for all hardware's, software's and network used in the company realized through its integrated use in the various core and support functions of an organization as well as with external business partners, (Dobler et al, (2005).It involves the development, maintenance and use of computers systems, software's and networks for the processing and distribution of data. It provides a supportive role for human activities to enhance organizational or personal efficiency and effectiveness (Cohen et al, 2002). IT helps to execute activities faster, support autonomous decision making processes and enable distributive operations in order to achieve higher logistics efficiency (Faber et al, 2002).According to power et al (2008), Technology is one of the largest drivers of change in any industry.

Medline and Tornroos, (2011)attributes this trend to both rapid advances in technology as well as the increasing demands of the customers who look forward to flexible ,specialized, accessible and interactive products and communication with principles (Christopher, 2005;Devaraj et al ,2007)As much as technologies have great potential to influence the direction of the productivity in an organization ,the willingness to adopt is determined by a number of factors among them reduction of costs, improvement of customers quality, defensive reaction to competitors 'adoption, requirement by customers that their suppliers link their system as a condition for doing business (Conway and swift, 2004).The development of information technology has been viewed as a primary factor in the reduction of costs and one which allows for a greater number of suppliers in electronic markets (Cohen and Roussel,2005).

The evolution of e-tendering, e-cataloging, e-payments, started after the introduction of automatic teller machine (ATM) and has passed through telephone banking, direct bill payment, electronic fund transfer and the revolutionary online banking, (Petrus and Nelson, 2006).However, it has been forecasted that among all the categories online banking in logistics processes in the future of electronic financial transactions for all logistics department. The rise in the e-commerce and the use of the internet has made it possible to have facilitation along with the enhanced online security of transactions, equated to logistics processes confidentiality through encrypting thus allowing transmission of sensitive information and giving reasons for online banking in everyday life (Papers 4you.com.2006).

Processes that are automated and more efficient in driving to a paperless process eliminate substantial costs in obtaining the goods and services required to operate the public agency. It is also noted that

automating the process eliminates deviation from established procedures creating a fairer, more uniform process for potential suppliers and the public institutions alike. With simpler process of getting notices of potential contacts, more suppliers' respond to online solicitations (Burt et al, 2007). According to Sergio, (2000), technology change includes any application of new ways to transform resources into the product or service. These include new machines/equipment e.g. computers and new techniques and methods of work procedures e.g. the management of information system (MIS). The adoption of new technology involves the current decision to adopt the organization design to that technology.

Creative technological adoption can suggest possibilities for new products or for improvements in existing products or in manufacturing and marketing techniques. A technological breakthrough can have a sudden and dramatic effect on a firm's environment and performance, Pearson (2001). The survival of an enterprise in the age of knowledge-based economy depends on how to improve their technological innovation capability. Many studies have found that adopting technological innovations is the most important tool for enterprises to keep their competitive advantage. Therefore, the innovation in logistics technologies is a key variable and means of differentiation between logistics service providers (Sauvage, 2003). Some studies revealed that to fully satisfy the diversifying requirements of customers, logistics service providers should improve their service efficiency by continuous adoption of information or automation technologies, (Sauvage, 2003).

Nixon (2001) suggested that logistics service providers should employ new information technologies to raise their service capability in the e-commerce age. Speakman (2002) proposed that

logistics companies could increase their performance by employing new technologies. Chapman et al. (2003) suggested that the logistics industry should pay more attention to innovation in logistics service and the innovation in logistics can be implemented through technology, knowledge and relationship networks. Adopting innovative logistics technologies might enable logistics service providers to enhance their service abilities. However, most research about technology adoption and innovation focused on manufacturing industries though increasing attention has been paid to technological innovation in service industries recently (Gallouj, 2002; Howells and Tether, 2004; Miles, 2004).

Davilla et al,(2007) analyzed that, the propensity to adopt effective logistics management may be hindered by the cost of investing in compatible systems, training of personnel, unwillingness to have a more and open approach to tendering, and other perceived barriers to procurement among others, by suppliers will be determined by the suppliers appetite for change,(Medline & Tornroos,2011). Other researchers view technology as various types of knowledge and expertise necessary for planning, establishment and operation of a manufacturing plant and associated enterprises. Technologies are evolutionary.

According to Jobber (2004) Technological advances do not go smoothly and when they do acknowledge of consumers is still an advantage to securing a success Technological change can also pose threat to those company gradually find they cannot compete effectively with their more advance rivals. Companies are discovering that old solutions do not work with new problems. The business parameters have changed technology enables the service to be faster hence customer satisfaction. Organizations today are operating in a very complex, dynamic and competitive business environment. Organizations

are facing many challenges and are constantly adapting and responding to the changing environmental conditions. These challenges are: increased customer awareness, rapid advances in technology, increased product ranges, shorter product life cycle and competition. Hence technological advancement affects logistics management.

### **Effectiveness of logistics management**

Effectiveness by definition is a qualitative measure set by an evaluator; the evaluator here refers to customers. The concept of effectiveness according to Moller and Torren, (2003) is an actor's ability to produce solutions that provide value to markets. A related but a more specific concept of effectiveness is given by Hines et al, (2000) who define organization effectiveness as an external standard of how well an organization meets the demand of various groups that are concerned with its activities.

Logistics management as a function within the organization has a crucial role to play in the delivery of quality services and products to customers. It can significantly reduce costs, ensure goods and services are delivered at the right time and place and also enhance quality. Owing to current global trends and increased competition across all industry technology, quality, communication and lead time play a fundamental role in determining the effectiveness of logistics management. While most of the studies highlighted above have dealt with one factor influencing effective logistics management, none has focused specifically at the state and factors affecting effective logistics management at Sameer Africa limited. Besides this, there is little by way of empirical studies that have addressed these issues conducted in Kenya. Many studies have found that adopting technological innovations is the most important tools for enterprises to keep their competitive advantage.

Therefore the innovation in logistics technologies is a key variable and means of differentiations or between logistics services providers (Sauvage, 2003).

Logistics management effectiveness is equalized by Gunasekaren, Patel and Tirtiro, (2001) to the level to which organizations involved in delivering value to customers create customer satisfaction by delivering the right product, offering at the right time and at the right place. Ralph (2000) established that in order to achieve the logistics management validity of outcome effectiveness; delivering the right groups and at the right place then all barriers to free flow of products must be removed. Ineffective logistics management are loosely integrated with poor management and coordination of activities and functions, individual and collectively involved in acquisition of raw materials to the point the final product is delivered to customer.

### **RESEARCH METHODOLOGY**

This study adopted a descriptive research design which is normally intended to describe and report the way things are in their natural state, (Kothari, 2004). Due to the small number of the population, this study used a Census and which constituted 46 employees in the logistics management department of Sameer Africa limited in Nairobi. These respondents provided accurate information of their logistics management since they were in a better position about the company. The study used a Census approach to collect data from the respondents since it is the best method for collecting data of a population below 200 elements, Mugenda and Mugenda, (2000). Hence no sampling technique was used.

For data collection, both Primary and Secondary data was collected. The main source of this data type was the print and electronic journals. Primary

data was collected using a self-administered questionnaire. The study relied on primary data which was collected through semi-structured questionnaires. Primary data is data which is collected fresh and for the first time, and is therefore original (Kothari, 2004). The research instrument was pretested before final administration of questionnaires to the respondents. This involved administering questionnaires to eight respondents purposively selected from the population. That represented 17% of the total population which is adequately for a pilot study (Mugenda and Mugenda, 2008). The results from the pilot test was calculated using statistical package for social sciences (SPSS) version 20 and analyzed to test reliability of the instrument using Cronbach's alpha. An alpha score of above 0.70 was accepted indicating that the instrument is reliable (George and Mallery, 2003).

The researcher used both qualitative and quantitative techniques in analyzing the data. The qualitative data collected was analyzed using cross tabulation to compare responses according to various variables. The descriptive analysis was also used through employment of weighted averages frequency and percentages. Descriptive statistics was computed for presenting and analyzing the data. Descriptive statistics enables the researchers to describe the aggregation of raw data in numerical terms, (Neuman, 2000).

## **FINDINGS**

The sample of the study comprised of 46 respondents. The research instrument was administered to the respondents who later on returned all dully filled instruments. Out of 46 questionnaires that were administered, 43 were dully filled and returned.

Majority of the respondents were degree holders which included Post graduate diplomas, Masters, and PhD at (52%) in their respective areas of specialization; Diploma holders at (38%), while minority,(10%) had attained O-Level certificates.

The respondents were required to indicate their Age category where the study findings indicated that majority (53%) indicated that their Age bracket was between 18 and 30 years. Analysis of findings also pointed that (27%) of the respondents were between 31 and 40 years of Age. The findings further indicated that (20%) were above 40 years of Age.

The study sought to know the number of years the respondents have worked for him to ascertain the extent their responses could be relied upon to make conclusions for the study based on experiences. The number of years of service varied from a period of one years to over 10 years. More specific 57.3% had served for a period of less than 5 years, 22.7% had served for a period of 6-11 years and the remaining 20% for over 12 years respectively.

## **Inventory management**

### **Economic Order Quantity**

The respondents were asked to indicate how often they run out of inventory in the course of their work. The majority at, (95%) indicated that Sameer Africa limited experienced stock out weekly while (3%) accepted running out of stock daily and the remaining (2%) agreed running out of stock monthly.

The findings of the study showed that Sameer Africa limited not only needed to improve its inventory management systems but also to ensure appropriate inventory management techniques for enhancing high degree of accuracy, reduced cycle times and replenishment of stock. Therefore the

need for a proper inventory management in Sameer Africa limited could not be over emphasized given the nature of the firm's operation where equipment and components used are usually very sophisticated.

### **Issues with the inventory management system security**

The respondents were asked to indicate whether Sameer Africa limited had issues with their inventory management system security. Based on the findings majority at (83%) of the respondents indicated that Sameer Africa limited had issues with their inventory management system security while (17%) were of the contrally view. It was revealed that majority of the respondents were undoubtedly in agreement that inventory management system security was improper and not efficient.

### **Extent to which inventory management systems affects effective logistics management**

The respondents were further presented with statements concerning issues afflicting inventory management system security, where they were required to tick the statement that best described their opinion. They were to rate the statements on a 5 point Likert scale where 1=highly satisfied; 2=Satisfied; 3=Neutral; 4=Dissatisfied; 5=strongly dissatisfied. According to the analysis of findings, the respondents indicated that in general the adequacy of inventory management system security was not good scoring (81.39%) and which implied that majority of the respondents coalesced around the same response without differing to a great extent across the entire logistics management department.

The findings further indicated that when there are so many loopholes within the inventory management system security which results to

product misplacement, increased the holding costs and encouraged theft. This statement was supported with a score of (69.76%). Further, the analysis of findings indicated with the majority at (76.74%) that inventory management system security couldn't be trusted fully in effective logistics management operations. On the availability of physical space for storing inventory the study revealed that the rate of breakdown was a blow to effective logistics management which had disabled the handling stores operations by respondents with a score of (93.02%).

From the findings it can be deduced that effective inventory management and in such Sameer Africa limited should endeavor to adopt a proper and efficient inventory management system security that meets the specific requirement of the organization. The findings of the study agrees with Xin,(2009) who suggested that the type of inventory management system security and physical storage space impacts positively on effective logistics management and therefore firms in the public and private sectors should strive to improve these areas in order to boost its competitive advantage.

### **Technology**

The respondents were asked to indicate whether Sameer Africa limited had adequate computers. The majority, (95%) of the respondents indicated that Sameer Africa limited had inadequate computers while, (5%) indicated that computers were adequate. The findings therefore agree with Karplus, (2007) in a study on Technology innovation in China energy sector revealed that Technology was a major factor affecting logistics management in China's energy sector.

He recommended that high level of technology be adopted in order to increase through put or service delivery with a higher level of accuracy and



reliability in a diligent manner, improve service quality and increase predictability of service provision. The findings of the study showed that Sameer Africa not only needed to add modern technological equipment but also install modern infrastructure that would ensure reduced cycle times, On time delivery, quick responses with customers and replace human being in tasks done on dangerous environment among other accruing benefits. Therefore the need for adoption of high level technology by Sameer Africa couldn't be over emphasized given the nature of firms operations where equipment and components used usually very expensive.

### **The extent to which Technology affect effective logistics management**

The respondents were presented with statements to determine the extent to which Technology affect effective logistics management in the manufacturing industry in Kenya. Most of the respondents at (78%) agreed that Technology affected effective logistics management at a very large extent agreeing with Coyle, Langley, Gibson, Novack and Bardi,(2007) who suggested that many of the strategies being pursued within logistics management organizations will rely on (Technology),that is the internet and extranet based solutions as organizations seek to integrate suppliers and distributors, share link, ERP systems, to sale personnel in the fields, outsource manufacturing and logistics functions and develop supplier onsite engineering and maintenance activities :

(12%) indicated that technology affect effective logistics management to a large extent; (7%) indicated that Technology affect effective logistics management to a moderate extent while the remaining (3%) of the respondents felt that technology affect effective logistics management at

a small extent and only (2%) said it did not affect effective logistics management at all. Technology is a major factor that organizations need to consider if they are to enhance effectiveness in their logistics management functions. Technology ought to be introduced in the whole logistics management processes.

### **Frequency of upgrading Technology**

Respondents were asked to indicate the frequency with which Technology was upgraded. According to the analysis of the findings, majority (81%) of the respondents indicated that technology was upgraded sometimes when need arises followed by (19%) who indicated that it was upgraded regularly. The findings of the study was in agreement with Frohlich and Westbrook,(2002) who observed that Technology investment and upgrading clearly plays a leading role in growth of firms who have invested substantial resources in new types of Technology enabling them to improve efficiency in and coordination of logistics management, thereby reducing inventory levels which gives them a competitive advantage.

### **Effective logistics management**

In order to analyze effective logistics management the following sub variables were analyzed. Productivity, cost reduction, customer satisfaction and quick responses (JIT). In line with effective logistics management the respondents were presented with statements to rate the performance of their current logistics management comparing it with four years ago. The respondents were required to rate on a 4 point scale where 1=good; 2=Average; 3=Poor; 4=very poor. According to the findings, majority (74.4%) of the respondents rated Sameer Africa limited as poor in terms of cost reduction while (11.6%) rated it as good.

The findings further revealed that (6.9%) of the respondents indicated Sameer Africa limited performed well rating it as good employees productivity while (60.46%) indicated that it performed poorly. It was further revealed that (37.20%) of the respondents rated Sameer Africa in terms of customers satisfaction as average, (9.30%) as good, (30.23%) as poor and (23.25%) as very poor. In terms of increased revenues/profit (13.95%) rated it as good; (46.51%) as rated is as average however (37.20%) and (2.32%) of the respondents rated it as poor and very poor respectively. The analysis of findings agree with Ramakrishna, (2005) who noted that progressive management has recognized that logistics management can provide opportunities to lower cost and can be treated as profit Center.

## **SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS**

### **Summary of findings**

#### **Inventory management**

Based on the findings, majority of the respondents indicated that Sameer Africa limited had in place an inventory management system. It was revealed that majority of the respondents unanimously agreed that they run out of stocks weekly. This raised pertinent question on whether the Sameer Africa limited inventory management system was effective and efficient. This acknowledges that inventory management system is vital in the control of stock, materials and goods that had been held, (or stored) for later use in the case of production or later exchange activities in the case of service industry.

From the findings, majority of the respondents attested to the facts that Sameer Africa limited had issues with its inventory management system security which had a negative effect to effective

logistics management due to many fundamental flaws. The findings of the study suggests that the type of inventory management system in use impacts on effective logistics management either negatively or positively and therefore firms in the private and public sectors should strive to improve on those areas in order to boost their competitive advantage. The study also revealed that there was a frequent inventory breakdown that affected effective logistics management as strongly agreed by the majority of the respondents.

#### **Technology**

The study found that logistics management performances are affected by technology to an extent. From the findings, majority of the respondents indicated that Sameer Africa limited is computerized but the computers are not adequate a major factor affecting effective logistics management. The findings of the study revealed that technology was a major factor affecting effective logistics management.

According to the analysis, the respondents indicated that in general Sameer Africa limited not only need to add modern technology gadgets but should also install modern technology infrastructure that will reduce cycle times, on time delivery, quick responses, customer satisfaction and replace human in dangerous environment among other accruing benefits. It was observed that the relationship between use of technology and logistics management performance was highly significant in Sameer Africa limited. The findings further reveals that when the technology used becomes common, the competitive advantage is lost implying that there is need of constantly upgrading and replacing of old and obsolete technologies with modern ones. The findings of the study observed that technologies investment have clearly played a leading role in growth of firms who

have invested substantial resources in new types of technology enabling them to improve efficiency in coordination of material handling operations, thereby reducing inventory levels which gives them a competitive advantage. From the findings, it can be deduced that modern technology comes with efficiency in operations, react more promptly to market signals and reduce production costs. It's noteworthy that the respondents agreed that investment in new technology would enable Sameer Africa limited to improve on its effectiveness in logistics management.

## **Conclusions**

### **Technology**

The following are the conclusions drawn from the study findings. Based on the findings, it can be concluded that Technology is the factor that affect effective logistics management the most. It was further concluded that Sameer Africa limited had computerized their logistics management however inadequately which made its logistics management functions ineffective and inefficient. Further analysis of findings revealed that upgrading of technology and replacement of old, outdated and obsolete technology was not being done regularly hence a major contributor of ineffectiveness in logistics management.

As far as adoption of modern infrastructure and modern technology is concerned, implementation of service delivery becomes faster, and this increases the customers' satisfaction. Furthermore, modern technology is a means of providing a competitive advantage, and hence they are becoming part of the organization strategy. Modern Technology have reduced transaction costs, cycle times, on time delivery, quick responses and customer satisfaction in organizations, created new opportunities for organizations and has enabled

firms to develop closer relationships with their clients.

Similarly lack of investments in new type of Technology had literary robbed Sameer Africa limited ability to improve the efficiency and effectiveness of their logistics management performances. Technology had been applied in the logistics management functions to enhance efficiency and effectiveness through reduced lead time and better projection of sale. However, there were limitations that prevented its rapid implementations and use such as the costs of acquiring the new technology may at times be very high which becomes prohibitive to some organization.

### **Inventory management**

On the basis of inventory management, the study concluded that Sameer Africa limited had put in place inventory management however it was found to be ineffective and improper. The physical storage space was too small for inventory and their inventory management security was riddled with a lot of issues including theft, stock out, increased holding cost, product misplacement and consistent inventory breakdown which is an impediment to effective logistics management. In a perfectly predictable economy, inventory may be needed in order to take advantage of economic feature to meet the changing demands, when uncertainty is present; inventories are used as a protection against risk of stock out.

The study further concluded that logistics management staffs received the necessary skills through training to handle their current job effectively and efficiently. This indicated the company commitment in promoting career development among its employees. The study recognized that systematic training of workers was

one of the best practice rather than allowing them personal discretion in their tasks and in addition the workload should be evenly distributed between the workers and management with management performing the instruction and the workers performing the labor, each group doing the work for which it is best suited.

### **Recommendations**

The study recommends as far as employees demographic characteristics is a concern, the Human resource unit should motivate and promote the logistics management employees in order to reduce a high rates of employees turnover. The study further recommends that Sameer Africa limited should continue enhancing reduction in quality complaints, putting in place a competent inspection team, and renewing their commitment in consistently providing quality products that will make it achieve effective logistics management on wastages and damages, cycle times and improve on time delivery.

The study recommends that Sameer Africa limited should replace fully old, outdated and obsolete Technology and technological equipment with modern ones in order to improve the productivity of logistics management employees beyond that possible with current human labor levels so as to realize economies of scale. The findings also recommend that regular maintenance and upgrading of Technology and technological equipment so as to ensure that they remain in good working conditions at all times. This will go a long way in reducing losses as results of breakdown and cost of maintenance and purchase of spare parts which are very costly to Sameer Africa limited. The study recognized that investing in new technology and technological gadgets leads to better

performance, reduced maintenance and repair costs as well as reduced occurrences of equipment breakdown. In relation to the inventory management, the study recommends that there is a need for a total overhaul or improvement of the existing inventory management systems in order to optimize resources and achieve a balance of not wanting to hold too much.

It was found that inventory management was vital in the control of materials and goods that had been held (or stored) for later use in the case of production or exchange activities in the case of service industry. The study further indicated that an appropriate inventory management system security could lead to business success and vice versa. The conclusion made was that effective inventory managements could make significant contribution to effective logistics management as indicated in company's profit as well as increased returns on total assets. On the basis of communication, the study recommends that Sameer Africa Limited should introduce proper and good communication strategies to ensure that effective logistics management functions runs smoothly.

### **Areas for Further Research**

Logistics management is key to any successful organisation both small-scale and large-scale. The study was carried on the private sector, it is suggested that a further study to be carried in the public organisations which are the majority in our country to find out how best they can manage their logistic process.

Many researchers will find this research a point for further research work. Further research should focus on other dimensions affecting effective logistics management in manufacturing industry in other countries.

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