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INFLUENCE OF MATERIAL MANAGEMENT ON PERFORMANCE OF LARGE MANUFACTURING FIRMS IN NAIROBI CITY COUNTY, KENYA

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Abstract

Purpose: *The main objective of this study was to determine influence of material management on performance of Large Manufacturing Firms in Nairobi City County, Kenya.*

Materials and methods*; the study adopted the descriptive research design; research design is defined as a plan, structure and strategy of investigation conceived to obtain answers to research questions and control variance. The unit of observation analyses of this study consisted of officers who are assigned with warehouse responsibilities comprising of warehouse middle-level managers. The study used stratified random sampling procedure to select respondents. Stratified random sampling procedure is a probability sampling procedure in which the target population is separated into mutually exclusive homogenous segments (strata). The close-ended question provides more structured responses to facilitate tangible recommendations. The closed ended questions was used to test the rating of various attributes and this helps in reducing the number of related responses in order to obtain more varied responses. The collected research data was checked for any errors and omissions, coded, defined and then entered into Statistical Package for Social Science (SPSS Version 23). Descriptive statistics was used to portray the sets of categories formed from the data. The mean, standard deviation and variance on the dependent and independent constructs was used to show how clustered or dispersed the constructs are. The study used multiple linear regression analysis to test the statistical significance of the various independent variables In testing the significance of the model, the coefficient of determination (R2) was used to measure the extent to which the variation in implementation on supply chain performance is explained by the variations of various factors on the outsourced distribution services.*

Results*: The study established that Basic functionality of materials management includes various factors such as supply, material pricing, and usage. Large manufacturing firms should take more in-depth look at the functions of materials management and how it is advantageous to large manufacturing firms supply chain to enable production facility and locate areas where aid is needed.*

Recommendations: *The study recommends that Materials management has successfully optimized production in various manufacturing firms' facilities, but the process cannot effectively stand alone. Implementing an advanced planning and scheduling system (APS) should be implemented in cost reduction, inventory reduction, and material flow enhancement.*

Keywords*: Material Management, Inventory Control, Material flow, Material requirements planning*

1.0 INTRODUCTION

1.1 Background of the Study

The study analyzed the role of Decentralized Warehouse Operations on Performance of large manufacturing firms in Nairobi City County, Kenya specifically, this chapter provides information on the global perspective of Decentralized Warehouse Operations on Performance of Large Manufacturing and then narrows down to regional and then local perspectives. It highlights on the background information, statement of the problem, general and specific objectives, and research questions, justification of the study and the scope of the study.

According to Faber (2015), decentralized warehouse is closely linked to marketing functions in the supply management system. The operations employee at a regional warehouse is well-trained in inventory management, to make quick decisions without waiting for decisions from the central management that benefits the business as a whole. It is they who are closer to the problem and actions in a warehouse. So, they understand customers better. When goods are manufactured, they have to be moved from the point of origin to various destinations for distribution. This involves a network of strategically placed warehouses used for timely delivery of products to the customer. The whole distribution process involves warehousing, inventory management, packaging and transportation. In a decentralized supply chain, management at local warehouses plays a significant role in ensuring goods are delivered to the customer (Chen and Tian, 2011).

A system for managing warehouse operations comprises two or more enterprise resource planning systems and a decentralized warehouse management system for managing data related to contents and operations of a warehouse (Bijvank &Vis, 2011). The enterprise resource planning systems are operable to send a delivery document to the decentralized ware house management system over a business application programming interface; the delivery document includes a unique identifier for the enterprise resource planning system that sends the delivery document. The decentralized warehouse management system is operable to receive the delivery document with the unique identifier, carry out instructions included in the delivery document and send an updated version of the delivery document to the enterprise resource planning system from which the delivery document was received, based on the unique identifier included in the delivery document. Local warehouses reduce the time required to deliver the goods to the customer. According to Bartholdi and Hackman, (2014) when local managers are independent, they can make decisions that result in customer satisfaction. A customer dealing with a decentralized warehouse doesn't have to wait for the local staff to contact central management before receiving an answer. Decision and answers to queries are local and instant.

Beers and Zand (2014) states that when a company is physically close to its customers, it is more flexible in meeting increasingly diverse demands. Greater flexibility means greater customization. A company with decentralized manufacturing manufactures only those products that are in demand in a specific region or country. Flexibility has other rewards as well. For communicating locally is more efficient than having to go through multiple channels at a single corporate office Decisions are made more quickly.

Companies with decentralized manufacturing enjoy benefits that often elude companies with centralized plants. These advantages include flexibility, being closer to their customers, better and timelier information, more motivated managers and employees, and the ability to take advantage of low labor costs in different areas (Bartholdi and Hackman, 2014). Decentralized manufacturing not only improves the efficiency of decision-making but also empowers employees, letting them improve problem areas immediately without approval from a centralized organization. According to Chan and Zhang (2011), decentralized manufacturing actually increases motivation and creativity by giving lower tier managers more responsibilities. When a manager is

given a sense of ownership over an operation, efficiency increases among employees in both production and support positions.

Many companies manufacture different array of products, making it hard to develop capacity and style for a specific product type. Some companies choose to move into manufacturing new products rather than scaling up existing manufacturing, for several reasons (Berry & Wadsley, 2012). The market and market access create reluctance to scale up the manufacture of a certain product if the firm is not certain the increased supply will be consumed. Firms should diversify into other product spaces and capture market share and expand profitability in this way rather than through further up-scaling (Gil-Saura and Ruiz-Molina, 2011). Though diversification of product range may buffer firms from issues in certain product markets, the spread of goods being produced may negatively inform a firm's ability to develop niche management expertise. Linked to this is a factor mentioned before, whereby management not only is responsible for firm activity but also has to get involved in managing or owning supplier firms to ensure.

1.1.1 Global Perspective of Decentralized Warehouse Operations

According to Fawcett and Magnan (2011), current global manufacturing trends show that more and more companies are choosing a decentralized warehousing strategy. As global markets continue to expand, the demand for customized products has also expanded and new technologies are emerging that make it easier for companies to build customization into their manufacturing processes, decreasing the costs of flexibility but not dramatically increasing the per-unit cost (Chen and Tian, 2011).While some companies with decentralized warehousing practices are reshoring overseas plants back to more centralized U.S.-based locations in response to increased costs, for example in China, the arguments in favor of decentralized manufacturing outweigh the arguments against.

Company decentralizes in response to increased demand or expanding markets. Such as, American Nutrition, Inc. a major pet food company, started with a single plant in Ogden, Utah, but as the pet food market expanded, the company also expanded to four manufacturing plants in Phoenix, Ariz, Woodland, Wash, and Hazleton Township Penn. Decentralized warehouse activities in manufacturer's transition help manufacturing and distribution processes to more nimble, customization-focused operations by providing customized end products. Decentralized warehouse give companies the flexibility they need to accommodate any workflow, implement social collaboration and especially add new capabilities and quickly address changing requirements. Decentralized warehouse enables state-of-the-art manufacturing, distribution and supply chain process that integrate with supplier operations (Gil-Saura and Ruiz-Molina, 2011).

To do this, the American Nutrition manufacturer considers a setting where several suppliers ship to several retailers through a shared warehouse, so that outbound trucks from the warehouse contain the products of local multiple suppliers. The American Nutrition manufacturer extends the classic one warehouse multi-retailer analysis (Gurría A, 2012). Incorporate multiple suppliers and per truck outbound transportation cost from the warehouse, and develop a cost lower bound on centralized operation as benchmark. The American Nutrition manufacturer then analyze decentralized versions of the system, in which each retailer and each supplier maximizes his or her own utility in a variety of settings, and we analytically bound the ratio of the cost of decentralized to centralized operation, to bound the loss due to decentralization. The Nutrition manufacturer found that it easy-to-implement decentralized policies are efficient and effective (Hilmola & Lorentz, 2011).

1.1.2 Regional Perspective of Decentralized Warehouse Operations

Unilever Ghana became noted for its willingness to develop best in class warehouse operations and to establish best practices by Decentralized Warehouse Operations. These qualities seemed to dominate the firm's long-term strategic development which offers a clear strategy to grow the firm or expand its businesses. (Güçlü, 2013) Unilever Ghana has made use of a variety of physical distribution strategies in which characteristics of the biggest advantages of decentralizing the shipping and receiving is a reduction in delay of material handling. Wherever the products are coming from, having a connected network of warehouses and supply facilities allow Unilever to receive products more quickly and get them out to customers more quickly (Gil-Saura and Ruiz-Molina, 2011).

Industrial and manufacturing enterprises have applied the use of best practices, via Decentralized Warehouse systems, to many different aspects of their various lines of business for many years. The process of Decentralized Warehouse systems a competitor's operations is recognized method to reduce costs, improve efficiencies, and expand product lines without expending much in the way of resources to do so because the company being benchmarked has committed the necessary capital and resources to do so (Kaluarachchi, 2010). With Unilever decentralizing the warehousing, one of the most obvious issues is increased operating costs. Even with all the benefits in stocking and shipping that this approach brings, the fact of the matter is you're still faced with the costs of owning/renting, maintaining, and outfitting more than one warehouse, which can begin to add up after a while**.**

Often as a company, Unilever warehouse decentralizes lead to meeting increased demand or to enter alternate markets and coverage areas. Common practice is to begin with a single, centralized location or plant at company launch. This lead to demand grows and business is performing well, that coverage can expand by opening new locations, transforming a once centralized structure into a decentralized one. In addition, centralized manufacturing offer Unilever more stable contract pricing, lower per-unit costs, improved or efficient material management and optimized production schedules and the greatest benefit of centralized manufacturing is the superior quality management and better decision-making options (Ip & Kam. 2011).

1.1.3 Local Perspective of Decentralized Warehouse Operations

Chandaria Industries Ltd manufactures and markets tissue, paper and hygiene products in Kenya, Tanzania and internationally. The company offers toilet rolls, serviettes, facial tissues, hankies, pocket tissues, kitchen towels, various purpose towels, aluminum foils, cling films, cotton wools, hand sanitizer's, sanitary pads, dispensers, me dispread rolls, toilet seat cover liners, liquid hand wash products and multi-purpose detergents. The Decentralized Warehouse Operations for Chandaria Industries Ltd manufactures plays one of the key activities in supply chain by creating time utility to the product, hence adding value to the product to fulfill the requirements of a customer. It ensures that products are stored and availed whenever required (Kiraka and Katwalo, 2013).

With the demand for health commodities increasing, KEMSA has policies and procedures in place to ensure that stocks are well managed. The Authority has two warehouses in Nairobi and eight (8) depots across the country to enhance flexibility and quick response to customers demand. The specialized nature of drugs and medical commodities call for state-of-the-art racking schemes that facilitate ease of storage and stock retrieval procedures. Storage conditions for drugs and medicines vary from product to product in terms of lighting, temperatures, and humidity, conditions that KEMSA warehouses throughout the country fulfill. Warehousing activities are also conducted to ensure the highest health and safety standards. Distribution & Customer

Service: Customer Service Centres are conveniently located in Nairobi, Mombasa, Kisumu, Nakuru, Eldoret, Kakamega, Nyeri, and Garissa. The regional customer service teams work closely with health facilities to identify, quantify and make requisitions for essential drugs and medical commodities on behalf of its clients. A key pillar of KEMSA's strategic plan is the attainment of supply chain excellence. This pillar focuses on ensuring that the operational processes supporting all aspects of the supply chain are efficient and

1.1.4 Large manufacturing firms in Nairobi City County, Kenya

The Large manufacturing firms in Nairobi City County, Kenya have been classified by various scholars and researchers based on different characteristics. Nairobi is the business and financial Centre of Kenya and East Africa. This is highlighted by the number of companies and organizations headquartered in the city. The capital, Nairobi, is a regional commercial hub. The economy of Kenya is the largest by GDP in East and Central Africa. Agriculture is a major employer; the country traditionally exports tea and coffee. The service industry is also a major economic driver (K.A.M, 2015). Authors classified large manufacturing firms based on the quality of service or production, the size of the work force, and the numbers of facilities. In Kenya, according to the KAM directory (2015/2016) large-scale Large manufacturing firms have more than 100 workers, medium-scale firms have from 51 to 100 workers, small-scale large manufacturing firms have from 11 to 50 workers, and micro-scale firms are those with 10 or fewer workers.

According to Gichuru & Arani, (2015), the leading large manufacturing warehouse communicates planned goods movements to the decentralized operations through inbound and outbound deliveries, respectively. The decentralized warehouse executes the physical inbound or outbound deliveries using transfer orders with the transfer order confirmation of the decentralized operations. The objectives of warehouse layout and operation are easily recognized, warehouse layout problems are often complicated by large varieties of products needing storage, varying areas of required storage space and drastic fluctuations in product demand. Therefore, an effective layout design of the warehouse is required to address these problems and accomplish the objectives (Karimi & Namusonge, 2014). The large manufacturing firms in Nairobi City County Despite challenges in the operating environment. Food, clothing and textile subsectors accounts for over 73% of the sector which is a representation of the complete picture of the industry. Food, beverages and tobacco constitute over 73% of total production turnover in the agro-processing industry. (Kiraka & Katwalo, 2013).

1.2 Statement of the Problem

The movement of goods from the port in Mombasa to Kisumu and Eldoret and other major big cities for the large manufacturing firms Kenya is expensive, given the generally poor state of roads. This translates to higher vehicle maintenance costs, which then leads to higher costing of transport services. In addition, congestion is a concern that makes movement of goods takes a longer time, thus increasing the cost (KAM, 2015).

A key concern in local manufacturing is managing inputs, particularly local inputs where manufacturers cannot always rely on centralized warehouse operation due to long lead time, and thus are not guaranteed to get inputs of the right quality at the right price within the right time period. According to the data released by the Kenya National Bureau of Statistics in 2014, Gross domestic product at market price and operating cost increasing from: 9.8% in 2014, 10.6% in 2015, 11.5% in 2016, 13.9% in 2017 creating high cost of material handling unlike in the decentralize warehouse operations.

The scale of this growth in demand contrasts sharply with the reported global growth in warehousing demand as reported by (Karimi and Namusonge,2014) Allied Research, at an average increase 3.48% in operating cost

a year. At the same time, inventory levels are often significantly higher than they have to be leading to high holding cost of between 1,000,000.00 and 5,000,000.00. it was indemnified that the performance of the manufacturing would be presenting transportation represented 8.8%, average savings of 6 to 22% on freight costs, 99.8% on-time delivery, reductions in out-of-stocks from 2 to 14% and lead-time reductions of 3 to 7 days (Kamau, 2013).

For manufacturers to develop control and flexibility they need, Decentralized Warehouse Operations empowers them to meet the challenges of rapidly changing markets while raising the total performance of their entire supply chain (K.A.M, 2015).The study therefore majorly touched on the Influence of Decentralized Warehouse Operations on Performance of Large manufacturing firms in Nairobi City County, Kenya: to establish the various factors that affect the performance of large manufacturing firms.

1.3 Research Objectives

1.3.1 General Objective

The main objective of this study was to determine influence of material management on performance of Large Manufacturing Firms in Nairobi City County, Kenya

1.3.2 Specific Objectives

The specific objectives of this study were as follows:

- **i.** To determine the influence of Inventory Control on Performance of Large manufacturing firms in Nairobi City County, Kenya.
- **ii.** To establish the influence of Material flow on Performance of Large manufacturing firms in Nairobi City County, Kenya.
- **iii.** To determine the influence of Material requirements planning on Performance of Large manufacturing firms in Nairobi City County, Kenya.

LITERATURE REVIEW

2.1 Theoretical Review

According to Homayoun and Manduchi (2010) literature review refers to the theoretical perspectives and previous research findings regarding the problem at hand. The function of literature review is to look against what others have done in areas that are similar, though not necessarily identical to one's own area of investigation (Creswell, 2013). This part contains a review of various secondary materials that exist on the topic of effects of Decentralized Warehouse operations on performance of large manufacturing firms.

2.2 Performance of Large manufacturing firms in Nairobi City County, Kenya

Effective warehouse management in Kenya plays a vital part of the economy, as it can be the source of various economic contributions through the generation of income via proper and effective decentralized warehouse operation (RoK, 2013). With increased income, there will be new job opportunities, introducing innovations, stimulating competition, and engine for employment. The role and importance of manufacturing companies in an economy has been highly appreciated and acknowledged. Moreover, in the present economy, manufacturing companies are facing tremendous challenges and threats to survive in a competitive environment. Therefore,

companies are continuously forced to improve their decentralized warehouse operation. Many companies have also customized their value proposition to increase their customer service levels, which has led to changes in the role of warehouses (Awino & Gituro, 2011).

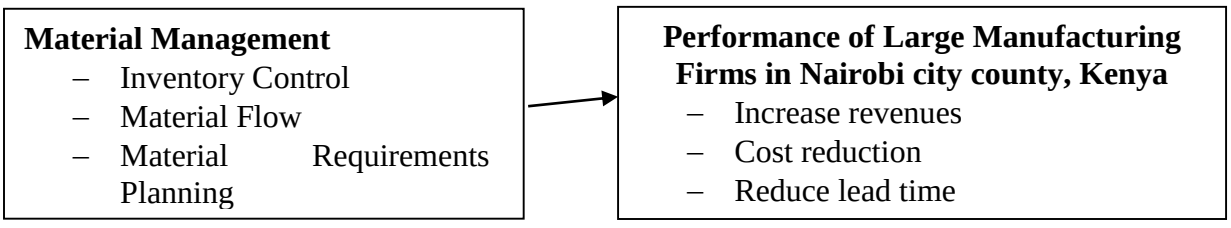
Measurement of decentralized warehouse operation performance of large firms is based on both quantitative and qualitative performance indicators (Nielsen, 2013). Quantitative and qualitative performance measures provide a tool for organizations to manage progress towards achieving predetermined goals, defining key indicators of organizational performance and customer satisfaction. It is the process of assessing the progress made (actual) towards achieving the predetermined performance goals (baseline). The warehouse performance reports are necessary to know where the warehouse stands in the business and it is the key performance indicator which tells how efficiently and effectively the warehouse is functioning. There are basically two types of performance reports which are service and cost performance reports (Autry & Richey, 2010).

2.3 Material Management

According to the studies by Kolarovszki &Vaculík (2013) on Warehouse Management Systems based on selected automatic identification technology in Slovakia the study established that materials management are all those functions involved in the supply and logistics process from initial identification to final receipt by end-user or customer. Typically, some of these functions may not report through to a materials manager but rather to finance, engineering or production, but for the purposes of this chapter are deemed to include; specification, sourcing, purchasing and expediting, cataloguing and inventory control, warehousing and materials handling, quality assurance, testing and tracking, internal and external distribution. While all of these' functions are just as likely to exist in a pure manufacturing environment, their relative importance and the optimum approach to carrying out each function is generally very different in the capital-intensive sector(Tozay ,2012).

According to Mongare & Nasidai (2014) studies on the impact of information communication technology on inventory control systems in transport organization, European Journal of Logistics Purchasing and Supply Chain Management, in both manufacturing and capital-intensive industries, the materials function is essentially a service operation, the prime aim of which is to support other direct revenue-earning functions such as production or operations. As such, the objectives of materials must be closely aligned to the goals of these other functions and to the overall objectives of the organization. Unlike in the manufacturing sector, however, where these corporate objectives may be readily defined in financial terms and the materials objectives therefore also tend to be financially driven, such as unit purchase price and work in progress minimization (Taleizadeh &Barzinpour, 2011).

2.4 Conceptual Framework



3.0 METHODOLOGY

The study adopted the descriptive research design; research design is defined as a plan, structure and strategy of investigation conceived to obtain answers to research questions and control variance. The unit of observation analyses of this study consisted of officers who are assigned with warehouse responsibilities comprising of warehouse middle-level managers. The study used stratified random sampling procedure to select respondents. Stratified random sampling procedure is a probability sampling procedure in which the target population is separated into mutually exclusive homogenous segments (strata). The close-ended question provides more structured responses to facilitate tangible recommendations. The closed ended questions was used to test the rating of various attributes and this helps in reducing the number of related responses in order to obtain more varied responses. The collected research data was checked for any errors and omissions, coded, defined and then entered into statistical package for social science (spss version 23). Descriptive statistics was used to portray the sets of categories formed from the data. The mean, standard deviation and variance on the dependent and independent constructs was used to show how clustered or dispersed the constructs are. The study used multiple linear regression analysis to test the statistical significance of the various independent variables in testing the significance of the model, the coefficient of determination (r2) was used to measure the extent to which the variation in implementation on supply chain performance is explained by the variations of various factors on the outsourced distribution services.

RESEARCH FINDINGS ANALYSIS AND DISCUSSION

4.1 Introduction

The study was to determine the Influence of decentralized warehouse operations on performance of large manufacturing firms in Nairobi City County, Kenya. Specifically, the study focused on four study variables; Material Management, Material Flow, Production planning and Supplier management on Performance of Large manufacturing firms. This chapter presents the findings and results of the application of the variables. Data was analysed, results interpreted on the basis of the overall objectives of the study.

4.2. Response Rate

The study targeted a sample of 136 officers who are assigned with warehouse responsibilities comprising warehouse middle-level managers working in large manufacturing firms in Nairobi City County, Out of the 136 distributed questionnaires, 103 were filled and returned. This translated to a response rate of 75.7%. This implied that the response was good enough and representative of the population and conforms with Mugenda and Mugenda (2012) for generalization purposes a response rate of 50% is adequate, while that of 60% is good but a response rate of 70% as excellent. The response rate of 88% for this study therefore, yielded more accurate measurements than did surveys with higher response rates.

Table .1: Response Rate

Category	N	Percentage
Responded	103	75.7
Incomplete questionnaires	33	24.3
TOTAL	**136**	**100**

4.3 Demographic information

To obtain a better understanding of the population structure from which the sample was taken, a preliminary analysis of demographic data was carried. In this case, the study sought the respondents': gender, age, level of education and the duration of work in large manufacturing firms in Nairobi City County.

4.3.1 Gender of the Respondents

The respondents were requested to indicate their gender. From the findings in Figure 1, majority 68% were male while 34% were female. This implied that there were more male than female respondents involved in the study. The findings demonstrated that male respondents were the dominant employees in large manufacturing firms. This were not in line with that of Owuoth, (2010). Gender equality, equality between men and women, entails the concept that all human beings, both men and women are free to develop their personal abilities and make choices without the limitations set by stereotypes, rigid gender roles and prejudices.

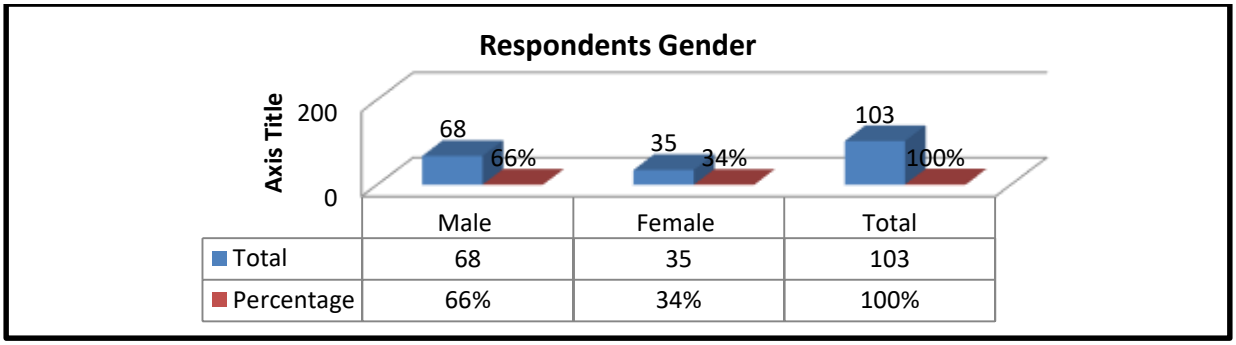


Figure .1 Gender of the Respondents

4.3.2 Respondents Level of education

As tabulated in table 2, majority of the respondent had attained diploma level education with 45.63%, followed by certificates education at 29.24% while only 25.24 % had attained university degree level of education. The findings demonstrated that certificate and diploma collage holders who graduated with ability to obtaining and seeing the appropriate use of equipment, facilities, and materials needed to do certain work, were employed in large manufacturing firms. The finding concurred with those of Jinxiang & McGinnis (2011) that manufacturing system requires skills, competence and Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.

Table 2: Level of education

Education level	Frequency	Percent
Certificate	30	29.13%
Diploma Collage	47	45.63%
University	26	25.24%
Total	**103**	**100**

4.3.3 Respondent's Years of Service

Respondents were requested to indicate the number of years they have been in service at the large manufacturing companies they work in. From the findings as indicated in Table 3, majority of the respondents indicated that they had been in service at the manufacturing companies for over 9 years, 6-8 years, 3-5 years and 0-2 years as indicated by 36%, 28%, 23% and 13% respectively. This clearly indicated the respondents had worked long enough in the warehouse sector and understood well the strategic importance of centralizing warehouse activities hence providing reliable data for analysis. The finding agreed with those of Güçlü (2013) that warehouse work responsibilities requires establishing and maintaining personally challenging achievement goals and exerting effort toward mastering tasks.

Table 3 Respondent's years of service

Years Of Service	Frequency	Percentages
9-Above	37	36%
6-8 Years	29	28%
3-5years	24	23%
0-2years	13	13%
Total	**103**	**100**

4.4 Descriptive Analysis

Descriptive statistics are brief descriptive coefficients that summarize a given data set, which can be either a representation of the entire or a sample of a population. Descriptive statistics are broken down into measures of central tendency and measures of variability spread. Measures of central tendency include the mean, median and mode, while measures of variability include the standard deviation, variance, and the minimum and maximum variables (Creswell, 2013).

4.4.1 Material Management

The study sought on the extent to which respondents agreed on the given statements that relate to the influence of Material Management on performance of large manufacturing firms and results presented on Table 4. From the findings, majority of the respondents strongly agreed that the increasing efficiency in the whole operating range is done through improvements in material flow and so, shorten lead times and reduce stocks supported by mean score of 3.77 and standard deviation of 0.83. From the study, the respondents to a great extended indicated that organization with inventory control policies, enables it determine how the warehouse manages the movement of inventory under its control supported by mean of 3.83 and standard deviation of 0.74. From the study it was established that organization evaluates internal and external interfaces to ensure a smooth operation to great extend the respondents concurred to statement supported by mean of 4.13 standard deviation 0.92.

The study revealed that Material requirement planning system ensures material is available for production and products are available for delivery to customers with a mean of 4.27 and standard deviation of 0.92. To a great extend respondents agreed that, insufficient quantities of an item used in manufacturing makes it unable to meet contract obligations to supply products on time with a mean score of 4.06 and standard deviation of 0.95. It was discovered that expansion of existing systems is a consequence of an increase in turnover, new sales and product strategies or changes in the market place with mean score of 3.88 and standard deviation of 0.97, this

implies that material management is key to management of production processes in the manufacturing sector. The finding in this study concurred with those of Faber (2015) that expanding demand for materials establishes a need for materials management, which pertains to the coordination of planning, organizing, and controlling the steps within the tangible component management process.

Table 4. Material Management

Statement	Min	Max	Mean	StD
Organisation has inventory control policies to determine how the warehouse manages the movement of inventory under its control	3.00	4.00	3.83	0.74
The increasing efficiency in the whole operating range done through improvements in material flow and so, shorten lead times and reduce stocks	3.00	4.00	3.77	0.83
The material flow process includes procurement, production, despatch and distribution and all related transportation, storage and handling processes	1.00	5.00	4.14	0.79
Organisation carry out Simulation of complex material flows for modelling and verification purposes	2.00	5.00	4.09	1.00
Organization evaluates internal and external interfaces to ensure a smooth operation	1.00	5.00	4.13	0.92
Systems Plan manufacturing activities, delivery schedules and purchasing activities	2.00	5.00	3.84	0.91
Material requirement planning system ensures material is available for production and products are available for delivery to customers	2.00	5.00	4.27	0.92
Maintain the lowest possible material and product levels in store to cut on the cost.	3.00	4.00	4.13	0.76
Insufficient quantities of an item used in manufacturing (or the wrong item) it may be unable to meet contract obligations to supply products on time.	3.00	5.00	4.06	0.95
Expansion of existing systems as a consequence of an increase in turnover, new sales and product strategies or changes in the market place	3.00	4.00	3.88	0.97

4.5 Model Summary

The study found in the table below the R Square, which is the coefficient of determination, was used to measure the dependent variable variations and their effect on the dependent variables. As observed, the R Square value is 0.643; this value is between 0 and 1. Analytically, this shows that 64.3% of variations in the dependent variable can be explained by the independent variables. Analytically, 72.1% of variation in Large Manufacturing Firms which is explained by Inventory Control, Material Flow and Material Requirements Planning while the remaining 35.7 % is associated with factors that re not within the scope of this study.

Table 5: Regression analysis model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.802a	.643	.632	.485

a. Dependent Variable: Performance of Large Manufacturing Firms
b. Predictors: (Constant) Inventory Control, Material Flow, Material Requirements Planning

4.6 Coefficient Analysis

The established regression equation was;

Y = 1.941+0.309X1+0.558X2 +0.229X3 +e

From regression results in Table 5, the 1.941 represented the constant which predicted Performance of Large Manufacturing Firms when all the Influence of material management effects remains constant at zero (0). This implied that manufacturing firms in Nairobi performance would be at 1.941 holding Inventory Control, Material Flow, Material Requirements Planning at zero (0).

Regression results revealed that Inventory Control has significance influence in Performance of Large manufacturing firms as indicated by β1=0.309, p=0.000<0.05, t= 2.800. The implication is that an increase in radio Inventory Control lead to increase in manufacturing firm's performance by β1=0.309. This implied that an increase in Inventory Control would lead increase in firm's performance. The findings concurred with those of Taleizadeh &Barzinpour (2011) that Demand satisfaction is accomplished through the maintaining, raising or lowering of inventories or backlogs, while keeping the workforce relatively stable. Implemented a just-in-time philosophy, the firm would utilize a chase strategy, which would mean satisfying customer demand while keeping inventories at a minimum level.

Regression results revealed that Material Flow has a significance influence on Performance of Large manufacturing firms as indicated by β2= 0.558, p=0.002<0.05, t=4.153. This implied that an increase in Material Flow would lead to an increase in Performance of Large Manufacturing Firms by β2= 0.558, this implied that Material Flow was effective in improving the performance of the manufacturing firms. From the regression findings, the study revealed that there existed a significant positive relationship between manufacturing Material Requirements Planning and Performance of Large Manufacturing Firms as indicated by β3=.0.229, p=0.001<0.05, t=1.460. The implication is that an increase in Material Requirements Planning would lead to increase in Performance of manufacturing firms by β3=.0.

Table 6: Coefficient Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.941	.228		8.527	.000
	Inventory Control	.309	.110	.441	2.800	.000
	Material Flow	.558	.134	.688	4.153	.002
	Material Requirements Planning	.229	.157	.310	1.460	.000

a. Dependent Variable: Performance of Large Manufacturing Firms
b. Predictors: (Constant) Inventory Control, Material Flow, Material Requirements Planning

$Y = 1.941+0.309X_1+0.558X_2 +0.229X_3 +e$

Y= Performance of Large manufacturing firms

β_0=constant

X1= Inventory Control

X2= Material Flow

X3= Material Requirements Planning

ε=Error Term

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter describes the summary of the study, conclusions and recommendations of the study. The main purpose of the study was to determine Influence of decentralized warehouse operations on performance of large manufacturing firms in Nairobi City County, Kenya. The study also determined the influence of independent variables

5.2 Summary of Findings

5.2.1 Material Management

The study established that Basic functionality of materials management includes various factors such as supply, material pricing, and usage. Large manufacturing firms should take more in-depth look at the functions of materials management and how it is advantageous to large manufacturing firms supply chain to enable production facility and locate areas where aid is needed. Various functions of materials management in large manufacturing firms include, Production Control; as production schedules are generated through demand analysis, and the materials that are needed are determined. Purchasing; as production management hands off the materials that are needed, the parts are then purchased from various and frequent suppliers. Locating quality materials at a reasonable price can reduce overall cost within the materials management process.

5.3 Conclusion

The study concludes that the materials department should be charged with releasing materials to a supply base, ensuring that the materials are delivered on time to the manufacturing firms using the correct carrier. Materials management in manufacturing firms should be measured by accomplishing on time delivery to the customer, on time delivery from the supply base, attaining a freight, budget, inventory shrink management and inventory accuracy. The materials department is also charged with the responsibility of managing new launches

5.4 Recommendations

The study recommends that Materials management has successfully optimized production in various manufacturing firms' facilities, but the process cannot effectively stand alone. Implementing an advanced planning and scheduling system (APS) should be implemented in cost reduction, inventory reduction, and material flow enhancement. Materials management takes the initiative in unloading and counting materials. This is where the parts are distributed to the correct locations and where the process ends.

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