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INFLUENCE OF QUALITY MANAGEMENT ON SUPPLY CHAIN PERFORMANCE OF FOOD MANUFACTURING FIRMS IN NAIROBI COUNTY, KENYA

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ABSTRACT

The purpose of the study was to examine influence of quality management in supply chain performance in food manufacturing companies Nairobi county, Kenya. The study was to establish how customer focus, continuous improvement, lean management and quality planning affect the supply chain performance. The theories that were used were Demming's theory, Lean theory, Taguchi's theory, crossby's theory Feigenbaum theory and ishikawa theory. The study used descriptive research design and the focus was 34 food manufacturing firms in Nairobi County. The unit of observation was senior procurement officer one supervisor in each selected firm and one sores manager. The study used census survey design with respect to unit of analysis which was to be the most applicable because the population was small. The target population was 102 staff in the Procurement department of food manufacturing companies in Nairobi county Kenya for the 34 selected companies. The stratified sampling design was to guide the study in obtaining the sample size of 34 selected firms. The data was collected through use of semi-administrated questionnaires. The data was analyzed using statistical package for social sciences (SPSS) Version 21.0 which was the computer software for analysis. The study concluded and found that customers and suppliers were the keys stakeholders in the success of supply chain. There should be continuous improvement and innovations in the products and services to ensure that they meet the standards and specifications of the supply chain and the market in general. Lean manufacturing should be utilized in public sector, particularly the county governments where a lot of wastage has been experienced. The County government should come up with strategies to ensure that their supply chain and their performance are better than in other counties. The study found that management was supportive of some of the quality management practices which was encouraging. The management in this county had a responsibility of implementing quality management in supply chain to improve on its performance.

Key Words: *Customer Focus, Continuous Improvement, Lean Management, Quality Planning*

INTRODUCTION

According to Fernandesetal (2014) quality has become increasingly important issue in organizations and so it is crucial to developed sustained resource management and therefore logistics emerges as an activity that allows, in a near term, the achievement of a great efficiency and economic benefits, and, in the long term, to obtain competitive advantage.

Naylor (2002) noted that quality is a strategic factor that works through virtuous cycles to build market share and reduced costs. The quality management is related to product improvement, making it more suited to customers' needs and process improvements, ensuring better conformance to standards. Improved quality increases demand and enables the firm to charge higher prices for the value differentiation it offers. The second order effect is the way customers learn about quality and continue to feed back their demands into product design.

Achieving customer satisfaction was not, therefore, a one off process; rising standards create demand for even higher standards in the competitive market place. Within the organization, process improvements have direct impact on costs and also show feedback as the habit of continual development is self-reinforcing. Increased profits will provide the funds for, and justify policies devoted to, quality management (Naylor, 2002).

The quality management QM according to Lysons and Gillingham (2003) is based on three tenets: a focus on product improvement from the customer's viewpoint. The achievement of annual improvements in quality and reduction in quality related costs. Any improvement that takes an organization to levels of quality performance previously unachieved is taken as breakthrough. Quality supply chain emphasize on the linkages of suppliers and customers, which is both internal and external. Without strong supplier-customer links both internally and externally, QM is doomed to fail.

There was also need to recognize that personnel at all levels share responsibility for product quality. It was based on Japanese concept of Kaizen, which is ongoing improvement, affects everyone in the organization at all levels. It is therefore based on team rather than individuals. Thus, when the top management provides leadership, continuous improvement is also understood and implemented at shop floor level. The last tenet of quality management is the recognition of the importance of implementing a system to provide information to managers about quality processes which enable them to plan, control and evaluate performance.

One of the aims of supply chain was to satisfy customer requirements which, in turn would lead to improved performance of the individual companies as well as the whole supply chain. This can be achieved by treating the downstream party to a customer, an approach which was first introduced in Total Quality Management (TQM). A customer would be satisfied as long as the supplier ensures high quality, flexibility and faster response to demand.

This was valid for all parties in the supply chain, all of which are indeed in a customer-supplier relationship. The success of a supply chain depended on the success of each and every company in it. The key activities that were required to achieve successful supply chain are integration, cooperation, long term focus on partnerships, sharing information, extensive communication between supply chain parties, sharing risks, rewards and goals (Ramos, 2007).

Globalization forced companies to expand their businesses to new geographies where availability of raw materials, access to trained people and new markets among others, can offer them competitive advantage. These changes, in turn, led companies to transfer their business processes to different suppliers and partners, relying on their capacity to produce and deliver high quality products and making them responsible for an important part of the final product.

Over the past two decades, total quality management (TQM) had become the most widely used management acronym and is considered as the buzz word in the management practices. It had been well accepted by managers and quality practitioners as a change management quality approach (Arumugam et al., 2009). It plays a vital role in the development of management practices (Prajogo and Sohal, 2003; Hoang et al., 2006).

SCP was initially related to the management of inventory within a supply chain. This concept was later broadened to include the management of all functions within a supply chain. According to Chopra and Meindl (2001), supply chain management involves the management of flows between and among stages in a supply chain to maximize total profitability". This definition suggests that SCM involves management of the flows of products, information, and funds upstream and downstream in the supply chain. SCM also entails making decisions about the locations of production facilities, which products to produce, how to produce them, and finally, how to distribute these products (Sila et al., 2006).

Li, Ragu-Nathan and Rao (2005) argues that quality management practices and supply chain performance (SCP) have been recognized as the two key strategies for manufacturing and service firms; and have become a prerequisite for success in the international market. Quality management practices and supply chain act as essential tools to achieve competitiveness and enhancing organizational performance.

Statement of Problem

The government of Kenya had put in place provisions to ensure realization of long term objective of improving the quality of life of its citizens through provision of quality goods and services. Substantial resources had been committed towards improving service delivery in areas such as food manufacturing, infrastructure development due to logistics and maintenance human development and governance among others. However, this has not been achieved and there have been continuous complaints from end customers of poor quality goods manufactured and service delivery from the food manufacturing firms (Ogubala and Kiarie, 2014).

According to Naylor (2010) poor quality in supply chain was the main cause of dissatisfaction among customers. This was a problem because dissatisfied customers led to reduced profitability of the firm directly but also detered new customers. Poor product quality and service was also demoralizing to employees as they spend so much time coping with complaints and were frustrated more when nothing seemed to be done to relieve them.

(Seth et al., 2006) devised a conceptual model for quality of service in the supply chain and found that majority of studies on service quality had focused on service industries, not supply chain as a whole. On finding that there were certain service quality domains that had not been investigated sufficiently, they proposed a model for assessing the quality of service at various interfaces of supply chain using 3PL.

There were many some studies concerning the influence of quality management (QM) in supply chain in the food manufacturing firms that had been carried, but there were no major studies that

had been carried in food manufacturing firms in Nairobi County, Kenya. As a result this study focused on the influence of Quality Management (QM) in supply chain in the public sector, specifically the county governments.

Research Objectives

The study sought to examine the influence of quality management on supply chain performance in food manufacturing firms in Nairobi County, Kenya. The specific objectives were:-

- To examine the influence of customer focus on supply chain performance in food manufacturing firms in Nairobi County, Kenya.
- To determine the influence of continuous improvement on supply chain performance in food manufacturing firms in Nairobi County, Kenya.
- To examine the influence of lean manufacturing on supply chain management in food performance firms in Nairobi County, Kenya.
- To establish the influence of quality planning of on supply chain performance in food manufacturing firms in Nairobi County, Kenya.

LITERATURE REVIEW

Theoretical Framework

Demming's Theory

Deming believed that 85% of industrial problems are caused by management and only management can fix them (Lysons and Gilingham, 2003). Deming came up with 14 points for management as set out in 'Out of Crisis'.

The points for management were: create constancy of purpose; learn the new philosophy; ask for evidence of process control along with incoming parts; be prepared to reduce the number of suppliers; use statistical methods to find out, in any trouble spot and what are the sources of trouble; institute modern aids to training on the job; improve supervision; drive out fear; break down barriers between departments; eliminate numerical goals slogans, pictures, posters, urging people to increase productivity and sign their work as an autograph; look carefully at work standards; institute a massive training programme for employees in simple but powerful statistical methods; institute a vigorous programme for retraining people in new skills and create a structure in top management that will push every day on these 13 points (Naylor, 2004).

The practice of awarding business on the basis of price tag need to be discouraged. Instead, the total cost should be minimized. The move towards a single supplier for any one item, on a long term relationship of loyalty and trust. According to Deming there is a need to break down barriers between departments. People in research, design, sales and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.

According to Lysons and Gilingham (2003) three principles of his quality management points are applicable in the objectives of quality planning for the management of food manufacturing firm to have a strategy on how to produce quality products.There is a need to cease dependence on inspection so as to achieve quality. This is achieved by building quality into the product in the first place.

Taguchi's Theory

DrGenichi Taguchi (2004), a Japanese statistician, became the director of the Japanese Academy of Quality and an advisor to the Japanese Standards Association. Taguchi defines quality as the avoidance of the 'loss a product causes to society after being shipped'.This includes loss due to failure to meet customer expectations, failure to meet

performance requirements and harmful side effects caused by the product such as the noise and pollution which may lead to social costs such as medical claims. By relating loss expressed in money terms to quantifiable product characteristics, Taguchi makes the transition from engineering to management perspectives (Lysons and Gilingham, 2003).

Taguchi proposed a quality loss function, QLF, to underline the need to aim close to the target. It estimates the total cost in the long run of poor quality resulting from a product moving away from exactly matching the target value. The cost covers all losses from the time the product is delivered, including those incurring during use and the consequential effects of failure. It comprises service and warranty work, customer dissatisfaction, extra inspection and scrap as well as what Taguchi refers to as general cost to society (Naylor, 2004).

Taguchi's table is applicable to the objective of quality customer focus where all aspects of product, service and process quality relate to both on-line and off-line quality control. On-line control concentrates on the manufacturing process. Taguchi, however, states that no amount of on-line inspection can improve a product, quality must be designed into a product off-line.

Crosby's Theory

In his book 'Quality is Free (McGraw Hill, 2006), there are five absolutes of quality management. Quality means conformity to requirements – not elegance. There is no such thing like quality problem although there may be an engineering machine problem. According to the theory it is always cheaper to do the job right the first time. The only performance indicator is the cost of quality and the only performance standard is zero defects

Zero defects is part of the four essentials of quality management. According to Crosby, quality is the conformance to requirements. The product either conforms or it does not. There is no such concept as good quality and quality has nothing to do with notions such as elegance. Prevention is the route to achieve conformance, not appraisal. Crosby noted that zero defects is the only acceptable performance standard. Quality is assessed by the cost of non-conformance. Crosby's change programme is more behavioral as compared to work of other authorities. It stresses more on quality planning and organizational processes rather than the application of statistical methods (Naylor, 2004).Therefore the theory will go in line with the objective of quality planning and to give the output of zero defects.

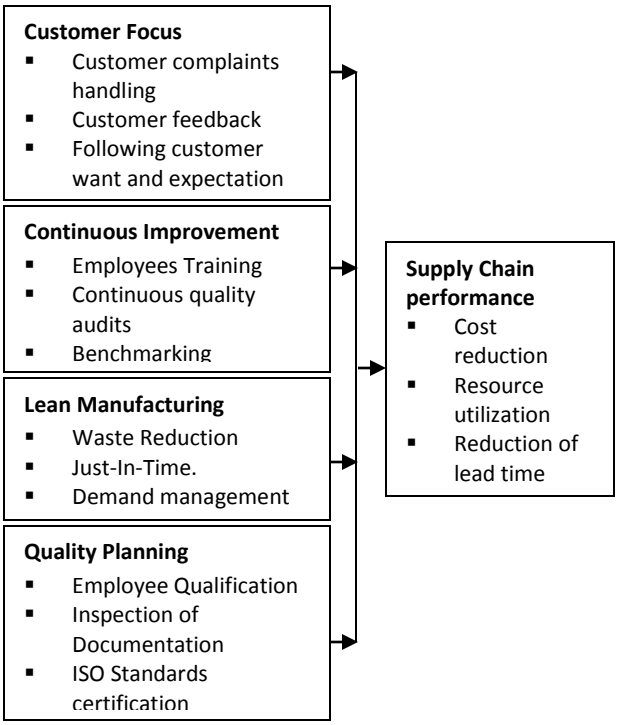
Lean Theory

Lean theory was proposed by the Japanese automotive industry, Toyota production system, and it has been successfully applied in both manufacturing and service fields Al-Araidah, et. al (2010). Competitiveness in dynamic developing market conditions can be ensured through the implementation of lean manufacturing for organizations B. P. Tomar and A. N. Tiwari (2016). It is recognized as an extensive set of much effective techniques for waste identification and its elimination from processes in order to enhance system and reduce on the whole production costs organizations B. P. Tomar and A. N. Tiwari(2016). Lean techniques is generally adopted for their low cost and to reduce costs, increase quality and improve the delivery time of services L. J. Krajewski and L. P. Ritzman(2005). Lean eliminates waste and concentrates on value-added activities from the customers' point of view Al-Araidah, et. al (2010) . Throughout the years, several lean tools and concepts have been forwarded and daily ones are proposed to assist the employment of their principles and to eliminate waste in companies L. J. Krajewski and L. P. Ritzman(2005) .

Feigenbaum Theory

In the book 'Total Quality Control' (McGraw-Hill, 2006) the underlying principle of total quality is that control must start with the identification of customer quality requirements and end only when the product has been placed in the hands of a customer who remains. Total Quality Control guides the coordinated actions of people, machines and information to achieve this goal. The first principle is to recognize that quality is everybody's job (Lysons and Gilingham, 2003).

Conceptual Framework



Independent variable **Dependent Variable**

Figure 1: Conceptual Framework

Customer Focus

Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations. Main benefits include systematically managing customer relationships and ensuring balanced connections between customers and other parties (Ramos etal, 2007). Lysonsetal (2003) noted that customer is associated with the concept of quality chains which emphasize the linkages of suppliers and customers.

Quality chains are both internal and external, thus internally; purchasing is the customer of design and the supplier of production. Staff within a department or an activity is also suppliers and customers. Like all chains, the quality chain is no stronger than the weakest link. Without strong supplier – customer links both internally and externally, quality management is doomed to fail.

Continuous Improvement

According to Lu (2011) continuous improvement is the journey to improve that will never end. If better is possible good is not enough. It does not need to be a quantum leap; any small steps of changes toward better operations will be encouraged. Toyota production system itself was not designed and created by somebody overnight, but rather an ultimate result from long years of gradually, step by step changes through the continuous improvement process. A continuous improvement and innovation process is an ongoing effort to improve products, services or processes. These efforts seek the incremental improvement at a time and over time; it also embrace the breakthrough improvement as and when it occurs.

Some successful implementations of the continuous improvement had been known as Kaizen, which is basically the Japanese word for continuous improvement. The concept is based on improvements based on many, small changes rather than one radical change; ideas of change that come from workers at the operational level; small improvements that do not usually require any capital investment; all employees are engaged to

participate to seek the ways to improve their own performance and it encourages workers in the supply chain to take the ownership of their performance.

Quality Planning

Quality planning was concerned with the formulation, implementation and evaluation of strategies designed to achieve the objectives of an enterprise and functions within that enterprise. According to Lysons and Gilingham (2003), strategy formulation could be created entrepreneurially by a visionary leader who recognized the environmental opportunities and threats facing the organization and emerge incrementally as managers through the organization adopt corporate and functional strategies to meet environmental changes. quality planning included vision, mission, and values of the firms. They were formed by taking into account the quality concept. With effective strategic quality planning efforts employees were taken as an input in developing the vision, mission, strategies, and objectives. This facilitates acceptance and support of strategic quality plans by the employees. Successful strategic quality planning efforts also take into account the possible side effects of the plan to the environment prior to the production. This will manifest and improve social responsibility of the firm.

Previous studies have found that strategic quality planning is positively associated with operational performance, inventory management performance A. C. Phan, A. B. Abdallah, and Y. Matsui (2011), customer results, and market performance M. S. Macinati (2008).

Lean Management

Lean manufacturing was a comprehensive production management system developed in Toyota originally but later gradually refined and improved by many scholars and practitioners around the world. Lean manufacturing increased efficiency through the reduction of waste and error and also reduced carrying costs of inventories achieved by manufacturing in small batches. The key ingredient to success of the system is Japan's highly skilled workforce. The overriding concept of the lean system was about doing more with less – a philosophy for identifying and removing waste across the whole business activities. It was also about adding value for the customer and for the whole supply chain and it is customer driven. (Lu, 2011).

According to Panneerselvam (2005) lean manufacturing precisely specify value by specific product in terms of the specific price and the specific time it is required. The value stream for each product which was all the steps and processes required to bring a specific product from the raw materials to finished product, in the hands of the customers is identified. Then, the value flow which is a flow of raw materials through a dedicated arrangement of facilities with distinct value addition at each stage of the value stream, to produce products continuously which may result in less cost, decreased delivery time and other benefits of lean system though other types of production are possible is made.

Empirical Review

Customer Focus

According to Saleemi (2010) customers and suppliers are both internal and external to the organization. People in and outside organizations that provide input into the steps in a process are suppliers and those who use the products or services are the customers. Thus employees in one phase of work process were customers of the employees who produced the goods or services

used by them in their work processes. Employees within the organization receive work passed through their systems from other employees, the internal suppliers. Therefore, each employee was a customer of preceding employees and each has customers, the people who receive the results of his/her work. Likewise the people outside the organization who sell materials, information or services to be used by employees are external suppliers. A company external customer purchases a product or service and contributes to profits. They must ultimately be satisfied if the business is to survive.

According to Lysonsetal (2003) the organization should be able to determine who the internal customers are; what is their true requirements; find out ways of knowing what they require; measure their ability to meet the requirements; find out their capability to meet their requirements; find out if continuous meeting of requirements is possible and monitor the changes in the requirements. In addition, the organization should find out their internal suppliers; their requirements; how to communicate the requirements; the suppliers capability to meet the requirements and informing them of changes in the customers' requirements.

Product/service quality is what a customer expects in the product/service that he is acquiring. The purpose of

Continuous Improvement

According to Fernandes (2014) the main objective of QM is the continuous improvement and innovation of the organization. Innovation capacity is increasingly important in terms of competitiveness and in order to promote a dynamic capability to respond to dynamic markets and customer needs. Organizations should be prepared to quick changes of the market. Main benefits include flexibility and alignment of improvement activities at all levels and parties (Ramos, 2007).

Many programmes for operational change were based on the notion of restructuring the system and moving it from one state to another. This requires three stages: preparation for change, the change itself and the confirmation of the new arrangement. In contrast, advocates of improvement, or kaizen, see striving for quality as an endless journey rather than a trip to a known and fixed destination. Normal behavior, in this view, is experimentation, adjustment and minor improvement to every detail. If kaizen is accepted, employees expect small developments and do not see them as challenges to existing working practices and relationships. No one is ever quite happy with the status quo (Naylor, 2002).

Lean Manufacturing

According to Panneerselvan (2005) lean manufacturing is a systematic approach to identify and eliminate wastes of all non-value added activities through continuous activities that is being adopted by world class, high performance firms to produce remarkable results. It is also called as a manufacturing system in which friction is absent. The friction consists of all non-value adding activities.

Elimination of waste was one of the key tenets of lean manufacturing. In the broadest sense, waste can be found from all aspects of business activities. It could take the form of time, inventory, redundant process and defects. Supply chain members must work together to identify and eliminate all those possible wasteful and non-value adding elements in order to become lean. This elimination of waste will have a direct and visible consequence, which is the reduction of cost to the supply chain. When the cost reduces, assuming the output of the supply chain remain the same, the supply chain efficiency improves and cost to serve reduces (Lu, 2011).

Quality Planning

Quality Planning Product quality planning is a structured method of defining and establishing the necessary steps to ensure that manufactured products satisfy customer requirements. The target of product quality planning is to facilitate communication with everyone involved to ensure that all the required steps are completed in time (Bobrek & Sokovic, 2005). Process planning, assembly planning and measurement planning are three essential parts of manufacturing process planning. Integration of the measurement activity into the production process is an essential part of dimensional management (Maropoulos et al, 2006), and there is a vital requirement to integrate manufacturing process planning with quality planning.

The strategic planning process is a quality management process that starts with environmental monitoring. The process according to Lysons and Gilingham (2003) search the environment for signals that may portend significant changes in monetary trends, inflation, strikes, shortages, technological breakthrough and industry overcapacity. The process is followed by identification of commodities or materials which may be threatened or benefit from environmental changes such as sensitive commodities. The scanning will then look at the evolution of the possible consequences to the organization of changes in supply conditions arising from such environmental changes and the probability of such changes occurring. The profit impact of a given supply item can be defined in terms of the volume purchased, percentage of total purchase cost and the impact of product quality or business growth.

METHODOLOGY

The study used descriptive research design, which was the most applicable for the study because the study focused on describing independent variables which is quality management. The target population for this study constituted 102 staff from Procurement department from the selected food manufacturing firms in Nairobi County. A muiltiple regression model was used to show the relationship between the independent variables to the dependent variable as follows;

$Y=\beta0+\beta1x1+\beta2x2+\beta3x3+\beta4x4+\sum$

Where

Y=Influence of quality management on supply chain performance

X1=Customer focus

X2=Continous improvement

X3=Lean management

X4=Quality planning

In the model,$\beta0$=the constant term while the coefficient βii-1……4 was to be used to measure the sensitivity of the dependent variable(Y) to unit change in the predictor variables x1,x2,x3 and x4.The error($\sum$) term captured the unexpected variation in the model. The data was presented in pie charts and tables which are reader friendly and easy to interpret.

RESULTS

Customer Focus

The respondents were asked to indicate their level of agreement on various statements relating to the influence of quality management on supply chain performance on food manufacturing firms in Nairobi County. Using the scale where strongly agree -SA, Agree -A, Moderate -M, Disagree -D, Strongly disagree -SD. Descriptive statistics were obtained through running the statements of each

objective using descriptive custom Table and presenting them in percentages.

According to the findings majority of the respondents who represented 49.6% of the respondents agreed that Customer care employees are well trained as telephone customer care. 29.8% strongly agreed, 9.9% were moderate and 6.6% disagreed while only 4.1% strongly disagreed.Results also indicated that 66.9% agreed that Customer needs and expectations are communicated throughout the company .The result also indicated that 56.2 agreed that Benchmarking with other company helps the company to measure performance progress while 79.3% of the respondents agreed that The firm is committed to customer retention by ensuring quality products there was need to use previous experience in decision making. The average mean of the responses was 3.83 which mean that majority of the respondents agreed with most of the statements on customer focus. The standard deviation was 1.12 imply that the results were however uniform as it measures the difference from the mean

The findings of the study are in agreement with those of Ogunlana, (2008) that conducted a study and found out that the customer focus of supply chain performance can greatly influence the performance outcomes of the selected food manufacturing companies in Nairobi county kenya. If the procurement manager, logistics manager and the stores manager are well experienced, knowledgeable and well conversant with the overall performance of the organization, then there is a high likelihood of successful completion of the management of quality by focusing on customers. The results were as shown in table 1.

Table 1: Customer Focus

Statements	Strongly disagree	Disagree	moderate	Agree	Strongly agree	Mean	Std. Dev
Customer care employees are well trained as telephone customer care.	4.1%	6.6%	9.9%	49.6%	29.8%	3.94	1.02
Customer needs and expectations are communicated throughout the company.	4.1%	10.7%	14.0%	69.9%	35.5%	3.88	1.14
The firm is committed to customer retention by ensuring quality products	10.7%	5.0%	17.4%	79.3%	28.1%	3.69	1.24
Benchmarking with other company helps the company to measure performance progress	6.6%	9.1%	5.0%	56.2%	23.1%	3.80	1.10
						3.83	**1.12**

The respondents were asked to indicate the extent at which Customer focus influenced the performance of supply chain in food manufacturing. Majority of the respondents who represented 49% indicated that customer focus influenced the performance of supply chain in food manufacturing firms by a percentage between 61% and 80%, 30% indicated an influence of over 80%, 10% indicated an influence of between 41% and 60%, 7% indicated an influence of between 21% and 40% while only 4% indicated an influence of below 20%. This implies that managing customer focus is an essential requirement in the performance of supply chain of food manufacturing firms.

The findings are in agreement with the findings of Nyangilo (2012) who found that inadequate quality,dissatisfaction of customer needs and poor management systems are the major causes of poor performance of the firms manufacturing food in Kenya. These results are further supported by Omolo (2015) who found that customer focus influences the performance of supply chain. Regression analysis was conducted to determine the significance relationship between influence of customer focus and the performance of supply chain of food manufacturing firms in Nairobi.

Table 2: Model Summary

Indicator	Coefficient
R	0.487
R Square	**0.836**
Adjusted R Square	0.736
Standard Error	0.091

Table 3: Regression Model for Customer Focus

ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	22.216	1	22.216	74.147	**0.000**
Residual	13.341	85	.085		
Total	35.557	102			

Table 4: Regression Coefficient

Variable	B	Std. Error	Beta	T	Sig
(Constant)	3.615	0.294		13.347	0.000
Customer focus	**0.407**	0.076	0.98	9.3523	**0.007**

Continuous Improvement

The second objective of the study was to determine the influence of continuous improvement on supply chain performance in food manufacturing firms in Nairobi County, Kenya.

Continuous improvement Plans were Developed to Guide the supply chain performance Process

Respondents were asked to indicate the types of continuous improvement plans they developed to guide the supply chain performance process. According to the findings 59% of the respondents indicated that mid and long term continuous improvement plans guiding supply chain performance process, 17% indicated that no plans guided the supply chain performance process,12% indicated that they were guided by long term plans, 8% were guided by short term plans while only 4% indicated that they were guided by mid-term plans. These findings are in consistence with those of Zwikael & Saleh, (2006) that budget involves continuous planning and shows the required performance for each time period. The results were obtained by running data on frequencies through SPSS.

The respondents were asked to indicate their level of agreement on various statements relating to

determine the influence of continuous improvement on supply chain performance in food manufacturing firms in Nairobi County .using the scale where Strongly agree -SA, Agree -A, Moderate -M, Disagree -D, Strongly disagree -SD. Descriptive statistics were obtained through running the statements of each objective using descriptive custom Table and presenting them in percentages. According the findings majority of the respondents who represented 31.4% of the respondents agreed that There is continuous improvement reviews through internal quality audits. Results also indicated that 39.7.9% agreed that Employees are continuously trained to enhance internal quality performance. The result also indicated that 40.5 agreed that The firm has continuous improvement of quality systems leading to increased revenue.29.8 agree too that The firms benchmarks its quality against other quality management practices best practices while 39.7% of the respondents agreed that There is a policy for making continuous improvement of products quality for every individual in the company .

The average mean of the responses was 3.94 while the total standard deviation was 1.11 implying that the results were however not uniform as it measures the difference from the mean. The findings are in consistence with Ondari, (2013) who conducted a study and found out that government procedures for continuous improvement are bureaucratic and thus most tenders once approved by the parliament wait longer period before actual release of funds. The analysis is on Table 5.

Table 5: Continuous Improvement

	Strongly degree	Desagree	Moderate	Strongly Agree	Agree	Mean	Std. Dev
There is continuous improvement reviews through internal quality audits	4.1%	15.7%	9.1%	39.7%	31.4%	3.79	1.17
Employees are continuously trained to enhance internal quality performance	4.1%	4.1%	11.6%	40.5%	39.7%	4.07	1.03
The firm has continuous improvement ofquality systems leading to increased revenue	4.1%	5.0%	8.3%	42.1%	40.5%	4.10	1.03
The firms benchmarks its quality against other quality management practices best practices	4.1%	6.6%	9.9%	49.6%	29.8%	3.94	1.02
There is a policy for making continuous improvement of products quality for every individual in the company	6.6%	17.4%	5.0%	31.4%	39.7%	3.80	1.31
Average						**3.94**	**1.11**

Determining the influence of continuous improvement on supply chain performance.The respondents were asked to indicate how continuous improvement influenced the supply chain performance of food manufacturing firms in Nairobi county,kenya. Majority of the respondents who represented 46% indicated that continuous improvement influenced the the supply chain performance of food manufacturing firms in Nairobi county by a percentage of over 80%, 35% indicated a percentage between 61% and 80%, 11% indicated an influence of between 41% and 60%, 4% indicated an influence of between 21% and 40% also 4% indicated an influence of below 20%. This implies that continuous improvement is an essential requirement in the supply chain performance of food manufacturing firms.The findings are in line with those of Sharma, (2012) who argues that conttinous improvement can influence the behavior and decisions of employees by translating business objectives, and providing a benchmark against which performance is assessed. The findings disagree with those of Rebeccah (2014) who established that there is a low positive relationship between continuous improvement and performance of organizations.

Regression Analysis Model for Continuous improvement and the supply chain performance of food manufacturing firms in Nairobi County.

Table 6: Model Summary

Indicator	Coefficient
R	0.280
R Square	**0.078**
Adjusted R Square	0.071
Standard Error	0.3919306

Table 7: Regression Model for Continuous Improvement

ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1.553	1	1.553	10.11	0.002
Residual	18.280	85	.154		
Total	19.8833	102			

Table 8: Regression of Coefficients

Variable	B	Std. Error	Beta	T	Sig
(Constant)	3.127	0.259		12.078	0.000
Continuous improvement	**0.208**	0.065	0.280	3.180	**0.002**

Lean Manufacturing

Respondents were asked to indicate the extent to which lean manufacturing experience influenced supply chain performance in food performance firms in Nairobi County, Kenya. According to the findings 42% of the respondents indicated that team experience influenced supply chain

performance in food performance firms in Nairobi County by a large extent, 27% indicated influence of a very large extent, 18% indicated a moderate extent influence, 9% indicated small extent influence, while 4% indicated that team experience did not at all influenced supply chain performance in food performance firms in Nairobi County.These findings are in agreement with Gundecha, (2012) who states that lean manufacturing experience, just-in-time method, are the most important success factors for the good performance in food manufacturing firms.

The results were obtained by running data on frequencies through SPSS. The respondents were asked to indicate their level of agreement on various statements relating to determine the influence of lean manufacturing on supply chain performance in food manufacturing firms in Nairobi County .using the scale where Strongly agree -SA, Agree -A, Moderate -M, Disagree -D, Strongly disagree -SD. Descriptive statistics were obtained through running the statements of each objective using descriptive custom Table and presenting them in percentages. According to the findings majority of the respondents who represented 6.6% of the respondents agreed that expertise in supplier selection has a role in lean manufacturing. Results also indicated that 10.7% agreed that Elimination of waste is done in the firm.The result also indicated that 5.0 agreed that Optimization of resources is achieved procurement process.9.1 agree too that The supplier should consistently provide high quality goods or services while 10.7% of the respondents agreed that expertise in supplier selection has a role in reduction of cost and waste

The average mean of the responses was 3.82 while the total standard deviation was 1.15 implying that the results were however not uniform as it measures the difference from the mean. The findings are in consistence with Ondari, (2013) who conducted a study and found out that government procedures for continuous improvement are bureaucratic and thus most tenders once approved by the parliament wait longer period before actual release of funds.

Table 8: Lean Manufacturing

	Strongly agree	Agree	Moderate	Disagree	Strongly Disagree	Mean	Std. Dev
Expertise in supplier selection has a role in lean management.	4.1%	6.6%	9.9%	49.6%	29.8%	3.94	1.02
Elimination of waste is done in the firm.	4.1%	10.7%	14.0%	35.5%	35.5%	3.88	1.14
Optimization of resources is achieved procurement process	10.7%	5.0%	17.4%	38.8%	28.1%	3.69	1.24
The supplier should consistently provide high quality goods or services	6.6%	9.1%	5.0%	56.2%	23.1%	3.80	1.10
Expertise in supplier selection has a role in reduction of cost		10.7%	12.4%	32.2%	36.4%	3.78	1.28

and waste	8.3%		
Average		**3.82**	**1.15**

Regression Analysis Model for lean manufacturing and influenced supply chain performance in food performance firms in Nairobi County,

Table 9: Model Summary

Indicator	Coefficient
R	0.746
R Square	**0.856**
Adjusted R Square	0.753
Standard Error	0.2719022

Table 10: Regression Model for Lean Manufacturing

ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	11.035	1	11.035	149.260	**0.000**
Residual	8.798	85	.074		
Total	19.833	102			

Table 11: Regression of Coefficients

Variable	B	Std. Error	Beta	t	Sig
(Constant)	1.243	0.222		5.588	0.000
Lean manufacturing	0.678	0.056	0.746	12.217	0.000

Quality Planning

The respondents were asked to indicate the progress of quality planning on supply chain performance on food manufacturing firms in Nairobi .From the findings, 44% of the respondents indicated that quality planning was done annually, 40% indicated that it was done semiannually, 6% indicated quality planning was done quarterly, 5% indicated it was done monthly the other 5% indicated that quality planning was done weekly.

Respondents were then asked to indicate the aspects that were assessed during quality planning. 42% of the respondents indicated that quality progress was assessed during quality planning, 27% indicated that all aspects were assessed, 18% indicated that quality budget was assessed during quality planning, 9% indicated performance quality. Majority of the respondents indicated that performance progress was assessed .The findings are in consistent with those of Chin, (2012) who found that to achieve performance success the

progress should be planning quality regularly. The results were obtained by running data on frequencies through SPSS. The average mean of the responses was 3.98 showing a mean budget of monitoring and evaluation of between ksh 2.5 and 5 million. The standard deviation was 1.06 implying that the results were however not uniform as it measures the difference from the mean.

Table 12: Influence of Quality Planning

Statement	Strongly disagree	disagree	moderate	agree	Strongly agree	Mean	Std. Dev
Quality policies and procedures are documented and communicated to all employee.	4.1%	4.1%	8.3%	39.7%	43.8%	4.15	1.02
Quality policies are reviewed regularly to meet the needs of the organization.	4.6%	4.1%	10.7%	34.7%	46.3%	4.15	1.05
Management takes leading positions on guiding quality teams.	4.1%	9.1%	17.4%	42.1%	27.3%	3.79	1.07
Quality planning is embraced in the vision of the company.	4.7%	6.6%	9.9%	49.6%	29.8%	3.94	1.02
Top management devotes resources for development and support for ISO certification	4.1%	10.7%	14.0%	35.5%	35.5%	3.88	1.14
Average						**3.98**	**1.06**

Regression Analysis Model for quality planning and influence of quality management on supply chain performance of food manufacturing firms in Nairobi County.

Table 13: Model Summary

Indicator	Coefficient
R	0.911
R Square	**0.830**
Adjusted R Square	0.829
Standard Error	0.1681748

Table 14: Regression Model for Quality Planning

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	16.467	1	16.467	582.229	**0.000**
Residual	3.366	85	.028		
Total	19.833	102			

Table 15: Regression of Coefficients

Variable	B	Std. Error	Beta	t	Sig
(Constant)	1.507	0.102		14.760	0.000
Quality planning	**0.617**	0.026	0.911	24.129	**0.000**

Influence of quality planning on supply chain performance

Respondents were asked to indicate the timeline of the supply chain performance in food manufacturing firms that they were currently undertaking. The results were obtained by running data on frequencies through SPSS. According to the findings 39% of the respondents indicated that quality planning time was 2 years, 28% indicated that it was 1 year, 17% indicated quality planning time was 3 years, 11% indicated it was 5 years while 5% indicated that quality time was 4 years.

Correlation Analysis

Table 16 revealed that there was a positive and a significant relationship between customer focus and the influence of supply chain performance in food manufacturing firms in Nairobi county (r=0.68, p=0.004). The results indicated that there was a positive and a significant relationship between continuous improvement and the influence of supply chain performance in food manufacturing firms in Nairobi county (r=0.280, p=0.002). The results also indicated that there was a positive and a significant relationship between lean manufacturing and the influence of supply chain performance in food manufacturing firms in Nairobi county (r=0.746, p=0.000). Further the results showed that there was a positive and a significant relationship between quality planning and the influence of supply chain performance in food manufacturing firms in Nairobi county projects (r=0.911, p=0.000).

Table 16: Correlation Analysis

		Quality management	Customer focus	Continuous improvement	Lean management	Quality planning
Quality management	Pearson Correlation	1				
	Sig. (2-tailed)					
Customer focus	Pearson Correlation	0.68**	1			
	Sig. (2-tailed)	0.004				

Continuous improvement	Pearson Correlation	.280**	0.017	1		
	Sig. (2-tailed)	0.002	0.504			
Lean manufacturing	Pearson Correlation	.746**	0.009	0.119	1	
	Sig. (2-tailed)	0.000	0.205	0.194		
Quality planning	Pearson Correlation	.911**	-.187*	0.012	.654**	1
	Sig. (2-tailed)	0.000	0.040	0.463	0.000	

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Regression Analysis

Table 17: Model Summary

Indicator	Coefficient
R	0.966
R Square	**0.933**
Adjusted R Square	0.931
Standard Error	0.1067847

Regression of Coefficients

The results shows that customer focus had a positive and significant effect on influence of quality management on supply chain performance in food manufacturing firms(r=0.061, p=0.000). continuous improvement had a positively and significantly effect on the influence of quality management on supply chain performance (r=0.182, p=0.000).Lean manufacturing had a positively and significantly effect on the influence of quality management on supply chain performance (r=0.179, p=0.000). Quality planning had a positive and significant effect on influence of quality management on supply chain performance(r=0.537, p=0.000).

The specific model was;

Y =0.160 +0.537 X1 + 0.182 X2 + 0.179 X3 +0.061X4

Where; Y is influence of quality management on supply chain performance

X1 is customer focus.

X2 is continuous improvement

X3 is lean manufacturing

X4 is quality planning

The equation above reveals that holding customer focus, continuous improvement, lean manufacturing and quality planning of supply chain performance would be at 0.160

Table 18: Regression Model (Overall)

ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	18.510	4	4.627	405.814	**0.000**

Residual	1.323	85	.011
Total	19.833	102	

Table 19: Regression of Coefficients

	B	Std. Error	Beta	t	Sig.
(Constant)	0.160	0.134		1.199	0.023
Customer focus	0.061	0.020	0.074	2.993	0.003
Continuous improvement	0.182	0.018	0.245	10.118	0.000
Lean manufacturing	0.179	0.030	0.197	6.063	0.000
Quality planning	0.537	0.022	0.793	24.097	0.000

CONCLUSIONS, AND RECOMMENDATIONS

The study sought to establish to examine the influence of customer focus on supply chain performance in food manufacturing firms in Nairobi County, Kenya. Majority of the respondents indicated that Customer care employees should be well trained as telephone customer care,the Customer needs and expectations should be communicated throughout the company.Further findings were done that the firm should be committed to customer retention by ensuring quality products and also benchmarking should be done with other firm because it helps measure performance progress

The study sought to explore the extent to which continuous improvement influence supply chain performance in food manufacturing firms in Nairobi County, Kenya. The study found out that most firms have continuous improvement for making changes towards better operations in the supply chain performance.It was found that those respondents who agreed that sustained continuous improvement, good housekeeping practices, standardization programmers and specifications knew that these parameters are important in changing the supply chain system in organizations The analysis reveals that continuous improvement and innovation in public sector need to sustained in order for their products and services to compete effectively with the private sector.

This implied that management in the public sector should come up with policies and procedures that are supportive of the continuous improvement and innovation as suggested by majority of the respondents who had high ratings for it. The findings on those who strongly agreed showed that the continuous improvement and innovation need to be an important ingredient in supply chain in the public sector. From the analysis, it was an indication that continuous improvement and innovation should always be part and parcel of successive supply chain.

The study majored on examining whether lean manufacturing has a role in supply chain. With the majority of respondents who agreed to it, it was an indication that lean supply chain should always be practiced in organizations, particularly the public sector. The analysis revealed that lean supply chain that works on waste reduction, managing demand, engaging people and just-in-time production should be important aspects that need to be done to realize lean supply chain. Majority of respondents were found to agree that waste elimination in terms of costs, processes, time and energy is important in supply chain.

This was an indication that organizations and

particularly county governments need to reduce wastage on funds allocated by adopting the policies that support lean supply chain. Considering majority of respondents were in agreement, it was an indication that lean manufacturing need to be adopted if inefficient and wanton wastage being experienced in the public sector, especially county governments need to be controlled.

The summary of findings on management and quality planning revealed that majority of the respondents were in agreement that it plays a crucial role in supply chain in the public sector, especially the county governments. This implied management should come up with the strategies that will ensure that firms especially in the public sector are able to compete effectively and have a comparative advantage over other firms offering the same products and services.
The summary showed most respondents were in support of competitive advantage, product differentiation and customization as key strategies to be applied in the supply chain to ensure that public sector compete effectively and is able to offer quality products and services.

The study also revealed that focusing in particular group of customers is important to ensure that the products and services produced are specifically made with the particular group of customers in mind and also will ensure that there is ready market for the products. In regards to the majority of respondents, it was an indication that since the employees are supportive of the role management and strategic planning plays in quality management the public sector should adopt the practice.

Conclusion of the Study

The study concluded that customer and supplier focus is an important quality management practice that needs to be applied more in the public sector. The study concluded that there should be a close relationship between the customers and suppliers. In addition, the study noted that products/service to citizens should be quality. The quality culture needs to be cultivated in governments.

There should also be close working relationship between customers and other stakeholders. The study revealed customer and supplier focus need to be a priority as it is the cord that joins the supply chain

The conclusion derived from the study in continuous improvement and innovation noted that organizations should always embrace change and keep on improving the products and services it offers to the public. There should be new innovations to ensure the quality produced is always better and suited to the customers than before. The study concluded that continuous improvement and innovation should be a sustained campaign that every organization should carry out. The study also noted that good housekeeping practices go a long way in ensuring there is quality. Standardization and specifications programmes also are important for the success of supply chain.

The conclusion from the study focusing on the influence of lean manufacturing in supply chain found that it is widely accepted concept of quality management. It was concluded that lean manufacturing should aim at wastage elimination by being more efficient; managing demand by knowing what the customer need and when; engaging all the stakeholders concerned; collaboration and ensuring that production is done as demand arises. The study concluded that there is a lot of wastage in governments and especially the county government which need to be controlled.

The study concluded that management and quality planning need to be effective in the public sector, and all stakeholders should work towards its success. It was concluded that management should

come up with strategies to ensure that the public sector has a competitive advantage over other sectors and should ensure that products and services offered are different in quality from competitors and are made specifically according to given specifications. It was noted that management and strategic planning is embraced in counties, but more need to be done to ensure its success in supply chain so as to improve on quality.

In conclusion, the study found that customers and suppliers are the keys stakeholders in the success of supply chain. There should be continuous improvement and innovations in the products and services to ensure that they meet the standards and specifications of the supply chain and the market in general. Lean manufacturing should be utilized in public sector, particularly the county governments where a lot of wastage has been experienced. The county government should come up with strategies to ensure that their supply chain and their performance is better than in other counties. The study found that management was supportive of some of the quality management practices which is encouraging. The management in this county had a responsibility of

Recommendations of the Study

The study recommended that management of food manufacturing firms and in various government ministries and departments should take customer and supplier focus as a priority in supply chain. The success and failure in organizations depends on how customers and suppliers relate and are treated. As the 'customer is the king' the study recommended that the customers handling and the quality of products given should be 100%. The management has a major role to ensure that customers and suppliers are taken care of for business success.

The management at food manufacturing firms should ensure that the quality of goods and services offered becomes better and better. There is a need to come up with continuous improvement and innovation strategies to ensure the success of the supply chain and for better quality of products and services. The study recommended that the process of improvement and innovation should be continuous and the management should work on its sustainability. It further recommended for standardization programmes and specifications to improve on supply chain

The management at food manufacturing firms in Nairobi should ensure that lean supply chain is adopted. The study recommended that this is only possible if practices of lean manufacturing like wastage elimination, managing demand, engaging people, collaboration, just in time production are fully implemented. The management should ensure that also employees are made aware of the importance of lean supply chain to save on processes, energy, time and costs.

The management has a responsibility to ensure that they come up with quality meant to improve on quality so as to have competitive advantage. The study recommended ensuring that the products and services offered are unique to others and are able to meet the utility of the users. The study further recommended the focus on particular group of customers to be able to give them the best. The management of the county government has an active role to ensure that the strategies are implemented

Areas for Further Research

Further studies can be done in other counties for the purpose of making a comparison of the findings with those of the current study. Other variables aside from customer focus,continuous improvement,lean manufacturing and quality

planning can also be studied since these variables only explained 93.3% of the changes in supply chain performance in food manufacturing firms in Nairobi county,kenya.This implies that remaining 6.7% of influence of quality management of supply chain performance in food manufacturing firms can be explain by other variables not covered in this study.

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