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INFLUENCE OF SUPPLY BASE RATIONALIZATION ON PERFORMANCE OF MANUFACTURING FIRMS IN KENYA

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Abstract

Purpose: The study aimed at establishing how; triangle approach, Pareto's approach, 'improve or else' method and competency staircase method influence the performance of manufacturing firms in Kenya.

Methodology: The study employed a descriptive research design, the study prefers this method because it allows an in-depth study of the subject. The 2017 KAM directory has listing of members (firms) by sectors which contains a register of 12 sectors of those in manufacturing firms spread all over the country. The population of the large sized registered members as per the directory is 499. This study used the large sized firms only. This study used Cochran's formula to sample 165 large manufacturing firms from the total population, heads of procurement were the respondents. Semi-structured questionnaires were administered to collect qualitative and quantitative data. Secondary data was collected from firm's reports and websites.

Results: The findings of the study indicated that triangle approach, Pareto's approach, improve or else method and competency staircase method have a positive relationship with performance of manufacturing firms in Kenya.

Conclusion: Based on the study findings, the study concludes that performance of manufacturing firms can be improved by triangle approach, Pareto's approach, improve or else method and competency staircase method.

Policy recommendation: The study recommended that manufacturing firms should embrace supply base rationalization so as to improve performance and further researches should to be carried out in other institutions to find out if the same results can be obtained.

Keywords: *triangle approach, Pareto's approach, improve or else method, competency staircase method*

1.0 INTRODUCTION

1.1 Background of the Study

The business environment in which firms compete today is markedly different from that in past decades. Improvements in computational power coupled with the advent of the internet have decreased the coordination costs needed to successfully integrate disparate firms across the globe into a single supply chain (Lysons & Gullingham, 2013).

In the past, firms commonly contracted with a huge number of suppliers and currently there is a significant movement from the traditional adversarial buyer-seller relationships to the use of a few qualified suppliers with close relationships. This trend is attributed to the customers' demand for higher quality, wider range of products, shorter time to market and faster deliveries. This has forced the producing companies to keep up with these demands in order to survive (Karlsson 2011).

One key aspect of managing the complex global supply chain is through strategic sourcing decisions. However, as the concept of strategic sourcing gains momentum many firms seeking to shift to this strategy have found themselves riddled with a supply base that does not support implementation as they have too many suppliers. Supply base rationalization thus becomes a key to change from transactional to strategic purchasing (Linarelli & Wallace, 2010).

1.1.1 Global Perspective

Intel, for instance, concluded that it could not improve the quality of its products if it did not improve the quality of its suppliers (Ngugi & Mugo, 2010). Sun (2015) concluded that to be more responsive to its customers its suppliers needed to be more responsive. There is therefore need for supplier rationalization. Supplier base rationalization according to the Chartered Institute of Purchasing and Supplies (2012) is concerned with determining roughly how many suppliers the buying firm wants to do business with.

1.1.2 Regional Perspective

The consolidation of purchases to a smaller number of suppliers might not be without difficulties. Managers with experience from supply rightsizing conclude that the process is initially easy but as the amount of suppliers is reduced it gets more difficult. In a case study made by Lonsdale and Watson (2015) they identify drivers for fragmentation of the supplier base, some technical and organizational, but it was merely politics and power that amplified the issue. It was first after the power shifted somewhat from the divisions to purchasing that the first step towards consolidation was made, immediately resulting in significant financial results.

1.1.3   Local Perspective

Recently, in Kenya the notion of supply base rationalization has been discussed in many studies. The popularity of that topic could have emanated from many drivers, including trends in global sourcing, highlighting on time to market, product quality based competition, customer uncertainty and the requirement to develop bottom-line costs (Odhiambo & Kamau, 2012). Nowadays, procurement has an important strategic role in the value chain and is also a major driver in the extended supply chain.

1.1.4 Supply Base Rationalization

Supplier base rationalization is a conscientious effort to determine the right number of suppliers to do business with (Institute for Supply Management, 2015). The beginning point of the process is determining the optimal number of suppliers that a firm should maintain and then focusing on identifying which incumbent firms should remain in the supply base in a given commodity team or division (Richard, 2013).

1.2 Problem Statement

As the clock ticks, so does demand for better quality, faster delivery, and better overall value increase; leading to a few visionary leaders to start to consciously differentiate between the things that create value and those that do not and thus leading to adoption of supply chain best practices such as supply base rationalization and value engineering that seek to help firms have a competitive advantage over rivals and position themselves for future success (KPMG, 2012).

Supply base rationalization is important to any organization since it leads to improved design, quality and cost, which means an improvement in supply chain performance. Kenya's long term development agenda spelt out in the vision 2030, targets an annual growth rate of above 10% with an investment rate of 30%, manufacturing firms are key drivers in this projected growth. Manufacturing firms accounted for 20% of the country's GDP (GoK, 2016). However, manufacturing firms in Kenya have been experiencing a myriad of problems including misappropriation and blatant mismanagement of resources (PPOA, 2010).

The problem of poor productivity among manufacturing firms represents a drain on the economies meager resources and also results into non delivery on intended services. This has a negative implication on the welfare of Kenyan citizens and may also imply that Vision 2030 is not met (UNESCO, 2014). This situation is hampering sustained performance and poor delivery (KNBS, 2013). Supply base rationalization is not practiced, which is one of the reasons for loss, fraud and gross mismanagement of resources.

A number of studies have been conducted on supply base rationalization globally. For instance, Cousins (2015) conducted a survey on 174 firms in the UK and found out that though 92% claimed supply base reduction seemed to have reduced transaction costs. The studies found that the investigated firms looked at negotiating savings instead of focusing on streamlining the inter-organizational processes. This study was however, conducted in a developed country and not in Kenya.

Several studies have been done locally; Rotich (2010) interrogated the manufacturing sector supplier management, while Wanjohi (2012) investigated the challenges facing supplier base management in Kenya and the efforts in progress. These studies however, did not look at supply base rationalization and performance among these firms. It is against this back drop that this study seeks to examine the influence of supply base rationalization on performance of manufacturing firms in Kenya.

1.3 Objectives of the Study

a. To determine the influence of the triangle approach on performance of manufacturing firms in Kenya.

b. To assess the influence of Pareto's approach on performance of manufacturing firms in Kenya.

c. To evaluate the influence of improve or else method on performance of manufacturing firms in Kenya.

d. To establish the influence of competency staircase method on performance of manufacturing firms in Kenya.

2.0 LITERATURE REVIEW

2.1.1 Triangle Approach and Performance of Manufacturing Firms

The classification of vendors is a major task and considering the quantity of purchased. The supplier selection and evaluation related steps of the Mentzer model (2011) are mainly the steps of screening suppliers and the selection of one as well as negotiating and finalizing an agreement. These steps are quite similar with the steps in the Monczka et al., (2011) model, but they are described on a more general level and do not have any detailed descriptions of how the suppliers should in fact be evaluated. Thus, thinking of the subject and the goal of this thesis, this process model is not suitable for this study.

Weele (2010) divides his purchasing process model into six steps: define specification, select supplier, contract agreement, order, expedite, and evaluate. This purchasing process (Weele, 2010) is a very high level process and aimed rather at operational purchasing than strategic sourcing. These supplier selection steps describe more traditional evaluation criteria, such as pricing and delivery terms, but sustainability and environmental criteria are neglected. In conclusion, this process model is not a suitable strategic sourcing supplier selection process.

2.1.2 Pareto's Approach and Performance of Manufacturing Firms

According to Perzyk (2012) case study in foundry industry by, Pareto chart shows that the foundry staff should concentrate on reducing defects like 'sand inclusions' and 'gas holes', which make up 72% of all defects. Pareto diagrams can therefore be particularly useful in defining the targets. Pareto charts show the most frequently occurring factors and help to make the best use of limited resources by pointing at the most important problems to analyze.

Chandna and Chandra (2009) studied forging operation that produce six cylinder crankshafts used in trucks and buses. With the help of Pareto diagrams critical areas are identified and forging defects of crankshaft have been prioritized by arranging them in decreasing order of importance. Then Cause and Effect Diagram (CED) is applied to explore possible causes of defects through brain storming session and to determine the causes, which have the greatest effect. The corrective measures reduce the rejection rate from 2.43% to 0.21%.

Khekalei et al., (2010) presented another case of wastage reduction in a belt manufacturing industry located in the Virabha, India which produces world class automotive belts and hoses. The main raw material for producing this automotive belt is rubber. Others raw materials are biased fabric and cord. From many years consumption of raw material was not taken seriously as rubber

is reusable. But other raw material that is biased fabric and cord consumption was increased drastically which resulted in increased in the production cost of belt and reduced profit margin.

2.1.3. Improve or Else Method and Performance of Manufacturing Firms

Supply chain is often built with asymmetrical relationships (Belaya, Gagalyuk, & Hanf, 2009), and suppliers are not necessarily the weaker partner. In cases where the buyer is the weaker party, the relationship will often change after a period of time. The relationship between a powerful supplier and a dependent buyer often becomes more difficult, because the purchase orders are small and and do not meet the supplier's expectations (Belaya, Gagalyuk, & Hanf, 2009).

These weaker buyers' objective needs to be achieving a so-called 'customer of choice' or 'preferred customer' status (Rocca, Caruana, & Snehota, 2012). The basic notion of customer attractiveness is that the buyer (as a customer) will attract the supplier, and that this will lead to loyalty and superior performance within this relationship (Rocca, Caruana, & Snehota, 2012). This status will also ensure that buyers receive competitive preference from a given supplier over other buyers (Rocca, Caruana, & Snehota, 2012).

2.1.4 Competency Staircase Method and Performance of Manufacturing Firms

Performance should not be relegated to simply task accomplishment and goal achievement as some job results aren't necessarily the preserve of what individual employees do and there could be other contributory factors outside of the person doing the job (Cardy and Dobbins 2014). Over-concentration and undue focus on outputs whilst ignoring important interpersonal and processual factors may misdirect vendor's effort as to what is required.
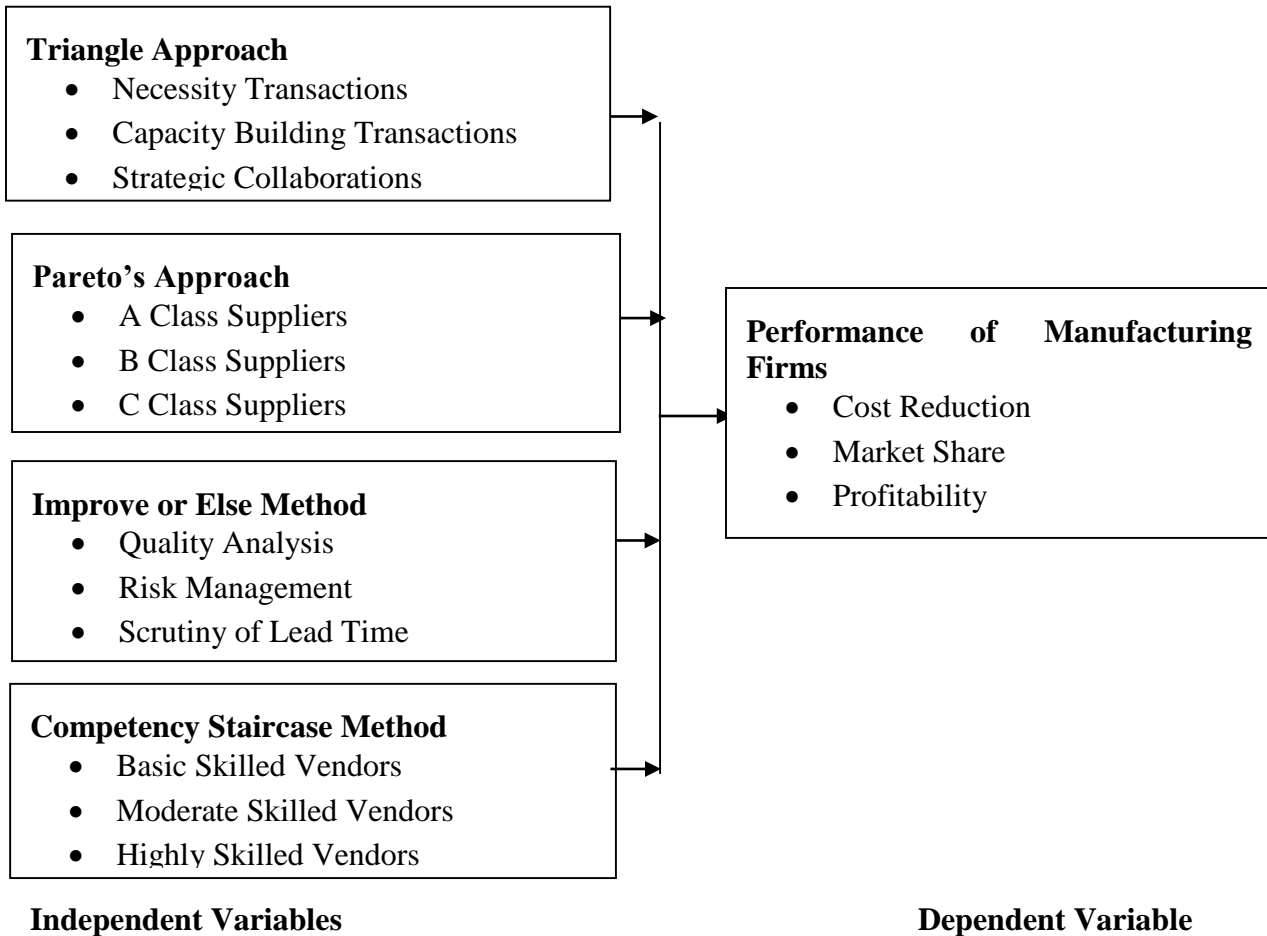
2.2 Theoretical review

2.2.1 The Lean Theory

Lean is a functional model which basically discounts the value of economies of scale and focuses on how to reduce costs as a result of small, incremental and continuous improvement. Lean supply base has certainly become increasingly significant in supply chain management. Initially organizations involved in manufacturing of products used to involve themselves in lean manufacturing techniques, this has ceased as lean has expanded beyond manufacturing (Fawcett, Gregory & Mathew, 2013).

Lean supply base management seeks to explain how organization should manage its system and needs. It states that supply base can be used as a strategic differentiator by the organization and further goes on to say that not all supply base management is about waste (Finch, 2014). The theory stated that supply base management strategies developed by an organization should support the customer's need and expectations. Supply base management strategies should not be a driver on how much and when a product will be delivered to a customer, rather, the customers' expectations should be understood and supply base management strategies is designed purposely to meet those expectation. Real savings can only be realized through day to day management and optimization of supply base management (Fisher, 2010). This theory is relevant to the study because the triangle approach is a key component in effective and efficient management of supply base rationalization in which an entity has vendors with interaction levels ranging from arm's length transaction level, capacity building transaction level and strategic collaboration level.

2.3 CONCEPTUAL FRAMEWORK

Triangle Approach
• Necessity Transactions
• Capacity Building Transactions
• Strategic Collaborations

Pareto's Approach
• A Class Suppliers
• B Class Suppliers
• C Class Suppliers

Improve or Else Method
• Quality Analysis
• Risk Management
• Scrutiny of Lead Time

Competency Staircase Method
• Basic Skilled Vendors
• Moderate Skilled Vendors
• Highly Skilled Vendors

Performance of Manufacturing Firms
• Cost Reduction
• Market Share
• Profitability

Independent Variables   **Dependent Variable**

3.0 METHODOLOGY

The study employed a descriptive research design, the study prefers this method because it allows an in-depth study of the subject. The 2017 KAM directory has listing of members (firms) by sectors which contains a register of 12 sectors of those in manufacturing firms spread all over the country. The population of the large sized registered members as per the directory is 499. This study used the large sized firms only. This study used Cochran's formula to sample 165 large manufacturing firms from the total population, heads of procurement were the respondents. Semi-structured questionnaires were administered to collect qualitative and quantitative data. Secondary data was collected from firm's reports and websites.

4. 0 RESULTS FINDINGS

4.1 Descriptive Statistics

The study set out to establish the influence of supply base rationalization on performance of manufacturing firms in Kenya. To this end, four variables were conceptualized as components of supply base rationalization on performance of manufacturing firms in Kenya. These include; triangle approach, Pareto's approach, improve or else method and competency staircase method.

4.1.1 Triangle Approach

The first objective of the study was to assess the influence of triangle approach on performance of manufacturing firms in Kenya. The respondents were asked to indicate to what extent triangle approach influence performance of manufacturing firms did. Results indicated that majority of the respondents 25% agreed that it was to a very great extent, 27% said that it was to a great extent, 35% said it was moderate, while little extent and not all were at 5 and 8% respectively.
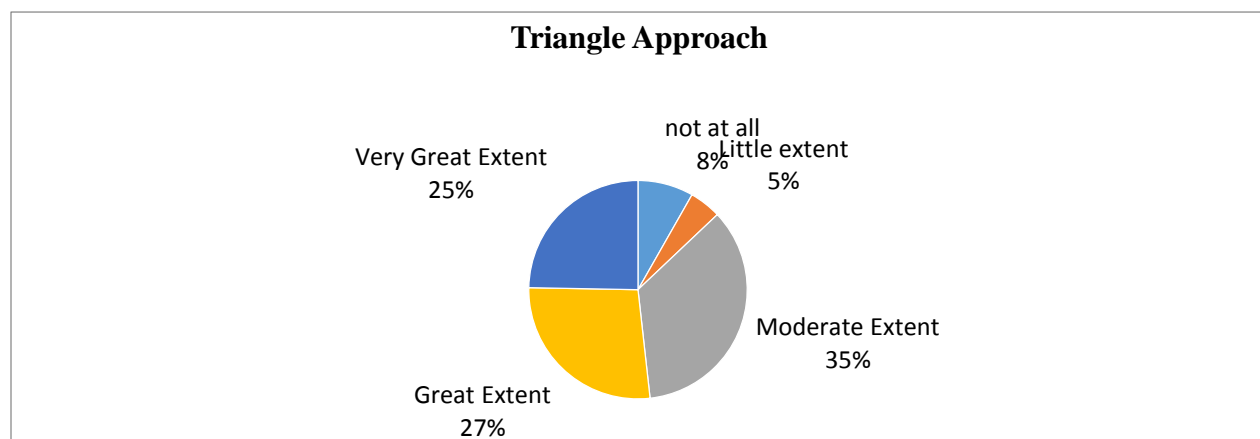

Figure: 1: Triangle Approach

The respondents were also asked to comment on statements regarding triangle approach influence on performance of manufacturing firms in Kenya. The responses were rated on a likert scale and the results presented in Table 1 below. It was rated on a 5 point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The scores of 'strongly disagree' and 'disagree' have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'neutral' has been taken to represent a statement agreed upon, equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' have been taken to represent a statement highly agreed upon equivalent to a mean score of 3.5 to 5.

The respondents were asked to indicate their descriptive responses for triangle approach. The result revealed that majority of the respondent with a mean of (4.3) agreed with the statement that having vendors whom you transact at the necessity level plays a significant role in cost reductions. The measure of dispersion around the mean of the statements was 1 indicating the responses were varied. The result revealed that majority of the respondent with a mean of (3.6) agreed with the statement that having vendors whom you transact at capacity building level plays a significant role

in cost reductions. The measure of dispersion around the mean of the statements was 1.4 indicating the responses were varied. The result revealed that majority of the respondent with a mean of (3.8) agreed with the statement that having vendors whom you transact at strategic collaboration level plays a significant role in cost reductions. The measure of dispersion around the mean of the statements was 1.3 indicating the responses were varied.

The result revealed that majority of the respondent with a mean of (3.0) agreed with the statement that having vendors whom you transact at necessity level plays a significant role in improving market share. The measure of dispersion around the mean of the statements was 1.4 indicating the responses were varied. The result in table 1 revealed that majority of the respondent with a mean of (4.2) agreed with the statement that having vendors whom you transact at capacity building level plays a significant role in improving market share. The measure of dispersion around the mean of the statements was 1 indicating the responses were varied. The result revealed that majority of the respondent with a mean of (3.7) agreed with the statement that having vendors whom you transact at strategic collaboration level plays a significant role in improving market share. The measure of dispersion around the mean of the statements was 1 indicating the responses were varied.

The result revealed that majority of the respondent with a mean of (3.4) agreed with the statement that having vendors whom you transact at necessity level plays a significant role in increasing profitability. The measure of dispersion around the mean of the statements was 1.3 indicating the responses were varied. The result revealed that majority of the respondent with a mean of (3.8) agreed with the statement that having vendors whom you transact at capacity building level plays a significant role in increasing profitability. The measure of dispersion around the mean of the statements was 1.2 indicating the responses were varied. The result revealed that majority of the respondent with a mean of (3.8) agreed with the statement that having vendors whom you transact at strategic collaboration level plays a significant role in increasing profitability. The measure of dispersion around the mean of the statements was 1.2 indicating the responses were varied. However the variations in the responses were varied as shown by an average standard deviation of 1.5 and an average mean of 3.8. These findings imply that triangle approach were at the heart of the organizations. The findings agree with Knudsen (2015) that using triangle approach when rationalizing the supply base is a smart move and can reduce expenses significantly.

Table 1: Triangle Approach

Statements	Mean	Std. Deviation
Having vendors whom you transact at the necessity level plays a significant role in cost reductions	4.3	1.0
Having vendors whom you transact at capacity building level plays a significant role in cost reductions	3.6	1.4
Having vendors whom you transact at strategic collaboration level plays a significant role in cost reductions	3.8	1.3
Having vendors whom you transact at necessity level plays a significant role in improving market share	3.0	1.4
Having vendors whom you transact at capacity building level plays a significant role in improving market share	4.2	1.0
Having vendors whom you transact at strategic collaboration level plays a significant role in improving market share	3.7	0.5
Having vendors whom you transact at necessity level plays a significant role in increasing profitability	3.4	1.3
Having vendors whom you transact at capacity building level plays a significant role in increasing profitability	4.1	4.3
Having vendors whom you transact at strategic collaboration level plays a significant role in increasing profitability	3.8	1.2
Average	3.8	1.5

4.1.2 Pareto's Approach

The second objective of the study was to investigate the influence of improve or else method on performance of manufacturing firms in Kenya. The respondents were asked to indicate to what extent did improve or else method influenced performance of manufacturing firms in Kenya. Results indicated that majority of the respondents 31% agreed that it was to a very great extent, 36% said that it was to a great extent, 23% said it was moderate, while little extent and not all tied at 5%.
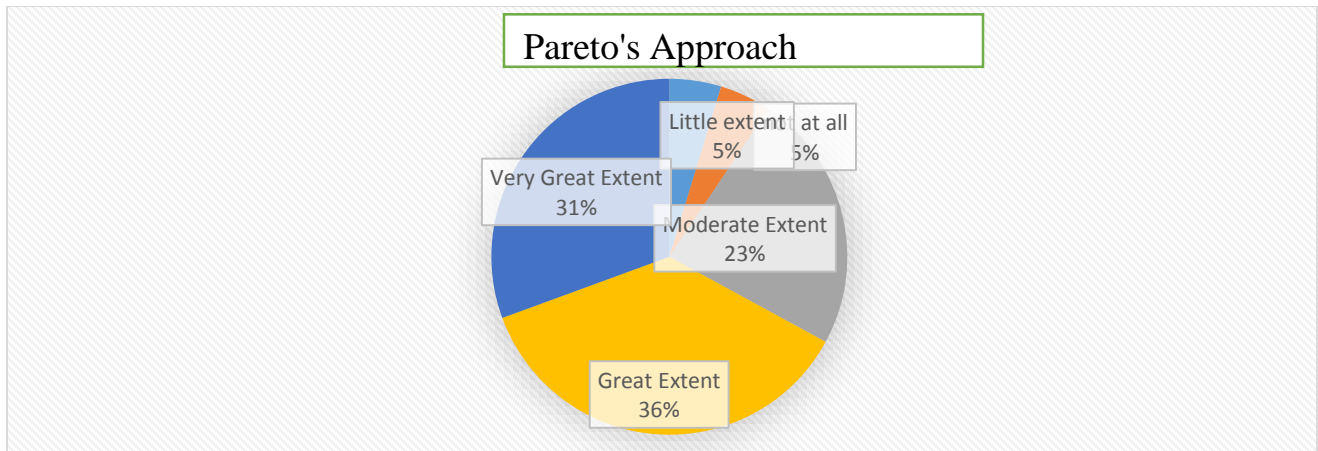
Figure 2: Pareto's Approach

The respondents were also asked to comment on statements regarding Pareto's approach influence on performance of manufacturing firms in Kenya. The respondents were asked to indicate descriptive responses for Pareto's approach. The result revealed that majority of the respondents as indicated by a mean of (3.8) indicated that they agreed with the statement that having a category of A class suppliers plays a significant role in cost reductions. The responses were varied as measured by standard deviation of 1.1. The result revealed that majority of the respondents as indicated by a mean of (3.6) indicated that they agreed with the statement that having a category of B class suppliers plays a significant role in cost reductions. The responses were varied as measured by standard deviation of 1.1. The result revealed that majority of the respondents as indicated by a mean of (3.7) indicated that they agreed with the statement that having a category of C class suppliers plays a significant role in cost reductions. The responses were varied as measured by standard deviation of 1.1

The result revealed that majority of the respondents as indicated by a mean of (3.6) indicated that they agreed with the statement that having a category of A class suppliers plays a significant role in improving market share. The responses were varied as measured by standard deviation of 1.2. The result revealed that majority of the respondents as indicated by a mean of (3.6) indicated that they agreed with the statement that having a category of B class suppliers plays a significant role in improving market share. The responses were varied as measured by standard deviation of 1.2. The result revealed that majority of the respondents as indicated by a mean of (3.5) indicated that they agreed with the statement that having a category of C class suppliers plays a significant role in improving market share. The responses were varied as measured by standard deviation of 1.4.

The result revealed that majority of the respondents as indicated by a mean of (3.5) indicated that they agreed with the statement that having a category of A class suppliers plays a significant role in increasing profitability. The responses were varied as measured by standard deviation of 1.4. The result revealed that majority of the respondents as indicated by a mean of (3.3) indicated that they agreed with the statement that having a category of B class suppliers plays a significant role in increasing profitability. The responses were varied as measured by standard deviation of 1.5. The result revealed that majority of the respondents as indicated by a mean of (3.6) indicated that they agreed with the statement that having a category of C class suppliers plays a significant role in increasing profitability. The responses were varied as measured by standard deviation of 0.5.

However the variations in the responses were varied as shown by an average standard deviation of 1.2 and an average mean of 3.6. This means that Pareto's approach is an important aspect among manufacturing firms. These findings imply that Pareto's approach was at the heart of the organizations. They agree with Lysons (2013) that organizations must look toward their Pareto's approach. The opportunities for cost savings and operational improvements can be enormous as the impact on profitability is considerable.

Table 2: Pareto's Approach

Statements	Mean	Std. Deviation
Having a category of A class suppliers plays a significant role in cost reductions	3.8	1.1
Having a category of B class suppliers plays a significant role in cost reductions	3.6	1.1
Having a category of C class suppliers plays a significant role in cost reductions	3.7	1.1
Having a category of A class suppliers plays a significant role in improving market share	3.5	1.2
Having a category of B class suppliers plays a significant role in improving market share	3.8	1.2
Having a category of C class suppliers plays a significant role in improving market share	3.5	1.4
Having a category of A class suppliers plays a significant role in increasing profitability	3.5	1.4
Having a category of B class suppliers plays a significant role in increasing profitability	3.3	1.5
Having a category of C class suppliers plays a significant role in increasing profitability	3.6	0.5
Average	3.6	1.2

4.1.3 Improve or Else Method

There was also need to establish how improve or else method influenced performance of manufacturing firms in Kenya as the third objective. The respondents were asked to comment on extent of improve or else method influence on performance of manufacturing firms. Results indicated that majority of the respondents 21% agreed that it was to a very great extent, 22% said that it was to a great extent, 21% said it was moderate; little extent was 28% and not all at 8%.
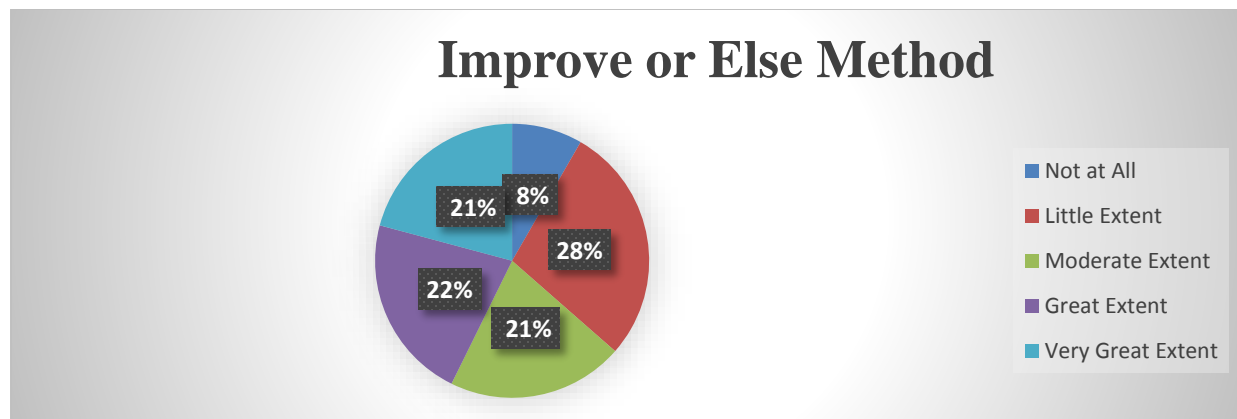
Figure 3: Improve or Else Method

The respondents were asked to indicate their levels of agreement on statements regarding improve or else method. The results revealed that majority of the respondent (3.9) agreed with the statement that Quality analysis plays a significant role in cost reductions. The responses were varied as shown by the standard deviation of 1.2. The results revealed that majority of the respondent (3.2) agreed with the statement that Risk management plays a significant role in cost reductions. The responses were varied as shown by the standard deviation of 1.3. The results revealed that majority of the respondent (4.0) agreed with the statement that Scrutiny of lead time plays a significant role in cost reductions. The responses were varied as shown by the standard deviation of .8.

The results revealed that majority of the respondent (4.2) agreed with the statement that Quality analysis plays a significant role in improving market share. The responses were varied as shown by the standard deviation of .9. The results revealed that majority of the respondent (3.7) agreed with the statement that Risk management plays a significant role in improving market share. The responses were varied as shown by the standard deviation of .5. The results revealed that majority of the respondent (2.4) agreed with the statement that Scrutiny of lead time plays a significant role in improving market share. The responses were varied as shown by the standard deviation of 1.3.

The results revealed that majority of the respondent (3.1) agreed with the statement that Quality analysis plays a significant role in increasing profitability. The responses were varied as shown by the standard deviation of 1.2. The results revealed that majority of the respondent (3.2) agreed with the statement that Risk management plays a significant role in increasing profitability. The responses were varied as shown by the standard deviation of 1.3. The results revealed that majority of the respondent (3.5) agreed with the statement that Scrutiny of lead time plays a significant role in increasing profitability. The responses were varied as shown by the standard deviation of 1.3. The average mean of all the statements was 3.7 indicating that majority of the respondents agreed on improve or else method influence on performance of manufacturing firms in Kenya. However the variations in the responses were varied as shown by a standard deviation of 1.1. These findings imply that through improve or else method, companies can improve competitive positioning, gain entry to new dynamic and technology driven markets (Maina, 2008).

Table 3: Improve or Else Method

Statements	Mean	Std. Deviation
Quality analysis plays a significant role in cost reductions	3.9	1.2
Risk management plays a significant role in cost reductions	3.2	1.3
Scrutiny of lead time plays a significant role in cost reductions	4.0	0.8
Quality analysis plays a significant role in improving market share	4.2	0.9
Risk management plays a significant role in improving market share	3.7	0.5
Scrutiny of lead time plays a significant role in improving market share	2.4	1.3
Quality analysis plays a significant role in increasing profitability	3.1	1.2
Risk management plays a significant role in increasing profitability	3.2	1.3
Scrutiny of lead time plays a significant role in increasing profitability	3.5	1.3
Average	3.7	1.1

4.1.4 Competency Staircase Method

There was also need to establish how competency staircase method influences performance of manufacturing firms in Kenya. The respondents were also asked to comment on statements regarding competency staircase method influenced performance of manufacturing firms. Results also showed that 3% of respondents indicated to very great extent, great extent was at 12%, moderate extent was 37%, while little extent was at 27% and not at all was at 21%.
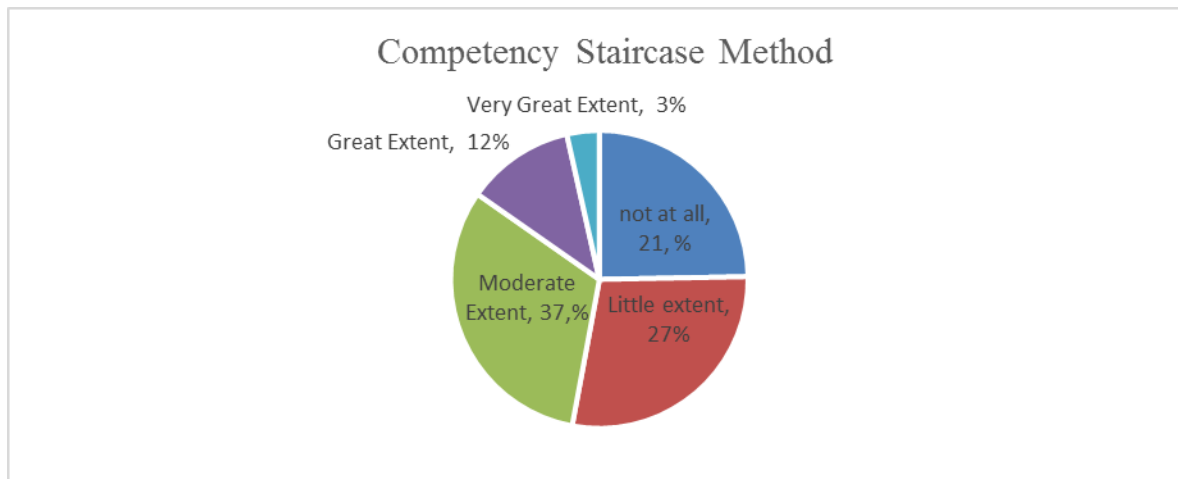

Figure 4: Competency Staircase Method

The respondents were asked to indicate the descriptive responses for competency staircase method. The result revealed that majority of the respondents (3.2) agreed with the statement that Having vendors who are low skilled plays a significant role in cost reductions. The responses were varied as shown by a standard deviation of 1.3. The result revealed that majority of the respondent (3.2) agreed with the statement that Having vendors who are middle skilled plays a significant role in cost reductions. The responses were varied as shown by a standard deviation of 1. The result

revealed that majority of the respondent (4.3) agreed with the statement that Having vendors who are highly skilled plays a significant role in cost reductions. The responses were varied as shown by a standard deviation of 1.

The result revealed that majority of the respondent (4.2) agreed with the statement that Having vendors who are low skilled plays a significant role in improving market share. The responses were varied as shown by a standard deviation of 0.8. The result revealed that majority of the respondent (4.1) agreed with the statement that Having vendors who are middle skilled plays a significant role in improving market share. The responses were varied as shown by a standard deviation of 1. The result revealed that majority of the respondent (4.2) agreed with the statement that Having vendors who are highly skilled plays a significant role in improving market share. The responses were varied as shown by a standard deviation of 0.8

The result revealed that majority of the respondent (4.4) agreed with the statement that Having vendors who are low skilled plays a significant role in increasing profitability. The responses were varied as shown by a standard deviation of 0.6. The result revealed that majority of the respondent (4.4) agreed with the statement that Having vendors who are middle skilled plays a significant role in increasing profitability. The responses were varied as shown by a standard deviation of 0.6. The result revealed that majority of the respondent (4.4) agreed with the statement that Having vendors who are highly skilled plays a significant role in increasing profitability. The responses were varied as shown by a standard deviation of 0.7.

The average mean response for the statements on electronic sourcing was 4.4 indicating there was agreement on electronic sourcing, the variations in the responses was 0.9. This means competency staircase method is paramount in all manufacturing firms. The results imply that an organization benefits greatly when competency staircase method is embraced to reduce costs (Bird, 2009).

Table 4: Competency Staircase Method

Statements	Mean	Std. Deviation
Having vendors who are low skilled plays a significant role in cost reductions	3.2	1.3
Having vendors who are middle skilled plays a significant role in cost reductions	2.9	1.0
Having vendors who are highly skilled plays a significant role in cost reductions	4.3	0.9
Having vendors who are low skilled plays a significant role in improving market share	4.3	0.9
Having vendors who are middle skilled plays a significant role in improving market share	4.1	1.0
Having vendors who are highly skilled plays a significant role in improving market share	4.2	0.8
Having vendors who are low skilled plays a significant role in increasing profitability	4.4	0.6
Having vendors who are middle skilled plays a significant role in increasing profitability	4.4	0.7
Having vendors who are highly skilled plays a significant role in increasing profitability	4.4	0.6
Average	4.4	0.9

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4.2 Correlation Analysis

Table 5: Summary of Pearson's Correlations

Correlations		Triangle Approach	Pareto's Approach	Improve or Else Method	Competency Staircase Method	Performance of Manufacturing Firms
Triangle Approach	Pearson Correlation	1				
	Sig. (2-Tailed)					
Pareto's Approach	Pearson Correlation	.372**	1			
	Sig. (2-Tailed)	0				
Improve or Else Method	Pearson Correlation	.353**	.449**	1		
	Sig. (2-Tailed)	0	0			
Competency Staircase Method	Pearson Correlation	.363**	.771**	.547**	1	
	Sig. (2-Tailed)	0	0	0		
Performance of Manufacturing Firms	Pearson Correlation	.556**	.662**	.703**	.691**	1
	Sig. (2-Tailed)	0	0	0	0	

** Correlation is Significant at the 0.05 Level (2-Tailed).

The correlation summary shown in Table 5 indicated that the associations between each of the independent variables and the dependent variable were all significant at the 95% confidence level. The correlation analysis to determine the relationship between the triangle approach and performance of manufacturing firms in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there was a positive relationship (r=0.556) between the triangle approach and performance of manufacturing firms in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The correlation analysis to determine the relationship between the Pareto's approach and performance of manufacturing firms in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicated that there was a positive relationship (r=0.662) between the Pareto's approach and performance of manufacturing firms in Kenya. In

addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The correlation analysis to determine the relationship between improve or else method and performance of manufacturing firms in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there was a positive relationship (r=0.703) between improve or else method and performance of manufacturing firms in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The correlation analysis to determine the relationship between competency staircase method and performance of manufacturing firms in Kenya, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there was a positive relationship (r=.691). In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). Hence, it was evident that all the independent variables could explain the changes in the performance of manufacturing firms in Kenya, on the basis of the correlation analysis.

4.4 Regression Analysis

In this study multivariate regression analysis was used to determine the significance of the relationship between the dependent variable and all the independent variables pooled together. Table 6 presented the regression coefficient of independent variables against dependent variable. The independent variables reported R value of 0.846 indicating that there was perfect relationship between dependent variable and independent variables. R square value of 0.715 means that 71.5% of the corresponding variation in performance of manufacturing firms in Kenya can be explained or predicted by (triangle approach, Pareto's approach, improve or else method and competency staircase method) which indicated that the model fitted the study data. The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at (β = 0.715), p=0.000 <0.05.

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	. 846[a]	. 715	. 703	.14869

Table 7: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.002	4	1.251	83.40	.000[b]
	Residual	1.990	135	0.015		
	Total	6.992	139			

a) **Predictors: (Constant), Triangle Approach, Pareto's Approach, Improve or Else Method and Competency Staircase Method**

b) **Dependent Variable: Performance of Manufacturing Firms**

The significance value is 0.000 which is less than 0.05 thus the model is statistically significance in predicting triangle approach, Pareto's approach, improve or else method and competency staircase method influence performance of manufacturing firms in Kenya. The F critical at 5% level of significance was 28.61. Since F calculated which can be noted from the ANOVA table above is 83.40 which is greater than the F critical (value= 28.61), this shows that the overall model was significant. The study therefore establishes that; triangle approach, Pareto's approach, improve or else method and competency staircase method were all important supply base rationalization practices influencing performance of manufacturing firms. These results agree with Odhiambo and Kamau (2013) results which indicated a positive and significant influence of supply base rationalization on performance of manufacturing firms.

Table 8: Coefficients of Determination

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.07	0.193		10.725	0.000
	Triangle Approach	0.166	0.041	0.255	4.048	0.000
	Pareto's Approach	0.138	0.053	0.235	2.603	0.001
	Improve or Else Method	0.119	0.021	0.398	5.667	0.000
	Competency Staircase Method	0.09	0.043	0.201	2.093	0.037

The research used a multiple regression model

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mathcal{E}$

The regression equation will be;

$Y = 2.07 + 0.166 X_1 + 0.138 X_2 + 0.119 X_3 + 0.09 X_4$

The regression equation above has established that taking all factors into account (triangle approach, Pareto's approach, improve or else method and competency staircase method) constant at zero, performance of manufacturing firms in Kenya will be an index of 2.07. The findings presented also shows that taking all other independent variables at zero, a unit increase in triangle approach will lead to a 0.166 increase in performance of manufacturing firms.The P-value was 0.000 which is less 0.05 and thus the relationship was significant.

The study also found that a unit increase in Pareto's approach will lead to a 0.138 increase in performance of manufacturing firms in Kenya. The P-value was 0.00 and thus the relationship was significant. In addition, the study found that a unit increase in improve or else method will lead to a 0.119 increase in the performance of manufacturing firms in Kenya. The P-value was 0.000 and thus the relationship was significant.

Lastly, the study found that a unit increase in competency staircase method will lead to a 0.09 increase in the performance of manufacturing firms in Kenya. The P-value was 0.00 and hence the relationship was significant since the p-value was lower than 0.05. The findings of the study show that, triangle approach contributed most to the performance of manufacturing firms in Kenya.

5. 0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

5.1.1 Triangle Approach

The study sought to assess influence of the triangle approach on performance of manufacturing firms in Kenya as the first objective of the study. A majority of respondents were found to highly agree that manufacturing firms had embraced the triangle approach with regard to their procurement activities. Correlation and regression results revealed that this was an important variable that could perhaps be explained by the observation from the findings that the triangle approach was an important factor in influencing performance of manufacturing firms.

5.1.2 Pareto's Approach

The influence of the Pareto's approach on performance of manufacturing firms in Kenya was the second objective of the study. A majority of respondents were found to highly agree that the manufacturing firms had embraced the Pareto's approach with regard to their procurement activities. Correlation and regression results revealed that this was an important variable that could perhaps be explained by the observation from the findings that the Pareto's approach was an important factor in influencing performance of manufacturing firms.

5.1.3 Improve or Else Method

The study endeared to assess influence of improve or else method on performance of manufacturing firms in Kenya as the third objective of the study. A majority of respondents were found to highly agree that the manufacturing firms had embraced improve or else method with regard to their procurement activities. Correlation and regression results revealed that this was an important variable that could perhaps be explained by the observation from the findings that improve or else method was an important factor in influencing performance of manufacturing firms.

5.1.4 Competency Staircase Method

The study sought to assess influence of competency staircase method on performance of manufacturing firms in Kenya as the last objective of the study. A majority of respondents were found to highly agree that the manufacturing firms had embraced competency staircase method with regard to its procurement activities. Correlation and regression results revealed that this was an important variable that could perhaps be explained by the observation from the findings that competency staircase method was an important factor in influencing performance of manufacturing firms.

5.1.5 Performance of Manufacturing Firms

The study endeared to determine the influence of supply base rationalization on performance of manufacturing firms in Kenya. The regression results revealed that supply base rationalization platforms identified in the study, that is, triangle approach, Pareto's approach, improve or else method and competency staircase method combined could explain approximately 71.5% of the variations in the performance of manufacturing firms. The other 28.5% may be attributed to other supply base rationalization strategies not explained by the model or the variables.

5.2 Conclusion of the Study

Based on the study findings, the study concludes that performance of manufacturing firms can be improved by triangle approach, Pareto's approach, improve or else method and competency staircase method. Drawing on this study, lack of triangle approach, Pareto's approach, improve or else method and competency staircase method in manufacturing firms is leading to poor performance. Though the manufacturing firms are striving hard to improve their performance there are still issues of poor quality products, long lead time and high cost of products. Thus, it is evident that all the independent variables identified in this study were all important supply base rationalization strategies that influenced the performance of manufacturing firms.

5.3 Recommendations of the Study

The study recommended that manufacturing firms should embrace supply base rationalization so as to improve performance and further researches should to be carried out in other institutions to find out if the same results can be obtained.

5.4 Areas for Further Research

The findings demonstrated the important supply base rationalization strategies to the performance of manufacturing firms to include; triangle approach, Pareto's approach, improve or else method and competency staircase method. The current study obtained an R2 of 71.5% and should therefore be expanded further in future in order to include other supply base rationalization strategies that may as well have a positive significance to performance of manufacturing firms. Existing literature indicates that as a future avenue of research, there is need to undertake similar research in other institutions and organizations in Kenya and other countries in order to establish whether the explored supply base rationalization strategies herein can be generalized to affect performance in other institutions.

REFERENCES

Choi, J. (2010). *A study of the role public procurement – can public procurement make society better?* The International Public Procurement Conference, Seoul, South Korea

Donald, C. (2009). *Synthesizing Research*; A guide for Literature Reviews (3rd edn) Sage: Thousand Oaks

John, G. & Johnson, P. (2012). *Research methods for Managers, 4th Edition*. Sage Publications: London.

KPMG (2008). *Governance Survey.* Nairobi: KPMG.

Linarelli, J. & Wallace, D. (2010). *Regulating Public Procurement:* National and International Perspectives. Kluwer Law International

Lysons, K., & Gullingham, M. (2013). *Purchasing and Supply Chain Management*, (6th Ed). London: Pearsons Hall.

Mugerwa, E. (2009). *Factors Affecting Supply Chain Performance of SMEs in Eastern Uganda.* Kampala.

Ngugi, J.K., & Mugo, H.W. (2010). *Internal factors affecting procurement process of supplies in the public sector;* a survey of Kenya government ministries. Paper presented at 5th International Public Procurement Conference was held on August 17th, 2012 in Seattle, USA.

Odhiambo, W., & Kamau, P. (2012). *Public procurement: Lessons from Kenya, Tanzania and Uganda,* Working Paper 208. Paris: OECD Development Centre.

OECD (2011). *Strengthening Partner Country Procurement Capacities* - A Needs Assessment. Paris: Crown Agents.

Onyango, A. (2011). *Supply Chain Management Practices and Performance in Cement Industry in Kenya, U*npublished MBA Project, University of Nairobi School of Business, Nairobi

Orodho .C. R. (2009). Element of Education and Social Sciences. *Research Methods* 2nd Edition, Kanezja Publishers. New Delhi

Perry, C. (2011). *Supporting access to public procurement opportunities.* Research and Information Service Research Paper, 12 (1), 12-22.

PPOA (2010). *Assessment of the Procurement System in Kenya Report.* A report by Public Procurement Oversight Authority, Nairobi

Procurement Reform Project (2014). *African Regional Workshop on Harmonization, Alignment and Results*, available on http:/www.worldbankorg/ on 14th Dec.2017.

Richard, S. W. (2013). *Institutions and Organizations: Ideas and Interests*. Kenya: Sage Publications.

Transparency International (2010). *The Kenya Public Procurement Sector Supplier Management Study Report,* Nairobi: Transparency International.

Trochin, W.M.K. (2008). *Research methods*. Knowledge base. Kogan Page Ltd, London, UK.

UNESCO (2014). *Global Monitoring Report: The Role of the Organization and Social Context of Public Procurement*. http://portal.org/education.

Wanjohi, M. A. (2012). *Challenges facing supplier base management in Kenya and the efforts in progress*. Nairobi: Acts Press.

Wanyama, J. (2010). *The Effectiveness of the Procurement Regulations in Kenya*. Available on http:/www.oecd.org, on 18th Dec 2017

World Bank (2008). "*Standard Bidding Documents: Procurement of Works*", Washington, D.C: World Bank