INFLUENCE OF SUPPLY BASE LEVERAGING PRACTICES ON PROCUREMENT PERFORMANCE AMONG PUBLIC INSTITUTIONS IN KENYA: A CASE OF KENYA FOREST SERVICE

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ABSTRACT

Procurement performance has increasingly become prominent in the print and electronic media underlining how public entities handle the entire process. Procurement is perceived as prone to corruption; occasioning waste and affecting quality of service and life improving opportunities. There is need to reverse this worrying trend and win public confidence. Despite Government efforts to improve the procurement system, it is still marred by shoddy works, poor quality goods and services. Improper implementation of recommended performance standards results in unnecessarily high operation costs, uncoordinated business activities, inability to achieve domestic policy goals, and failure to attract and retain professionals. Despite its importance, limited scientific research has been undertaken to examine the influence of supply base leveraging practices on procurement performance in public institutions in Kenya. The purpose of the study was to examine the influence of supply base leveraging practices on procurement performance among public institutions in Kenya a case of Kenya Forest Service with an aim of making recommendations on proper use of supply base leveraging practices. The study aimed to establish how supplier development, supplier partnerships, early supplier involvement and supplier appraisal affect procurement performance. There is no evidence of a study that has investigated the influence of supply base leveraging practices on procurement performance among public institutions in Kenya with reference to Kenya Forest Service hence the necessity to conduct it. To achieve this, the researcher reviewed both theoretical and empirical literature and proposed the research methodology that addressed the gaps identified in literature as well as answer the stipulated research questions. This research study adopted a descriptive research design approach. The researcher preferred this method because it allows an in-depth study of the subject. A census was conducted where all the 72 staff in procurement department was issued with questionnaires. Data was collected using self-administered questionnaires. The data collected was analyzed by use of descriptive and inferential statistics. The quantitative data generated was keyed in and analyzed by use of Statistical Package of Social Sciences (SPSS) version 22 to generate information which was presented using tables, charts, frequencies and percentages. The multiple regression model was used to show the relationship between the dependent variable and the independent variables. The response rate of the study was 76%. The findings of the study indicated that supplier
development, supplier partnerships, early supplier involvement and supplier appraisal have a positive relationship with procurement performance in Kenya Forest Service. Finally, the study recommended that public institutions should embrace supply base leveraging practices so as to improve procurement performance and further researches should to be carried out in other public institutions to find out if the same results can be obtained.

**Key Terms:** Supply Base Leveraging, Procurement Performance, Early Supplier Involvement, Supplier Development, Supplier Partnerships, Supplier Appraisal
Background of the Study

As the economy accelerates, organizations receive and endure market realities such as customers that are more demanding, dwindling product lifecycles, and severe price erosion (Adizes, 2004). To maximize on performance with profitability many have resorted to outsource their production in an effort to cut down on costs (Abramson & Harris, 2003). The recent craze of marketplaces, exchanges and reverse auctions has caused many manufacturers and their suppliers to question the value of once-trusted long-term buyer/seller relationships (Roemer, 2004).

Thus to achieve competitive advantage, several of these companies have taken supply base leveraging and supply chain execution. In essence, it has become very crucial for these companies to leverage their supply base and even the development of technologies such as Supplier Relationship Management (SRM) has been a welcome move. This software outstandingly improves the supply chain performance and introduces a completely new class of supply base management (Nicosia & Moore, 2006).

According to International Conference on Intellectual Capital, Knowledge Management & Organizational Learning (2013) success in this new era requires intellectual capital and the ability to manage this scarce resource. Intangibles are currently the main drivers of performance, growth and competitiveness in the corporate world and must consequently be carefully managed and protected. To protect and manage intellectual capital, organizations must closely examine the structure of these intangible assets. There are three basic forms of intellectual capital that must be recognized and categorized, namely: human capital (people and their skills); structural capital (patents, documents, methodologies, databases, brands, and other knowledge artifacts); and relationship capital (predominantly relationships with suppliers and buyers)(Holsapple, 2003).
Today, businesses of all sizes, throughout the world, are trying to redefine their relationships with their suppliers in order to lower costs, increase quality and speed, and reduce risk thus maximizing on performance. In these attempts, businesses are applying Archimedean thinking as they attempt to transcend the purely tactical realms of purchasing, procurement, and sourcing into the more strategic area of building alliances with suppliers to increase supply chain competitiveness (Kersten, 2011).

In the USA, Vodafone Group is one of the world’s largest mobile communications companies, with operations in over 30 countries. For it to continue to build on its position in the European marketplace through high performance, as well as to capitalize on emerging opportunities in new markets, it established the Vodafone Procurement Company (Pedersen, 2014).

To begin, the company recognized the need for a more flexible, scalable supply chain solution that could accommodate its growing global performance. Vodafone wanted a way to leverage economies of scale and scope across multiple operating units by obtaining visibility and control across its distributed trading network (Johnson, Scholes & Whittington, 2008).

In Ireland, Ryanair, the Irish carrier posted high annual performance output in a dismal airline climate not by doing what customers want per se, but rather by paying close attention to the supply side of its business. While other airlines were selling off their planes in a reaction to reduced customer demand, Ryanair went on a buying spree, acquiring planes at a steep discount and building its fleet at a fraction of the price paid by competitors. The savings that Ryanair was able to leverage by moving to the careful purchasing and negotiating his costs amount to more than double the company’s profits (Creaton, 2013).

Procter & Gamble, one of America’s longest surviving corporations, literally redefined itself from a manufacturing company to a corporation focused on creating and building brands. By 2003,
P&G, which had previously manufactured detergents, beauty aids and a variety of products with its own proprietary equipment, had moved towards becoming an aggregator of products made by a wide range of suppliers, and it was outsourcing a growing percentage of its manufacturing. The company adopted a “connect and develop” strategy which called for acquiring more than 50% of its innovation from outside the company (Grant, 2016).

In Africa, public procurement has become an issue of public attention and debate, and has been subjected to reforms, restructuring, rules and regulations (Rolfstam, 2013). In South Africa, public procurement expenditure is approximately £30 billion (McNichols & Brennan, 2006). In other developing countries, public procurement is increasingly recognized as essential in service delivery (Wanyama, 2013) and it accounts for a high proportion of total expenditure. For instance, public procurement accounts for 60% in Kenya (Mukasa, 2009) 58% in Angola, 40% in Malawi and 70% of Uganda’s public spending as cited by (Basheka, 2008). This is very high when compared with a global average of 12-20% (Cousins, Lawson & Squire, 2006). Due to the colossal amount of money involved in government procurement and the fact that such money comes from the public, there is need for accountability, adherence to procurement procedures, professionalism and transparency to improve procurement performance which is generally very poor according to Ngugi and Mugo (2012).

Supply Base Leveraging Practices

According to Rudzki and Trent (2011) when leverage is mentioned in a procurement department, it usually refers to bundling of internal needs to create as much buying power as possible. That’s a good and valuable concept. However there is another, equally-valuable perspective on leveraging
your supply base. Leading companies often take advantage of a powerful source of competitive advantage such as preferred relationships with their suppliers (Steinhilber, 2008).

Examples of supply base leveraging practices include but not limited to, early supplier involvement, supplier development, strategic alliances and supplier appraisal. Research shows that these customers receive preferential treatment from their suppliers in two important ways: First, direct investment made by the supplier to benefit a single company, such as dedicated capacity, exclusive use of a new technology, or key engineers assigned to the customer’s new product development teams and systems integration among others (Roemer, 2004). Secondly, exceptional service, such as preferential scheduling of orders, more frequent deliveries, better pricing, shorter lead times and similar advantages.

Suppliers play a crucial role in enabling companies to rise to the demanding challenges of new product development. Strategic supplier considerations should be built into improvement initiatives for product inception, product development and product launch. Supply chain participants need to synchronize their approaches for understanding the product architecture, discovering and validating new ideas, measuring success, accelerating product development and mutually protecting their intellectual property (Christopher, 2010).

**Statement of the Problem**

Procurement performance, growth and sustainability of firms have strong and reliable relationship with sound supply base leveraging practices (Chick & Handfield, 2015). Public institutions have largely not used these practices as far as procurement performance goals, structured growth and development of supply chain relationships are concerned (Gunasekaran, 2001).
In a study to evaluate procurement performance due to supply chain systems in Kenya, Ngugi and Mugo (2012) established that despite the state’s efforts to improve the procurement system, it is still marred by shoddy works, poor quality goods and services, secrecy, inefficiency, corruption, inadequate regulatory compliance, lack of professionalism, and lack of transparency leading to waste of huge amounts of public resources. The Systems Audit for State Law Office, 2012/2013 Report revealed losses of Ksh 18,291,430.30 through irregular procurements in financial year (FY) 2012/2013. Earlier, in FY 2011/2012, SLO had lost Ksh 8,495,968.00 due to inefficiencies (Wanyama, 2013). This raises questions on the level of performance of public institutions procurement system.

According to Juma (2010), central government procurement was estimated at 10% of gross domestic product (GDP) and even a 10% saving via improved procurement performance means Kshs. 30 billion annual savings for other needy sectors. This therefore acts as the motivation for the study. Consequences of inefficiencies include drains on scarce resources and erosion of public confidence in Government. It is further estimated that public procurement accounts for 9%–13% of the GDP of the economies of developing countries (Thai, 2004). This statistics indicate that public procurement is key to government service delivery, yet constraints affect its performance.

According to Odhiambo and Kamau (2003) consistent lack of value for money and bulk of underperformance in Kenya has occurred in public procurement and supply sector and has adversely affected procurement performance of the involved sectors. From his study on the challenges of the Public Procurement and Disposal Act of 2005 as amended in 2007, Mukasa (2009) established that the reform solutions within government procurement systems do not adequately include measures that address issues of transparency, strategic supplier partnerships, value for money, a professional work force, supplier appraisal and ethics. This study is worthy because this is an area that needs attention in the face of increasing non-compliance, waste of
public resources, lack of professionalism, transparency, adherence to procurement procedures and accountability (Mlinga, 2009).

In view of the foregoing, there was need to refocus on supply base leveraging practices to tap on benefits such as better procurement performance among others. This study therefore was to investigate how procurement performance of institutions was impacted by supply base leveraging variables such as; early supplier involvement, supplier development, supplier partnerships and supplier appraisal in public institutions in Kenya specifically Kenya Forest Service.

**Objectives of the Study**

i. To assess how early supplier involvement influences procurement performance among public institutions in Kenya.

ii. To establish how supplier development influences procurement performance among public institutions in Kenya.

iii. To determine how supplier partnerships influence procurement performance among public institutions in Kenya.

iv. To evaluate how supplier appraisal influences procurement performance among public institutions in Kenya.

**Conceptual Framework**

A conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Kombo, 2006). Conceptual frameworks are used to explain how the independent variables affect the dependent variable. The study uses procurement performance as dependent variable and supply base leveraging elements as independent variables.
Early Supplier Involvement
- Joint Initiatives
- Alignment of Goals
- Mutual Accountability

Supplier Development
- Training and Skills Development
- Improvement of Processes and Capacity
- Financial Capacity Improvement

Supplier Partnerships
- Systems Integration
- Commitment to Sustainable Discounted Prices
- Preferential Scheduling of Orders

Supplier Appraisal
- Financial Capacity
- Supplier Quality Consistency
- Technical Capacity

Procurement Performance
- Quality Improvement
- Cost Reduction
- Lead Time Reduction

Independent Variables
  
Dependent Variable

Figure 1: Conceptual Framework

Literature Review

Early Supplier Involvement

Early supplier involvement (ESI) in this study will be considered as a supply base leveraging attribute that influences procurement performance. The attributes of early supplier involvement
which will be taken into consideration in this study are: Joint initiatives, alignment of goals and mutual accountability. The growing global marketplace has placed additional strain on product developers who are faced with the challenges of getting new products through product development and onto market faster than ever before. One solution is the Early Supplier Involvement process, where product designers and manufacturers get the opportunity to review product designs and leverage the combined resources of both manufacturer and its suppliers (Cheng & Choi, 2010).

Early Supplier Involvement is a form of vertical collaboration between supply chain partners in which the manufacturer involves the supplier at an early stage of the product development process (Weele, 2010). According to Economist Intelligence (2006) many leading companies are forming 'supply networks' in order to lock in the benefits of early supplier involvement through an increase in profit margins by reducing the time lapse between design and production with improved quality.

Early supplier involvement adds another dimension of expertise to your existing design team during the planning, design and manufacturing phases. This broadened knowledge base makes it easier to keep pace with rapid technology and material developments as well as your industry’s demands for shorter product life cycles. Involving suppliers when developing a new product or service can be smart. But, if not done well, early supplier involvement can lead to suppliers taking advantage of customers who lack the future threat of competition to reduce costs and improve performance (Dominick & Lunney, 2012).

**Supplier Development**

Supplier development (SD) in this study will be considered as a supply base leveraging attribute that influences procurement performance. The attributes of supplier development which will be
taken into consideration in this study are: Training and skills development, improvement of processes and capacity and financial capacity improvement. According to Mamiro (2010) as customers demand additional cost reductions, faster deliveries, better quality and better performance, organizations must look toward their suppliers for operational improvements. The opportunities for cost savings and operational improvements can be enormous. And the impact on your margins and bottom line is considerable. With supplier development support, significant improvements can be accomplished. According to Nyeko (2004) supplier development is the process of working with certain suppliers on a one-to-one basis to improve their performance for the benefit of the buying organization. Most medium to large size companies have supplier development programs in place aimed at achieving the following: Lower supply chain total cost, increased profitability for all supply chain participants increased product quality and Near-perfect on-time-delivery at each point in the supply chain.

Thus, a supplier development program must be aimed at improving suppliers’ performance; it’s all about providing suppliers with what they need to be successful in the supply chain. The role of Supplier Development is considered to be significant in supply chain management, as without active and positive participation of supplier(s), it is difficult to develop a successful supply chain network (Day, 2002). Thus to gain and maintain a competitive edge, companies strive to incorporate the activities of other partners of the supply chain. The level of integration in some organizations is high participating relationships, whereas in some other organizations, it is characterized by low involvement (Gadde & Hakansson, 2001). A number of studies confirmed several benefits of SD activities. Several firms practiced SD after recognizing long-term and strategic advantages of SD. SD program supported the suppliers to enhance their capabilities that ultimately improved the buyer performance (Kannan et al., 2010). In the era of technological
advancement and fierce competition where firms cannot produce all the goods and services required for manufacturing process, a good integration with other actors of the chain especially with the suppliers can provide a competitive advantage to the organization for the long run.

**Supplier Partnerships**

Supplier partnerships in this study will be considered as a supply base leveraging attribute that influences procurement performance. The attributes of supplier partnerships which will be taken into consideration in this study are: Systems integration, commitment to sustainable discounted prices and preferential scheduling of orders. Supplier partnerships are agreements among firms in which each commits resources to achieve a common set of objectives. Companies may form supplier partnerships with a wide variety of players: customers, suppliers, competitors, universities or divisions of government (Chang et al., 2012). Through supplier partnerships, companies can improve competitive positioning, gain entry to new markets, supplement critical skills and share the risk or cost of major development projects. To form a supplier partnerships, companies should:

- Define their business vision and strategy in order to understand how an alliance fits their objectives,
- evaluate and select potential partners based on the level of synergy and the ability of the firms to work together,
- develop a working relationship and mutual recognition of opportunities with the prospective partner and negotiate and implement a formal agreement that includes systems to monitor performance (Hugos, 2011).

Supplier partnerships help companies to improve relationship value systems within their organisations’ cultures thus learning from mistakes and form the successes of other alliances, and make investments to enable collaborative problem solving. In supplier partnerships, business decisions are made jointly to achieve the agreed goals of aligned organizations that share resources, information, profits, knowledge, and risk. The main goals are to gain access to new customer
bases; offer more product/service offerings for the customers; pool resources in light of the large outlay required; to learn new know-how from the alliance partners; utilize the existing personal network to reach new supplier bases; enhance the market position in present markets; add credibility to the business (Gibbs & Humphries, 2009).

Supplier Appraisal

Supplier appraisal in this study will be considered as a supply base leveraging attribute that influences procurement performance. The attributes of supplier appraisal which will be taken into consideration in this study are: Financial capacity, supplier quality commitment and technical capacity. Supplier appraisal is the evaluation and monitoring of supplier capability to ensure successful delivery of commercial outcomes. It is an essential part of strategic sourcing, supplier management and securing competitive advantage. It is best considered in two phases, pre-contract and post-contract often referred to as contract management. The pre contract involves assessment of potential suppliers’ capability of controlling quality, delivery, quantity, price and all other factors embodied in a contract while the post-contract involves assessing ongoing supplier performance, deciding what to monitor and the success factors involved(CIPS Australia, 2005).

Gordon (2008) stated that the strategic importance of a given supply item (and in aggregate a contract or supplier) is related to its profit impact and its supply risk. Profit impact can be volume or value purchased, impact on supply chain value-add, business growth potential or dependency. Supply risk can be product availability, number of suppliers, ease or cost of switching supplier or the availability of substitute products or services.

The Chartered Institute of Purchasing and Supply (2012) proposed that companies should support continuous performance appraisals by holding suppliers accountable for poor performance and
providing incentives for outstanding performance, therefore they should hold regular supplier reviews to facilitate on-going supplier performance management and provide a senior management overview of the relationship between the organization and the supplier. An organization benefits greatly when key suppliers reduce costs, introduce new services designed to address the organization’s needs, and work with the organization to streamline joint processes.

According to Broome (2002) supplier performance measurement is the process of measuring, analyzing, and managing supplier performance for the purposes of reducing costs, mitigating risk, and driving continuous improvement. Gordon (2008) articulates that SPM is a process, not an event. It requires support from stakeholders besides procurement, as supplier performance impacts many functions.

**Procurement Performance**

Procurement performance refers to efficiency and effectiveness in acquiring of goods and services in the procurement function in order to change from being reactive to being proactive to attain set performance levels in an entity. Procurement performance has several benefits to an organization like cost saving, reduced lead time, policy adherence and compliance to procurement regulations. Procurement activities have a relation to the organization’s economic performance which is evident by cost reduction (Pomazalova & Pomazalova, 2013).

This can be divided to effects on turnover, gross profit, efficiency, total costs and organization’s equity. All of these categories correlate directly with how the supplier ratings are controlled and utilized for the benefit of the organization according to Gordon (2008). Sollish and Semanik (2007) identified seven key success factors which influence procurement, namely; a clear procurement strategy, effective management of information and control systems, development of
expertise, proactive approach, co-ordination focused efforts and communicating the key success factors to all levels of the organization and set out a procurement strategy to achieve continuous improvement in value for money. This should be based on total cost, quality, and enhancement of competitiveness of suppliers using best procurement practice.

Supplier performance has an impact on procurement performance. According to Broome (2002), decisions to buy instead of make to improve quality, lower inventories, integrate supplier and buyer systems, and create co-operative relations underline need for good supplier performance. Recent trends are to fewer suppliers; long-term contracts, e-procurement, and continuing improvement in quality, price, and service require closer co-ordination and communication between key procurement partners. Supplier switching for lower prices may not result in the best long-term value. Sharing information and assisting suppliers to improve performance is a necessity for world-class performance. There is need to have coherent methods of performance in the procurement function in procuring entities. (Weele, 2010) asserted that basing on financial performance and neglecting non-financial performance cannot improve the procurement operations because only partial performance is considered. Realization of procurement goals is influenced by internal and external forces. Interactions between various elements; professionalism, staffing levels and budget resources, procurement organizational structure, regulations, rules, and guidance, and internal control policies, all need attention and influence procurement performance.

**Study Methodology**

This study adopted a descriptive research design. The choice of this design is appropriate for this study since it utilized a questionnaire as a tool of data collection and helped to analyze influence
of supply base leveraging practices on procurement performance among public institutions in Kenya: a case of Kenya Forest Service. Descriptive research design is a scientific method which involves observing and describing the behavior of a subject without influencing it in any way. The population of this study constituted the 72 procurement staff of Kenya Forest Service. The data collected was coded and entered into a spreadsheet and analyzed using Statistical Package for Social Sciences (SPSS) version 22. Inferential statistics (multiple regression analysis) was used to give a measure of the relationship between two or more variables and establish if there is any relationship or if there exists a cause effect relationship between the variables.

The study used a multiple regression model

\[ Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon \]

Where \( Y \) = Procurement Performance, \( \beta_0 \) = Constant, \( X_1 \) = Early Supplier Involvement, \( X_2 \) = Supplier Development, \( X_3 \) = Supplier Partnerships, \( X_4 \) = Supplier Appraisal, \( \varepsilon \) = Error Term

**Findings of the Study**

**Procurement Performance**

The study sought to establish the procurement performance of KFS against the following parameters namely; quality improvement, cost reduction and lead time reduction.

The first indicator for the dependent variable required to know the level of procurement performance in relation to quality improvement, 0% of the respondents had 0-20%, 3% had 20-30% and 11% had over 30-40%, 17% had 40-50%, 69% had over 50% quality improvement on average annually. The median was found to be 5 which imply that on average the organization’s level of quality improvement was over 50%. The next indicator required the respondents to state
the cost reduction margin in the organization, 3% of respondents had 0-1, 3% had 1-2, 14% had 2-3, 26% had 3-4, 54% had over 4. The median was found to be 5 which imply that on average organization’s cost reduction was over 4 million annually. The last indicator required the respondents to state the lead time reduction margin in the organization, 0% had 0-1, 3% had 1-2, 20% had 2-3, 43% had 3-4, 34% had an average of over 4 weeks lead time reduction.

This shows that procurement performance provides the basis for an organization to assess how well it is progressing towards its predetermined objectives, identifies areas of strengths and weaknesses and decides on future initiatives with the goal of how to initiate performance improvements by reduction of costs, lead time through early supplier involvement, appraisal and development (Mukasa, 2009).

<table>
<thead>
<tr>
<th>Table 1: Procurement Performance</th>
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<td><strong>(Percentage)</strong></td>
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<tr>
<td>Quality Improvement (In Millions)</td>
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<td>Cost Reduction (In Weeks)</td>
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<td>Lead Time Reduction</td>
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**Correlation Analysis**

Correlation analysis was used to determine both the significance and degree of association of the variables and also predict the level of variation in the dependent variable caused by the independent variables. The correlation technique is used to analyze the degree of relationship between two
variables.

Table 2: Summary of Correlations

<table>
<thead>
<tr>
<th></th>
<th>E-Supplier Involvement</th>
<th>Supplier Development</th>
<th>Supplier Partnerships</th>
<th>Supplier Appraisal</th>
<th>Procurement Performance</th>
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</thead>
<tbody>
<tr>
<td><strong>E-Supplier Involvement</strong></td>
<td>Pearson Correlation</td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>N</td>
<td>55</td>
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<tr>
<td><strong>Supplier Development</strong></td>
<td>Pearson Correlation</td>
<td>.87</td>
<td></td>
<td>1</td>
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<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.040</td>
<td>N</td>
<td>55</td>
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<tr>
<td><strong>Supplier Partnerships</strong></td>
<td>Pearson Correlation</td>
<td>.62</td>
<td>-.24</td>
<td>1</td>
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<td></td>
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<td>Sig. (2-tailed)</td>
<td>.066</td>
<td>.242</td>
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<td>N</td>
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<tr>
<td><strong>Supplier Appraisal</strong></td>
<td>Pearson Correlation</td>
<td>-.015</td>
<td>.112</td>
<td>.118</td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.833</td>
<td>.119</td>
<td>.101</td>
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<td>N</td>
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<tr>
<td><strong>Procurement Performance</strong></td>
<td>Pearson Correlation</td>
<td>.105</td>
<td>.350</td>
<td>.179</td>
<td>.462</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.011</td>
<td>.001</td>
<td>.002</td>
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<td>N</td>
<td>55</td>
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**Correlation is statistically significant at 5% level (2-tailed).**

The correlation summary indicates 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 early supplier involvement and procurement performance, Pearson Correlation Coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship ($r=0.105$) between early supplier involvement and procurement performance of Kenya Forest Service. In addition, the researcher found the relationship to be statistically significant at 5% level ($p=0.011$, $<0.05$).
The correlation analysis to determine the relationship between supplier development and procurement performance, Pearson Correlation Coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship ($r=0.350$) between supplier development and procurement performance of Kenya Forest Service. In addition, the researcher found the relationship to be statistically significant at 5% level ($p=0.001, <0.05$).

The correlation analysis to determine the relationship between supplier partnerships and procurement performance, Pearson Correlation Coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship ($r=0.179$) between supplier partnerships and procurement performance of Kenya Forest Service. In addition, the researcher found the relationship to be statistically significant at 5% level ($p=0.002, <0.05$).

The correlation analysis to determine the relationship between supplier appraisal and procurement performance, Pearson Correlation Coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship ($r=0.462$) between supplier appraisal and procurement performance of Kenya Forest Service. In addition, the researcher found the relationship to be statistically significant at 5% level ($p=0.000, <0.05$).

Hence, it is evident that all the independent variables could explain the changes in the procurement performance of KFS on the basis of the correlation analysis.

**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. Regression analysis was conducted to find the proportion in the dependent variable (procurement
performance) which can be predicted from the independent variables (supplier appraisal, supplier
development, supplier partnership and early supplier involvement).

The results of regression analysis revealed there is a significant positive relationship between
dependent variable (procurement performance and independent variables (supplier appraisal,
supplier development, supplier partnership and early supplier involvement). The independent
variables reported R value of 0.847 indicating that there is perfect relationship between dependent
variable and independent variables. R square value of 0.718 means that 71.8% of the corresponding
variation in procurement performance can be explained or predicted by (supplier appraisal,
supplier development, supplier partnership and early supplier involvement) which indicated that
the model fitted the study data.

Adjusted R square indicated how procurement performance varied with variation in effects of
factors which includes; supplier appraisal, supplier development, supplier partnership and early
supplier involvement. The results of regression analysis revealed that there was a significant
positive relationship between dependent variable and independent variable at (β = 0.718), p=0.000
<0.05). This implies that improvement on supplier appraisal, supplier development, supplier
partnership and early supplier involvement leads to improved procurement performance.

Table 3: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.847a</td>
<td>0.718</td>
<td>0.311</td>
<td>1.945</td>
</tr>
</tbody>
</table>

a) Predictors: (Constant), Early supplier involvement, Supplier development,
Supplier partnership and Supplier appraisal

b) Dependent Variable: Procurement Performance

The research used a multiple regression model: \( Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon \)

The optimal final regression model was as follows: \( Y = 0.254 + 0.487X_1 + 0.306X_2 + 0.170X_3 + 0.153X_4 \)
The regression equation above established that taking all factors into account (supplier appraisal, supplier development, supplier partnership and early supplier involvement) constant at zero, procurement performance will be an index of 0.254. The findings presented also shows that taking all other independent variables at zero, a unit increase in supplier appraisal will lead to a 0.487 increase in the scores of procurement performance. The P-value was 0.001 which is less than 0.05 and thus the relationship was significant.

The study also found that a unit increase in supplier development will lead to a 0.306 increase in procurement performance. The P-value was 0.000 and thus the relationship was significant. In addition, the study found that a unit increase in supplier partnership will lead to a 0.170 increase in the scores of procurement performance. The P-value was 0.040 and thus the relationship was significant. Lastly, the study found that a unit increase in early supplier involvement will lead to a 0.153 increase in the scores of procurement performance. The P-value was 0.024 and hence the relationship was significant since the p-value was lower than 0.05. The findings of the study show that, supplier appraisal contributed most to the procurement performance.

Table 4: Coefficient of Determination

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>25.453</td>
<td>3.327</td>
<td></td>
<td>7.650</td>
</tr>
<tr>
<td>Supplier appraisal</td>
<td>.487</td>
<td>.081</td>
<td>.478</td>
<td>2.075</td>
</tr>
<tr>
<td>Supplier development</td>
<td>.306</td>
<td>.058</td>
<td>.371</td>
<td>2.966</td>
</tr>
<tr>
<td>Supplier partnership</td>
<td>.170</td>
<td>.061</td>
<td>.184</td>
<td>0.742</td>
</tr>
<tr>
<td>E-supplier involvement</td>
<td>.153</td>
<td>.047</td>
<td>.183</td>
<td>1.126</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Procurement Performance
### Table 5: ANOVA

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>282.566</td>
<td>4</td>
<td>70.6415</td>
<td>18.635</td>
</tr>
<tr>
<td>Residual</td>
<td>416.984</td>
<td>67</td>
<td>3.7908</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>699.55</td>
<td>71</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a) Predictors: (Constant), Early supplier involvement, Supplier development, Supplier partnership and Supplier appraisal  
b) Dependent Variable: Procurement Performance

The significance value is 0.001 which is less than 0.05 thus the model is statistically significant in predicting how supplier appraisal, supplier development, supplier partnership and early supplier involvement influence procurement performance. The F critical at 5% level of significance was 2.68. Since F calculated which can be noted from the ANOVA table above is 18.635 which is greater than the F critical (value = 2.68), this shows that the overall model was significant. The study therefore establishes that; supplier appraisal, supplier development, supplier partnership and early supplier involvement were all important supply base leveraging practices influencing procurement performance of KFS. These results agree with Dominick and Lunney (2012) and Gordon (2008) results which indicated a positive and significant influence of supply base leveraging practices on procurement performance.

**Summary of Findings**

The study sought to determine procurement performance in the public institutions with reference to KFS. The regression results revealed that supply base leveraging practices identified in the study, that is, early supplier involvement, supplier development, supplier partnerships and supplier appraisal combined could explain approximately 71.8% of the variations in the procurement performance of KFS. The other 28.2% may be attributed to other strategies not explained by the model or the variables. The impact of supply base leveraging practices was reviewed over a 5-year
period, running from 2011 to 2015. Quality of goods purchased recorded positive growth, timely purchases and stock out reduction further recorded positive growth, cost reductions due to minimal or no reworks also recorded positive growth. From inferential statistics, a positive correlation is seen between each determinant variable and procurement performance. The strongest correlation was established between supplier appraisal and procurement performance. All the independent variables were found to have a statistically significant association with the dependent variable at ninety five percent level of confidence.

**Conclusion of the study**

Based on the study findings, the study concludes that procurement performance in public institutions can be improved by supplier appraisal, supplier development, supplier partnerships and early supplier involvement.

First, in regard to supplier appraisal, the regression coefficients of the study show that it has a significant influence of 0.487 on procurement performance in public institutions. This implies that increasing levels of supplier appraisal by a unit would increase the levels of procurement performance in public institutions by 0.487. This shows that supplier appraisal has a positive influence on procurement performance in public institutions.

Second in regard to supplier development, the regression coefficients of the study show that it has a significant influence of 0.306 on procurement performance in public institutions. This implies that increasing levels of supplier development by a unit would increase the levels of procurement performance in public institutions by 0.306. This shows that supplier development has a positive influence on procurement performance in public institutions.
With regard to the third objective, the regression coefficients of the study show that it has a significant influence of 0.170 on procurement performance in public institutions. This implies that increasing levels of supplier partnerships by a unit would increase the levels of procurement performance in public institutions by 0.170. This shows that supplier partnerships has a positive influence on procurement performance in public institutions.

Lastly, in regard to the fourth objective, early supplier involvement, regression coefficients of the study show that it has a significant influence of 0.153 on procurement performance in public institutions. This implies that increasing levels of early supplier involvement by a unit would increase the levels of procurement performance in public institutions by 0.153. This shows that early supplier involvement has a positive influence on procurement performance in public institutions.

Drawing on this research, lack of supplier appraisal, early supplier involvement, lack of supplier development and partnerships in public institutions is leading to poor procurement performance. Though the public institutions are striving hard to improve procurement performance there are still issues of poor quality products, long lead time and high cost of projects/products. It was articulated that the current phenomenon of poor procurement performance in the public sector can be reversed if the government and other stakeholders ensure that supplier appraisal, early supplier involvement, supplier development and partnerships are embraced in procurement function. Thus, it is evident that all the independent variables identified in this study were all important supply base leveraging practices that influenced the procurement performance of KFS.

**Recommendations of the study**

To ensure that public institutions have better procurement performance they should focus more on using their supplier appraisal techniques so as to ascertain the realistic financial capacity of
suppliers, their realistic technical capacity and ensure that there is consistency of quality in goods supplied. In the same regard, they should outsource consultants to enable them to come up with appraisals that articulate with their organization objectives.

With regard to the second objective, it would be salutary for public institutions to invest more in supplier development to reduce the cost of procurement through unnecessary re works and ensure suppliers get it right the first time. This should be done consistently with the supplier training, improvement of their processes and capacity as well as enabling them financially.

In relation to supplier partnerships, the organizations should form strategic alliances with their suppliers so as to have a more improved working relationship characterized by a shared mindset and good information flow. If public institutions embrace systems integration among its suppliers then there will be cost reduction and timing of delivery will improve.

Concerning early supplier involvement, there is need for public institutions to always set aside a substantial part of their resources for activities that consume a huge amount of total costs, which is in the product development process. This is because decisions made in the first stages of product development have major effects on the resulting product or service costs. In the same regard, they should outsource consultants to enable them to come up with early supplier involvement strategies that articulate with their organization objectives.

The study recommends that procurement staff should ensure that they strictly follow procurement procedures to ensure that goods supplied are of the right quality, in the right quantity, at the right time, to the right place from the right source. This will aim at satisfaction of customers in terms of cost, quality, and timeliness of the delivered product or service, minimizing administrative operating costs, conducting business with integrity, fairness and openness. Procurement staff
should uphold integrity and ensure that there are no malpractices and there is informed decision-making, which requires public institutions to base decisions on accurate information and ensure that requirements are being met. This can be attained by proper strategic planning. More checks and controls should be introduced to check on the integrity of the tendering systems and ensure that it is as open as possible.
REFERENCES


Chartered Institute of Purchasing and Supply (2012). Intelligence, Supplier Performance Management.


Grant, R. M. (2016). *Contemporary strategy analysis: Text and cases*. 


World Bank (2013). “*Reducing Supply Chain Barriers Could Increase Global GDP Up To 6 Times More Than Removing All Import Tariffs Report*”, Switzerland
APPENDIX I: QUESTIONNAIRE

This questionnaire has been set in relation to the objectives of the study. All the questions relate to influence of supply base leveraging practices on procurement performance. Kindly read the questions carefully and answer them as honestly as possible by ticking (✓), rating, specifying or writing the correct answers precisely on the spaces provided.

SECTION 1: RESPONDENT’S INFORMATION

1. Department of the person filling the questionnaire ____________________________

2. Gender (Please tick in the appropriate box)

   i) Male [ ]

   ii) Female [ ]

3. What is your age? (Please tick in the appropriate box)

   i) 18-30 [ ]

   ii) 31-40 [ ]

   iii) 41-50 [ ]

   iv) 50 and above [ ]

4. What is your level of education? (Please tick in the appropriate box)

   i) Certificate level [ ]

   ii) Diploma level [ ]

   iii) Degree level [ ]

   iv) Masters level [ ]
5. Number of years served in your current office
   i) 0-2 [ ]
   ii) 3-5 [ ]
   iii) 6-8 [ ]
   iv) 9 and above [ ]

SECTION 2: Early Supplier Involvement and Procurement Performance

6. Explain how your department implements the established early supplier involvement structure
   a) _____________________________________________________________________
   b) _____________________________________________________________________
   c) _____________________________________________________________________

7. How would you rate the earlier supplier involvement structure implemented in your department?
   a) Very Effective
   b) Effective
   c) Somehow Effective
   d) Ineffective

8. Please indicate the extent to which you agree or disagree with the following statements.
   (Please Tick 1 for “Strongly Disagree”, 2 for “Disagree”, 3 for neutral”, 4 for “Agree” and 5 for “Strongly Agree”).

http://www.ijsse.org   ISSN 2307-6305   Page | 553
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<tbody>
<tr>
<td>a)</td>
<td>The management explains to the suppliers the importance of their early involvement to the organisation’s procurement performance</td>
<td></td>
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</tr>
<tr>
<td>b)</td>
<td>Joint initiatives with suppliers play a significant role in quality improvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>Alignment of goals with suppliers play a significant role in quality improvement</td>
<td></td>
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<td></td>
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<tr>
<td>d)</td>
<td>Mutual accountability plays a significant role in quality improvement</td>
<td></td>
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<td></td>
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<tr>
<td>e)</td>
<td>Joint initiatives with suppliers play a significant role in cost reduction</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>f)</td>
<td>Alignment of goals with suppliers play a significant role in cost reduction</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>g)</td>
<td>Mutual accountability plays a significant role in cost reduction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h)</td>
<td>Joint initiatives with suppliers play a significant role in lead time reduction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i)</td>
<td>Alignment of goals with suppliers play a significant role in lead time reduction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>j)</td>
<td>Mutual accountability plays a significant role in lead time reduction</td>
<td></td>
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</tr>
</tbody>
</table>
9. List some of the ways in which early supplier involvement procedures improve the procurement performance of your organization.

a) _____________________________________________________________________

b) _____________________________________________________________________

c) _____________________________________________________________________

SECTION 3: Supplier Development and Procurement Performance

10. Explain how your department implements the established supplier development structure?

a) _____________________________________________________________________

b) _____________________________________________________________________

c) _____________________________________________________________________

11. How would you rate the supplier development structure implemented in your department?

  a) Very Effective
  b) Effective
  c) Somehow Effective
  d) Ineffective

12. Please indicate the extent to which you agree or disagree with the following statements.
(Please Tick 1 for “Strongly Disagree”, 2 for “Disagree”, 3 for neutral”, 4 for “Agree” and 5 for “Strongly Agree”).
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<tbody>
<tr>
<td>a)</td>
<td>The management explains to the suppliers the importance of supplier development to the organisation’s procurement performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Supplier training and skills development plays a significant role in quality improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>Continuous improvement of suppliers’ processes and capacity plays a significant role in quality improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d)</td>
<td>Financial capacity improvement of suppliers plays a significant role in quality improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e)</td>
<td>Supplier training and skills development plays a significant role in cost reduction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f)</td>
<td>Continuous improvement of suppliers’ processes and capacity plays a significant role in cost reduction</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>g)</td>
<td>Financial capacity improvement of suppliers plays a significant role in cost reduction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h)</td>
<td>Supplier training and skills development plays a significant role in lead time reduction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i)</td>
<td>Continuous improvement of suppliers processes and capacity plays a significant role in lead time reduction</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
j) Financial capacity improvement of suppliers plays a significant role in lead time reduction

13. In your view, how does supplier development improve procurement performance?

a) 

b) 

c) 

Section 4 - Supplier Partnerships and Procurement Performance

14. Explain how your department implements the established supplier partnerships structure?

a) 

b) 

c) 

15. How would you rate the supplier partnerships structure implemented in your department?

   a) Very Effective

   b) Effective

   c) Somehow Effective

   d) Ineffective
16. Please indicate the extent to which you agree or disagree with the following statements.
(Please Tick 1 for “Strongly Disagree”, 2 for “Disagree”, 3 for neutral”, 4 for “Agree” and 5 for “Strongly Agree”).

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>The management explains to the suppliers the importance of supplier partnership to the organisation’s procurement performance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>b)</td>
<td>Systems integration plays a significant role in quality improvement</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>c)</td>
<td>Commitment to sustainable discounted prices plays a significant role in quality improvement</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>d)</td>
<td>Preferential scheduling of orders plays a significant role in quality improvement</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>e)</td>
<td>Systems integration plays a significant role in cost reduction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>f)</td>
<td>Commitment to sustainable discounted prices plays a significant role in cost reduction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>g)</td>
<td>Preferential scheduling of orders plays a significant role in cost reduction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>h)</td>
<td>Systems integration plays a significant role in lead time reduction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
17. In your view, how do supplier partnerships improve procurement performance?

a) 

b) 

c) 

SECTION 5: Supplier Appraisal and Procurement Performance

18. Explain how your department implements the established supplier appraisal structure?

a) 

b) 

c) 

19. How would you rate the supplier appraisal structure implemented in your department?

   a) Very Effective

   b) Effective

   c) Somehow Effective
20. Please indicate the extent to which you agree or disagree with the following statements. (Please Tick 1 for “Strongly Disagree”, 2 for “Disagree”, 3 for neutral”, 4 for “Agree” and 5 for “Strongly Agree”).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>The management explains to the suppliers the importance of supplier appraisals to the organisation’s procurement performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>b)</td>
<td>Supplier financial capacity plays a significant role in quality improvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>Supplier quality consistency plays a significant role in quality improvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d)</td>
<td>Supplier technical capacity plays a significant role in quality improvement</td>
<td></td>
<td></td>
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<tr>
<td>e)</td>
<td>Supplier financial capacity plays a significant role in cost reduction</td>
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<tr>
<td>f)</td>
<td>Supplier quality consistency plays a significant role in cost reduction</td>
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<tr>
<td>g)</td>
<td>Supplier technical capacity plays a significant role in cost reduction</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>h)</td>
<td>Supplier financial capacity plays a significant role in lead time reduction</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>i)</td>
<td>Supplier quality consistency plays a significant role in lead time reduction</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>j)</td>
<td>Supplier technical capacity plays a significant role in lead time reduction</td>
<td></td>
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</tr>
</tbody>
</table>

21. What supplier appraisal practices does your organization have? (State)

a) ________________________________________________________________

b) ________________________________________________________________

c) ________________________________________________________________

22. In your view, how does supplier appraisal improve procurement performance?

a) ________________________________________________________________

b) ________________________________________________________________

c) ________________________________________________________________
SECTION 6: Procurement Performance

(Please indicate by ticking the margin of Quality Improvement in relation to; Performance, Reliability, Conformance, and Durability & Serviceability over the last five years)

23. Quality Improvement

<table>
<thead>
<tr>
<th>Category</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>0-20</td>
<td></td>
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<td>20-30</td>
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<td>30-40</td>
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<td>40-50</td>
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<td>Over 50</td>
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</table>

(Please indicate by ticking the margin of reduction in cost over the last five years)

24. Cost Reduction

<table>
<thead>
<tr>
<th>Category</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Reduction (in Millions)</td>
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<td></td>
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<tr>
<td>0 – 1</td>
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<td></td>
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<tr>
<td>1 – 2</td>
<td></td>
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<td>2 – 3</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3 - 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
(Please indicate by ticking the margin of lead time reduction in delivery of supplies over the last five years)

25. Lead Time Reduction

<table>
<thead>
<tr>
<th>Category</th>
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<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
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<tbody>
<tr>
<td>Lead Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(in Weeks)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>0-1</td>
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<td>1-2</td>
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<td>2-3</td>
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<td>3-4</td>
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<tr>
<td>More than 4</td>
<td></td>
<td></td>
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THANK YOU FOR YOUR TIME