DETERMINANTS OF EFFECTIVE PROCUREMENT PERFORMANCE IN OIL INDUSTRY IN KENYA: A CASE OF KENYA PIPELINE CORPORATION

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ABSTRACT

Public procurement is key to government service delivery, yet constraints affect its performance. 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. Suppliers complain about the capability of public sector buyers. Procurement performance is encompasses the whole process of acquiring property and/or services and it begins when an agency has identified a need and decided on its procurement requirement. Prudent management of public procurement systems has been identified as very important to accelerated national development and organizations have realized that proper and sound procurement management is very essential. The ability to realize procurement goals is influenced by professionalism in procurement planning, staffing levels – training and budget resources, contracts management, government procurement regulations. This study was guided by the following specific objectives: to assess the influence of the use of information technology, employee competence, quality management systems and supplier relationship management on effective procurement performance in KPC. Descriptive research design was used for the study. The target population for this study was 100 procurement personnel from five depots who are contracted to execute procurement services at Kenya Pipeline Company. Primary data was collected using questionnaires and SPSS was used for analysis. The study found that adoption of E-technology system on computerized tender process leads to better customer satisfaction. Also the study
indicates that the lead time management influence on storage costs reduction. Again training and career development influence procurement performance and training reduces the breach of contract and motivation of employees. The most important functions of procurement management in quality work and also being able to motivate procurement employees and promote their morale in organization. The extent of any organization success depends on it and as well as developing the supplier relations is important. Understanding your suppliers and utilizing your suppliers mutual competition has proven to be a very effective way of supplier relationship development. The study recommend the organization to practice E-procurement and automate all the procurement process. The study recommends further research on effective procurement performance based on, inventory management, Outsourcing and third party Logistics. From the finding the study shows that employee competence influences the effective procurement performance most followed by Quality management systems, Information technology and finally Supplier relationship management.
Background of the study

Procurement encompasses the whole process of acquiring property and/or services. It begins when an agency has identified a need and decided on its procurement requirement. Procurement continues through the processes of risk assessment, seeking and evaluating alternative solutions, contract award, delivery of and payment for the property and/or services and, where relevant, the ongoing management of a contract and consideration of options related to the contract. Procurement also extends to the ultimate disposal of property at the end of its useful life (Waters, 2004). Public procurement systems are central to the effectiveness of development expenditure. Budgets get translated into services largely through the governments’ purchases of goods, services and works. It is estimated that 18.42% of the world’s Gross Domestic Product (GDP) is spent through public procurement (Mahmood, 2010).

Procurement management is a concept which brings together under one management responsibility for determining the organizations requirement, scheduling the processes and procuring, storing and dispensing materials (David & Alex, 2000). As such it is concerned with and controls activities involved in the acquisition and use of all materials employed in the production of finished goods. It is clearly evident that Procurement management concepts enhance communication and coordination by bringing together to one responsible individual, all functions which are interrelated.

This integration of interrelated materials functions is the basis of Procurement management concept (Jacobs, Chase & Aquilano, 2009).
Andreasen (2012) in a study by on case companies in Denmark, concludes that the management of the procurement function is quite involving since, procurement processes are complex, given the fact that they involve the completion of a series of activities, such as qualifying new suppliers, procuring different types of inputs, and monitoring supplier performance, that cut across both functional boundaries and organizational boundaries. This is also the case across the world, more so, in developing countries, especially in Africa where the management of the procurement function is dynamic. The dynamic explosion of technology, the shifting demands of consumers, and the new structures of markets combine to convert the world of purchasing into one of change and innovation.

The purchasing agent of today is a specialist, a technologist, and above all, a skilled and competent manager. He/she must understand the complexity and change which surround this task (Telgen et al, 2008).

An efficient public procurement system is vital to the advancement of African countries and is a concrete expression of their national commitments to making the best possible use of public resources. Equally, Kakwezi and Nyeko (2010) argues that the procurement departments of public entities in Uganda are faced with the problem of not having enough information about the procurement procedure, its inputs, outputs, resource consumption and results, and are therefore unable to determine their efficiency and effectiveness. This implies that such a problem requires establishment of clear procurement procedures and performance standards. Performance standards when adopted can provide the decision-makers in the procurement department with unbiased and objective information regarding the performance of the procurement function.
In Uganda, procurement and disposal planning are central to proper procurement management. Public Procurement and Disposal of Public Assets (PPDA) Regulation 96(1) provides that a user department shall prepare a multi-annual, rolling work plan for procurement based on the approved budget, which was submitted to the Procurement and disposal unit to facilitate orderly execution of annual procurement activities.

Vickery et al. (2003) argue that traditional government contracts worldwide have tended to focus on inputs rather than outputs. They suggest that the focus should instead be on what projects can deliver rather than how much the project costs which calls for high level of performance management in the entire process.

The procurement function has not been given the recognition it deserves in developing countries, in most public entities, regardless of the effort by the partners like the World Bank, the International Trade Organization, the United Nations Conference on Trade and Development, the World Trade Organization and, others. This could be deliberate or sheer ignorance on the value the procurement function could contribute to any organization (Thomson & Jackson, 2007). In the past decades, the public procurement system in Kenya has undergone significant developments. In line with the country’s public procurement reform agenda, Kenya in 2006 committed itself to become one of the 22 countries participating in the pilot testing a new Methodology for Assessment of National Procurement Systems (version 4) developed by the OECD-DAC Joint Venture for Procurement. The core objectives of the assessment are to: establish a common base for development through a well documented and broadly accepted understanding of key issues of the public procurement system, create a baseline against which future progress
can be measured and serve as a benchmarking tool which may be used for comparison between systems and countries (Public Procurement Oversight Authority, 2007).

**Statement of the Problem**

State corporations continue to experience major challenges in the execution of procurement practices. In Kenya, the central government spends about Kshs. 234 billion per year on procurement; however the government loses close to 17 percent of the national budget due to inflated price quotations (KISM, 2010). According to Public Procurement Oversight Authority (PPOA, 2009), most of the tendered products/services in the oil industry have a mark-up of 60 per cent on the market prices. In the year 2010, the Ministry of Energy lost 4.2 billion Kenyan shillings, in the year 2011, a total of Ksh. 33,061,925 is said to have been embezzled from the lucrative oil infrastructure projects (Daniel 2010).

The inefficiency and ineptness of overall implementation of procurement practices in government institutions dealing in oil contributes to loss of over Ksh.50 million annually (Tom 2009). According to Victor (2012), procurement expenditure could be minimized through proper implementation of procurement practices.

Even a 10% saving via improved procurement performance means Kshs. 30 billion annual savings for other needy sectors. Organizations are founded on goals and objectives and their continued existence can only be justified by the extent to which they meet them. This study is worthy so as to help get to grips with constraints; tackle waste, control public spending and light the fires of enterprise in public sector.
Public procurement is key to government service delivery, yet constraints affect its performance. 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. Suppliers complain about the capability of public sector buyers. It is hence against this background this study was undertaken in order to identify the determinants of effective implementation of procurement practices in public institutions dealing in oil.

Objectives of the Study

i. Establish how information & communication technology influence effective procurement performance in oil industry in Kenya

ii. Determine how employee competence affect effective procurement performance in oil industry in Kenya

iii. Explore how quality management systems affect effective procurement performance in oil industry in Kenya

iv. Find out how supplier management relationship influence effective procurement performance in oil industry in Kenya

Conceptual Framework

Conceptual framework as a concise description of the phenomenon under study accompanied by a graphical or visual depiction of the major variables of the study.
(Mugenda & Mugenda, 2008). According to Young (2009), conceptual framework is a diagrammatical representation that shows the relationship between dependent variable and independent variables. The conceptual framework shown in figure 2.1 describes the relationship between the variables in the study. The independent variables are information technology, employee competence, quality management systems, quality management systems and supplier relationship management. If these factors are aligned with the procurement operations of oil industry in Kenya, it will improve performance of procurement system by enhancing information flow and reducing delays in order processing. Organization that invests in staff competencies will likely to have competitive advantage over the other as this may result to quality product and variety reduction. Procurement performance, the dependent variable is defined as accomplishment of employees task that result to customer satisfaction, efficient information flow and quality procurement management.

Performance improvement were assessed in terms of quality, efficiency, customer satisfaction, cost of procurement and lead times.
Employee Competency
- Employee’s experience & skills
- Training and career development
- Professional qualification

Quality Management Systems
- Quality planning
- Quality control
- Quality assurance

Supplier Relationship Management
- Supplier relationship development
- Supplier cooperation
- Cost and time efficiency

Procurement Performance in Oil industry
- Increased Customer Satisfaction
- Stability of prices
- Reduced Cost
- Increased number of quality products

Independent Variables

Dependent Variable

Figure 1: Conceptual Framework
Literature Review

Information, Communication & Technology

According to Campbell (2005), technology is the change or integration of means of processing a product or service from what is perceived not be a good version to a better one. It is also change of system or way of operation from inefficient or manual to automatic operations. Private sector procurement activities have evolved from orders, systems to nowadays E-procurement. If you always remember that technology is a tool and that you need to know how to use it, for it to be productive, the money that you spend will never appear to be wasted. The emergence of Internet Technologies has changed the way that governments and organizations operate. The majority of organizational spending consists of purchasing. In order to decrease the total costs spent on purchasing process, internet technologies are used and E-Procurement has become popular to implement in the latest era by both governments and enterprises. Several researchers studying in this area says E-Procurement is named as the “Revolution” due to its potential to reduce the total costs of acquisitions (Campbell, 2005).

Today, Internet technology is relatively cheap and flexible technology which not only has held significant importance for communication in society, but also for the development of the interplay between one procurement units of an organization to another (Monrove, 2002). According to Rusek (2006), the digitalization of information and data, as well as the opportunities offered by the Internet, provides the basis for rationalization and improved efficiency in administrative processes for private sector procurement companies. The digitalization of the administrative and procurement functions of public sector companies provides a number of advantages, for example, the opportunity to
establish new and more efficient work processes and to communicate and cooperate in new ways. Traditional paper-based work processes in procurement can be made more efficient, changed or rendered superfluous when data and data-communication become electronic. Via this path, resources can be transferred from administration to service. Digitalization does not only bring advantages with it. The risk element in procurement changes radically along with technical development, for example, when traditional paper documents disappear and are replaced by digital information that easily can be stolen (copied), changed, deleted, etc., without trace. In future, security surrounding digital systems will be allocated important priority in all fields of society (Rusek, 2006).

Development also requires an important technical redirection and comprehensive further training for users. For procurement officers, development will mean the need for further training, amended procurement methods and new IT-based in procurement tools. In the latest era, the significant usage of E-Procurement systems by governments and enterprises led to significant savings in government procurement costs. It has been shown theoretically and empirically that these savings are mostly caused by increased competitive environment, thus by increased number of bidders in government procurement auctions (Rusek, 2006).

The success of E-Procurement systems mostly depends on the increases in number of bidders (suppliers) that participate to procurement auctions. So, the implementation of E-Procurement has some restrictions namely technology adoption and usage of E-Procurement systems by suppliers. Some public institutions have not embraced e-procurement. Again, e-procurement has high maintenance costs and required level of professionalism that needs to be investigated in terms of sustainability (Rusek, 2006).
Berger and Humphrey (2007) states that, use of technology has not been fully embraced in the practice of undertaking procurement activities in Kenya. Berger and Humphrey observe while there are up to date systems such as reverse auction for undertaking bidding process in procurement, in most private and public sector the process is still being undertaken manually giving room for manipulation and corruption. Manual process also takes longer thus thereby affecting procurement activities. The same view is also recorded by Dale (2010) that states that manufacturing industry performance in Kenya is hampered by lack of investment in technology that helps to reduce lead time, improve efficiency and efficacy, and eliminate quality default and corruption in the processes.

**Employee Competency**

Boyatzis (2008), define competency as a capability, ability or an underlying characteristic of an individual which is casually related to effective or superior performance. It is a set of related but a different set of behavior organized around an underlying construct, which we call the “intent”. The behaviors are alternate manifestations of the intent, as appropriate in various situations or times. Competence is a cluster of related abilities, commitments, knowledge, and skills that enable a person (or an organization) to act efficiently in a job or situation. Competencies indicate sufficiency of knowledge and skills that enable someone to act in a wide variety of situations (Aketch and Karanja, 2013). According to Russell (2004), professionalism in public procurement relates not only to the levels of education and qualifications of the workforce but also to the professional approach in the conduct of business activities. If the workforce is not adequately educated in procurement matters, serious consequences including; breaches of codes of conduct may occur.
According to Shick (2003), all levels of employees should be involved including the subordinates should be involved in preparation of budget so that they too can feel appreciated and acknowledged. If involved in the right way motivation for employees will be increased.” employees should be involved in the happenings of the organization so that they can be up to date with the daily operation of the organization. Past records used in the past will assist in consultation as they can be referred to if a similar situation arises as had in the past. According to Banda (2009), many procuring organizations do not have staff with the right competence critical to good procurement process management. There is need for authorities to give much greater emphasis to developing such competence and to adopt best practice more widely. For big projects the cost of employing advisers is very high and in many cases exceeded budgets by a substantial margin.

Procuring organizations need to drive down advisers’ costs and ensure that sensible budgets are adhered to through staff competence development. Monitoring and enforcement of Quality standards is sometimes weak sometimes the failure can be traced back to problems in human resources capacity to monitor procurement process, poor determination of specifications, weak definition of requirements and/or inadequate budgets, and failure to enforce the conditions of the contract is due to inadequate supervision from within the private sector as well as weak enforcement of regulations. Regulatory agencies rarely manage to enforce standards due to lack of capacity (Banda, 2009).

According to Berger & Humphrey (2007), a procurement function that is carried out professionally is the heart of delivery of any service on value for money principle. In the
study, it was noted that most of personnel carrying out procurement functions in the local authorities in Kenya have not been sensitized on procurement regulations. In emphasis, the law requires that each procuring entity establishes a procurement unit with the professionals. This was not the case in 15 out of 27 surveyed local authorities in Kenya. According to the report, it was observed that there are serious challenges in staffing of procurement professionals in the local government institutions. Some of the personnel carrying out those duties do not have any certification in procurement and most have never been sensitized and have little knowledge if any of procurement function.

In order to sustain economic growth and effective performance, it is important to optimize the contribution of employees to the aims and goals of the organizations. Technological developments and organizational change have gradually led some employers to the realization that success relies on the skills and abilities of their employees, and this means considerable and continuous investment in training and development (Sultana, 2012). Current educational systems, do not necessarily impart specific knowledge for specific job positions in organizations. As a result of this the labour force comprises of few people with the right skills, knowledge and competencies needed for positions in the job market. There is therefore the need for extensive external training for human resources to be able to improve and also contribute to the productivity of organizations (Appiah, 2010). Seleim (2007) explains that training is a key element for improved organizational performance through the increasing level of individual competences. This means that training will help employees to master knowledge, skills, behaviors, sense of self worth and confidence upon which they are able to perform efficiently to improve on the performance of the organization.
Boyan (2003) reveals that there are clear benefits in ensuring that staff who handle suppliers are professionals and approaches are handled well. Competence can ensure that the benefits of new products and services are brought to the attention of the right person in the organization. It can protect the organization, keep work to a minimum, avoid souring relationships and add to the organization’s reputation for efficiency and good management. According to the author, in procurement, it is not what you do but how you do it that matters. “For big projects the cost of employing advisers is very high and in many cases exceeded budgets by a substantial margin. Procuring organizations need to drive down advisers’ costs and ensure that sensible budgets are adhered to. They also need to be mindful of costs to bidders. Imposing excessive costs on bidders is likely to result in higher charges in the long run and risk deterring firms from bidding” (Boyan, 2003).
Quality Management Systems

According to Berger and Humphrey (2007), quality management can be considered to have four main components: quality planning, quality control, quality assurance and quality improvement. Quality management is focused not only on product/service quality, but also the means to achieve it and whether motivation plays significant role in its achievement. Quality management therefore uses quality assurance and control of processes as well as products to achieve more consistent quality. In quality work, where consumer responsibilities are very important and non-negotiable, customers recognize that quality is an important attribute in products and services. Procurement employees therefore must be provided with all tools and motivated in order to deliver quality services (Berger & Humphrey, 2007). In Africa, in the past two decades quality gap has been greatly reduced between competitive products and services. This is partly due to cases where procurement employees have lost their lives after consuming some fake products from the market. As a result, countries amongst many others have raised their own standards of quality in order to meet international standards and customer demands. The ISO 9000 series of standards are probably the best known international standards for quality management that some many countries associate with (Zeithaml, 2000).

According to Armstrong (2001), the study reveals that the most important functions of procurement management in quality work is being able to motivate procurement employees and promote their morale in organization. In fact, the extent of your success depends on it. To inspire extraordinary performance you must foster a positive environment and discover what motivates procurement employees in quality work.
Motivating yourself and others isn't easy. You must work on it daily or it won't last in procurement employees or you in organization. Tangible ways in which job satisfaction benefits the organization in quality work include reduction in complaints and grievances, absenteeism, turnover, and termination; as well as improved punctuality and worker morale. Motivation is also linked to a healthier work force and has been found to be a good indicator of longevity. And although only little correlation has been found between job satisfaction and quality work, Armstrong (2001) notes that some employers have found that satisfying or delighting procurement employees is a prerequisite to satisfying or delighting customers, thus protecting the "bottom line".

In Kenya, a number of organization use motivation to help procurement employees achieve organization targets and objectives. DHL limited for instance has cultivated the practice of procurement employees’ motivation in order to help them achieve international quality standards. Products that consumer use must meet standard fitness of purpose and quality and thus the need for motivation in quality work, to ensure they achieve the threshold and standards required for inspection of goods that are consumed in the market (Waters, 2004).
Supplier Relationship Management

Effective supplier management can make the procurement process more cost and time efficient. Having supply market intelligence and applying a correct competition situation are ways to implement a good supplier management strategy. Other issues that should be accounted are a reliable source for supplier performance and evaluation as well as developing the suppliers. With the help of common procurement approaches and development projects the supplier relationship is utilized to the maximum (Iloranta 2008).

Supplier relationship management succeeds the best when all the different factors have been taken into account. It is important to consider issues like delivery, packaging, logistics, time management, documentation and reporting and communication. In most cases the problems with suppliers are due to the fact that the contract lacks of detailed information about daily supplier management. Selecting a contact person for the buying and selling organization is essential to ensure the information flow between the organizations (Iloranta 2008).

According to Liker et al. (2004), actively developing the supplier relations is important. Understanding your suppliers and utilizing your suppliers mutual competition has proven to be a very effective way of supplier relationship development. Other development ideas include managing your suppliers to improve their performance and abilities. It’s important to keep the managing role to yourself when conducting shared product development projects. The buying organization should communicate information with determination to selected suppliers (Liker et al. 2004).
Understanding the actions and processes of your suppliers is a basis for starting to develop your relationships with them. Supply market intelligence is one the factors that need to be accounted. It explains the mutual competition between competing organizations in the market. With the help of detailed supply market understanding, the factors that affect competitive advantage can be identified. The determination of the knowhow of supplier processes and the total cost structure helps to develop supplier relationships (Liker & al. 2004).

The benefit of the long-term relationships with the supplier in this case is the fact that the supplier will learn about the real needs and requirements of the buyer. This can result is optimization and rationalization of its own operations. The evaluation and measurement of these sorts of activities is hard which makes it a gain for the supplier since it can hide from the buyer and use it as an advantage for its own good (Iloranta 2008, 317-321). The open books principle is a common strategy with the long-term relations concerning accounting and reporting. One of the problems is that it is easy for the supplier to hide large amounts of money behind single numbers. Controlling human resources accounts is difficult due to the fact that reporting can prove to be distorted which is hard to identify by the buying organization (Iloranta 2008).
Effective Procurement Performance

Smith and Conway (1993) identified seven key success factors which influence procurement, namely; a clear procurement strategy, effective management information and control systems, development of expertise, a role in corporate management, an entrepreneurial and proactive approach, co-ordination and focused efforts. An eighth is fundamental; communicate 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 Leenders and Fearon (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, eprocurement, 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.
Lardenoije, van Raaij and van Weele (2005) asserted that basing on financial performance and neglecting non-financial performance cannot improve the procurement operations because only partial performance is considered. Realisation 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.

Christopher (2005) distinguished features of a responsive organization. Major transformations are; from functions to process, profit to performance, products to customers, inventory to information, and transactions to relationships. Critical measures of procurement performance need to be continuously monitored. The idea of ‘Key Performance Indicators’ (KPI) framework suggests that whereas there are many measures of procurement performance to be deployed in an organization, only a small number of critical dimensions contribute more than proportionately to success or failure. A balanced scorecard can provide guidance on critical areas where action may be needed to ensure achievement of goals. Three key outcomes of success are: better, faster, and cheaper. The goals combine customer-based measures of performance in terms of total quality with internal measures of resource and asset utilization. Benchmarking helps identify current best practice and then focuses on how processes could be re-engineered and managed to achieve excellence in critical procurement areas.

Emphasis should be on search for strategies that provide superior value in the eyes of customers seeking greater responsiveness and reliability. Van Weele (2006) maintained
that there is a link between procurement process, efficiency, effectiveness and performance. Procurement performance starts from purchasing efficiency and effectiveness in the procurement function in order to change from being reactive to being proactive to attain set performance levels in an entity. 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.

Procurement performance is not an end in itself but a means to control and monitor the procurement function. For any organization to change its focus and become more competitive, performance is a key driver to improving quality of services. Batenburg and Versendaal (2006) noted that use of inappropriate means can be a barrier to change and may lead to deterioration of procurement operations. Organizations which do not have performance means in their processes, procedures, and plans experience lower performance and higher customer dissatisfaction and employee turnover. Measuring procurement performance yields benefits to organizations such as cost reduction, enhanced profitability, assured supplies, quality improvements and competitive advantage. Electronic processes have replaced physical and paper-based processes. E-procurement moves tendering, negotiation and purchasing processes to websites. Improvement to a PE’s procurement performance can be realised through reduced costs and wider choice availed.

Methodology

This study used descriptive research design which involves gathering data that describe events and then organizes, tabulates, depicts, and describes the data. Descriptive studies
portray the variables by answering who, what, and how questions (Bernard, 2011). The study used a questionnaire to collect primary data.

Data analysis is the representation of data gathered during a study (Orodho, 2010). Data was analyzed using Statistical Package for Social Sciences (SPSS) version 22. Descriptive statistics was used to analyze the data in frequency distributions and percentages which were presented in tables and figures.

The study also used Analysis of Variance (ANOVA) to analyze the degree of relationship between the variables in the study. This provided an indication to the strength and direction of association between the variables. Multiple regression analysis was used to test relationships between the variables.

In this study, the statistical model was developed from the conceptual framework as follows: the dependent variable (DV) which in the present study is effective procurement performance in oil industry will take the variable \( Y \), and the coefficients of the independent variables (IV) denoted by \( X_1, X_2, \dots, X_6 \) were used to show the relationship of the independent variables and the dependent variable. Statistically, analysis has been done using the models:

\[
Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e
\]

Where

- \( Y \) is the dependent variable (Effective Procurement performance in oil industry)
- \( X \) is the set of three independent variables, i.e. \( X_1 \)– Information technology
X₂– Employee competence, X₃– Quality management systems, X₄– Supplier relationship management; βᵢ (i=1,2,3,4) are the parameters associated with the corresponding independent variable that are to be estimated (partial regression coefficients), β₀ is the intercept, ε is the error variability (error term)

Findings of the Study

Supplier Relationship Management

This study sought to find out how supplier relationship management influence effective procurement performance in oil industry in Kenya. The table below indicated the results of the findings:

<table>
<thead>
<tr>
<th>Supplier Relationship Management</th>
<th>Agree</th>
<th>Disagree</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>(%)</td>
<td>F</td>
</tr>
<tr>
<td>a) Vertical alliance between organization and suppliers</td>
<td>65</td>
<td>81.3</td>
<td>10</td>
</tr>
<tr>
<td>b) Horizontal alliance between</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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The respondents were asked to indicate the extent to which they agreed with the stated clauses on Supplier Relationship Management. According to the findings, the respondents agreed with 81.3%, that Vertical alliance between organization and suppliers. Again the respondents agreed with a 68.7% that Horizontal alliance between organization and suppliers; respondents agreed with 75% that there is Reciprocal alliance between organization and suppliers. Respondents agreed with 85% that the organization practice Information sharing, 77.5% of the Respondents agreed that Suppliers are involved in decision making.

**Regression Analysis**

The study conducted a multiple linear regression analysis so as to determine the relationship between the procurement performance and the four independent variables.

**Model Summary**

The four independent variables that were studied, explain 81.3% of the effective Procurement performance in oil industry as represented by adjusted R square. This
therefore means that other variables not studied in this research contribute 18.7% of the influence of effective procurement performance in the oil industry. Therefore, further research should be conducted to investigate the other variables and factors (18.7%) that effective procurement performance in the oil industry. The results of the model summary are summed in Table 2 below.

**Table 2: 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>.957(^a)</td>
<td>.809</td>
<td>.813</td>
<td>.555</td>
</tr>
</tbody>
</table>

\(^a\) Predictors: (constant), Information technology, Employee competence, Quality management systems and Supplier relationship management

**ANOVA**

Inferential statistics analysis of variance was employed for the study variables. Correlation tests were chosen in order to assess whether there was a relationship between the study variables. From the correlation analysis, the study found that there was a strong positive relationship between Information technology and procurement performance, where the correlation coefficients was 0.92 and a p-value of 0.003. The study also found that there was a strong positive relationship between Employee competence and procurement performance with correlation coefficients of 0.86 and p-value of 0.000. The study further established that there was a positive relationship between quality management systems and procurement performance with a correlation coefficient of 0.913 and p-value of 0.000. Lastly, the study found that there was a positive relationship between Supplier relationship management and procurement performance.
with a correlation coefficient of 0.931 and a p-value of 0.039.

### Table 3; Correlation of the study variables

<table>
<thead>
<tr>
<th></th>
<th>Procurement performance</th>
<th>Information technology</th>
<th>Employee competence</th>
<th>Quality management systems</th>
<th>Supplier relationship management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement</td>
<td>Pearson</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>performance</td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>Pearson</td>
<td>.92(*)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>technology</td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.003</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee</td>
<td>Pearson</td>
<td>.86(*)</td>
<td>.937(*)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>competence</td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>Pearson</td>
<td>.923(*)</td>
<td>.941(*)</td>
<td>.941(*)</td>
<td>1</td>
</tr>
<tr>
<td>management systems</td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.001</td>
<td>.005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplier</td>
<td>Pearson</td>
<td>.931(*)</td>
<td>.926(*)</td>
<td>.939(*)</td>
<td>.932(*)</td>
</tr>
<tr>
<td>relationship</td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>management</td>
<td>Sig. (2-tailed)</td>
<td>.039</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
</tbody>
</table>

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

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable. Statistically, analysis have been done using the models: $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + e$ Where $Y$ is the dependent variable (Effective Procurement performance in oil industry)

$X$ is the set of four independent variables, i.e. $X_1$– Information technology, $X_2$– Employee competence, $X_3$– Quality management systems and $X_4$– Supplier relationship management. As per the SPSS generated coefficient table 4.7, the equation $(Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + e)$ becomes:

$Y = 5.053 + 0.423X_1 + 0.419X_2 + 0.362X_3 + 0.323X_4 + e$

The regression co-efficient were as summarized in table 4. The possible value of $Y$ (effective procurement performance) when all independent variables are equal to zero is 5.053 which is constant. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in Information technology will lead to a 0.362 increase in effective procurement performance; this means that there is a significant relationship between Information technology and effective procurement performance. The $P$-value for Information technology was 0.020 and thus the relationship was significant.

A unit increase in employee competence will lead to a 0.423 increase in effective procurement performance; this means there is a significant relationship between employee competence and effective procurement performance and the $P$-value was 0.040 and thus the relationship was significant. A unit increase in quality management systems
will lead to a 0.419 increase in effective procurement performance; this means that there is a significant relationship between quality management systems and effective procurement performance and the $P$-value was 0.03 and thus the relationship was significant. Lastly, a unit increase in supplier relationship management will lead to a 0.323 increase in effective procurement performance; this means there is a significant relationship between Supplier relationship management and effective procurement performance in Kenya were the $P$-value was 0.000 and thus the relationship was significant. In conclusion the study found that Employee competence influences the effective procurement performance most followed by Quality management systems, Information technology and finally Supplier relationship management.
**Table 4: Regression Coefficient**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>(Constant)</td>
<td>5.053</td>
<td>3.061</td>
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<tr>
<td>Information technology</td>
<td>0.362</td>
<td>0.073</td>
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<tr>
<td>Employee competence</td>
<td>0.423</td>
<td>0.079</td>
</tr>
<tr>
<td>Quality management systems</td>
<td>0.419</td>
<td>0.058</td>
</tr>
<tr>
<td>Supplier relationship</td>
<td></td>
<td></td>
</tr>
<tr>
<td>management</td>
<td>0.323</td>
<td>0.039</td>
</tr>
</tbody>
</table>

**a. Effective procurement performance in Kenya**

**Summary of the Findings**

The study found that adoption of E-technology system on computerized tender process leads to better customer satisfaction. Also the study indicates that lead time management influences storage costs reduction. Training and career development influence procurement performance while training reduces the breach of contract and enhances motivation of employees.

The most important functions of procurement management is quality work and the ability to motivate procurement employees and promote their morale in organizations.
Recommendations of the study

The study recommends the following based on the findings and conclusions:

The study recommends that effective procurement performance should be measured using performance indicators such as lead time, order cycle time and customer satisfaction. From the summary and conclusions, the study recommends that organization needs training programmers’ on the issues of ICT. This will help to give guidelines on critical stages of implementation process.

The study also recommends that management must be committed to implementing the new work system and encourage staff to accept the new system. The study further recommends that the governments should consider offering additional training to the staff as this will help equip end users with required competence thus streamlining the implementation of E-procurement process.
REFERENCES


Appendix I: Questionnaire

Introduction
This questionnaire is designed to assist in collection of data on Determinants Of Effective Procurement Performance In Oil Industry In Kenya: A Case Of Kenya Pipeline Corporation. The information revealed by the respondents will be treated with a high degree of confidentiality. The respondents are also assured that this information is meant for academic purposes only.

SECTION A: GENERAL INFORMATION

1.1 Gender of the respondent
   Male [    ]
   Female [    ]

1.2 Age of the respondent
   Below 20 years [    ]
   21-29 years [    ]
   30-39 years [    ]
   40-49 years [    ]
   50 years and above [    ]

1.3 Indicate the Period which you have stayed/worked in the organization?
   0-5 years [    ]
   6-10 years [    ]
   11-15 years [    ]
   16-20 years [    ]
   20 Years and above [    ]

1.4 What is your level of education?
   Primary [    ]
   Secondary [    ]
   College diploma [    ]
   Degree [    ]
   Masters [    ]

SECTION B: INFORMATION COMMUNICATION & TECHNOLOGY
2.1. To what extent has the organization adopted E-technology on online tender to enhance stability of prices (Tick all that apply)
   a. Very large extent
   b. Large extent
   c. Moderate extent
   d. Small extent
   e. None

2.2. How has adoption of improved E-technology system on computerized tender process initiated better customer satisfaction? (Tick all that apply)
   a. Very large extent
   b. Large extent
   c. Moderate extent
   d. Small extent
   e. None

2.3. How does ICT application influence supply chain performance by increase of customer satisfaction in your organization? (Tick all that apply)
   f. Use of specialized software that allow manager to track inventory
   g. It leads to higher productivity
   h. Facilitates the managers to communicate with suppliers

2.4. How does lead time management influence reduce storage costs in your organization? (Tick all that apply)
   a. Helps to analyze routes and transportation modes available
   b. Most effective way of delivering goods in time
c. It increases efficiency [   ]

2.5. How does computerized selection process influence customer satisfaction in your organization?(Tick all that apply)
   a. Enables excellence of the products[   ]
   b. Facilitates after sales services, warrants[   ]
   c. Facilitates handling of customer complaints[   ]

SECTION C: EMPLOYEE COMPETENCY

Kindly indicate the extent to which you agree with the following statements to determine how employee competence affect effective procurement performance in oil industry in Kenya. Use the scale of: 1. Very large extent [   ] 2. Large extent [   ] 3. Moderate extent [   ] 4. Small extent [   ] 5. None [   ]

<table>
<thead>
<tr>
<th>Competence</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent has the organization provided professional skills to</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>enhance stability of prices</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How has the organization increased capability of individuals to</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>initiate better customer satisfaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How does training and career development influence supply chain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>performance by increase of customer satisfaction in your</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>organization</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>To what extent does training reduces the breach of contract and</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>motivation of employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTION D: QUALITY MANAGEMENT SYSTEMS

In your own opinion, indicate whether you agree or disagree with the following statements on the quality management systems in your place.

<table>
<thead>
<tr>
<th>No.</th>
<th>QUALITY MANAGEMENT SYSTEMS</th>
<th>Agree</th>
<th>Disagree</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Quality planning influence increase of profits in your organization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Quality planning influence reduce storage costs in your organization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>Internal control influence supply chain performance by increase of customer satisfaction in your organization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d)</td>
<td>Quality assurance lead to customer satisfaction in your organization</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION E: SUPPLIER RELATIONSHIP MANAGEMENT

In your own opinion, indicate whether you agree or disagree with the following statements on the supplier relationship management in your place.
### Supplier Relationship Management

<table>
<thead>
<tr>
<th>Agree</th>
<th>Disagree</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Vertical alliance between organization and suppliers
- Horizontal alliance between organization and suppliers
- Reciprocal alliance between organization and suppliers
- We practice Information sharing
- Suppliers are involved in decision making

### SECTION F: EFFECTIVE PROCUREMENT PERFORMANCE

6.1. Show the rate of change of number of satisfied customers for the last five years in your enterprise?

<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>&lt; 50,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>50,000 – 100,000</td>
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<td></td>
</tr>
<tr>
<td>100,000 - 150,000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 150,000</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Any other (specify)</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

6.2 What is the rate of change in profits in the last five years in your organization?

<table>
<thead>
<tr>
<th>Category</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
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</thead>
<tbody>
<tr>
<td>&lt; Ksh.500,000</td>
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<tr>
<td>Ksh.500,000 – Ksh.1,000,000</td>
<td></td>
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<td>Ksh.1,000,001 - Ksh.1,500,001</td>
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<td></td>
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</table>
6.3 What is the amount of change in cost reduction in your organization the last five years?

<table>
<thead>
<tr>
<th>Category</th>
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<th>2013</th>
<th>2014</th>
<th>2015</th>
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<tbody>
<tr>
<td>&gt; Ksh.1, 500,001</td>
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<tr>
<td>&lt; Ksh.500,000</td>
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<tr>
<td>Any other (specify)</td>
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<table>
<thead>
<tr>
<th>Category</th>
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<th>2014</th>
<th>2015</th>
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<td>Ksh.1,000,001 - Ksh.1, 500,001</td>
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<td>&gt; Ksh.1, 500,001</td>
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<td>Any other (specify)</td>
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</table>
Appendix II: Budget Estimates

<table>
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<tr>
<th>ITEM</th>
<th>COST (KSHS)</th>
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<tbody>
<tr>
<td>1) Stationery</td>
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</tr>
<tr>
<td>a) Writing Materials</td>
<td>1,000/=</td>
<td></td>
</tr>
<tr>
<td>b) Pens and pencils</td>
<td>100/=</td>
<td></td>
</tr>
<tr>
<td>c) Files, Rulers and erasers</td>
<td>1000/=</td>
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</tr>
<tr>
<td>Sub total</td>
<td>2,100/=</td>
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</tr>
<tr>
<td>2) Typesetting</td>
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</tr>
<tr>
<td>a) Typing of PROJECT</td>
<td>3,000/=</td>
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<tr>
<td>b) Typing of final report</td>
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<tr>
<td>c) Printing services</td>
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<td>Sub total</td>
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<td>3) Traveling Expenses</td>
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<tr>
<td>a) Piloting</td>
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<tr>
<td>b) Data collection</td>
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<tr>
<td>Sub total</td>
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<td>4) Binding Services</td>
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<tr>
<td>a) PROJECT spiral binding</td>
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<tr>
<td>b) Final report binding</td>
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<tr>
<td>Sub total</td>
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</tr>
<tr>
<td>5) Computer Services</td>
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<tr>
<td></td>
<td>4,000/=</td>
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<td>6) Data analysis</td>
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<td>6,000/=</td>
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<td>7) Miscellaneous</td>
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<td>Sub total</td>
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<tr>
<td>Grand total</td>
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### Appendix IV: Time Schedule

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<tr>
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<th>Wk 3</th>
<th>Wk 4</th>
<th>Wk 5</th>
<th>Wk 6</th>
<th>Wk 7</th>
<th>Wk 8</th>
<th>Wk 9</th>
<th>Wk 10</th>
<th>Wk 11</th>
<th>Wk 12</th>
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</thead>
<tbody>
<tr>
<td>Topic selection &amp; Approval</td>
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<tr>
<td>Supervisor Appointment</td>
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<td>Write A concept note</td>
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<td>General Literature Survey</td>
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<tr>
<td>Draft reviews by Supervisor</td>
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<td></td>
<td>xx</td>
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<tr>
<td>Draft PROJECT ready for Presentation</td>
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<td></td>
<td></td>
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<tr>
<td>Presentation of PROJECT to University</td>
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