



**DETERMINANTS OF COLLABORATIVE PROCUREMENT PRACTICES ADOPTION IN THE ENERGY SECTOR IN KENYA: A CASE STUDY OF KENYA ELECTRICITY TRANSMISSION COMPANY LIMITED**

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**ABSTRACT**

*The purpose of this study was to establish determinants of collaborative procurement practices adoption in the energy sector in Kenya focusing on Kenya Electricity Transmission Company Limited. The study used a descriptive research design to enable the researcher to depict and describe situations as accurately as possible the way they exist in the target population. A sample size of 154 was arrived at by calculating the target population of 256 with a 95% confidence level. The main data collection instrument for the study was a structured questionnaire consisting of closed ended questions. The data was entered into the latest version of SPSS (Version 25.0) ready for analysis. The study concluded that Policy Framework had a positive and significant effect on adoption of collaborative procurement practices. The study further concluded that budgetary allocation and Strategic leadership had effect on the adoption of collaborative procurement practices in KETRACO. Further, the study found that transaction costs reduction, market intelligence and shared expertise or cross functional team influenced the adoption of collaborative procurement practices in KETRACO. The study concluded that Policy Framework had the greatest effect on the adoption of collaborative procurement practices in Kenya Electricity Transmission Company Limited, followed by communication/knowledge sharing then technology alignment while Stakeholder involvement had the least effect to the adoption of collaborative procurement practices in Kenya Electricity Transmission Company Limited. The study recommended that KETRACO should train procurement staff to improve on their skills particularly on tender evaluation, chose of evaluation criteria, tender award and management of the contracts. In addition, the company should inculcate team building spirit among the staff and encourage them to enhance communication for information sharing on technological changes in products in the market. This would assist Procurement Function monitor the procurement plan and obtain best value for money.*

**Key Words:** Policy Framework, Stakeholder Involvement, Communication, Knowledge Sharing, Technology Alignment, Collaborative Procurement

## INTRODUCTION

Procurement is now more complex with various procurement routes depending on the client, the scale and the sector, the stage of maturity and their attitude to risk. Today the new source of business competition lies outside the walls of organizations and is determined by how effectively companies link their operations with their supply chain partners such as suppliers, distributors, wholesalers, retailers and end customers (Knoke, 2018). Increased competition and the widespread availability of web-based technologies have led to a rise in supply chain collaboration across a wide range of industry sectors. In the recent past, purchasing firms have utilized numerous tools in their efforts to work more closely with suppliers. Key to these efforts are dimensions of collaboration that facilitate close relationships. Collaborative procurement practices are means of delivering greater efficiencies through combined purchasing power. With public bodies under pressure to deliver more for less, collaborative procurement practices have become embedded in the procurement process (Hakansson, 2015).

In the developed countries, collaborative approaches have been shown to deliver a wide range of benefits which enhance competitiveness and performance in terms of better cost management, improved delivery time, improved resource management, improved risk management and delivering incremental business value and innovation (Lysons & Farrington, 2016). Organizations that have incorporated supply chain collaboration among their chain member realizes improved forecast, more accurate and timely information, reduced costs, reduced inventory and improved customer service in their business operations. Collaborative public procurement, either through joint buying by distinct procuring entities, or through taking credit mechanisms such as framework agreements, falls within an interesting intersection of public procurement law and competition law. However, to the extent that public procurement marketplaces in advanced. There is

increasing international interest in collaborative procurement arrangements in the public sector in countries such as Canada, Finland, Germany, the Netherlands, the UK and the US (Dodgson, 2018).

In developing countries, procurement is increasingly recognized as essential in-service delivery (Basheka & Bisangabasaija, 2010), and it accounts for a high proportion of total expenditure. For example, procurement accounts for 58% in Angola, 40% in Malawi and 70% of Uganda's public spending (Wittig, 1999; Government of Uganda, 2006) as cited in Basheka and Bisangabasaija (2010). The increasing interdependence of customers and suppliers is evident as it is a greater premium placed on knowledge. There is a growing focus on branding and people rather than goods and capital where reputational risk was a concern. The balance between cost and value was getting greater recognition as strategic organisational relationships and alliances addressed the challenges of integration and de-integration in supply chains through increased globalization, outsourcing and E-business offering more flexible choices.

In Africa, collaborative public procurement practices may involve pooling of procurement volumes by distinct procuring entities and by way of common framework agreements. These practices are also encouraged by various government laws for reasons of public interest. For instance, Public Procurement and Asset Disposal Act, 2015, provide for framework agreement as a method of procurement. Collaborative public procurement is significant for strategic items. This either through joint buying by distinct procuring entities, or through piggybacking mechanisms such as framework agreements, falls within an interesting intersection of public procurement law and competition law (Keitany, Kwasira, Boit & Chelule, 2017).

In Kenya, growing interdependency as a result of more complex, high risk, business together with increasing global trade is focusing industry and government on the need to invest in developing more integrated business relationships. The

research detailed within the report indicates that drivers and trends are focused on building confidence in outcomes as opposed to the historical approach focused on cost reduction. As the survey discovered, cost reduction featured lowest in terms of collaborative working drivers. The challenge for organisations is in building commitment and sustainable relationships which ensure they do what they promise. Organisations managing complex and extended supply chains rate managing risk as a key factor; the research also highlights that business relationship risk is now an additional major consideration (Nyerere & Obamba, 2018).

Kenya Electricity Transmission Company Limited (KETRACO) was established on 2<sup>nd</sup> December 2008 and registered under the Companies Act, Cap 486 pursuant to Sessional paper No. 4 of 2004 on Energy. KETRACO is 100% Government owned and being a state corporation, it is regulated under the State Corporations Act, Cap 446. The Company was established to develop new high voltage electricity transmission infrastructure that will form the backbone of the National Transmission Grid, in line with Kenya Vision 2030. Its core business is to plan, design, build and maintain electricity transmission lines and associated substations. The voltage rating of the transmission lines includes 132kV, 220kV, 400kV and 500kV (HVDC) (Njeri, 2013).

### **Statement of the Problem**

Collaborative procurement practices which are expected to result in fewer tendering exercises, which leads to lower administrative costs and allows public organizations to spend more time focusing on the specialized purchases that are unique to them have not been well adopted in the energy sector (Wambua & Omwenga, 2017). Collaborative procurement is increasingly on the agenda in many countries, yet problems with collaboration occur. Collaborative procurement has been ineffective due to the changing demographic patterns has brought about narrowing of the arc between developed and developing areas. (Shalle, Guyo & Amuhaya, 2014).

In energy sector, there is a shift of economic power to east and south it will be coupled with increasing access to lethal and disruptive technologies. Unprecedented wide spread aging populations, growth of the global middle class whilst developing countries having advantages from youth premium. Urban centres 4.9 billion people generating 80% growth but with demand for food increased by 35%. Half the world will be under water stress as demand increases 40% and energy demand up 50%. However as far as energy is concerned new technologies (fracking/shale) could change power balance (Nyerere & Obamba, 2018). Although the potential performance benefits have made collaboration a popular supply chain practice, surveys show its complex structure has left Kenyan public-sector institutions struggling with collaborative procurement.

In Kenya Electricity Transmission Company Limited, adoption of collaborative procurement practices has not been well implemented. Even though the firms have played a major role in the development of the county through generation and distribution of electricity in Kenya for consumption in other production sectors such as manufactory industries. Consequently, Kenya's Gross Domestic Product (GDP) grew at 5.6% in 2015 compared to 5.3% in 2014 (KETRACO Annual report, 2016). Despite these benefits, these firms have still struggled to engage in collaboration procurement due to struggles with partner selection and matching the needs and goals of independent organizations. Lack of communication, poor planning, lack of commitment, lack of trust, lack of co-operation and poor performance were some of the challenges that are facing collaborative procurement practices in KETRACO as evidenced by decreased information and knowledge sharing that has hindered partners to respond quickly to shifts in customer demands and reduce cycle time by removing some of the obstacles to responsiveness (Wambua & Omwenga, 2017).

Previously, researchers have highlighted the multidimensional nature of collaboration such as study by Kamau (2013) focused on the extent to which manufacturing have adopted buyer-communication/knowledge sharings, Kemunto and Ngugi (2014) examined the influence of strategic buyer supplier alliance on procurement performance in private manufacturing organizations a case of Glaxo Smithkline, Gichuru, Iravo and Arani (2015) collaborative supply chain practices on performance of food and beverages companies: A case study of Del Monte Kenya Ltd, Mugarura, Ntayi and Muhwezi (2010) buyer-supplier collaboration, adaptation, trust, commitment and relationship continuity of selected private manufacturing firms in Kampala, Barasa, Simiyu and Iravo (2015) the impact of supply chain collaboration practice on the performance of steel manufacturing companies in Kenya and Boraya (2013) collaborative public procurement and performance among state corporations in Kenya. These studies identified the challenges that were facing collaborative procurement practices but not in Kenya Electricity Transmission Company Limited. This study was therefore designed to fill this knowledge gap through establishing the determinants of collaborative procurement practices adoption in the energy sector in Kenya: a case study of Kenya Electricity Transmission Company Limited.

### **Objectives of the Study**

The purpose of this study was to establish determinants of collaborative procurement practices adoption in the energy sector in Kenya focusing on Kenya Electricity Transmission Company Limited. The specific objectives were:-

- To establish the influence of policy framework on adoption of collaborative procurement practices in KETRACO
- To assess the influence of stakeholder involvement on adoption of collaborative procurement practices in KETRACO
- To determine the influence of communication/knowledge sharing on adoption

of collaborative procurement practices in KETRACO.

- To establish the influence of technology alignment on adoption of collaborative procurement practices in KETRACO

## **LITERATURE REVIEW**

### **Theoretical Review**

#### **Socio-Economic Theory of Compliance**

Lyons (1986) propounded the socio-economic theory of compliance by integrating economic theory with theories from psychology and sociology to account for moral obligation and social influence as determinants of individuals' decisions on compliance. Lisa (2010) also adds that psychological perspectives provide a basis for the success or failure of organizational compliance. According to Lyons (1986), the socio-economic theory postulates that the organization is responsible to disclose its practices to the stakeholders, especially to the private and justify its existence within the boundaries of society (Hui *et al.*, 2011).

#### **Strategic Choice Theory**

The early empirical studies on the relationship between organizational structure and situational factors such as technology by Blau, Hage and Aiken, Hal, Lawrence, and Lorsch in the United States and Pugh and Woodward in Britain provided material for development of models that helped the Strategic choice theory (SCT) to advance (Child, 1972). According to these models, the goal of the organizations is to achieve high performance standards and increase the efficiency to the limits of economic constraints. In these studies, little attention was paid to situational (contextual) factors for example, environment, technology, and scale of operation and the agency of choice any agent in the organization who has the power to direct the organization managers (Child, 1972).

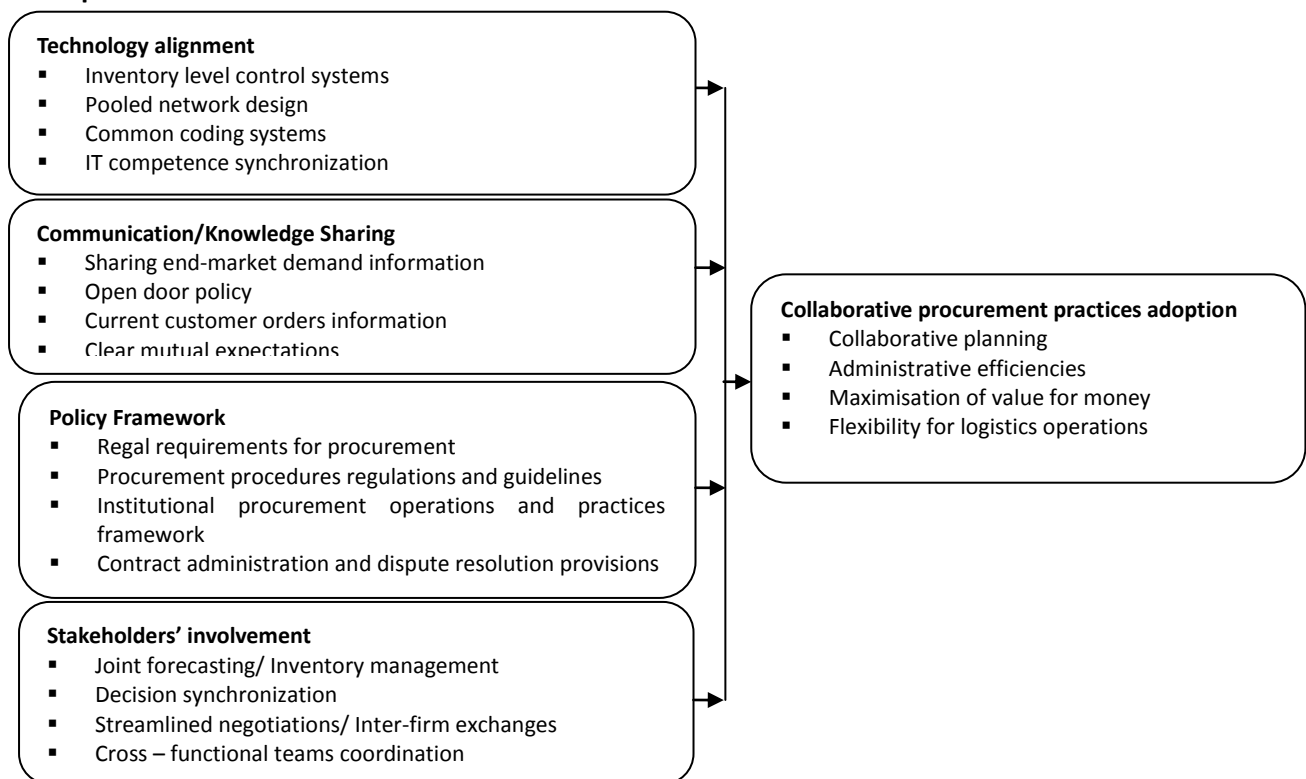
## Resource Based View Theory

It was Penrose who established the foundations of the resource-based view as a theory (Roos & Roos, 1997). Resource Based View theory refers to the firm's internal value creation through its resources and capabilities. Value can be created from communication/knowledge sharing management through learning mechanisms, routines and experience. RBV applies the aspects of external and internal social relations, power distribution and the level of dependency on external counterparts. It aims at the optimization of the continuity of the business and the autonomy of a firm. RBV are important to the study of supplier management, as superior performance achieved in supply chain activities relative to competitors, would explain how these activities can be supported by suppliers and how supplier selection/evaluation/development can contribute to the supply chain core competences (Wamalwa, 2014).

## Systems Theory

The systems theory established in 1968 by Ludwig Von Bertalanffy provides inside view of organizations. Ludwig argued that system theory focused on the study of organization activities that lead to high performance. Scott (2015) in their finding argued that organizational ownership is collective responsibility bottom up. Systems theory provides an analytical framework for viewing the activities of an organization. Marquis and Huston (2009) argued that leadership and management support recognize how system theory shapes a working environment for organization staff. Northouse (2018) in a study on management theories and concepts at the workplace pinpoint that systems theory is instrumental for leadership and management support to examine activities at workplace.

## Conceptual Framework



Independent variables

Dependent variable

Figure 1: Conceptual Framework

### **Technology Alignment**

Woodward's typology is useful for translating the influence of technology on organizational form into a collaborative procurement context. While in collaborative procurement there is no production process, technology does play a role in terms of the technology of the buying need: the technology incorporated in the goods and services bought. This is the essence of collaborative procurement: together trying to fulfill a need in a more efficient and effective way than when acting alone. In this way, buying need typology, referring to three situations that vary in complexity of the buying need (products and/or services) (Barasa *et al*, 2014).

### **Communication/Knowledge Sharing**

Effective communication is a critical component of buyer-communication/knowledge sharing. Procurement professionals utilize a variety of media to communicate with suppliers, including phone, fax, face-to-face, mail, email, Internet, and electronic data interchange (EDI) thus improving procurement performance. Information sharing is regarded as a major collaboration form in ABS supply chain literature. The supply chain is a complex network that involves a lot of local decisions and activities. None of the members in the supply chain can have a full picture of the networked operations. They are therefore facing uncertainties/incorrect decisions when trading with each other in the network.

### **Policy Framework**

Policies, laws, regulations and guidelines that provide procedures followed when implementing collaborative procurement contracts (Muge, 2009). The public procurement regulatory framework dictates that contracts must be drawn carefully involving all stakeholders for completeness so as to avoid unnecessary deviations (Wamalwa, 2014). Sari (2008) in his findings observes that it is possible to design collaborative public contracts that are robust within government policy regulatory framework to enhance organizational performance.

Compliance with applicable obligations can enhance collaborative procurement practice.

### **Stakeholders Involvement**

Effective collaborative procurement calls for involvement and support from each of the stakeholders. The members must also operate on agreed goals and performance measures while implementing appropriate structures to foster collaboration. Thus, the members need to be aligned. Being aligned refers to the development and governance of roles and responsibilities across supply chain members (Wiengarten *et al.*, 2010).

### **Empirical Review**

#### **Technology Alignment**

Sogand, Mujtaba and Mohammad Reza (2014) did a study on collaborative procurement in construction projects performance measures, case study: partnering in Iranian construction industry. Partnering performance is affected by two factors: Project performance and partner's performance. One of the main criteria to assess is whether the motivations for entering into partnering has been achieved at the end or not. However, application and generalization of construction partnering in Iran is still in its inception. There are few comprehensive research studies focused on objective, reliable and practical partnering performance results in construction industry.

#### **Communication/Knowledge Sharing**

Mugarura *et al* (2010) valued buyer-supplier collaboration, adaptation, trust, commitment and relationship continuity of selected private manufacturing firms in Kampala. A quantitative cross-sectional survey was conducted. Factor, Correlation and regression analyses were used in data analysis. The results indicated a significant positive relationship between buyer-supplier collaboration and relationship continuity. Results also indicated that adaptation, trust and commitment are significant predictors of relationship continuity and collaboration also

positively predicts adaptation, trust and commitment.

### **Policy Framework**

Per Erik and Mats (2011) assessed the effects of cooperative procurement procedures on construction project performance: A conceptual framework. Based on a comprehensive literature review, we put forward propositions suggesting that cooperative procurement procedures (joint specification, selected tendering, soft parameters in bid evaluation, joint subcontractor selection, incentive-based payment, collaborative tools, and contractor self-control) generally have a positive influence on project performance (cost, time, quality, environmental impact, work environment, and innovation).

### **Stakeholders Involvement**

Kemunto and Ngugi (2014) examined the influence of strategic buyer supplier alliance on procurement performance in private manufacturing organizations a case of Glaxo Smithkline. A case study design was used for this study and targeted 100 management staff of Glaxo Smithkline. The findings of the study revealed that strategic buyer supplier alliance influences procurement performance. The study indicated that governance structure was the main factor in the relationship between procurement performance and strategic buyer supplier alliance.

### **METHODOLOGY**

The study used a descriptive research design to enable the researcher to depict and describe situations as accurately as possible the way they exist in the target population. The population of this study comprised of the Procurement Department, Finance Department, Logistics, ICT Department, Operation Department and the Stores Department at Kenya Electricity Transmission Company Limited Nairobi in Kenya comprising of 256 respondents. A sample size of 154 was arrived at by calculating the target population of 256 with a 95% confidence level and an error of 0.05. Data was collected through administration of questionnaires. Data

processing and analysis comprised of categorizing, manipulation and summarizing of data in order to obtain answers to research questions (Kothari, 2004). Data preparation was done on completed questionnaires by editing and then coding. The data was entered into the latest version of SPSS (Version 25.0) ready for analysis. The multiple regression model generally assumed the following equation;

$$Y_s = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;  $Y_s$  = performance of construction firms

$\beta_0$  = Constant

$\beta_1, \beta_2, \beta_3$  and  $\beta_4$  = Regression coefficients

$X_1$  = Technology alignment

$X_2$  = Communication/knowledge sharing

$X_3$  = Policy Framework

$X_4$  = Stakeholder involvement

$\varepsilon$  is the error term.

## **RESULTS**

### **Policy Framework**

The study sought to establish the influence of policy framework on adoption of collaborative procurement practices in KETRACO. The respondents were asked to indicate the extent to which policy framework influence adoption of collaborative procurement practices in KETRACO. From the findings, the respondents indicated that policy framework influenced the adoption of collaborative procurement practices in KETRACO in a great extent (37.2%), in a very great extent (31.9%), in a moderate extent (21.8%) and in a low extent (6.1%). This showed that policy framework influenced the adoption of collaborative procurement practices in KETRACO greatly. This concurred with Yukl (2012) who studied on procurement policies in public procurement and found that the implementation of enhanced Institutional framework and management capacity for mainstreaming and integration into the public financial management system was long overdue.



Further, the researcher asked to tell the extent to which various aspects of policy framework influenced adoption of collaborative procurement

practices in KETRACO. Their replies were shown in table 1.

**Table 1: Policy Framework Aspects Influencing Adoption of Collaborative Procurement Practices**

	Mean	Std. Dev.
Strategic leadership	4.292	0.863
Coordination along the supply chain	3.832	0.789
Relationship orientation/ Stakeholder involvement	3.469	0.568
Development and approval of the proposal plan	2.531	0.568
Budgetary allocation	4.407	0.752

From the findings, the respondents indicated that Budgetary allocation as expressed by a mean of 4.407 and Strategic leadership as expressed by a mean of 4.292 had a great effect on the adoption of collaborative procurement practices in KETRACO. Moreover, the respondents indicated that Coordination along the supply chain as expressed by a mean of 3.832 also influenced the adoption of collaborative procurement practices in KETRACO greatly. This was in line with a study by Apiyo and Mburu (2014) on factors affecting procurement planning in county governments in Kenya which found that creating a functional management or regulatory body and strengthening the institutional development capacity had a bearing on organizational performance. Nevertheless, the respondents indicated that Relationship orientation/ Stakeholder involvement as expressed by a mean of 3.469 and Development and approval of the proposal plan as expressed by a mean of 2.531 had a moderate effect on the adoption of collaborative procurement practices in KETRACO. This concurred with Abbas and Asghar (2010) findings that it is necessary for governments to enhance efficient procurement operations and practices and that, enforcement of the public procurement market and putting in place efficient and effective contract administration and dispute resolution provisions reforms are necessary for the national and county governments.

On respondent's view, the respondents reported that the public procurement regulatory framework dictated that contracts must be drawn carefully

involving all stakeholders for completeness so as to avoid unnecessary deviations and that compliance with applicable obligations can enhance collaborative procurement practice. Further, the respondents indicated that creating a functional management or regulatory body and strengthening the institutional development capacity had a bearing on organizational performance. This concurred with Yukl (2012) who studied on procurement policies in public procurement and found that the implementation of enhanced Institutional framework and management capacity for mainstreaming and integration into the public financial management system was long overdue.

**Stakeholder Involvement**

Further, the study sought to assess the influence of Stakeholder involvement on adoption of collaborative procurement practices in KETRACO.

The respondents were requested to indicate the extent to which Stakeholder involvement influenced the adoption of collaborative procurement practices in KETRACO. From the results, the respondents revealed that Stakeholder involvement influence the adoption of collaborative procurement practices in KETRACO moderately as shown by 41.6%, greatly as shown by 23.0%, very greatly as shown by 18.6% and lowly as shown by 16.8%. This showed that Stakeholder involvement influenced the adoption of collaborative procurement practices in KETRACO moderately. This correlated with Marquis and Huston (2009) who points out that effective collaborative procurement calls for involvement and support

from each of the stakeholders where the members must also operate on agreed goals and performance measures while implementing appropriate structures to foster collaboration.

The respondents were also asked to indicate the extent to which various aspects of Stakeholder involvement influence the adoption of collaborative procurement practices in KETRACO. Their answers were presented in Table 2.

**Table 2: Stakeholder Involvement Aspects Influencing Adoption of Collaborative Procurement Practices**

	Mean	Std. Dev.
Shared expertise/Cross functional team	4.053	0.854
Market intelligence	3.964	0.876
Joint insurance	2.548	0.582
Transaction costs reduction	4.106	0.806
Financial risks allocation	3.805	0.854

The respondents indicated that transaction costs reduction as illustrated by a mean score of 4.106, shared expertise or cross functional team as illustrated by a mean score of 4.053 and market intelligence as illustrated by a mean score of 3.964 greatly influence the adoption of collaborative procurement practices in KETRACO. These findings agreed with Muge (2009) who argues that when firms are working closely together and sharing potentially sensitive information, they need to have the confidence that their partner. Therefore, trust is key element for long-term collaborative arrangements. Firms must understand that they have the responsibility to be mindful that the knowledge they gain from partners is private and not to be shared. Trust is necessary not only for a collaborative procurement to exist, but for it to thrive.

Further the respondents indicated that financial risks allocation as illustrated by a mean score of 3.805 has a great influence on the adoption of collaborative procurement practices in KETRACO while joint insurance as illustrated by a mean score of 2.548 lowly influences the adoption of collaborative procurement practices in KETRACO. These findings correlate with Shalle, Guyo and Amuhaya (2014) who argues that if in a collaboration initiative one organization is larger than others in terms of resources and buying volume, this organization tends to lead the buying of all products or services, as they tend to have access to resources and more expertise.

On respondent's view, the respondents reported that the members must also operate on agreed goals and performance measures while implementing appropriate structures to foster collaboration. Further, the respondents indicated that effective collaboration requires a high degree of commitment and trust between members. Finally, the respondents indicated that dimension impacts information sharing, but it also has an effect on incentive alignment since different channel members are responsible for different types of decisions. These findings correlated with Marquis and Huston (2009) who points out that effective collaborative procurement calls for involvement and support from each of the stakeholders where the members must also operate on agreed goals and performance measures while implementing appropriate structures to foster collaboration

### **Communication or Knowledge Sharing**

The study sought to determine the influence of communication/knowledge sharing on adoption of collaborative procurement practices in KETRACO. The respondents were requested to indicate the extent to which communication or knowledge sharing influence the adoption of collaborative procurement practices in KETRACO. The respondents indicated that communication/knowledge sharing greatly influence the adoption of collaborative procurement practices in KETRACO as shown by 39.8% and moderately as shown by 37.2%. The

respondents further indicated that communication/knowledge sharing influence the adoption of collaborative procurement practices in KETRACO very greatly as shown by 14.2% and lowly as shown by 8.8%. This reveals that communication or knowledge sharing greatly influence the adoption of collaborative procurement practices in KETRACO. This is consistent with Muge (2009) who notes that the flow of information in an organization is the blood life of any business

operating unit irrespective of its size. The ABS literature revealed that the information sharing in supply chain context can be modelled as two major categories: sharing demand information and sharing supply information.

Further the respondents were asked to indicate the extent to which various aspects of communication or knowledge sharing influence the adoption of collaborative procurement practices in KETRACO. Their indications were presented in Table 3.

**Table 3: Communication or Knowledge Sharing Aspects Influencing Adoption of Collaborative Procurement Practices**

	Mean	Std. Dev.
Sharing end-market demand information	4.097	0.866
Open door policy	3.690	0.846
Current customer orders information	2.487	0.584
Clear mutual expectations	4.027	0.871
Periodical talkfest (Meetings)	4.159	0.819
Current capacity information sharing	2.805	0.610

As per the findings, the respondents indicated that periodical talkfest (Meetings) as shown by an average of 4.159, sharing end-market demand information as shown by an average of 4.097, clear mutual expectations as shown by an average of 4.027 and open-door policy as shown by an average of 3.690 influence adoption of collaborative procurement practices in KETRACO greatly. Further the respondents indicated that current capacity information sharing as shown by an average of 2.805 influence adoption of collaborative procurement practices in KETRACO in a moderate extent and that current customer orders information as shown by an average of 2.487 influence adoption of collaborative procurement practices in KETRACO in a low extent. These findings agree with Tukamuhabwa (2013) study results that showed a significant reduction in the cost of the supply chain and each of its agents due to the sharing of breakdown information. In addition, the analysis found that the significance of sharing breakdown information was getting larger with the increase of the disruption frequency. Despite the possible confidentiality of the disruption problem to

the factory agent, the results showed that the factory will benefit most in cost reduction, if the breakdown information is shared.

On respondents' opinions on the ways in which communication or knowledge sharing influenced adoption of collaborative procurement practices in KETRACO, they indicated that it facilitated the exchange of data regarding sales, customer needs, market structures, and demand levels. It also reduces incidence of the bullwhip effect, early problem detection, faster response, and trust building. The respondents also indicated that information sharing reduced uncertainty levels and thereby improves the degree to which firms trust one another. These findings correlated with Shalle, Guyo and Amuhaya (2014) who argues that if in a collaboration initiative one organization is larger than others in terms of resources and buying volume, this organization tends to lead the buying of all products or services, as they tend to have access to resources and more expertise.

### Technology Alignment

The study further sought to establish the influence of technology alignment on adoption of collaborative procurement practices in KETRACO. The respondents were requested to indicate the extent to which technology alignment influenced the adoption of collaborative procurement practices in KETRACO. From the findings, the respondents indicated that technology alignment influence the adoption of collaborative procurement practices in KETRACO in a great extent as shown by 41.6%, in a very great extent as shown by 23.9% and in moderate great extent as shown by 18.6%. The respondents further showed that technology alignment influence the adoption of

collaborative procurement practices in KETRACO in a low extent as shown by 15.9%. This shows that technology alignment influences the adoption of collaborative procurement practices in KETRACO in a great extent. This concurs with Georghiou *et al.* (2014) who views ICT as the enabling system that facilitate the processing and flow of information as well as the technologies used in the actual processing that goes on to produce a product or to provide a service to customers.

The researcher further asked the respondents to indicate the extent to which various aspects of Technology alignment influenced the adoption of collaborative procurement practices in KETRACO. Their responses were presented in Table 4.

**Table 4: Technology Alignment Aspects Influencing Adoption of Collaborative Procurement Practices**

	Mean	Std. Dev.
Pooled network design	3.743	0.842
Process automation	2.407	0.545
Common coding systems	3.911	0.950
Common coding systems	4.168	0.767

The respondents revealed that Common coding systems as indicated by a mean of 4.168 and common coding systems as indicated by a mean of 3.911 influenced the adoption of collaborative procurement practices in KETRACO greatly. This correlated with Wamalwa (2014) who states that ensuring the quality of shared information has become a critical issue of effective Supply Chain Management supported that internet or internet tool can facilitate information sharing and more collaboratively with their partners.

The respondents indicated that Pooled network design as indicated by a mean of 3.743 influences the adoption of collaborative procurement practices in KETRACO greatly while process automation as indicated by a mean of 2.407 influences the adoption of collaborative procurement practices in KETRACO lowly. This was in line with Barasa *et al.* (2014) who found that there was a significant relationship between financial managers and available technology. The study's findings found that a positive relationship

exist between the independent variables and dependent variable. Full implementation of IFMIS will support leadership and management timely and required information for decision making.

Further on the ways in which technology alignment influence adoption of collaborative procurement practices in KETRACO, the respondents indicated that it helps to produce, manipulate process, store, communicate, and/or disseminate information. From these three definitions and that technology alignment enables system that facilitate the processing and flow of information as well as the technologies used in the actual processing that goes on to produce a product or to provide a service to customers. This concurs with Georghiou *et al.* (2014) who views ICT as the enabling system that facilitate the processing and flow of information as well as the technologies used in the actual processing that goes on to produce a product or to provide a service to customers.

### Adoption of Collaborative Procurement Practices

The study also requested the respondents to indicate the trend of the various aspects of

adoption of collaborative procurement practices for the last five years. Their responses are presented in Table 5.

**Table 5: Trend of Adoption of Collaborative Procurement Practices Aspects**

	Mean	Std. Dev.
Collaborative planning	2.451	0.567
Administrative efficiencies (streamlined procurement processes)	3.628	0.601
Development and optimization of standards	4.142	0.789
Standardisation and quality control	3.903	0.866
Maximisation of value for money	4.221	0.788
Flexibility for logistics operations	4.204	0.847
Reliability of delivery and operations	3.841	0.819
Better match to market capacity	3.204	0.734

As per the findings, the respondents indicated that maximization of value for money as expressed by a mean of 4.221, flexibility for logistics operations as expressed by a mean of 4.204, development and optimization of standards as expressed by a mean of 4.142, standardization and quality control as illustrated by a mean of 3.903, reliability of delivery and operations as illustrated by a mean of 3.841 and administrative efficiencies (streamlined procurement processes) as illustrated by a mean of 3.628 have improved for the last five years. The respondents further indicated that better match to market capacity as illustrated by a mean of 3.204

and collaborative planning as illustrated by a mean of 2.451 had been constant for the last five years. These findings are consistent with Forgues and Koskela (2009) who established the influence of a collaborative procurement approach using integrated design in construction on project team performance and found that traditional procurement processes reinforce socio-cognitive barriers that hinder team efficiency. He also illustrates how new procurement modes can transform the dynamic of relationships between the client and the members of the supply chain and have a positive impact on team performance.

### Multiple Regression Analysis

**Table 6: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.827	0.684	0.672	2.298

The outcome of table 6 found that adjusted R-Square value (coefficient of determination) is 0.672, which indicates that the independent variables (policy framework, stakeholder involvement, communication / knowledge sharing and

technology alignment) explain 67.2% of the variation in the dependent variable (adoption of collaborative procurement practices). This implied that there are other factors that influences the adoption of collaborative procurement practices attributed to 32.8% unexplained.

**Table 7: Analysis of Variance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1268.88	4	317.220	58.431	.000
	Residual	586.33	108	5.429		
<b>Total</b>		<b>1855.21</b>	<b>112</b>			

The results shown in Table 7 revealed that p-value was 0.000 and F calculated was 58.431. Since the p-value was less than 0.05 and F-calculated was greater than F-critical (2.2984), then the overall model was statistically significant.

Model coefficients provide unstandardized and standardized coefficients to explain the direction of the regression model and to establish the level of significance of the study variables. The results were captured in Table 8.

**Table 8: Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
	(Constant)	0.951	0.217		
Policy Framework	0.882	0.352	0.913	2.506	.014
Stakeholder involvement	0.633	0.281	0.717	2.253	.026
Communication/Knowledge Sharing	0.799	0.196	0.834	4.077	.000
Technology alignment	0.713	0.233	0.738	3.060	.003

As per the SPSS generated table above, the equation ( $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$ ) becomes:

$$Y = 0.951 + 0.882X_1 + 0.633X_2 + 0.799X_3 + 0.713X_4$$

The findings showed that if all factors (policy framework, stakeholder involvement, communication/knowledge sharing and technology alignment) were held constant at zero adoption of collaborative procurement practices will be 0.951. The findings presented also show that taking all other independent variables at zero, a unit increase in the policy framework would lead to a 0.882 increase in the score of adoption of collaborative procurement practices. This variable was significant since the p-value 0.014 was less than 0.05. This concurs with Yukl (2012) who studied on procurement policies in public procurement and found that the implementation of enhanced Institutional framework and management capacity for mainstreaming and integration into the public financial management system was long overdue

The findings also show that a unit increase in the score of Stakeholder involvement would lead to a 0.633 increase in the score of adoption of collaborative procurement practices. This variable was significant since  $0.025 < 0.05$ . This correlates with Marquis and Huston (2009) who points out that effective collaborative procurement calls for

involvement and support from each of the stakeholders where the members must also operate on agreed goals and performance measures while implementing appropriate structures to foster collaboration.

Further, the findings show that a unit increase in the score of communication/knowledge sharing would lead to a 0.799 significant increase in the score of adoption of collaborative procurement practices since p-value (0.000) was less than 0.05. This is consistent with Muge (2009) who notes that the flow of information in an organization is the blood life of any business operating unit irrespective of its size. The ABS literature revealed that the information sharing in supply chain context can be modelled as two major categories: sharing demand information and sharing supply information.

The study also found that a unit increase in the score of technology alignment would significantly lead to a 0.713 increase in the score of adoption of collaborative procurement practices since p-value (0.003) was less than 0.05. This concurs with Georghiou *et al.* (2014) who views ICT as the enabling system that facilitate the processing and flow of information as well as the technologies used in the actual processing that goes on to produce a product or to provide a service to customers.

Overall, it was established that policy framework had the greatest effect on the adoption of collaborative procurement practices in Kenya Electricity Transmission Company Limited, followed by communication or knowledge sharing then technology alignment then while Stakeholder involvement had the least effect to the adoption of collaborative procurement practices in Kenya Electricity Transmission Company Limited. All variables were significant since their p-values were less than 0.05.

## **CONCLUSIONS**

The study concluded that policy framework has a positive and significant effect on adoption of collaborative procurement practices. The study further concluded that budgetary allocation and Strategic leadership have effect on the adoption of collaborative procurement practices in KETRACO. Moreover, it was concluded that coordination along the supply chain also influences the adoption of collaborative procurement practices in KETRACO. Nevertheless, the study concluded that relationship orientation/ Stakeholder involvement and development and approval of the proposal plan have effect on the adoption of collaborative procurement practices in KETRACO.

The study concluded that Stakeholder involvement has a positive and significant effect on adoption of collaborative procurement practices. Further, the study concluded that transaction costs reduction, market intelligence and shared expertise or cross functional team influence the adoption of collaborative procurement practices in KETRACO. Moreover, the study also concluded that financial risks allocation and joint insurance influences the adoption of collaborative procurement practices in KETRACO.

The study concluded that communication/knowledge sharing has a positive and significant effect on adoption of collaborative procurement practices. The study concluded that periodical talkfest (Meetings), sharing end-market

demand information, clear mutual expectations and open-door policy influence adoption of collaborative procurement practices in KETRACO. Further the study concluded that the current capacity information sharing influences adoption of collaborative procurement practices in KETRACO and that current customer orders information also influences adoption of collaborative procurement practices in KETRACO.

The study concluded that technology alignment has a positive and significant effect on adoption of collaborative procurement practices. The study also concluded that common coding systems influences the adoption of collaborative procurement practices in KETRACO. The study further concluded that pooled network design and process automation influences the adoption of collaborative procurement practices in KETRACO.

## **RECOMMENDATIONS**

KETRACO should train procurement staff to improve on their skills particularly on tender evaluation, chose of evaluation criteria, tender award and management of the contracts. In addition, the company should inculcate team building spirit among the staff and encourage them to enhance communication for information sharing on technological changes in products in the market. This will assist Procurement Function monitor the procurement plan and obtain best value for money.

The fact that most of the determinants of collaborative procurement practices have a positive effect on their adoption this underpins the need for the energy sector to increase investment in these collaborative practices and intensify research and development in the respective strategies to optimize the gains of collaborative public procurement hence improve its performance.

The energy sector should establish a procurement unit with qualified, skilled and knowledgeable personnel to spearhead the procurement operations in order to stream line most of the existing weaknesses in the procurement controls,

the energy sector should undertake to do market capability analysis as part of its procurement management. This will allow the energy sector to assess the ability of the market to meet its required goods and services in the right quantities and quality in the right timings.

This study shows practitioners that procurement is not widely used concept among energy sector in Kenya. However, it also shows that technical alignment has a positive effect on adoption of collaborative procurement practices and consequently, there is need to facilitates the development of operational tasks in the procurement area. Managers should seriously consider the technical alignment, for example, e-procurement as a means for continuously improving their information gathering and analysis practices.

### Areas of Further Research

Since this study was limited to energy sector, the study recommended the same study should be done based on other manufacturing sectors in Kenya to determine the effect of adoption of collaborative procurement practices.

Further research is necessary as the findings were based on a relatively small sample that may have influenced the nature of results that were obtained. There is need to expand on the sample size and carry out similar research in other sectors.

More research on the individual variable that is technology alignment, communication/knowledge sharing, stakeholder involvement and policy framework to enhance deep and through understanding of effect of each variable on adoption of collaborative procurement practices.

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