

FACTORS INFLUENCING ADOPTION OF FRAMEWORK AGREEMENTS AT NATIONAL IRRIGATION BOARD

Akello Boaz Okoth

Master of Business Administration, University of Nairobi, Kenya

Tom O. Kongere

Department of Management Science, School of Business, University of Nairobi, Kenya

©2018

**International Academic Journal of Procurement and Supply Chain Management
(IAJPSCM) | ISSN 2518-2404**

Received: 4th December 2018

Accepted: 11th December 2018

Full Length Research

Available Online at:

http://www.iajournals.org/articles/iajpscm_v3_i1_85_105.pdf

Citation: Okoth, A. B. & Kongere, T. O. (2018). Factors influencing adoption of framework agreements at National Irrigation Board. *International Academic Journal of Procurement and Supply Chain Management*, 3(1), 85-105

ABSTRACT

Public procurement has had considerable focus on the value for money. Framework agreements is one of the procurement strategies that have been adopted in the recent past whose major benefit has been significant savings in procurement time, costs and other resources. As such, the purpose of this study was to establish the effect of selected factors on the adoption of framework agreements by National Irrigation Board (NIB). Specifically, the study sought to ascertain whether NIB adopts framework agreements in its procurement processes and establish the effect of legislative provision, procuring entity's capacity, nature of procurement, pricing and urgency of procurement needs. The study employed case study research design and targeted all the 43 middle level and senior level managers in the five departments at NIB. The data used in this study was obtained through questionnaires which had closed-ended questions. The data was analyzed using descriptive statistics, correlation and regression analysis. The findings of the study were considered important in formulating measures aimed at adoption of framework agreements in attempt to enhance procurement efficiency at NIB. The study findings revealed that framework agreements were not frequently adopted by NIB as indicated by 64% of the respondents. The study found out through correlation analysis that the selected factors; urgency of procurement needs ($r=0.855$), procuring entity's capacity

($r=0.855$), nature of procurement ($r=0.913$), legislative provision ($r=0.925$) and pricing ($r=0.930$), had a strong positive relationship with the adoption of framework agreements. The study further established, through regression analysis, that urgency of procurement needs has the most significant effect on the adoption of framework agreements with its unit increase resulting in a 6.412 increase in adoption of framework agreements. In addition, the study established that, procuring entity's capacity, nature of procurement, legislative provision and pricing, also affect the adoption of framework agreements with unit increases resulting in 4.249, 3.748, 3.500 and 0.936 respectively. The study concluded that the five selected factors affected the adoption of framework agreements by NIB and their effect was about 94.6%. The study recommends enhanced sensitization and training on the framework agreements to increase its adoption as an allowable and strategic procurement method for achieving procurement efficiency, careful preparation of pricing structure in framework agreements to ensure successful management and execution of the resulting contracts and best value for money and proper determination of entities' procurement requirements and environment that suit the adoption of framework agreements to ensure desired procurement objectives are met.

Key Words: *adoption, framework agreements, National Irrigation Board*

INTRODUCTION

The procurement function has consistently gained popularity among various organizations, both in public and private sector, across the globe. In the private sector, procurement is viewed as a strategic function whose main aim is the improvement of the organization's profitability (Larsson, 2008). In the public sector, the procurement is majorly concerned with

supporting government operations and provision of public services through the procured goods, services and works. The efficiency and effectiveness of any procurement process depends on the selected procurement method. The aim of identifying and selecting a suitable procurement method is to meet the stated procurement needs.

Masterman (2002) contended that there are different procurement methods through which organizations could achieve the procurement objectives of cost, time and quality. The procurement needs are met variably by the various procurement methods (Tookey, Murray, Hardcastle and Langford, 2001). According to Ojo and Awodele (2010), procurement methods create the required management and contractual relationships amongst project stakeholders. There is agreement that every entity's procurement need has a procurement method that delivers it better than other available methods (Love, Skitmore and Earl, 1998). However, entities face difficulties in selecting suitable procurement methods for their procurement needs (Mortledge, Smith and Kashiwaji 2006). Kumaraswamy and Dissayaka (2001) attributed the difficulties in ascertaining the suitability of the various procurement methods to inability of decision makers in entities to comprehend these procurement methods, entities' characteristics and needs, project characteristics and external conditions.

The employment of an imprudently selected procurement method curtails the achievement of procurement objectives of cost, time and quality and lead to subsequent procurement failures (Luu, Ng and Chen, 2003). Inappropriate procurement methods may lead to costly claims for time and strained contractual relationships (Abdel-Meguid and Davidson, 1996). According to Uyarra and Flanagan (2010), besides the public duty of providing works, goods and services to public entities, public procurement serves to stimulate national economic activities, protect domestic sectors from unfair foreign competition, enhance competitiveness of key industrial sectors and correcting national inequalities. The greater recognition of procurement role in the public sector has necessitated adoption of procurement strategies with a view to reducing the procurement costs and improving procurement efficiency. One of the procurement strategies that have been adopted in the recent past is framework arrangements whose major benefit has been significant savings in procurement time, costs and other resources (Arrowsmith, Treumer, Fejø and Jiang, 2011).

Factors Affecting Selection of Procurement Methods

The Kenyan Public Procurement and Asset Disposal Act (2015) (PPADA) defines procurement as acquisition by purchase, rental, lease, hire purchase, license, tenancy, franchise or by any other contractual means of any type of works, assets, services or goods including livestock or any other combination and includes advisory, planning and processing in the supply chain system. Chan and Yang (2000) opined that the chosen procurement method has a lasting impact on procurement expectations and success parameters. Ratnasabapathy and Raneezdeen (2006) recommended that the selection of procurement method need to consider the entity's requirements and characteristics, project characteristics and external environment. A number of procedures have been formulated to aid procuring entities in the selection of suitable procurement method (Kumaraswamy and Dissanayaka, 2001; Luu et al., 2005).

Most procurement selection procedures have dependence on cost, quality and time. Equally, other factors affect these selection procedures and these include: External factors of economic, commercial, technological, political, social and legal nature; entity's characteristics – entity's knowledge and the experience; project characteristics - the size, complexity, location and uniqueness of the project; cost and time issues (Rowlinson, 1999; Mortledge et al., 2006)

Framework Agreements

Framework agreements are long-term contracts whose terms and conditions are made to allow smaller repeat purchasing orders (or call-off orders) be issued for a defined period of time (Hussain, Tukai, Adu and Khan, 2012). Framework agreements are aimed at helping the procuring entities manage demand risk, reduce transaction costs, control the supplier base and, as a side-benefit, reduce maverick buying (Smith and Woodin, 2011). Framework agreements are characterized by known contracted suppliers for specified products, known price established for the products, procurement transacted once for a defined period, deliveries made as and when required.

According to Public Procurement Oversight Authority (PPOA)'s Guideline for Framework Contracting 2010 (PPOA, 2010), single award framework contracts are to be utilized by public entities under which frequently bought items would be consolidated into contracts for supply at agreed price over a definite contract term, with orders being placed at the contract price when required. The framework contract provides the entities with benefits of savings on procurement costs and better contract prices through larger volume contracts.

Framework agreements have two stages and either involve a single or multiple suppliers. In a single-supplier framework agreement, a single contract is competitively awarded to a single supplier at the initial stage and then several call-off orders are issued directly to the single supplier based on the signed contract agreement. In a multi-supplier framework agreement, a contract for the same items is entered into with multiple suppliers at the initial stage. The second stage will either involve another tendering where suppliers compete again for the call-off orders, rotational orders to the different suppliers or fixed orders to each of the suppliers in the initial contract (Gur, Lu and Weintraub, 2013).

According to Hussain et al. (2012) and Arrowsmith et al. (2011), some of the main benefits of framework agreement include: more effective and efficient tendering procedures and less transaction costs for procuring entities; reducing the need for urgent procedures; better transparency in smaller procurements; enhancing participation; ensuring security of supply; better supply chain management; process efficiencies and higher uniformity and standardization across buying institutions. Other benefits are: early involvement of contractors, faster delivery of projects, collaborative working and elimination of contractual disputes (Construction Frame South West, 2009). Karjalainen (2011) found evidence for price and process cost savings in the Finnish public sector; Lacoste (2014) found framework agreements of assistance in balancing co-operation and competition in a manufacturing

context. However, Lam and Gale (2014) looked at UK public sector construction and found no significant benefits in terms of price, but significantly reduced transaction costs.

The framework agreements come with some drawbacks. The bigger procurement volumes in some framework agreements may lock out small and up-coming business entities whose products may be superior. Framework agreements are relatively unresponsive to change due to exclusion of new business entrants and new innovative products (Hussain et al., 2012; Arrowsmith et al., 2011). Framework agreement providers face significant uncertainty when submitting their tenders in the first stage: they do not know when, what and how much they will sell over the specified time period. In particular, while typically the price of a product or service in the agreement is locked at the beginning of the agreement period, the providers' costs may change over that period. Empirical evidence suggests that providers charge for this uncertainty through higher tender prices (Gur et al., 2013).

National Irrigation Board

National Irrigation Board (NIB) was established and incorporated in 1966 as a state corporation through the Irrigation Act, Cap 347 of the Laws of Kenya. The Act provides for the development, control and improvement of irrigation schemes, for purposes incidental thereto and connected therewith. Currently, NIB manages eleven national irrigation schemes and four operational research stations. NIB also has two subsidiaries that are rice milling companies. In addition, NIB under the Expanded National Irrigation Programme (ENIP), is undertaking new developments as well as rehabilitation of irrigation projects spread all over the country. NIB is also spearheading the implementation of Galana/Kulalu Food Security Project in Tana River and Kilifi Counties. This is a National Economic Program aimed at putting one million acres of land under irrigated agriculture within 5 years from 2013 hence increasing food security in the county (NIB, 2013).

The procurement function of NIB is in the directorate of corporate services and is responsible for managing the procurement and asset disposal processes. The NIB's general manager, being the accounting officer, is primarily responsible for ensuring NIB complies with the Public Procurement and Asset Disposal Act (PPADA), 2015 (Act) in all its procurement and asset disposal processes. As prescribed in Section 47 of the Act, the procurement function is responsible for rendering procurement professional advice to the general manager. The department, being part of a public entity, is governed by the provisions of the Act in its functions. The department is headed by senior procurement and supplies officer stationed at NIB Head Office, Nairobi. The procurement functions of threshold of below Kenya shillings five hundred thousand have been decentralized to the schemes (NIB Service Charter, 2015). The scheme managers are undertaking procurements at the scheme levels under the delegated authority from the general manager.

The PPOA's (2013) procurement review of NIB revealed that request for quotations (RFQ) method of procurement accounted for 69% of the number of procurement transactions undertaken during the review period of 1st July 2010 to 30th June 2011; restricted tendering was at 20%, open tender at 6%, term contracts at 4% and direct procurement at 1%. The term

contract involved purchase of vehicles and equipment through framework agreements signed between the Supplies Branch of Ministry of Public Works and respective suppliers of vehicles. The review report recommended expanded usage of framework agreement as prescribed by PPOA's Guideline for Framework Contracting 2010 (PPOA, 2010) for the common user items in order to reduce the repeated use of RFQ and save on the procurement time and costs.

RESEARCH PROBLEM

The public procurement plays a significant role in facilitating provision of public goods, works and services. Framework agreement is a concept that is meant to enhance efficiency, reduce procurement lead time and cost reduction on matters pertaining to procurement (Nyongesa and Wagoki, 2010). There is a long tradition of using framework arrangements in number of European Union (EU) member states including Nordic countries, France and United Kingdom. In the Chilean e-procurement system, known as ChileCompra, government entities are procuring their requirements from multi-year agreements with suppliers for selected products. In using the system, the government entities have realized savings on time and costs (Bornbusch and Bates, 2013). In an assessment undertaken by the Joint Inspection Unit of the United Nations (UN) in 2012, it was established that the use of long term agreements (LTAs) throughout the UN system increased between 2008 and 2011 and the UN organizations realized the benefits of administrative efficiencies and advantages of greater procurement volumes (Terzi and Callejas, 2013). The literature on framework agreements with discussion on the factors affecting its use in procuring entities are mostly in the context of the developed countries and not in the context of the developing countries such as Kenya. In one study undertaken in the Kenyan context, Nyongesa and Wagoki (2010) in their findings concluded that framework contracting reduced cost and promoted procurement performance at Geothermal Development Company (GDC). Even though the study was undertaken in Kenya, it focused on the influence of framework contracting on procurement performance of the company without establishing its adoption and extent of usage in the company and the factors that influenced its usage at GDC. The context of the study was in a geothermal power generating public company established under Energy Act No. 12, Laws of Kenya while this study was in a state corporation in irrigation development and services established under Irrigation Act, Cap 347, Laws of Kenya. There was no study that had addressed the factors influencing adoption of framework agreements at NIB in Kenya and that was the gap that was to be filled by this study. The PPOA's (2013) procurement review of NIB recommended enhanced usage of framework agreements but failed to establish whether the NIB had adopted the framework agreement as one of the procurement methods in executing its procurement functions. Besides this PPOA's (2013) procurement review, there was no other study that had been undertaken to determine whether NIB adopts framework agreements in its procurement processes hence the need for this study. The researcher sought to answer the following questions: Does National Irrigation Board adopt framework agreement in its procurement processes? What are the effects of the selected factors on the adoption of framework agreements by National Irrigation Board?

RESEARCH OBJECTIVES

The general objective of the study was to determine the effect of selected factors on the adoption of framework agreements in state corporations in Kenya.

SPECIFIC OBJECTIVES

1. To determine whether the National Irrigation Board adopts framework agreements in its procurement processes.
2. To determine the effect of selected factors on the adoption of framework agreements by the National Irrigation Board.

THEORETICAL LITERATURE REVIEW

This research study on framework agreement was based on two theories: Agency theory and diffusion of innovation theory. Jensen and Meckling (1976) define an agency relationship as a contractual relationship in which one or more parties (principals) contract another party (agent) to execute some defined activity on their behalf with the principals delegated defined decision making authority to the agent. In the agency relationship, the agent makes decisions that serve the interest of the principal. Procurement function staff are equally expected to act in the interest of user departments that request for the procurement services. The relevance of agency theory is profound in public procurement since situations often arise where there is a conflict of interest between the procurement function staff and user departments with regard procurement processes to be employed in fulfilling the procurement needs (Eisenhardt, 1989). The particular relevance of the theory in the public procurement method of framework agreement is realized when procurement function staff have conflicting interests with those of user departments. The agency theory provided the researcher with the insight on how the procurement function relates with other user departments in an organization in the provision of professional procurement services.

The diffusion of innovation theory was started in 1920's and 1930's by sociologist Gabriel Tarde and George Simmel (Rogers and Ban, 1963). It was first practiced in 1943 to measure the rate of acceptance of innovated hybrid seed corn by the farmers in Iowa communities in United States of America (U.S.A.) (Ryan and Gross, 1943). Roger and Ban (1963) defines diffusion as the process in which an idea or innovation is spread to through different lines of communication to the entire membership of a given society. The theory explains how ideas, knowledge, practice and technology gain popularity and spread across a specific social system. He added that the innovation needs to be adopted first by opinion leaders in the social system and provide benefits to early adopters.

Ryan and Gross (1943) made contribution to the diffusion of innovation theory by identifying stages of adoption which include awareness of need to change, decision to adopt the change by early adopters, initial use by opinion leaders and continued use by opinion followers. The relevance of theory is prominent in the modern time where innovators continue to diffuse new ideas to the people and organizations for their adoption. This theory facilitated the understanding of the diffusion process of framework agreements by Kenyan state

corporations. According to the theory, framework agreement was considered as an idea from the innovator, the legislation of Public Procurement and Asset Disposal Act, (2015) (PPADA), to the end users, the Kenyan state corporations and other public entities over a period of time. Framework agreement has been prescribed by procurement legislation as one of the procurement methods. The diffusion of innovation theory states that there are benefits that accrue from adoption of the innovation. The researcher found the theory relevant since the adoption of adopting framework agreements Kenyan state corporations would be driven by the expected benefits.

Framework Agreements

Framework agreements have been embraced in public entities as means for aggregating demand and streamlining procurement processes (Albano, Ballarin and Sparro, 2008). The adoption of framework agreements depends on enabling legislative provision. In Kenya, Tanzania, Uganda, and Zambia, the legislative instruments have prescribed framework agreements as one of the procurement methods permitted for use by public entities. However, in other countries such as Ghana and Rwanda, their country procurement laws lack provisions for framework and the only available provisions are guidelines issued by procurement regulators (Leslie, Prashant, Roger and Taylor, 2014).

Successful use of framework agreements requires entities to have requisite staff capacity in the key activities of procurement, contract preparation and management and contract performance monitoring. In Zambia, establishing such a capacity was necessary before the adoption of framework agreements as a procurement method (Leslie et al, 2014). Framework agreements do not suit all nature of procurements. The entity needs to make a value for money judgment on whether framework agreement is the most appropriate method. Framework agreements general work well when buying standard goods, services or works. However, for certain requirements such as consulting services and construction, the capacity of the tenderer to tailor its specific products to what the entity wants is key and thus framework agreements may not be appropriate method (Albano and Sparro, 2008).

Given the long-term nature of framework agreements, there are risks associated with price fluctuations after signing of the contract. One measure that has been used to mitigate the risk of price fluctuations has been secondary tendering for the call-off orders amongst the initially contracted tenderers. The call-off orders are then awarded at the current market prices while the other terms and conditions in the initial contract remain the same (Arrowsmith et al. (2011). Procuring entities in the UN system mitigate the risks of price volatility to LTAs by expressing the price as a fixed percentage discount off the supplier's catalogue price (Terzi and Callejas, 2013).

The procurement lead time for the entity's requirements influences the choice of procurement method used by the entity. The generally lengthy procurement processes has prompted entities to develop procurement strategies that can deliver the requirements in time and within cost. One of the procurement strategies has been the adoption of framework agreements (Albano and Sparro, 2008).

EMPIRICAL LITERATURE REVIEW

A number of studies have been undertaken on adoption and usage of framework agreements with varying results being reported. The factors influencing the adoption of framework agreements as well as the benefits of adoption of framework agreements were varied. Rooney and Allan (2013) in their case study of changing procurement practices on delivery of highways projects in United Kingdom (UK) demonstrated that projects executed through the new framework agreements met the objectives of completion with time and contract price with little likelihood of price variations. The other benefits included cordial working relationships and amicable settlement of contractual matters. The study adopted case study approach that comprised of interviews with managers together with detailed analysis of data from projects completed prior to and those completed after introduction of framework agreements. The study findings may not be applicable to other contexts such as irrigation projects and the knowledge gap was filled through this study.

In another study in the UK, Lam and Gale (2014) assessed the impact of framework agreement on contractor performance for the UK public sector. The study used a case study approach. The results from the study showed improved contractor's performance with the use of framework agreements. The results supported the use of framework agreements for the typical authority under study and the wider public sector environment. The researcher was of the view that the findings of the study were derived from one single local authority and focused on a contractor performance. Thus there was a knowledge gap in the study on the adoption of framework agreements in other public entities such as state corporations and with focus on the supplier performance.

A study review of the sustainable procurement practice at Kilkenny Local Authorities (KLA) in Ireland was conducted by Flynn, Davis, Mckevitt and Mcevoy (2013). The study employed a longitudinal case study involving procurement unit personnel of KLA over a period of one year. The transformation of procurement in KLA presented in the case review, in particular the implementation of multi-year framework agreement for water and waste water services maintenance, sheds light on what is possible when procurement moves from the transactional to the strategic. There was annual operational cost savings of sterling pound 1.4 million. Not only was the contract a success in terms of value for money, the framework contract was in place to sustain local supplier capacity and capability. The researcher was of the opinion that the findings of the study presented the framework agreement as one of the procurement method that can facilitate achievement of a key procurement objective of value for money but the results may not be true for a state corporation in a different context such as Kenyan.

Nyongesa and Wagoki (2013) studied the influence of framework contracting on procurement performance of Geothermal Development Company (GDC) in Kenya. The study used descriptive survey research design and targeted 96 staff from a population of 127. With questionnaires completed by 82 staff, the study findings concluded that procurement performance at GDC was measured with regard to the role of framework contracting. The implementation of framework contracting resulted in reduced cost by promoting procurement performance at the company. The researcher found that the study dealt with the framework

contracting in relation to its influence on the key issue of procurement performance but failed to establish whether the company adopted framework contracting as a procurement method or not in its procurement processes.

RESEARCH METHODOLOGY

Research Design

The research design that was employed is the case study of National Irrigation Board (NIB). A case study was considered the most appropriate design since it had the benefit of providing an in-depth and detailed investigation of the effect of selected factors on the adoption of framework agreements. The case study focused on the depth of the issue under study rather than the breadth. The use of case study facilitates understanding of complex issues. Case studies offers experience and increase the depth to what has been established in previous studies. Case studies entail rigorous analysis of the context of specific occurrences. From empirical literature review, Rooney and Allan (2013) and Lam and Gale (2014) successfully used case study approach in their studies of similar nature. The target population in this study comprised of all the 43 middle level and senior level managers in the five departments of Procurement, Engineering, Finance, Agriculture and Human Resources and Administration at NIB.

Data Collection

The study used primary data to meet the objectives of the study. Primary data is information gathered directly from the respondents (Kombo and Tromp, 2011). The study used questionnaires in collecting primary data since it enabled the researcher to obtain adequate and detailed information. The study involved issuing questionnaires to the respondents for them to fill in a drop and pick method. The questionnaires contained closed-ended questions to enable respondents easily provide adequate information needed for the study. The questionnaire assessed the opinions of the respondents on the various factors identified by the researcher and the relative significance of these factors on the adoption of framework agreements by NIB. The reliability of the data collection instrument was confirmed through a pilot test. The questionnaires were issued to five staff from the studied institution, NIB, to evaluate the relevance of the questions, understanding of the questionnaires by the respondents and assess the general availability of the information required. The piloting was used to eliminate any ambiguity. The results of the pilot test were not included in the study. The questionnaire consisted of three parts. Part A sought to collect the demographic profile of the respondents. Part B captured responses to the first objective of determining whether NIB adopts framework agreements in its procurement processes. Part C sought answers to address the second objective relating to the effect of the five selected factors, the independent variables, identified by the researcher to be influencing the adoption of framework agreements. The part C gave respondents opportunity to rate the factors they perceive to have influence on adoption of framework agreement by choosing appropriate rating on Likert scale of 5= very great extent; 4= great extent; 3= moderate extent; 2= little extent and 1= no

effect at all. The respondents also had a chance to indicate other factors that they thought influenced the adoption of framework agreements as well as the extent of their influences.

Data Analysis

The completed questionnaires were checked for completeness and consistency. The data collected was compiled and analyzed to establish whether NIB adopts framework agreements and the extent to which the selected factors affected the adoption of framework agreement by NIB. Descriptive statistics was used to achieve first objective of the study where percentages, frequencies and statistical measures of central tendency such as means and standard deviations measured the variability of respondents' thoughts. Presentation of data was made through the use of tables and in prose-form. The effect of selected factors (Legislative provision, procuring entity's capacity, nature of procurement, pricing, and urgency of procurement needs) on the adoption of framework agreements by NIB was tested using correlation and regression analysis to achieve second objective of the study. The following regression model was adopted:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Where: Y= Framework Agreement; α = Constant; β =Beta Coefficients; X1= Legislative Provision; X2=Procuring Entity's Capacity; X3= Nature of Procurement; X4= Pricing; X5= Urgency of Procurement Needs; e= Error Term

RESEARCH RESULTS

The choice of a procurement method has a significant influence on the outcome of a procurement transaction. The most appropriate procurement strategy thus needs to be evaluated and chosen for each procurement need in order to effectively and efficiently achieve the procurement objective. The first objective of the study was to determine if NIB adopts framework agreements in its procurement processes. The effect of selected factors on adoption of framework agreements was the second objective of the research. These selected factors were: legislative provision, procuring entity's capacity, nature of procurement, pricing and urgency of procurement needs. The study was conducted through a case study with a target population of 43 middle and senior level managers in five departments of Procurement, Engineering, Finance, Agriculture and Human Resources and Administration at NIB. Data was collected through self-administered questionnaires. From the findings, most of the respondents reported that NIB does not adopt framework agreements as a procurement method with a response rate of 64% of the respondents. The study also revealed that the five independent variables (legislative provision, procuring entity's capacity, nature of procurement, pricing, and urgency of procurement needs) contribute about 94.6% to the adoption of framework agreements by NIB while other factors not studied in this research contribute 5.4% on the adoption of framework agreements by NIB. The study also found out that that urgency of procurement needs was the most important factor affecting adoption of framework agreements at NIB followed by procuring entity's capacity. The other factors that affected adoption of framework agreements at NIB were procuring entity's capacity, nature of procurement, legislative provision and pricing in that order.

Adoption of framework agreements by NIB

The study findings established that NIB does not adopt framework agreements in its procurement functions. Majority of the respondents, 64% of the total respondents, indicated that NIB does not adopt framework agreements in its procurement processes while 36% of the total respondents stated that NIB adopts frameworks agreements in its procurement processes.

Effect of legislative provision on Adoption of Framework Agreements

The findings of the research revealed that 71% of the respondents indicated that legislative provision affected the adoption of framework agreements by a great to a very great extent while the 29% of them indicated that legislative provision affected the adoption of framework agreements by a moderate extent. None of the respondent reported that the legislative provision had little or no effect at all on the adoption of framework agreements by NIB.

The results indicated that there is a legislative provision for use of framework agreements by public entities in the Public Procurement and Asset Disposal, 2015 (Act) and that the adoption of framework agreements by NIB was influenced by the existing legislative provision. From the regression model, a unit increase in legislative provision would result to a 3.500 increase in adoption in framework agreements at NIB. The results revealed the legislative provision affects the adoption of framework agreements by NIB, its awareness exists within NIB and the adoption has increased since the enactment of the new Act. In the earlier Act, the NIB employed term contracts between another public entity and suppliers, the equivalent of framework agreements, to procure vehicles while the new Act had NIB enter adopt framework agreements and enter into framework contracts directly with suppliers albeit on a minimal scale.

Effect of Procuring Entity's Capacity on Adoption of Framework Agreements

The research findings indicated that 24% of the respondents indicated that procuring entity's capacity affected the adoption of framework agreements by a moderate extent while 63% of them indicated that legislative provision affected the adoption of framework agreements by little extent. 13% of the respondent reported that the legislative provision had no effect at all on the adoption of framework agreements at NIB.

The research revealed that a unit increase in procuring entity's capacity would lead to a 4.249 increase in adoption in framework agreements. The results showed that procuring entity's capacity affects adoption of framework agreements. The other procurement methods such as request for quotations, which was to be replaced by framework agreements, continued to be used since the staff had adequate knowledge and experience with usage. The results compares well with the findings of a related study by Nasiche and Ngugi (2014) who concluded from study statistics that organizational capacity is a key determinant of adoption of Green Public Procurement (GPP) at Kenya Pipeline Company (KPC). The study showed that the KPC's low internal capacity affected the adoption of GPP practices.

Effect of Nature of Procurement on Adoption of Framework Agreements

The findings of the research revealed 100% of the respondents reported that the nature of procurement affected the adoption of framework agreements by a moderate to a very great extent. None of the respondent reported that the nature of procurement had moderate, little or no effect at all on the adoption of framework agreements at NIB.

The research findings revealed that a unit increase in nature of procurement would result in a 3.748 increase in adoption in framework agreements. The results revealed that the nature of procurement has a significant effect on the adoption of framework agreements. The respondents reported that the minimal usage of framework agreements was attributed to nature of procurements at NIB where most of the major procurements were for complex infrastructural works and services and the difficulties in determining the requirements even for the standard items. The results from Albano and Sparro (2008) also stated that framework agreements do not suit all nature of procurements and that framework agreements are appropriate when buying standard goods, services or works.

Effect of Pricing on Adoption of Framework Agreements

From the findings of the research, 69% of the respondents indicated that pricing affected the adoption of framework agreements by a very great extent to a great to moderate extent. 31% of the respondents indicated that pricing affected the adoption of framework agreements by a little extent while none of them that the pricing had no effect at all on the adoption of framework agreements at NIB.

The regression modal showed that a unit increase in pricing would lead to a 0.936 increase in adoption in framework agreements. The price stability was cited by respondents as a major hindrance to successful execution of framework agreements with a case being cited where the supplier declined to continue supplying items under the framework agreement at the initially contracted prices. These results had similarities with those of Terzi and Callejas (2013) who established that procuring entities in the UN system had challenges in setting the price in framework agreements.

Effect of Urgency of Procurement Needs on Adoption of Framework Agreements

Finally, the research found out that the urgency of procurement needs affected the adoption of framework agreements at NIB by a great extent by 58% of the respondents while 42% of the respondents indicated that urgency of procurement needs affected the adoption of framework agreements by a moderate extent. None of the respondent reported that the urgency of procurement needs had little or no effect at all on the adoption of framework agreements at NIB.

The research findings revealed that a unit increase in urgency of procurement needs would result in a 6.412 increase in adoption in framework agreements. The results revealed that the urgency of procurement needs was the most important consideration in all the procurements undertaken through the framework agreements. The compelling factor for adoption of framework agreements was the need for the availability of the items as and when required,

without having to undergo through a new lengthy and costly procurement process. These study findings were consistent with the findings from Albano and Sparro (2008) that stated generally lengthy procurement processes has prompted entities to develop procurement strategies that can deliver the requirements in time and within cost.

CORRELATION ANALYSIS

The study sought to establish the effect of selected factors on the adoption of framework agreements by NIB. The strength of the relationship between each of the independent variable and the dependent variable was thus determined through correctional analysis. Pearson correlation coefficient was computed and tested at 1% confidence level. The result as presented in table 1 above indicates that there is strong positive relationship between legislative provision and adoption of framework agreements, $r(36) = 0.925$. Further, it was established that the relationship is statistically significant at 1% level ($p = 0.000$, < 0.01 : since $p = 0.000$, which is less than 0.01).

Table 1: Pearson Correlation Coefficient of Legislative Provision and Adoption of Framework Agreements

	Adoption of Framework agreements	Legislative Provision
Adoption of Framework agreements	1	
Legislative Provision	0.925**	1

N=38

***Correlation is statistically significant at 1% confidence level (2-tailed)*

The result as presented in table 2 above indicates that there is a strong positive correlation between procuring entity’s capacity and adoption of framework agreements, $r(36) = 0.855$. Further, it was established that the relationship is statistically significant at 1% level (since $p = 0.000$, which is less than 0.01).

Table 2: Pearson Correlation Coefficient of Procuring Entity’s Capacity and Adoption of Framework Agreements

	Adoption of Framework Agreements	Procuring Entity’s Capacity
Adoption of Framework Agreements	1	
Procuring Entity’s Capacity	0.855**	1

N=38

***Correlation is statistically significant at 1% confidence level (2-tailed)*

The result as presented in table 3 above indicates that there is a strong positive relationship between nature of procurement and adoption of framework agreements, $r(36) = 0.913$. Further, it was established that the relationship is statistically significant at 1% level (since $p = 0.000$, which is less than 0.01).

Table 3: Pearson Correlation Coefficient of Nature of Procurement and Adoption of Framework Agreements

	Adoption of Framework Agreements	Nature of Procurement
Adoption of Framework Agreements	1	
Nature of Procurement	0.913**	1
N=38		

***Correlation is statistically significant at 1% confidence level (2-tailed)*

The result as presented in table 4 above indicates that there is a strong positive relationship between pricing and adoption of framework agreements, $r(36) = 0.930$. Further, it was established that the relationship is statistically significant at 1% level (since $p=0.000$, which is less than 0.01).

Table 4: Pearson Correlation Coefficient of Pricing and Adoption of Framework Agreements

	Adoption of Framework Agreements	Pricing
Adoption of Framework Agreements	1	
Pricing	0.930**	1
N=38		

***Correlation is statistically significant at 1% confidence level (2-tailed)*

The result as presented in table 5 above indicates that there is a strong negative relationship between urgency of procurement needs and adoption of framework agreements, $r(36) = 0.855$. Further, it was established that the relationship is statistically significant at 1% level (since $p=0.000$, which is less than 0.01).

Table 5: Pearson Correlation Coefficient of Urgency of Procurement Needs and Adoption of Framework Agreements

	Adoption of Framework Agreements	Urgency of Procurement Needs
Adoption of Framework Agreements	1	
Urgency of Procurement Needs	0.855**	1
N=38		

***Correlation is statistically significant at 1% confidence level (2-tailed)*

REGRESSION ANALYSIS

A multiple linear regression analysis was conducted to establish the relationship between the independent variables and the dependent variable. The regression model was as follows:

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + e$$

Where: Y= Framework Agreement; α = Constant; β =Beta Coefficients; X1= Legislative Provision; X2=Procuring Entity’s Capacity; X3= Nature of Procurement; X4= Pricing; X5= Urgency of Procurement Needs; e= Error Term at 95% confidence level

It assessed the effect of the various independent variables on the dependent variable. The results in Table 6 revealed that the value obtained for R which was the model coefficient was $r(32) = 0.976$ which was higher than any zero order value in the table. This indicates that the model improved when more variables were added in analyzing the factors affecting adoption of framework agreements. The model’s five independent variables (legislative provision, procuring entity’s capacity, nature of procurement, pricing, and urgency of procurement needs) that were studied, with the adjusted r-square value, $r = 0.946$, indicated that the multiple linear regression model could explain approximately 94.6% of the adoption of framework agreements at NIB. The five independent variables explain about 94.6% of variations in the dependent variable while other factors not studied in this research contribute 5.4% on the adoption of framework agreements at NIB. This was an indication of a further research opportunity to investigate the other factors (5.4%) that affect adoption of framework agreements at NIB.

Table 6: Regression Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of Estimate
	0.976a	0.954	0.946	2.563

a. *Predictors:* (Constant), legislative provision, procuring entity’s capacity, nature of procurement, pricing, and urgency of procurement needs

The ANOVA test was conducted to test the significance level of the model. The significance value obtained, significance = $2.02E -20$ was less than 0.05. It was thus concluded that the selected factors: legislative provision, procuring entity’s capacity, nature of procurement, pricing, and urgency of procurement needs, jointly have significant effect on adoption of framework agreements at NIB. The model is statistically significant in predicting how the factors (legislative provision, procuring entity’s capacity, nature of procurement, pricing, and urgency of procurement needs) adoption of framework agreements at NIB.

Table 7: ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Significance
Regression	4,359.330	5	871.866	132,748	2.02E-20
Residual	210.170	32	6.567		
Total	4,569.500	37			

a. *Dependent Variable:* Adoption of Framework Agreements

b. *Predictors:* (Constant), legislative provision, procuring entity’s capacity, nature of procurement, pricing, and urgency of procurement needs

The results of the significance of the variables in the regression model are presented in Table 8 below:

Table 8: Coefficients of Estimates

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-42.848	4.578		-9.370	1.086E-10
Legislative provision	3.500	2.768	0.588	1.264	0.215
Procuring entity’s capacity	4.249	1.455	0.536	2.919	0.006
Nature of procurement	3.748	1.194	0.248	3.139	0.004
Pricing	0.936	2.785	0.555	0.336	0.739
Urgency of procurement needs	6.412	1.530	0.645	4.190	0.000

From the table 8, the regression model equation was:

$$Y = -42.848 + 3.500X_1 + 4.249X_2 + 3.748X_3 + 0.936 X_4 + 6.412X_5$$

The regression model equation has established that if all the factors (legislative provision, procuring entity’s capacity, nature of procurement, pricing, and urgency of procurement needs) were taken to be constant at zero, the adoption of framework agreements at NIB would be -42.848. The findings also indicated that if all other independent variables are kept constant at zero, a unit increase in legislative provision would lead to a 3.500 increase in adoption in framework agreements at NIB. The p-value was 0.215 which was not less than 0.05 and thus the relationship was not significant.

The research also found that a unit increase in procuring entity’s capacity would lead to a 4.249 increase in adoption in framework agreements at NIB. The p-value was 0.006 which was less than 0.05 and thus the relationship was significant. Further, the findings revealed that a unit increase in nature of procurement would result in a 3.748 increase in adoption in framework agreements at NIB. The p-value was 0.004 which was less than 0.05 and thus the relationship was significant. From the research findings, a unit increase in pricing would lead to a 0.936 increase in adoption in framework agreements at NIB. The p-value was 0.739 which was not less than 0.05 and thus the relationship was not significant. Lastly, the research study found that a unit increase in urgency of procurement needs would result in a 6.412 increase in adoption in framework agreements at NIB. The p-value was 0.000 which was less than 0.05 and thus the relationship was significant.

CONCLUSIONS

The findings of the study revealed that there was awareness of the framework agreement as one of the procurement method prescribed by the Public Procurement and Asset Disposal Act, 2015 (Act). The study also found out that framework agreements were not majorly adopted by NIB as a procurement method in its procurement processes. This was reported by majority of the respondents. The reasons for the non-adoption of the framework agreements ranged from lack of experience in their use, complexity of majority of procurements undertaken by the entity and instability of the tenderers’ prices for some common goods and services. Consequently, the findings concluded that framework agreements are only

appropriate for particular procurement needs and that their suitability requires to be assessed by the entities using an appropriate array of parameters before adoption.

Based on study findings, there was a positive relationship between the selected factors and adoption of framework agreements by NIB. These findings led to the conclusion that legislative provision, procuring entity's capacity, nature of procurement, pricing, and urgency of procurement needs positively affects the adoption of framework agreements by NIB. It was also concluded that there is a significant positive relationship between legislative provisions and adoption of framework agreement as indicated by an r-value of 0.925. This is true given that the legislative provisions provide a platform through which framework agreements can be adopted as a legitimate procurement method.

The findings showed that there was a positive relationship between procuring entity's capacity and adoption of framework agreements with an r-value of 0.855. According to the findings of the study, it was concluded that the choice of the procurement method in any procurement transaction by procuring entities was influenced by their existing capacity. Thus, it is concluded that entities adopts procurement methods where they have adequate capacity in terms of knowledge and experience.

The study also established that there was a strong positive relationship between nature of the procurement and adoption of framework agreements since the r-value is 0.913. The study concluded that the suitability of a chosen procurement method is dependent on the nature of the procurement need to be met by the procurement process. The findings of the study on significant relationship between pricing and adoption of framework agreements with an r-value of 0.930 led to the conclusion that pricing was a key determinant in the choice of procurement method to be adopted by an entity.

It was also shown on the basis of the study findings that a strong positive relationship between the urgency of the procurement needs and adoption of framework agreements as indicated by an r-value of 0.855. It was therefore concluded that the adoption of framework agreements was necessitated by the entity's desire to have the required items as and when needed.

RECOMMENDATIONS

The findings revealed that the adoption of framework agreements was at low levels due to a number of reasons that included the procuring entity's capacity. The study recommends that NIB and other public entities undertake enhanced staff sensitization and training on the framework agreements to increase its adoption as an allowable and strategic procurement method for achieving procurement efficiency. Framework agreement is a procurement strategy that can significantly reduce procurement costs and time thus enhancing procurement efficiency and performance. Additionally, the inadequate internal capacity of entities in adopting the allowable procurement methods calls for policy intervention from the regulator, Public Procurement Regulatory Authority (PPRA) to execute capacity building programs for the public entities and other stakeholders on the newly enacted Act.

It is also recommended that NIB executes well thought pricing structure in framework agreements to ensure successful management and execution of the resulting contracts and best value for money to encourage contracted and potential suppliers participate in framework agreements. The structure of pricing was cited as challenges in NIB in its previous attempts for adoption of framework agreements for some items and therefore NIB and other entities require considering and providing appropriate pricing structure during procurement process.

The study recommends that NIB undertakes proper determination of its procurement requirements and assess its entire procurement environment to ensure it seizes opportunities that suit framework agreements and adopt it as procurement method.

REFERENCES

- Abdel-Meguid, T.A. and Davidson, C.H. (1996). Managed Claims Procurement Strategy (MCPS): A Preventive Approach. In Taylor, R.G. (Ed.), *“North Meets South”*: Proceedings of the CIB W92 Procurement Systems Symposium, Durban, South Africa, 11-20.
- Albano, G.L. and Sparro, M. (2008). A Simple Model of Framework Agreements. Competition and Efficiency. *Journal of Public Procurement*, 8 (3), 356-378.
- Albano, G.L. Ballarin, A. and Sparro, M. (2008). Framework Agreements and Repeated Purchases: The Basic Economics and A Case Study on the Acquisition of IT Services. *Journal of Public Procurement*, 8(3), 356-378.
- Arrowsmith, S., Treumer, S., Fejø, J., Jiang, L. (2011). *Public Procurement Regulation: An Introduction*. EU Asia Inter-University Network for Teaching and Research in Public Procurement Regulation
- Balcik, B. and Ak, D. (2013). Supplier Selection for Framework Agreements in Humanitarian Relief. *Production Operation Management*, 22, 1–14.
- Bornbusch, A. and Bates, J. (2013). Multiplicity in Public Health Supply Systems: A Learning Agenda. *Global Health: Science and Practice*, 1 (2), 154–159
- Bryman, B and Bell, E. (2007). *Business Research Methods. 2nd Edition*. Oxford University Press.
- Construction Excellence (2009). Never Waste a Good Crisis- A Review of Progress since Rethinking Construction and Thoughts for Our Future, *Construction Excellence, London*.
- Construction Framework South West (2011). Building Construction for All Framework Bodies in the South East, *Devon County Council*, Retrieved <http://www.cfsw.org.uk/> on 3rd August 2016.
- Eisenhardt, K.M. (1989). Agency Theory. An Assessment and Review. *The Academy of Management Review*, 14, (1), 57-74
- Flynn, A. Davis P., Mckevitt, D. and Mcevoy, E. (2013). Mapping Public Procurement in Ireland. *Public Procurement Law Review*, 74-95.
- Gur, Y., and Lu, L., and Weintraub, G. Y. (2013) Framework Agreements in Procurement: An Auction Model and Design Recommendations. *Columbia Business School*

Research Paper No. 13-24. Available at SSRN:
<http://dx.doi.org/10.2139/ssrn.2257073>

- Hussain, Z., Tukai, M., Adu, J.A., Khan, A.I. (2012). Workshop on Framework Agreement and Two-Year Procurement Cycle at Proshika HRDC, Koitta, Manikgonj. Arlington (VA): *Management Sciences for Health; 2012*
- Jagger, D. (1995). Editor's Introduction. *Journal of Construction Equipment*, 2 (1), 83-86.
- Jensen, M.C. and Meckling, W.H. (1976). Theory of the Firm: Managerial Behavior, Agency Cost and Ownership Structure, *Journal of Financial Economics*, 3 (4), 305-360.
- Karjalainen, K. (2011) Estimating the Cost Effects of Purchasing Centralization: Empirical Evidence from Framework Agreements in the Public Sector. *Journal of Purchasing Supply Management*, 17, 87-97
- Kombo, K.D. and Tromp, A.L.D. (2011). *Proposal and Thesis Writing*. Nairobi. Pauline's Publication Africa.
- Kumaraswamy, M.M. and Dissanayaka, S.M. (2001). Developing Decision Support Systems for Building Project Procurement. *Building and Environment*, 36, (3), 337-349
- Lacoste, S.M. (2014). Competition and Framework Contracts in Industrial Customer-Supplier Relationships. *Qualitative Market Research*, 17, 43-57.
- Lam, T.Y.M and Gale, K.S. (2014). Highway maintenance: Impact of Framework Agreements on Contractor Performance. *Engineering Construction and Architectural Management*, 2 (3), 336-347.
- Lam, T. and Gale, K. (2014). Highway Maintenance: Impact of Framework Agreements upon Project Financial Performance. *Construction Management Economics*, 32, 460-472.
- Larsson, L. (2008). *Lean Administration*. Malmö: Liber.
- Leslie, A., Prashant, Y., Roger, M. and Taylor, W. (2014). *Global Health: Science and Practice*, 2, (3), 295-306.
- Love, P.E.D., Skimore, R.M. and Earl, G. (1998). Selecting Appropriate Procurement Method for Building Project. *Construction Management and Economics*, 16, 221-223
- Luu, D.T., Ng, S.T. and Chen, S.E. (2003). Parameters Governing the Selection of Procurement System – An Empirical Survey. *Engineering, Construction and Architectural Management*, 10 (3), 209-218.
- Luu, D.T., Ng, S.T. and Chen, S.E. (2005). Formulating Procurement Selection Criteria through Cases-Based Reasoning Approach. *Journal of Computing in Civil Engineering*, 19 (3), 269-276.
- Masterman, J.W.E (2002). *An Introduction to Building Procurement System, 2nd Edition*. Spon Press, London
- Mortledge, R., Smith, A and Kashiwaji D.T. (2006). *Building Procurement*. Blackwell, Oxford, UK.
- Mugenda, O.M. and Mugenda, A.G. (2003). *Research Methods. Quantitative and Qualitative Approaches*. Nairobi: Acts Press.
- National Irrigation Board (2013). *2013-2017 Strategic Plan*. Nairobi: Author.

- Nyongesa, W.V. and Wagoki J. (2015). Influence of Framework Contracting on Procurement of Geothermal Development Company, Kenya. *International Journal of Science and Research (IJSR) ISSN, 4 (10)*.
- Ojo, A.E. and Awodele, A.O. (2010). Public –Private Partnership-Emerging Model for Infrastructures Financing. *Environ Link Journal of School of Environmental Studies, Federal Polytechnic, Ado Ekiti, 2 (3), 64-75*.
- Orodho A.J, (2009). *Essentials of Educational and Social Science Research Methods: Qualitative and Quantitative Approaches*. Nairobi Acts Press.
- PPOA (2010). *Guideline for Framework Contracting 2010*. Nairobi: Author.
- PPOA (2013). *National Irrigation Board Procurement Review Final Report*. Nairobi: Author.
- Ratnasabapathy, S. and Raneezdeen, R. (2006). *A Multiple Decisive Factor Model for Construction Procurement System Selection*. Proceedings of the Annual Research Conference of the Chartered Institution of Surveyors, University College London, 7th-8th September 2006.
- Rogers, E.M. and Ban, A.W.V.D. (1963). Research on the Diffusion of Agricultural Innovation in the United States and the Netherlands. *Rural Sociology, 3 (1), 38-49*.
- Rooney, P. and Allan, R. (2013). A Case Study of Changing Procurement Practices on Delivery of Highways Projects In: Smith, S.D. and Ahiaga-Dagbui, D.D. (Eds). *Procs 29th Annual ARCOM Conference, 2-4 September 2013, Reading, UK*. Association of Researchers in Construction Management, 779-788.
- Rowlinson, S. (1999). Selection Criteria. In. S. Rowlinson and P. McDermott, *Procurement Systems. A guide to Best Practice in Construction*. E & F Spon. London. 276-299.
- Ryan, R. and Gross, N. (1943). The Diffusion of Hybrid Seed Corn in Two Iowa Communities. *Rural Sociology, 8 (1), 15-24*.
- Tookey, J.E., Murray, M., Hardcastle, C. and Langford, D. (2001). Construction Procurement Routes: Re-Defining the Contours of Construction Procurement. *Engineering, Construction and Architectural Management, 8 (1), 20*.
- Smith, J. and Woodin, J. (2011). Purchasing Healthcare. In Walsh K, Smith J, editors. *Healthcare Management*. Maidenhead: *Open University Press*. 275–97.
- Terzi, C. and Callejas, J.F. (2013). Review of Long-Term Agreements in Procurement in the United Nations System. *Geneva: United Nations Joint Inspection Unit*; Retrieved from: https://www.unjui.org/en/reportsnotes/JIU%20Products/JIU_REP_2013_1_English.pdf.
- Uyarra, E. and Flanagan, K. (2010). Understanding the Innovations and Impacts of Public Procurement. *European Planning Studies, 18 (1), 123-143*.