ASSESSING THE EFFECT OF THE PROCUREMENT PROCESS ON THE EFFICIENCY OF UGANDA'S ROAD SECTOR: CASE STUDY OF NATIONAL ROADS CONSTRUCTED UNDER THE SUPERVISION OF UGANDA NATIONAL ROADS AUTHORITY

BY

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AT MAKERERE UNIVERSITY

2017
DECLARATION

This is my original work and has not been presented for the award of any Degree in any other university.

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This Research Project report has been submitted for examination with my approval as the University Supervisor

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DEDICATION

I dedicate this work to my dear parents Dr A.M.S Katahoire and Dr Anne Katahoire, who inspired me to work very hard to achieve my academic potential. To my sister Katahoire Faith, friends Marvin, Emmanuella, Elly, Hope, Paula and Charlotte for their assistance and encouragement while I was doing my dissertation.
ACKNOWLEDGEMENT

I wish to sincerely express my deepest gratitude to my Supervisor Ms. Hafsa Namirembe for her immense support, guidance and encouragement during the development of the research problem, research proposal and project without which this would not have been completed.

I would like to also take this opportunity to appreciate Makerere University for giving me an opportunity to study at the prestigious institution. Many thanks to the librarian and staff at the School of Statistics and Planning for the support accorded me and for providing a conducive environment for learning and assistance in different ways. I can’t forget to appreciate my discussion mates for their encouragement and support. Special thanks also to the Makerere university lectures and non-teaching staff for their wonderful support and encouragement during my study. I also take this opportunity to thank the procurement department of Uganda National Road’s Authority for their moral support and co-operation.

I also thank the Almighty God for his abundant love, protection, provision of good health, Knowledge and for granting me the gift of life.

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ABSTRACT

This study sought to investigate the effect of the procurement process on the efficiency of Uganda’s road sector. The study specifically focussed on the national roads constructed under the supervision of the Uganda National Road’s Authority. Procurement has been a serious issue of late and if not well managed will be very costly to the Government. Procurement is a function that costs an organization colossal sum of money and this has to be performed correctly in order to maximize efficiency and minimize costs. Most organizations’ executive management have realized that managing procurement must emerge as a critical core competency if organizations are to increase revenue. Procurement plays a very vital role in economic growth and development of any country if well managed.

The study aimed at achieving the following specific objectives in Uganda’s road sector; to establish the effect of the duration of the procurement process on time efficiency in the road sector, establish the effect of the duration of the procurement process on cost efficiency in the road sector, establish the effect of ICT usage in the procurement process on cost efficiency in the road sector, establish the effect of ICT usage in the procurement process on time efficiency in the road sector. The study was confined to national roads constructed under the supervision of the Uganda National Road’s Authority since the author widely assumed that the respondents in UNRA were willing to co-operate, be honest, freely participate, provide accurate responses to the items in the data collection instruments and have an adequate sample size to draw a valid conclusion. The researcher adopted descriptive survey research design using both qualitative and quantitative research paradigms. The data collection instrument was an interview that followed a pre-qualified questionnaire. The collected data was analysed using descriptive statistics and inferential statistics namely Spear man’s Rank correlation.

The study findings indicate that there was a lot of inefficiency both in cost and time in the road sector. The delays in the procurement process have led to increased cost and delay in the timely completion of roads in the sector, creating inefficiencies and high costs in the procurement process in the sector. ICT has led to increased efficiency in the road sector adding both a cost and time value in the sector though recommendations like pre-qualification of bids and making payments online have been made by the respondents. Other recommendations include minimising spent by the Solicitor General in evaluating whether standard practises have been adhered to while choosing the firm to take on the procurement process. This will improve time efficiency in the procurement process.

The researcher suggests that further research be done namely; investigating the impact of ethical practices in procurement process and how it affects the road sector, assessing the impact of the procurement process on the efficiency of other sectors in the country and other factors that affect efficiency in Uganda’s road sector.
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>UNRA</td>
<td>Uganda National Revenue Authority</td>
</tr>
<tr>
<td>MoWT</td>
<td>Ministry of Works and Transport</td>
</tr>
<tr>
<td>MoFPED</td>
<td>Ministry of Finance Planning and Economic Development</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
<tr>
<td>RICS</td>
<td>Royal Institution of Chartered Surveyors</td>
</tr>
<tr>
<td>MRO</td>
<td>Maintenance, Repair and operating materials</td>
</tr>
<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
</tr>
<tr>
<td>TSWG</td>
<td>Transport Sector Working Group</td>
</tr>
<tr>
<td>KCCA</td>
<td>Kampala Capital City Authority</td>
</tr>
<tr>
<td>PRDP</td>
<td>Peace, Recovery and Development Programme</td>
</tr>
<tr>
<td>AfDB</td>
<td>African Development Bank</td>
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<tr>
<td>JAF</td>
<td>Joint Assistance Framework</td>
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<td>ERP</td>
<td>Enterprise Resource Planning</td>
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<tr>
<td>CAIIP</td>
<td>Community Access Infrastructure Investment Project</td>
</tr>
<tr>
<td>JAF</td>
<td>Joint Assistance Framework</td>
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<tr>
<td>PPDA</td>
<td>Public Procurement and Disposal of Public Assets</td>
</tr>
<tr>
<td>IGG</td>
<td>Inspector General of Government</td>
</tr>
<tr>
<td>ACODE</td>
<td>Advocates' Coalition for Development and Authority</td>
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<tr>
<td>UNICITRAL</td>
<td>United Nations Commission on International Trade Law</td>
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<td>CIPS</td>
<td>Chartered Institute of Purchasing and Supply Management</td>
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CHAPTER ONE

1.1 Introduction
Chapter one introduces us to the study. Herein is the background to the study, background to the procurement process, background to Uganda's road sector, relationship among actors in the road sector, problem statement, main and specific objectives of the study, hypotheses, significance, limitations and delimitations of the study.

1.2 Background to the Study.
Procurement is the act of finding, acquiring, buying goods, services or works from an external source, often via a tendering or competitive bidding process. It is a pertinent and rigorous activity that entails use of dynamic forces such as competition, price and cost analysis, and life cycle cost analysis and performance criteria to choose the best entity to take on a particular service.

Figure 1.1: The Procurement Work Flow Process
1.3 Background to Uganda’s Procurement Process

Uganda’s procurement process is guided by the Public Procurement and Disposal of Public Assets Act, The Public Procurement and Disposal of Public Assets Act, and its attendant Regulations, was passed into law in 2003. The act requires all public procurement and disposal to be conducted in accordance with the principles of transparency, accountability and fairness (non-discrimination) and in manner that maximizes competition and achieves value for money. It applies to all central and local government entities. The procurement provides for each entity to have structures that perform separate roles and responsibilities in the procurement and disposal process. The entity structures are;

The Accounting Officer

I. The Contracts Committee
II. The Procurement and disposal Unit
III. The user department
IV. The evaluation Committee (adhoc)
V. Negotiation committee (adhoc)

1.4 Establishment of a Regulatory Institution

The Public Procurement and Disposal of Public Assets Authority (PPDA) was established 2003.

• PPDA departments are:
  I. Training and Capacity Building;
  II. Corporate Affairs
  III. Legal and Advisory Services;
  IV. Procurement Audits and investigations
  V. Finance & Administration

• The regulatory institution is under the Ministry of Finance, which is in charge of policy formulation.
1.4.1 The Mandate of PPDA

The objectives of the PPDA are derived from section 6 of the PPDA Act, 2003 and they are to:

- Ensure the application of fair, competitive, transparent, non-discriminatory and value for money procurement and disposal standards and practices.
- Harmonize the procurement and disposal policies, systems and practices of the central government, local governments and statutory bodies.
- Set standards for the public procurement and disposal system in Uganda.
- Monitor compliance of procuring and disposing entities.
- Build procurement and disposal capacity in Uganda.

1.5 Background to Uganda’s Road sector

Uganda’s road sector is one of the sub-components constituting the organizational structure of the Works and Transport sector. Structurally, the road sector falls under the portfolio of the Directorate of Engineering and Works, to which it is technically answerable. The Ministry of Works is responsible for coordinating the entire works and transport sector. It is responsible for policy formulation, supervision and monitoring in the sector. Other key actors in the sector include the Uganda National Roads Authority (UNRA) which is in charge of the national road network, the Uganda National Road Fund (URF) which is responsible for collecting road user charges and planning for road maintenance. Districts (112), Municipalities (22), and sub-counties (1,147) are responsible for district, urban, and community access roads respectively. Kampala City Council Authority (KCCA) is responsible for roads in Kampala.

Figure 1 summarises relationships among the key actors in Uganda’s road sector.

![Figure 1.2: Relationships among actors in the Road Sector in Uganda](image)

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3. Funding

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Policy Guidelines

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Reporting

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Donors - WB, AfDB, EU etc.

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OPM MoL.G

---

MoWT

---

URF

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UNRA

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KCCA

---

Districts and Municipalities

---

MPPED

---

TSWG & JAF

---

PPDA

---

Private Sector (contractors & financiers)

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Civil Society

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The Ministry of Finance, Planning and Economic Development (MFPED) is responsible for finance and planning, allocating funds and controlling public expenditure in all sectors including roads. The Office of the Prime Minister (OPM) and the Ministry of Local Government finance road works through specific project like Peace, Recovery and Development Programme (PRDP) and Community Access Infrastructure Investment Project (CAIIP) respectively. Donors, especially the World Bank, African Development Bank (AfDB) and the European Union, are key funders of roads in Uganda. Donor assistance is collaborated under the Joint Assistance Framework (JAF). There is also a Transport Sector Working Group (TSWG) that brings together stakeholders. Other actors include:

i) the Public Procurement and Disposal Authority (PPDA) which issues guidelines followed in procurement related to road works as well as any procurement by the implementing institutions;

ii) the private sector which undertakes most of the road works under different contractual arrangements including those that involve financing of road works by the sector; and

iii) Civil society organizations championing different causes in the sector. The relationships among the actors as shown in Figure 2 include issuance of guidelines or funds which are normally accompanied by supervision and monitoring in one direction and reporting in the other direction. The figure depicts a multiplicity of reporting channels used by actors in the sector. It is important to note that there are other actors that impact on outcomes of the sector not included in the figure, including Parliament, the Inspector General of Government (IGG), Police, Courts of Law, etc. ACODE (2015)

1.6 Background to UNRA

UNRA is one of the products of Road Sector Reforms. In 1996, the Government of Uganda prepared the 10-Year Road Sector Development Programme (RSDP). The Programme was reviewed and updated in 2002 making it a 10 Year rolling Road Sector Development Programme Phase 2 (RSDP2). One of the objectives of the RSDP was establishing a robust administration for effective and efficient management of the national roads network. To achieve this objective, Government committed itself to reform national roads management through the establishment of
an autonomous performance-based Road Authority to handle road administration and execution function and restructuring the Ministry of Works and Transportation (MoWT) to focus on policy, setting standards, regulation, monitoring and evaluation functions.

The UNRA Act As part of the reform process, in 1998 the Road Agency Formation Unit (RAFU) was created as a semi-autonomous agency within the MoWT to manage the national roads development. In 2002, a study was conducted on the establishment of an autonomous Road Authority. The findings of the study informed the drafting of the Bill for creating the Uganda National Roads Authority. The Bill was passed by Parliament of Uganda in May 2006 and was signed into Law by the President in June 2006. The Board of Directors (BODs) was appointed in January 2007. Thereafter, the Executive Director was appointed in November 2007. UNRA became fully operational on 1st July 2008.

Mission, Vision and Mandate

1.6 MISSION
To develop and maintain a national roads network that is responsive to the economic development needs of Uganda, to the safety of all road users, and to the environmental sustainability of the national roads corridors.

1.6.2 Vision
To operate a safe, efficient and well-developed national roads network

1.6.3 Mandate
To develop and maintain the national roads network, advise the government on general roads policy, contribute to the addressing of national transport concerns, and perform certain other functions such as the selection of contractors, the supervision of road construction, the scheduling of maintenance, and the prioritization of national road works
1.7 Problem Statement

A good procurement process should be open, transparent and compliant to the national laws. It should achieve continuous improvement and value for money in all categories of expenditure in its activities, promote innovation, encourage environmental and social sustainability through effective procurement policies and practices and work in partnership with the private sector and other organisations to achieve value for money, quality and effective service delivery in the road’s sector. Republic of Cyprus, Treasury of the Republic, Public Procurement Directorate (2007)

It is very important that the public procurement function is discharged honestly, fairly, and in a manner, that secures best value for public money. Contracting authorities must be cost effective and efficient in the use of resources while upholding the highest standards of probity and integrity. Management in government departments and agencies should ensure that there is an appropriate focus on good practice in purchasing and, where there is a significant procurement function that procedures are in place to ensure compliance with all relevant guidelines. National Public Procurement Policy Unit, Department of Finance Ireland (2010).

Uganda road sector’s procurement process has been marred with a myriad of irregularities. It faces a range of problems that include but are not limited to a lengthy procurement process, lack of integrity of the human resource employed, the actions of oversight agencies such as the Inspectorate of Government, PPDA, Police and the Courts of Law that affect the procurement process and prolong its duration, the liberties accorded to complainants under the PPDA Act give them the latitude to delay the conclusion of procurements and lack of due diligence. This in turn increases the cost of the road construction, increases the time spent on construction and also leads to inadequate quality of works provided. This affects the efficiency of the national road sector.

According to UNRA report entitled “Procurement Procedures and Project Implementation on Resource Absorption” 2014, Uganda loses $1 million each month due to delays in procurement as contractors put an allowance for inflation. This was mainly attributed to lack of due diligence, liberties accorded to complainants by the Procurement Law, action by oversight agencies and a lengthy procurement process.
The procurement process has a colossal effect on the efficiency of the road sector. The road sector is dependent on it for selection of the best firms to carry out construction works in the sector. If the process is executed in an effective manner, the road sector can then attain maximum efficiency levels. It is on this basis that we seek to ascertain the effects of the procurement process on the national road sector in Uganda.

1.8 Main Objective of the Study
The purpose of the study is to investigate the effect of the procurement process on Uganda’s road sector.

1.8.1 Specific objectives of the Study
The study sought to answer the following questions: -

(I) To Determine the effect of the duration of the procurement process on cost efficiency of roads in the road sector.

(II) To determine the effect of the duration of the procurement process on time efficiency in the road sector.

(III) To determine the effect of the ICT usage in the procurement process on time efficiency in the road sector.

(IV) To determine the effect of ICT usage in the procurement process on cost efficiency in the road sector.

1.9 Hypotheses of the Study
The study seeks to test the following hypotheses: -

1. Ho: Duration of the procurement process affects cost efficiency in the road sector

2. Ho: Duration of the procurement process affects the time efficiency in the road sector.

3. Ho: ICT usage in the procurement process affects the time efficiency in the road sector.

4. Ho: ICT usage in the procurement process affects the cost efficiency in the road sector.


1.10 Significance of the study

To The Government of Uganda and other policy makers

I. The Government of Uganda and other stakeholders may use the findings of this report to make adjustments in the procurement process that will promote maximum efficiency of the road sector as it will provide part of the evidence to assist in the revision of procurement policies in favour of procurement profession regarding the efficiency of the road sector.

II. The research will also add value to the body of knowledge and understanding the tendering process in public entities. This will be beneficial to researchers who may want to research more in this area.

1.11 Limitations of the Study

i) The research was costly as it involved making endless trips to UNRA.

ii) Access to data was a problem since procurement documents are highly classified.

1.12 Delimitations of the Study

i) The researcher acquired funds from his benefactor to enable him carry out his research.

ii) The researcher got an introductory letter from the institution to present to UNRA so as to access data.
CHAPTER TWO
LITERATURE REVIEW

This chapter reviews literature on tendering processes. It contains literature on features of the procurement process that influence time and cost effectiveness in the road sector. It puts emphasis on the following; Uganda national road system, procurement processes, steps in tendering process, duration taken in tendering process and use of ICT in tendering process. It also presents gaps to be filled by the study and the conceptual framework.

2.1 Uganda National Road's system

The Ugandan national roads system is experiencing a period of exceptional activity and promise. Once the best network in Sub-Saharan Africa, decades of neglect and spending inefficiencies have rendered it unfit for purpose. We are implementing a DFID-funded assistance programme to help restore the network to its former health. Roads are a central issue for growth in Uganda, which is land-locked and has few navigable waterways. An improved road network would reduce transport costs, leading to greater export competitiveness and a rise in incomes. It would also enable the country to respond promptly to natural disasters, and avoid unnecessary deaths from everyday medical emergencies. Most importantly, improving national roads could accelerate pro-poor growth, as it would encourage developments in agriculture in line with urbanisation. This would directly benefit Uganda’s extensive rural poor population. The Government of Uganda sought to usher in a new prosperous epoch in the Ugandan roads sector with the creation of the Ugandan National Roads Authority (UNRA) in 2008. This became the body responsible for planning and procuring the services of private firms for the building and maintenance of national roads. Yet the sector remained plagued with inefficiency. In 2010, each national roads construction contract was, on average, completed almost nine months behind schedule due to lack of transparency in the procurement process, poor contract management and project monitoring inefficiencies. We are assisting the UNRA in reaching its target of halving the average contract completion delay by 2014. Through a combination of technical training, soft skills capacity building, and the implementation of accountable and transparent systems, we have overhauled UNRA’s core functions to improve value for money throughout the lifecycle of procurement. (Adam Smith 2012)
2.2 Tendering

Tendering is a procurement procedure where potential suppliers are invited to make a firm and unequivocal offer on the price and terms in which they will supply specified goods, services or works which on acceptance shall be the basis of a subsequent contract (Lysons and Farrington, 2006). Tendering is based on the principles competitiveness, fairness and accessibility, transparency, openness and probity (World Bank, 2008). Internationally, all public entities are subjected to open tendering by law so as to prevent fraud, waste, unethical practices or local protectionism (global trade negotiation 18th Dec. 2006).

In most developing countries, the procurement process is transitioning from a clerical non-strategic unit to an effective socio-economic unit that is able to influence decisions and add value (Knight, Harland, Telgen, Thai, Callender, & Mcken, 2007; and Facolta di Economia, 2006). Developing countries in one way or another have reformed their public procurement regulations. The reforms have not been limited to regulations only, they also include public procurement process, methods, procurement organisational structure, and the workforce. The reforms have been as a result of joint effort with various development partners like the World Bank, International Trade Centre, WTO, and UNCTAD varying from country to country. None the less, most developing countries are facing a problem of rapid changes in public procurement requirements. The changes are impacting pressure on how the procurement function performs its internal and external processes and procedures in order to achieve its objectives. The ability to realize procurement goals is influenced by internal force and external force. Interactions between various elements, professionalism, staffing levels and budget resources, procurement organisational structure whether centralized or decentralized, procurement regulations, rules, and guidance, and internal control policies, all need attention and influence the performance of the procurement function. In addition, public procurement is faced by the challenges imposed by a variety of environment factors (external factors) such as market, legal environment, political environment, organisational and socio-economic environmental factors.

Public procurement is defined by the World Bank as the purchasing, hiring or obtaining by any other contractual means of goods, construction works and services by the public sector. It is alternatively defined as the purchase of commodities and contracting of construction works and services if such acquisition is effected by resources from state budgets, local authority budgets,
state foundation funds, domestic loans or foreign loans guaranteed by the state, and foreign aid as well as revenue received from the economic activity of the state. Public procurement thus means procurement by a procuring entity using public funds (World Bank, 1995). Public procurement has been identified as the government activity most vulnerable to corruption. As a major interface between the public and private sectors, public procurement provides multiple opportunities for both public and private actors to divert public funds for private gain.

2.3 Steps in Tendering Process in the Public sector

There are several main steps that are mostly used in the tender process (Creswel, 1999). First, tender process is determined: the organization requesting the tender will determine the type of tender that will be used, as well as what will be involved in the tender process. Second, request for tender is prepared: the request for tender outlines what is required, the contractual requirements and how you should respond. Thirdly, tenders are invited: the value, complexity and business category determines how tenders are invited. Fourthly, suppliers respond: you should first obtain all relevant documentation. At this stage, it’s important to attend any pre-tender briefing sessions being conducted, clarify any uncertainties, plan your response, prepare your response and submit your response in the right format, on time and at the right location (Fadhil and Hong, 2002). Other stages are fifth stage, this is the stage of evaluation and selection: each tender will be checked for compliance, and if compliant, then evaluated against the criteria specified in the tender documentation. The tender that offers best value for money will win the business. Sixth, involves notification and debriefing: when a contract has been awarded, the successful tenderer will be advised in writing (of the outcome. Unsuccessful tenderers are also advised and offered a debriefing interview. Dozzi et al. 1996). Finally, contracts established and managed. Generally, a formal agreement will be required between the successful tenderer and the relevant agency.

2.4 Duration taken in tendering process in Public Sector

Duration taken is one of the factors that influence effectiveness of tendering process in Public Sector. If not well managed, it will be very costly to the company. All Public sectors are required to comply with the law on duration taken in tendering process.

Ministry of Finance, Planning and Economic development in its report entitled “The State Of Public Service Delivery In Uganda”, 2015 cited irregularities during the bidding process
which leads to several complaints and requests for reviews during the procurement process which further delays the award of contracts. It further revealed that poor procurement planning as evidenced by failure to prepare adequate designs/specifications leads to cost overruns and design reviews as well as onsite delays.

The Roads' Sector Annual Monitoring Report of Financial Year 2013/14 by MoFPED, 2014 further attributed delay and non-completion of construction works in the sector to delay in the procurement process and the inadequate assessment of the financial capacity of firms rendering services in the sector. This led to halting of the projects as contractors would run out of capital to run the projects.

2.5 The use of ICT in Tendering Process in Public Sector Procurement

According to Egan, (1998) the procurement process in UK construction has come under close scrutiny since the (Egan report) which had pointed out that “The UK construction industry can gain substantial improvements by delivering better service to clients, reducing construction cost, time and defects”. According to Latham report (Latham, 1994) suggested as one of its proposals that savings in capital costs of 10% a year could be achieved. E-Procurement will bring improvements to all aspects of the procurement process (National Institute of Governmental Purchasing, 2001, Minahan and Degan, 2001, McIntosh and Sloan, 2001, Ribeiro, 2001). The procurement process is not solely the buying of goods and services but also incorporates buying strategy as well (Egbu et al, 2003). The public sector has produced a plethora of initiatives to investigate ways to improve the strategy and processes of procurement over the last 11 years. Despite these suggested advantages, Martin (2004) shows that in construction agencies, still less than 30% of tender documentation are sent out in electronic form. This is because construction procurement is more complex than general procurement. This situation is even worse in developing countries such as Kenya. There are many different parties involved who feed information into the process – clients, consultants, contractors and suppliers. Construction work specifications can be less well defined with unknowns such as ground conditions could large impact on the overall cost (Edie et al, 2007). In contrast items in goods and services procurement can be tightly specified with little movement from the original specification. Factoring in risk is a major aspect and can determine the form of contract, how it is assessed and its overall outcome. For these reasons electronic solutions for general procurement need to be altered to meet the
needs of construction procurement. This therefore makes tendering process complex. According to Knudsen (2003) suggests that procurement can be condensed into the following six processes - “e-sourcing, e-tendering-informing, e-MRO (Maintenance, Repair and operating materials), ERP (Enterprise resource planning) and e-collaboration”. The principle of electronic tendering is simply to provide a faultless system of transmitting input from the contractor's tender through to contract management removing the inefficiencies, delays and cost involved in manually processing tender information and re-transcribing for contract management activity. Bell (2001) suggests changes must take place if electronic solutions are to become predominant and companies are to remain competitive in the new era. Therefore, ICT is critical in tendering process. Rankin et al (2006) published a study into drivers and barriers for e-procurement in Canada. This was the first piece of research to investigate drivers and barriers in construction e-procurement. This confirmed that the drivers and barriers identified from the goods and Services industries could be applied to the construction industry. His study focused more on e-sourcing within construction e-procurement rather than e-tendering. With a stationary product and a production line that changes locations, greater complexity and economic value the construction industry is essentially different to other industries. The consequence is that the drivers and barriers to construction e-procurement could be performing differently to those in the general goods and services industry (Ahmed, Irfan, and Parasuraman, 1994). This study narrows down to evaluate level of usage of ICT in tendering process and its influence in effectiveness in tendering process which in turn affects the efficiency of the road sector.

As per RICS e-tendering guide notes (2005), there are many benefits in adopting the e-tendering process for instance, simplification of tender process, and reduction in tender cost, avoidance of multiple entries of the same information and ultimately acceptable and fair assessment among the Tenderers. All the voluminous tender documents are shared through the electronic copies rather than hardcopies. (Betts el al, 2006 & Karim, 2009) informs that in e-tendering, a Tenderer can easily exchange the information through

- MS Word, spread sheet MS Excel
- Auto CAD and Micro station drawings
- Adobe Acrobat
- Other formats e.g, XML, CITE etc.
Another most useful advantage of E-Tendering has been explained by Martin (2008) in the news section of RICS website. He explains that in E-tendering, not only the all parties would be able to check any revisions or change in drawings, the moment Designers or Employer post them on the net, all relevant parties will also receive a confirmation regarding the entities that have viewed the changes. Due to this, there would be lesser chances of denial by any Tenderers or Client, regarding the receipt or issuance of any addendum or revision of any part of works. This would benefit all entities who are involved in the tendering process. Further, the tender documents normally consist of voluminous amount of paper documents due to the complex requirements of tender, and printing all these documents and sending them to all Tenderers individually is totally wasteful (Martin, 2008). E-Tendering results in massive saving to the Employer in terms of reduced usage of paper. Furthermore, there is also a saving for the Tenderers as substantial travelling costs and time, required to pick the documents from the Employer’s office and to submit the tender document, are avoided in E-procurement.

Notwithstanding, Betts et al (2006) reports that the demands of various governments and the Construction Industry to do “paperless” business has generated various commercial e-tendering systems around the world, but these systems were launched without considering and fulfilment of legal and security perspective. This paper further informs that in shifting to an electronic environment, there are legal hurdles still to be faced. However, as the UNICITRAL Model law on Electronic Commerce has been implemented in many countries (either complete or partially in 25 national jurisdictions), it can be used as a guide if any legal issue may arise.

According to Martin (2008), the majority of related individuals agree that e-tendering has substantially reduced the administration cost.

Karim (2009) reports that, like European countries the countries in the Middle East have started the electronic procedure to requesting tenders for construction projects. He further explains that, through extranet Client or Consultant upload the documents from their offices and the same can be downloaded by the Tenderer upon obtaining requisite permissions. Selection of the medium of exchange of information depends on the size and complexity of project. The medium of technology implemented between project’s size and complexity.
According to current survey report by BCIS in 2009; BCIS seems to be convinced that web based e-tendering reduced administrative overheads related to the whole tendering processes. It also makes the documentation process more efficient, expedites the tender process, reduces the demand of manpower resources, provides better security and makes it easier to comply with best practice recommendations.

2.6 Conceptual framework

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration Of the Procurement Process</td>
<td>Cost Efficiency In The Road Sector</td>
</tr>
<tr>
<td>ICT usage in the Procurement Process</td>
<td>Time Efficiency In The Road Sector</td>
</tr>
</tbody>
</table>
CHAPTER THREE: RESEARCH METHODOLOGY

This chapter presents the research methodology that was used in carrying out the research on the effect of the procurement process on Uganda’s road sector. It consists of the research design, study area, study population, sample size, sampling techniques, data sources, data collection instruments, quality assurance measurement of variables, data analysis and presentation and some limitations.

3.1 Research design

The research design is the structure or approach of the research and also a kind of glue that holds the entire required element in the research thesis together and gives a concrete report to the researcher (Kombo and Tromp, 2011). Research design is the outline, plan or scheme that is being used to generate answers to the research problem. It is basically the plan and structure of investigation. Descriptive research was used to establish factors associated with certain occurrences, outcomes, conditions or types of behaviour. Descriptive research design is a scientific method of investigation in which data is collected and analysed in order to describe the current conditions, terms or relationships concerning a in a certain specific field problem. (Mugenda & Mugenda, 2003)

3.2 Area of Study

The study was carried out on national roads constructed in Uganda under the supervision of the Uganda National Roads Authority.

3.3 Sampling Design and Sample size.

Sampling is the process by which a relatively small number of individuals, objects or events is selected and analysed in order to find out something about the entire population from which was selected. A sample is a small proportion of targeted population selected using some systematic form. The researcher chose purposive sampling to select the sample size for the study.

3.4 Validity of Research Instrument

According to (Mugenda and Mugenda, 2003) validity is the accuracy and meaningfulness of inferences, which is based on the research results. It is a degree to which results obtained from the analysis of the data actually represents the phenomenon under study. The data was subjected to scrutiny by the supervisor to ensure validity.
3.5 Data Analysis
According to Kombo and Tromp (2011), data analysis procedure includes the process of packaging the collected information putting it in order and structuring its main components in a way that the findings can be easily and effectively communicated. After the fieldwork was done, all the data was checked for reliability and verification before analysis. Editing, coding and tabulation was carried out. Quantitative analysis was done using STATA in order to give all correct detailed analysis.

3.6 Ethical Issues
The researcher disclosed to UNRA that the study was purely meant to satisfy an academic requirement and not for any other reason. The information was analysed and used for the purpose of the study only.

3.7 Summary
The researcher adopted a descriptive survey design to investigate the effect of the duration and ICT usage in the procurement process in road sector in Uganda. Purposive sampling was used to come up with the data. The researcher organised raw data and STATA was used during the analysis. Ethical issues were strictly adhered to throughout the study and data was analysed only and used for the intended purpose of the study.
### 3.8 Operationalization of variables

<table>
<thead>
<tr>
<th>Research objectives</th>
<th>Type of variables</th>
<th>indicators</th>
<th>Measurement</th>
<th>Measurement scale</th>
<th>Type of analysis</th>
</tr>
</thead>
</table>
| To determine the extent to which duration of the procurement process affect cost efficiency of roads in the road sector. | **Independent Variable**  
Procurement process duration | Time taken to complete the procurement process  
Addition cost arising due to delays in procurement | Time  
Cost | Ordinal  
Ordinal | |
| To determine the extent to which the duration of the procurement process affects the time efficiency in the road sector. | **Independent Variable**  
Procurement process duration | Time taken to complete the procurement process  
Time lag between expected start date of the road project and the actual start time | Time | Ordinal  
Ordinal | |
CHAPTER FOUR
DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.0 Introduction

This chapter reports the major findings from the interviews and secondary data collected from UNRA. The interviews followed a questionnaire as one gets a higher response rate and better understanding of the interviewer’s views when he interviews rather than dropping a questionnaire and picking it later. The secondary data had fifty roads, bridges and OSBP Facilities in Uganda.

Presentation of Findings on ICT usage in the Procurement Process in the Road sector

4.1 Demographic Characteristics of the Respondents

This section will discuss gender, age and the level of education of respondents.

Table 4.1: Gender of Respondent

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Expressed as a Percentage</td>
<td>59</td>
<td>41</td>
</tr>
</tbody>
</table>

This indicates majority of officers working at UNRA procurement department were male (59%) and the rest (41%) were female. It is important that the above comply with current constitution of employing at least 30% of each gender at the regional offices.

Table 4.2: Level of Education of Employees

<table>
<thead>
<tr>
<th>Education level</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>Graduate</td>
<td>7</td>
<td>41</td>
</tr>
<tr>
<td>Post Graduate</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Graduate with Professional Certification</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Post Graduate with Professional Certification</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.2 shows that 18% of the respondents had attained a diploma, 41% a Bachelor’s degree, 6% a post graduate, and 12% were graduates with a professional certification and 24% post graduates with a professional certification.
Table 4.3: Employees’ terms of Employment

<table>
<thead>
<tr>
<th>Type of Employment</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporary</td>
<td>6</td>
<td>35.29142</td>
</tr>
<tr>
<td>Permanent</td>
<td>11</td>
<td>64.7088</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.3 shows that majority 65% of the respondents were on permanent and the rest 35% were temporary or on probation.

Table 4.4: Ages of Respondents

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>26-35</td>
<td>5</td>
<td>29</td>
</tr>
<tr>
<td>36-50</td>
<td>7</td>
<td>41</td>
</tr>
<tr>
<td>50 and above</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.4 shows that 18% of the respondents were aged between 18 and 25 years, 29% were aged between 26 and 35 years and 41% were aged between 36 and 50 and 12% were 50 years and above.

Table 4.5: Involvement in Procurement Process

<table>
<thead>
<tr>
<th>Involvement</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>17</td>
<td>100</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.5 shows that all respondents were involved in the procurement process.

Table 4.6: How the Employees are involved in the procurement process

<table>
<thead>
<tr>
<th>Involvement</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td>12</td>
<td>71</td>
</tr>
<tr>
<td>Support</td>
<td>5</td>
<td>29</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 4.7: Background in IT

<table>
<thead>
<tr>
<th>Background in IT</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>12</td>
<td>71</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>29</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>100</td>
</tr>
</tbody>
</table>

According to table 4.7, majority of the respondents (71%) had a background in it either through a capacity building training or a professional certification in IT while the other 29% didn’t have any special training in ICT.

**Employees involved in Tendering Process**

All respondents were of the view that IT usage in the road sector had a cost and time value in the road sector. It reduced the number of the days that the procurement process took, helped in choosing the best firm offering a fair price and thus adding a cost value. Most were the view that there were changes UNRA could effect in IT so as to increase the cost and time value being added to sector by ICT. The changes that could be effected included making the prequalification of bids, payment of the procurement dues online. More sophisticated programs could also be used to make procurement documents as safe as possible from hackers who try to access information without permission.

**Presentation Of The Effect Of The Duration Of The Procurement Process And The Cost And Time Implications It Has On The Efficiency Of The Road Sector.**

**ANALYSIS**

Table 4.8: Duration of The Procurement Process

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement Process Time</td>
<td>50</td>
<td>3</td>
<td>22</td>
<td>2.115</td>
</tr>
</tbody>
</table>

Source: Authors Survey (2017)

Since the data is highly skewed, we shall use the max, min and medium in interpreting the analysis.
Therefore, the minimum and maximum duration of the procurement process are 3 and 22 months respectively.

**Table 4.9: Cost Efficiency of Roads**

<table>
<thead>
<tr>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>0</td>
<td>35</td>
<td>2.518</td>
</tr>
</tbody>
</table>

Source: Authors Survey (2017)

Since the data is highly skewed, the minimum and maximum differences in the cost are 0 and 35 respectively.

**Table 4.10: Difference in time**

<table>
<thead>
<tr>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>0</td>
<td>30</td>
<td>1.868</td>
</tr>
</tbody>
</table>

Source: Authors survey (2017)

Since the data is highly skewed, the minimum and maximum differences in the time are 0 and 30 respectively.
RELATIONSHIP BETWEEN THE DURATION OF THE PROCUREMENT PROCESS AND COST EFFICIENCY OF ROADS

Figure 4.1: Scatter Plot Showing the Relationship between Duration of the Procurement process and Additional cost incurred in the Road Construction

Cost = 0.98077(Duration) + 1.2950

An increase in duration of the procurement process by a month will lead to a 0.98077 increase in cost in the road sector.

On interpreting the R, 35% of the changes of cost are accounted for by the duration of the procurement process.

NB: Spearman’s rank correlation was used since the respective data is highly skewed.

RELATIONSHIP BETWEEN THE DURATION OF THE PROCUREMENT PROCESS AND DIFFERENCE IN TIME

Figure 4.2: Scatter Plot Showing the Relationship between Duration of the procurement process and Time lag incurred in the Road sector
Time lag = 0.70942 (Duration of the Procurement Process) + 0.5771140

An increase in the procurement process by a month will lead to 0.70942 month difference between the original and revised commencement date of the construction of the road.

88% of the difference in the original and adjusted dates of commencement of the construction of the roads is attributed to the duration of the procurement process.

<table>
<thead>
<tr>
<th>r</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.787</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Source: Authors' survey

There is a strong, positive correlation and significant relationship between the duration of the procurement process and time lag in the start of the road construction in the road sector thus the longer the procurement process, the more time inefficiency in the road sector.

This is as a result of rejecting the null hypothesis because the P value is less than the P critical which is 0.01 in this particular case.

NB: Spearman’s rank correlation was used since the respective data is highly skewed

Ho: There is no relationship between the two variables

H1: There is a relationship between the two variables.
Table 4.11: Relationship Between the Difference in Cost and Difference in Time

<table>
<thead>
<tr>
<th>N</th>
<th>r</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>0.737</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Source: Authors Survey (2017)

There is a strong, positive correlation and significant relationship between the time lag in the start of construction in the roads' sector and the additional cost of road construction in the road sector.

This is as a result of rejecting the null hypothesis because the P value is less than the P critical which is 0.01 in this particular case.

NB: Spearman’s rank correlation was used since the respective data is highly skewed

Ho: There is no relationship between the two variables

H1: There is a relationship between the two variables.

5.3 Discussions

On demographic characteristics of the respondents, the following were the findings: This study found that, 59% were male and 41% female. This indicates that majority of officers at UNRA were male. On terms of service, 64.7% of the respondents were on permanent and 36.3% were temporarily employed.

The age distributions are as follows. 18% of the respondents were aged between 18 and 25 years, 29% were aged between 26 and 35 years and 41% were aged between 36 and 50 and 12% were 50 years and above.

18% of the respondents had attained a diploma, 41% a Bachelor’s degree, 6% a post graduate, and 12% were graduates with a professional certification and 24% post graduates with a professional certification. This concurs with the findings of Ahmed, Irfan, and Parasuraman, (1994) which found out that, the procurement tendering system is manned by junior officers, who were therefore powerless to correct any anomalies and could easily be manipulated by their seniors and powerful politicians.
Majority of the respondents (71%) were technically involved in the procurement process while the rest were support staff (29%).

The researcher sought to find out the effect of ICT usage in the procurement process in the road sector. All the respondents were of the view that ICT usage in the procurement process added cost and time efficiency in the road sector. This was through simplification of tender process, and reduction in tender cost, avoidance of multiple entries of the same information and ultimately acceptable and fair assessment among the tenderers. All the voluminous tender documents are shared through the electronic copies rather than hardcopies. E-Tendering results in massive saving to the employer in terms of reduced usage of paper. Furthermore, there is also a saving for the tenderers as substantial travelling costs and time, required to pick the documents from the employer’s office and to submit the tender document, are avoided in E-procurement.

The study sought to find to find out to what extent duration taken in procurement influences cost efficiency. The calculated Spearman Correlation coefficient of 0.602 implies that there is moderate, positive correlation and significant relationship between the duration of the procurement process and increased cost of road construction in the road sector. Thus a high correlation between the procurement process and cost inefficiency in the road sector. This study found out that the duration immensely affects the cost efficiency in the road sector since the longer the procurement process the higher the additional costs since the contractors put an allowance for inflation costs when contract signing is done later than expected.

The study sought to find out to what extent the procurement process affects the time efficiency in the roads sector. The calculated Spearman Correlation coefficient of 0.737 implies that is a strong, positive correlations and significant relationship between the duration of the procurement process and time inefficiency in the road sector thus we accept the null hypothesis that the duration of the procurement process immensely affects the time efficiency in the road sector.
CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction
This chapter summarizes the research findings, discussions, conclusions drawn and the researchers’ recommendations to the management of UNRA, URF, MoWT and other stakeholders.

5.2 Summary of Findings
The study found out that there is a significant positive correlation between the duration of the procurement process and the time lag between the original and revised construction dates of the road projects. This leads to loss of time in the country. The money invested in the road sector will take a longer time to spill over into the other sectors of the economy. Facilities that arise due to the construction of the roads e.g. road side shops will take a longer time to come up. This has a direct implication on the revenue collection since it will take a longer time for government to achieve desired tax revenues since the tax base is expanding slowly. It also cripples distribution of goods and services. Road construction is mainly seen as a big determinant of pro poor growth. If it takes a longer time to have roads constructed in this country, farmers will keep losing out since they cannot transport their goods due to delayed completion of the roads and thus affecting the livelihood of various communities in the country.

The study found out that the duration of the procurement process has a negative effect on the cost of the roads in the country. The longer the duration of the procurement process, the higher the cost. This means that tax payers have to fork out more money to construct roads thus having a heavier burden despite the harsh economic climate being experienced in the country. Most times these monies are borrowed from international financial institutions thus government paying back a larger amount than it would have paid if the duration was shorter.

In terms of ICT, most of the employees in the procurement department had attended a capacity building training in ICT. Most employees are of the view that ICT has both a cost and time value in the road sector and can highly influence that happenings in the realm of procurement. The recommendations given in the ICT are that prequalification of bids should go online and the sale of tenders too. The respondents are also of the view that UNRA has the capacity to effect these changes.
5.3 Conclusions of the Study

Based on the findings from the study, it’s concluded that, majority of officers at the procurement department of UNRA were male. On terms of service, majority of the officers were on permanent employment terms and majority of were aged 36 years and above implying the workforce was not young. Majority of the respondents were technically involved in the procurement process. In addition, majority of officers’ levels of education was Bachelor’s degree and above. In terms of availability of ICT specialists, most of the departments have ICT specialists with 96% of the respondents using computers in stages of tendering and are of the view that procurement has an effect on cost and time efficiency in the road sector. Therefore ICT is highly used in tendering in Central region and use of ICT in tendering significantly influences the efficiency in the road sector. Duration of the procurement process immensely affects the time and cost efficiencies of the road sector.

5.4 Recommendations

From the results of the study, the researcher makes the following recommendations to the Management of UNRA, URF and MoWT.

(I) The Solicitor General should streamline the process of verifying the evaluation of bids since its one of the major factors delaying the procurement process.

(II) The agency should try to economise on the amount of time used to procure a road since the more time used to procure a road, the higher the cost used to construct road facilities.

(III) Lastly payments for Sale of tenders should be done online to add more value in the Tendering process this will greatly improve efficiency and effectiveness of tendering process.

5.5 Suggestions for further research

The researcher suggests that further research be conducted on:

(i) Investigate the impact of ethical practices in procurement process and how it affects the road sector

(ii) A similar study may also be carried out in other counties to establish whether the findings are similar as those generalized in this study

(iii) Investigate any other factors that affect efficiency in Uganda’s road sector.
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David Luyimbazi Director, Planning Uganda National Roads Authority

APPENDICES

APPENDIX I: QUESTIONNAIRES

QUESTIONNAIRE TO ASSESS ICT USAGE IN THE ROAD SECTOR

My name is KWESIGA DANIEL KATAHOIRE, an undergraduate student pursuing a Bachelor of Science in Quantitative Economics at Makerere University. I am carrying out an academic research on the 'EFFECT OF THE PROCUREMENT PROCESS ON THE EFFICENCY OF UGANDA'S ROAD SECTOR' and this specific questionnaire seeks to access ICT usage in the procurement process. I am therefore requesting you to feel free in giving your answers and all will be considered right. The information provided through this questionnaire will be treated with top most confidentiality and results will be used to make recommendations which will help the public sector at large. Please answer in the space provided and you need not to write the respondent’s name. Please be honest in all responses. Your co-operation and assistance will be highly appreciated.

Personal Information

(1) Age.............................................

(2) Gender

Male ............ Female ..............

(3) Education level

I. Non – Graduate ..................................

II. Graduate ........................................

III. Post graduate

IV. Graduate with Professional Certification..............

V. Post Graduate with Professional Certification........

(4) What type of employee are you?

a) Permanent .........................

b) Temporary ............................

c) Casual ...................................

(5) Assigned Role ..............................
(6) Do you have a background in ICT or have you attended any special capacity building training in ICT?

Yes............................................No.............................................

(i) If so, please state here below

(7) Are you involved the procurement process?

Yes ........................................... No.............................................

(8) How are you involved in the procurement process?

I. Technical ...............................................................  
II. Support Staff ...........................................................

(9) On a scale of 1-10, rate the level of ICT usage in the procurement process in Uganda’s road sector .................................................................

(10) Does ICT usage in the procurement process immensely affect the cost value in the road sector?

I. Yes.........................  
II. No.........................  
III. I don’t know..............

(11) Reason

........................................................................................................

(12) Does ICT usage immensely affect the time value in Uganda’s road sector?

I. Yes.........................  
II. No.........................  
III. I don’t know..............

(13) Reason

........................................................................................................

........................................................................................................
(13) Are you satisfied with the current level of ICT usage in the procurement process in the road sector?
   a) Strongly satisfied .............................................
   b) Fairly satisfied............................................... 
   c) Not satisfied ...................................................

(15) Are there any recommendations you would like to see in the ICT usage in the procurement process in Uganda’s road sector?

........................................................................................................
........................................................................................................

(16) In your view, does Uganda National Road’s Authority have the capacity to effect these changes?

........................................................................................................
........................................................................................................

Thank you so much for your co-operation
HEAD OF PROCUREMENT
UGANDA NATIONAL ROADS’ AUTHORITY
P.O.BOX 28487
KAMPALA UGANDA

Dear Sir/ Madam,

Re: REQUEST FOR PERMISSION TO COLLECT DATA

I hereby introduce myself as Kwesiga Daniel Katahoire, a third year student of Makerere University pursuing a Bachelor of Science in Quantitative Economics at the School of Statistics and Planning in the College of Business and Management Sciences.

I write this letter requesting for permission to collect data from your department. I am doing a dissertation on “The Effect of the Procurement Process on the Efficiency of Uganda’s Road Sector.” I am humbly requesting for data on at least fifty roads. The data I am requesting for is the duration of a procurement process, the planned cost and time of completion for each of the roads and the actual cost and time of completion of each of the fifty roads. I will also be issuing a questionnaire on ICT usage in the procurement and its implications on efficiency in the nation’s road sector as regards cost and time.

I will be grateful if I am granted permission to collect data in your department.

Yours faithfully,

KWESIGA DANIEL KATAHOIRE