

Contract Management and Performance of Road Maintenance Projects: The Case of Arua Municipality

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Abstract This purpose of this study was to establish the relationship between contract management and performance of road maintenance projects in Arua Municipality. A cross-sectional survey design was used, with data collected from a sample of 102 respondents using questionnaire survey and interviews. The study found a significant relationship between contract administration, relationship management and contract closure and performance of the maintenance projects. We conclude that improved payment mechanism, controlled contract variations, improved communication channels and dispute management improve project performance. The study recommends that the government of Uganda should increase the budget for road works; internal audit function be strengthened, contract management meetings be regularly held and contract specifications clearly articulated and adhered to; and technical staff should be trained in contract management and stringent performance measures provided as controls to adequately punish errant officials. These findings offer a useful foundation in the road sector for policy and practical improvement in Uganda.

Keywords Contract Management, Performance, Roads Works, Project, Road Maintenance, Municipality, Arua, Uganda, Service Delivery

1. Introduction

Kylindri, Blanas, Henriksen & Stoyan (2012) contend that the main goal of each project is to be successful. Contract management in government has received increasing interest since the late 1980s, fostered by the 're-inventing government' movement (Osbourne and Gaebler, 1992). This movement was part of the New Public Management (NPM) that saw numerous public sector reforms, a wave of decentralization endeavors and the injection of an entrepreneurial spirit in the running of government. Managers were given much autonomy to manage,

accompanied by strong measures of performance. It was, however, not until 1989 that contracting-out was formally identified as a business strategy (Rundquist, 2007; Piore and Sabel, 1990) in an effort to transfer some risks to other parties, thereby targeting better performance.

Gwilliam et al., (2008) estimate average spending on roads in Africa at nearly 2% of Gross Domestic Product (GDP); the estimated expenditure in the industrialized countries is only about 1% of GDP while expenditure on roads in the fast growing economies ranges between 2% and 3% of GDP. The roads sector in Uganda, like many other sectors, have since the 1990s undergone several reforms aimed at improving efficiency and effectiveness.

Despite these reforms and increases in funds allocated to the roads sector in the national budget, service delivery indicators remain below target levels. The proportion of paved roads increased from four percent in 2005 to eight percent at the beginning of 2009, with 45 percent of all the roads being in poor condition. According to the World Bank (2011), the maintenance and development funding for the national road network amounted to an average equivalent of about US\$100 million per annum. However, Government is concerned that 70% of the contractors do shoddy work (Works Minister Abraham Byandala, 2013; Ntayi et al., 2010) and contractors constantly fail to deliver even after receiving advance payments.

Furthermore, despite the existence of a regulatory framework in the public sector, millions of dollars have been lost in unfulfilled contracts. Existing evidence indicates that the government is still losing billions of shillings in shoddy works and services (IGG Report, 2012). We, therefore, hypothesized that this could be due to poor contract management among key players in the procurement process. The above background could have led Basheka and Kabeteraine (2013) to conclude that the public procurement reforms envisaged may have been lost in practice.

According to the Works and Transport Sector Performance Report (2011), availability of good-quality and reliable transport infrastructure and services is a pre-requisite for effective functioning of the service sectors, consuming

about 16% of the national budget. Biafore (2006) observes the importance of contract management in projects performance. She notes that learning to avoid past mistakes is an important part of improving project performance. Cantabria (2011) records the use of 'rule of thumb' during the early years of industrialization as a measure (rough estimate) of things. The writer further reports the introduction of scientific management by Taylor in the early 1900s, which signaled the evolution of performance cost measurement. As industrialization entered the 20th century, Taylor mainly focused on productivity (efficiency) of the labor force that comprised mostly unskilled immigrants or field workers. It took about a century before the methods for evaluating performance took shape and form as a business management discipline. Memon, Rahman and Azis (2012) found that the construction industry in Malaysia still faces poor performance, resulting in failure to achieve effective time and cost performance. Martin (2012) identified factors impeding the organization's ability to deliver projects successfully as technical complexity of a project, optimistic organizational culture, unstable funding.

2. Statement of the Problem

When the Road Fund Act (2008) was operationalized in 2010, road maintenance funding to the Municipality rose significantly during financial year 2010/2011 (Annual road maintenance plan, 2010). Despite the achievements made in road maintenance performance during the study period, many road links in Uganda are not motor-able due to improper contract management. Nearly 40% of Arua Municipality's road network remains either poorly maintained or unmaintained and riddled with potholes. An audit of the Municipality by Uganda Road Fund in 2013, found that there were no records, site handovers, completion certificates and final handover of completed projects. If road funds are not adequately managed, the Government of Uganda is likely to continue losing colossal amounts of money in the roads sector without an equivalent level of actual service delivery. Sabiiti, Muhumuza and Tumutegyereize (2013) confirm that only 29.4 % of contracts are completed within the original contract time. This indicates that contract management is a probable area of poor performance. It is therefore against this background that the researcher studied the relationship between contract management and performance of road maintenance projects in Arua Municipality. Conceptually, contract management has become a megatrend in many public entities especially as a result of social accountability and increased demand of service delivery (Shetterly et al., 2012; Schiele, 2007; Swinney and Netessin, 2007). Contract management has been described by Rendon (2009) as having a grip in project monitoring and control.

3. Theoretical Background

For the purpose of this study, the theory of constraints

(TOC), was used to explain the study variables as depicted in the study objectives. The TOC developed by Goldratt in the mid-1980s (Goldratt, 1990) is a management paradigm that views any manageable system as being limited in achieving more of its goals by constraints. According to TOC, every organization or project must be understood as a system with a goal. Hence, every action taken by any part of the system must be judged by its impact on that goal. A system constraint is defined as anything that significantly prevents a system from improving its performance towards that goal (Goldratt, 1990; Mabin & Balderstone, 2003). TOC is systemic and strives to identify constraints to system success and to effect the changes necessary to remove them (Souza, 2010). Anything that prevents a project from reaching this goal is labeled as a constraint. Constraints may appear in the form of capacity, material, funds, time, logistics, the market (demand), behavior, or even management policy. The existence of these constraints in project management practices compromises project performance.

Khosravi and Afshari (2011) assert that researchers still have no common dimensions constituting project performance and how it should be measured. Lim and Mohamed (1999) argued that that project success depends on whether one is an individual owner, developer, contractor, user, the general public and so on. Chan and Chan (2004) categorized performance indicators for construction project performance into two categories. Category one composed of time; cost; safety; and environment. The second one was subjective measures, which comprised quality; functionality; and satisfaction of different project participants. However, other researchers criticized Chan and Chan (1997) as being limiting to operational and tactical levels and excluded the strategic level of the project. In the same breath Ahadzie et al. (2008) introduced new criteria for mass house building projects, which included: environmental-impact; customer's satisfaction; quality and overall cost; and time. While Bryde and Robinson (2005) argued that contractors measure project performance on five sets of criteria, including cost; time; meeting the technical specification; and customers' and stakeholders' satisfaction. Recent studies by Le-Hoai, Lee and Nguyen (2013) in Vietnam also identified six significant variables that determine project success as; timeliness, accuracy and completeness of design and owner's project financing. Xiao and Proverbs (2002); Thai (2004); Lysons and Farrington (2006) assert that contract management focuses on achievement of the three goals of product quality, delivery on time and within the budget. For the purpose of this study we operationalized project performance as quality, cost and time even though they are referred to as the traditional indicators.

We are aware as suggested by Kylindri et al., (2012) that project success may not be accessed only through the three criteria, since ascertaining success is more complex because of the number of stakeholders involved. He argues that success criteria vary from project to project and from stakeholder to stakeholder. PMBOK (2004); Elsey (2007)

classifies contract management into upstream/pre-award activities and downstream/post-award activities. We concentrated the study on downstream activities, with emphasis on contract administration, relationship management and contract closure.

Another theory used was the agent theory as advocated by Donahue (1989) who explains that contract managers in public sector play a relationship role. His findings emphasize that the buyer, as the principal, should minimize the risks posed by the agent. Therefore, civil servants concerned with public procurement must play the agent role. In that regard, procurement managers take on the role of agent for elected representatives. The principal-agency theory holds that shirking is likely to occur when there is some disagreement between policy makers and the bureaucracy.

4. Literature Review and Hypotheses

Some studies have been undertaken to explain how contract management affects project success mostly in the developed countries but few are context specific to Uganda. Reviewed literature seems to indicate that contract administration, relationship management, and contract closure indeed have respective relationships with project performance (Alinaitwe, 2007; Soliman, 2011 and Young 2008). However, not much is known in the roads maintenance in Arua Municipality, Uganda.

4.1 Contract Administration and Performance of Road Maintenance Projects

Kelman (1994) defines contract administration as a set of activities performed by government officials (client's representatives) after a contract has been awarded to determine how well the government (client) and the contractor perform to meet the requirements of the contract. While strategizing to ensure that contract management successfully takes the right course, all the parties involved must pay keen attention to all provisions in the given or existing contract (Sanders, Locke, Moore, & Autry, 2007; Laratta (2009) and Saunders (2000) as cited by Oluka and Basheka, 2013). Successful and efficient contract management practices are those that meet the needs of the company's (client's) stakeholders, achieve optimum conditions and value in regard to the allocation of scarce tax payers' resources, ensure rational and efficient use of funds available, stimulate valuable competition and manage the risk and potential liabilities to the buyer, thereby improving service delivery. Thus, enforcement of existing regulatory measures must be enforced to avoid pitfalls of inefficient contract management process and eventual poor service delivery (project performance). The people in charge of the contracts need to play an important and meaningful role in ensuring that the client's contractual goals are fully achieved at the minimum cost, timely, and to the required specifications. Therefore, consideration should be given to address the questions in the procurement contract literature

as to how the supplier can provide the buyer with sufficient flexibility while not assuming all the risk due to demand uncertainty (Oluka & Basheka, 2013).

Alinaitwe (2007) links poor performance of construction projects in Uganda to lack of regular payments and meetings between client and contractor, hence, contributing highly to substandard projects and variation. Ssebanakitta (2013) on his part blames lack of capacity by the domestic construction industry; overwhelming stakeholder/public expectations; delayed approvals by statutory agencies; and uncoordinated and repetitive audits by the various government agencies. All of these distract the sector's focus on contract administration activities as most staff spend time attending to audit queries. He further states that stakeholders must appreciate that variations in civil works are more of the norm than the exception. The situation is exacerbated by lack of accredited procedures to address road sector specific issues. The arguments above should not lead one to think that it is the client to blame (Majid & McCaffer, 1998). We thus hypothesize that:

H₁ Contract administration leads to success in road project performance

4.2. Relationship Management and Project Performance

A study by Coltman, Devinney and Midgley (2009) that examined the impact of customer relationship management (CRM) on firm performance reveals a positive and significant path between a superior CRM capability and firm performance. This study shows that CRM initiatives that jointly emphasize customer intimacy, cost reduction and analytic intelligence outperform those that take a less balanced approach. Soliman (2011) also finds a positive relationship between CRM and performance. Smith et al. (2004) are concerned that the financial risk and reason for dispute and arbitration mainly arises from the shortage of necessary capital, often resulting in delayed payments by clients to contractors as well as delayed payments by contractors to sub-contractors or contractors' employees. The writer further indicates that possibilities for disputes, arbitrations and other risks arising from time, cost and quality slippage are largely a result of or poor relationships between the client and the contractor. Oluka & Basheka (2013); Davison & Sebastian (2011) argue that contract management challenges are inevitable in any contractual relationship due to lack of transparency and poor record keeping. Stefanie et al. (2010) & Ntayi et al. (2010c) argue that high value contracts can provide the scaffold for the economic exchange, as long as the terms of the relationship are clear in terms of what is to be provided and the rights and obligations of parties to the contract thus minimizing the potential for opportunistic behavior.

William (2006) argues that purchasing has the ultimate responsibility of establishing and maintaining good supplier relationships. The author further contends that the type of relationship is often associated with the length of a contract between buyers and sellers. Keeping good relations with

suppliers is becoming increasingly recognized as an important factor in maintaining a competitive edge - with many companies often adopting their suppliers as partners, especially in instances where the suppliers are reliable, provide high quality goods, (including works and services), maintain precise delivery schedules and are flexible in cases of alterations to specifications. Elsey (2007) also argues that once the contractor gains greater understanding of the organization’s business needs and style, confidence and trust accrue. We therefore propose the second hypothesis:

H2: Relationship management enhances project performance

4.3. Contract Closure and Project Performance

Contract closure concerns the activities associated with closing the project down, whether in accordance with the contract or as a result of early termination (Elsey, 2007). Lee (1996); Thai (2004) guides that in cases where arbitration does not work and termination becomes inevitable, the consequences of termination must be taken into account and appropriate provisions made prior to contract signing . Young (2008), in a study on health services in United Kingdom, finds that contract termination occur mainly due to contractor’s inability to perform the work to the required outcomes due to underpricing or misunderstanding the specifications. Non-inclusion of all transaction costs was also noted to have affected efficiency. We then draw the third hypothesis:

H3: Contract closure clause leads to effective project performance

5. Methodology

The study adopted the quantitative approach. Data was collected from 102 respondents who were selected using both purposive and simple random technique. The sample categories included the top management comprising the mayor and town clerk, members of technical planning committee, municipal councilors, staff members from works and technical services department, staff members from finance, planning and internal audit department; staff members from the procurement and disposal unit, road contractors and local council 1 chairpersons. The researchers used the self- administered questionnaire for collecting data from members of technical planning committee (TPC), municipal executive committee (MEC), other councilors and staff from related departments and road contractors, while the mayor and Town Clerk were interviewed. The responses to the statements in the questionnaire were hinged on a 5–point Likert scale ranging from 5 – strongly agree; 4 – agree; 3 – neutral, 2-disagree; and 1 – strongly disagree. This is consistent with Likert Scales as laid out by Amin (2005). The instruments’ volatility was evaluated by two experts from Uganda National Roads Authority (UNRA) who evaluated the relevance of each question with regard to the study objectives. The judges then rated each item on a scale

of very relevant, VR (2) and not relevant, NR (1). CVI was obtained as 0.97. Basing on Amin (2005), the instrument was considered valid since its CVI was greater than 0.7.

Reliability of the instrument was determined to be 0.759 using Cronbach's Alpha. According to Cronbach (1951), a co-efficient of 0.5 and above is considered adequate. All co-efficient of the variables were above 0.5, implying that the measures were adequate. The overall response rate for the study was therefore 88.2%. According to Amin (ibid), a response rate of 70% is a good representation of the survey population.

In this study, questions asked were clustered according to themes of interest. Respondents’ opinions were sought on how contract administration was handled in Arua Municipal Council and how this affected performance of road maintenance projects. Their opinion on the relationship between contract managers and road maintenance contractors was also sought, together with its effect on performance of road maintenance projects. Respondents also gave their opinion on the adequacy of mechanisms to handle contract termination in the entity and their effects on performance of road maintenance projects in the Municipality.

To ensure validity and reliability, questionnaires were pretested. Initially a content validity index of 0.634 was achieved and questionnaires were refined and pretested. On the second round content validity index was 0.96 while a Cronbach Alpha Reliability Coefficient test also yielded 0.95. This is acceptable according to Sekeran (2003).

6. Presentation of Findings

In this section, we present the findings of our study. Data was analyzed using the SPSS software. Correlation Analysis was used to establish the strength and direction of the relationship between the variables in the study. Regression Analysis was used to examine the variance in project performance (dependent variable) that is explained by the contract management variables of contract administration, relationship management and contract closure (independent variables). We used the hierarchical regression analysis to determine the impact of each independent variable on contract performance. Correlation Analysis: The results of the correlation analysis are presented in the table below:

Table 1. Correlation results on contract management and performance

		Contract management	Performance of the projects
Contract management	Pearson Correlation	1	.761**
	Sig. (2-tailed)		.000
	N	88	87
Performance of the projects	Pearson Correlation	.761**	1
	Sig. (2-tailed)	.000	
	N	87	87
**. Correlation is significant at the 0.01 level (2-tailed).			

Source: Field research findings, 2013

Table 1 above shows Pearson's Correlation coefficient $r = 0.761$ between contract management and performance of the projects in Arua Municipality, suggesting that the two variables were highly positively related.

Regression Analysis: The results of the hierarchical regression analysis are shown in the table below:

Table 2. Regression results on contract management and performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.776 ^a	.603	.588	.43444	.603	40.932	3	81	.000
a. Predictors: (Constant), Contract closure, Contract administration, Relationship management									
b. Dependent Variable: Performance of the projects									

It can be noted from table 2 above that overall contract management (through its dimensions of contract administration, relationship management and contract closure) has a moderate significance and effect on performance of road maintenance projects in Arua Municipality as explained by the R Square of 0.588. This means that a change in project performance can be explained by contract management up to 58.8%.

7. Conclusions

It was concluded that giving attention to payment mechanism and control of variations to contracts (dimensions of contract administration) would result in significant improvement in the performance of road maintenance projects. The study also found a link between relationship management and performance of road maintenance projects in Arua Municipality. This followed a detailed consideration of various dimensions of relationship management during the study. It can therefore be concluded that addressing constraints of communication channels and dealing emphatically with disputes would result into significant improvement in the performance of road maintenance projects. Following an adequate consideration of various dimensions of contract closure, the study concluded that properly addressing gaps in final inspection, delayed payments and stakeholder involvement would result into significant improvement in the performance of road maintenance projects.

8. Discussions and Recommendations

Contract administration was a stronger predictor of performance of road maintenance projects since Pearson's Correlation coefficient $r = 0.679$ was high and p value ($p=0.000$) was less than the p critical ($p_c=0.050$), suggesting a positive relationship between the two variables. From regression analysis, the amount by which a change in contract administration brings a change in road maintenance projects performance was found to R square=0.455. This means that contract administration affects performance of

road maintenance projects by 45.5%. In qualitative results, it was noted that although there were some cases of variations to contracts, these arose from other causes such as fluctuation in prices as a result of delays in central government transfers that could change the cost of contracts. According to Oluka & Basheka (2013); Rendon (2009) Mansfield, Ugwu and Doran (1994), the problem of untimely financing and delayed payment for completed works, poor contract administration, change in site conditions and shortages of materials cause delays and cost overruns in public highways and building projects in Nigeria. Alinaitwe (2007), whose study was in the construction sector in Uganda, also links poor performance of projects to poor contract administration, emphasizing delayed payments, lack of regular meetings between client and contractor as causes of client's failure to track project developments and subsequently substandard projects and variation of prices. These arguments are largely in agreement with the findings of this study. Chan and Kumaraswamy (1997) identify some common and significant factors affecting performance of both building and civil engineering projects as poor site management and supervision, low speed of decision making involving project teams, variations of works and inadequate contractor experience. The factors pointed out by these writers are aspects of contract administration, thus in agreement with the findings of this study.

Xiao and Proverbs (2002) argue that improved contractor performance leads to enhanced client satisfaction, and hence an improvement in the contractor's reputation and competitiveness in the market. Therefore, Arua Municipal Council's management should budget basing on realistic requirements of the works and actual funding projections so as to avoid delays in projects and subsequently avoid cases of variations to contracts in the Municipality.

The correlation between relationship management and performance of road maintenance projects was positive and significant since Pearson's Correlation coefficient $r = 0.744$ was high and p value ($p=0.000$) was less than the p critical ($p_c=0.050$), suggesting a high positive relationship between the two variables. From regression analysis, the amount by which a change in relationship management brings a change in road maintenance projects performance was found to be 0.548 (R square=0.548). This means that relationship

management affects performance of road maintenance projects by 54.8%. In qualitative results, the council leaders noted poor communication on matters of contract management as well as laxity on the parts of both the contractors and contract managers as possible causes of poor performance of projects in Arua Municipality. A study by Coltman, et. al., (2009) reveals a positive and significant path between a superior customer relationship management (CRM) capability and firm performance, showing that CRM initiatives that jointly emphasize customer intimacy, cost reduction and analytic intelligence outperform those that take a less balanced approach. Soliman (2011) also finds a positive relationship between CRM and performance. Although not in the setting of road maintenance sector, these researchers largely agree with the findings of this study.

William (2006) argues that purchasing has the ultimate responsibility of establishing and maintaining good supplier relationships. He further argues that keeping good relations with suppliers is becoming increasingly recognized as an important factor in maintaining a competitive edge-with many companies often adopting their reliable and competent suppliers as partners. Elsey (2007) argues that it is necessary for a contractor to gain greater understanding of the organisation's business needs so as to develop some level of confidence and trust. However, we maintain that parties should establish a precondition of goodwill trust based on the principle of fairness (i.e. the absence of opportunistic behavior). The trust should be built and not demanded from either party. Trust can emerge from an affective experience with the other person (based on underlying feelings) while for cognition-based trust, confidence is grounded in an individual's track record and reputation for dependability, reliability, and professionalism (Katsikeas, Skarmeeas, & Bello, 2008). Therefore, role expectations and professional norms in contract management should circumscribe the domains within which people's words, actions, and decisions, can be provisionally trusted. Acharya and Young (2006) also argue that claims, disputes and omissions adversely affect project performance. Findings by these writers broadly emphasize the relationship between the contracting parties and their performance in the various projects. The Municipal management should therefore institute clear communication channels with contractors and put in place competent structures that can deal with disputes at their infancy. Internal audit and other over-site departments of the municipality should be strengthened to monitor contract progress closely. Regular contract management meetings involving all stakeholders should also be instituted to make close follow ups on specific observations and recommendations.

The correlation between contract closure and performance of road maintenance projects was positive and significant since Pearson's Correlation coefficient $r = 0.647$ was high and p value ($p=0.000$) was less than the p critical ($p_c=0.050$), suggesting a positive relationship between the two variables. From regression analysis, the amount by which a change in contract administration brings a change in road maintenance

projects performance was found to be 0.412 (R square=0.412). This means that contract closure affects performance of road maintenance projects by 41.2%. In qualitative results, the two leaders were rather non-committal on the relationship between contract closure and performance of road maintenance, emphasizing that inspection of contract works was a role of technical staff. This implies that possible performance gaps can be associated with the competence of the technical staff. Shen and Walker (2001) allude to time management as an important part of the construction management process. Acharya and Young (2006) also point out that any errors made in the process of meeting quality in technical performance, may result in loss to a contractor or dissatisfaction of the client. HHS (2012) urges contract managers to ensure that contracts are closed in a timely and effective manner in order to avoid any negative ramifications, financial or otherwise. Zhou, et al. (2007) concur with this submission, reporting that in China, all contracts are required to be audited at practical completion stage. This is ideally a final account audit, requiring thorough investigation by the client. The audit identifies final project cost and reconciles the makeup of the final price, while noting any significant variations for further verification with authorities. Although in agreement with several aspects of the study, Young (2008), in a study on health services in United Kingdom, finds that contract termination (closure) occurs mainly due to contractor's inability to perform the work to the required outcomes (efficiently) either as a result of underpricing or misunderstanding the specifications and non-inclusion of all transaction costs.

However, concerns of competence of the technical staff were also raised during the study. It is therefore recommended that the capacity of technical staff be developed through training so as to fully understand and accurately implement provisions of the contract. Stringent performance measures should also be provided within contract clauses so that intentionally erring officials are adequately punished. Council should make a deliberate effort to involve all relevant stakeholders during the project process up to closure so that projects are owned by them and sustainability plans can be easily made and implemented.

9. Implications, Limitations and Future Research

Our study raises a number of implications that have to be addressed if road maintenance performance is to be improved. First and foremost, the Public Procurement and Disposal of Public Assets Authority (PPDAA) and Arua Municipal Council should work together to improve technical staff capacity in contract management and interpretation of contract clauses or procedures. The Municipality should first carry out a procurement skills assessment and training of staff through refresher courses, workshops, seminars and conferences where staff meet and

share experiences. The Uganda Local Government Association may partner with PPDA and Ministry of Local Government in mobilizing training funds to build procurement capacity in the country for both staff and contractors.

This study is limited by a number of factors, whose analysis provides direction and areas for study in the area of contract management in Arua Municipality, leaving out other Local Government Entities (LGEs) and central governments. In Uganda, public and disposing entities are classified into two groups, the Central Government Entities and the Local Government Entities. The findings of our study cannot, therefore, be generalized to other entities, implying that there is need for studies to examine contract management in the road sector in other entities since the operating environments maybe different from those of Arua municipality. Secondly, we note that road construction projects take long periods to be completed and circumstances may change over time. We therefore recommend a longitudinal study comparing central government and local governments attributes of project performance.

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