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Contractor commitment and the delivery of road infrastructure projects in Uganda: A practitioner perspective

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ABSTRACT

This study examined the relationship between commitment (specifically the affective, continuance and normative aspects of commitment) and the delivery of road infrastructure in Uganda. The study employed a cross-sectional survey design with a sample of 266 that was purposively selected from road project engineers related to the Uganda National Roads Authority, the Ministry of Works and Transport, and the Uganda National Association of Building and Civil Engineering Contractors. A self-administered questionnaire was used to collect the data. Exploratory factor analysis and multiple regression analysis were used to analyze the data. The findings indicate that all three indicators of commitment (affective, continuance, and normative) significantly affect the delivery of road infrastructure projects, though in varying degrees. The researchers recommend the implementation of mechanisms to enhance the three forms of commitment in the delivery of road infrastructure projects in Uganda. Notwithstanding other factors, the paper makes a contribution to the area of road construction in the developing country context by extending previous qualitative findings which focused solely on a case-based approach. This will enable policymakers and practitioners to gain an appreciation of the key dimensions of contractor commitment that may influence the delivery of road infrastructure projects in developing countries.

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1. Introduction

Contractor commitment has become a critical factor in the execution of road projects in sub-Saharan Africa, particularly in Uganda. It is vital in the reduction of variance and slippage in project cost and schedule, thus enabling the delivery of the works project successfully, relative to fundamental performance criteria (Janjua & Gulzar, 2014). As with all projects, there are risks inherent in awarding an infrastructure project to a contractor, especially when considering some contractors' negative attributes, questionable abilities, and their lack of experience. These then may lead to delays in the successful realization of projects. For example, contractors fail to deliver, even after receiving advance payments, and projects are not delivered within the stipulated time, cost and specifications (Byaruhanga & Basheka, 2017). The reality in Uganda is that, despite the government allocating

more funds to the road sector, approximately 70% of contractors do shoddy work (Ntayi, Ngoboka, & Kakooza, 2013). The delays in the completion of road works imply cost overruns, disputes, arbitrations, total abandonment, accidents and litigation that waste the taxpayers' money (Memon, Rahman, & Azis, 2012). This abysmal state of affairs has left donors, aid agencies, change agents, policymakers and researchers wondering how to improve the delivery of road infrastructure projects in Uganda.

Several scholars have examined the delivery of road infrastructure projects using macroeconomic, cultural, institutional, economic and political constructs (Narayanan, Kure, & Palaniappan, 2019; Welter & Smallbone, 2011). However, little research has examined the power of the contractor commitment dimensions to explain the delivery of road infrastructure projects, specifically using data from a sub-Saharan setting such as Uganda. Furthermore, several studies argue that there are projects, such as road infrastructure projects, that fall into a class of entrepreneurship known as action-based entrepreneurialism (Kuura, Blackburn, & Lundin, 2014), where there are social and cultural values at play that shape the contextual outcomes (Gartner, 1995). Against this backdrop, it is important to consider the long-acknowledged role of the Ugandan social and cultural values in shaping the activities related to road infrastructure projects or action-based entrepreneurialism. Relatedly, Downing (2005) argues that cultural beliefs, specific to a context such as ethnicity or kinship, influence entrepreneurship (action-based road infrastructural project or entrepreneurialism) by creating the basis for trust, solidarity and social interaction. However, Zimmer, Aرسال, Al-Marzouq, and Grover (2010) assert that long-term relationships may exist only if they are characterized by commitment, and often trust is seen as an essential pre-condition for the development of commitment.

Road infrastructure is a driving force for national development. Access to roads is essential to improve the productivity, welfare, and security of both rural and urban communities' transformation (Van Damme, van Geelen, & Courange, 2016). Earlier scholars reported that the quality of roads is a prime factor in differentiating the economic powers from the non-starters (Srinivasu & Rao, 2013). The delivery of road infrastructure is a complex matter, and, as such, it is affected by procurement and the supervision of contractors (Boruszko, Dabrowski, & Jozefa, 2018). Although several studies have investigated the factors influencing quality in construction projects, little attention has been given to the various parameters that directly or indirectly contribute to quality performance in road infrastructure projects (Babalola, Oluwatuyi, Lawal, & Aiyewalehinmi, 2015; Marzouk, El Kherbawy, & Khalifa, 2013). The Ugandan road sector faces a number of challenges that affects its efficiency and effectiveness (Aluonzi, Oluka, & Nduhura, 2016).

Therefore, this paper contributes to the body of knowledge by enabling policymakers and practitioners to appreciate the key contractor commitment dimensions that may influence the delivery of road infrastructure projects. This is attained through the specific objectives of the study, namely: (i) to examine the relationship between affective commitment and the delivery of road infrastructure projects in Uganda; (ii) to determine the extent to which continuance commitment affects the delivery of road infrastructure projects; (iii) to test the association between normative commitment and the delivery of road infrastructure projects in Uganda, and (iv) to draw implications for Least Developed Countries (LDCs) based on the findings from Uganda.

This paper is organized as follows: literature review, hypotheses development, and methodology sections, followed by the results and discussion of findings sections. The

last part of the paper presents the conclusions and managerial implications of the research, as well as the limitations and directions for future research.

2. Literature Review

Academic literature has provided evidence of the influence of contractor commitment on project delivery (Klein & Park, 2015; Singh & Gupta, 2015; Zachary, 2015). Contractor commitment drives the effectiveness, efficiency, and reliability of organizational performance, and ensures compliance to standards (Nguyen, Chovichien, & Takano, 2013). To this end, our paper adopted the three-component model (TCM) proposed by Allen and Meyer (1990), as well as Mowday et al. (1979), in which the three dimensions are affective, continuance, and normative commitment. Affective commitment (AC) is defined as “identification with, involvement in, and emotional attachment to the organization” (Allen & Meyer, 1996, p. 253). Continuance commitment (CC) leads the contractor to stay because of the high costs of leaving, while normative commitment (NC) reflects the decision to remain out of a feeling of moral obligation. In other words, normative commitment is the degree to which contractors feel obliged to the organization (Meyer & Maltin, 2010). There have been limited attempts to understand contractor commitment and performance in the construction industry in Uganda.

Singh and Gupta (2015) assert that the three-dimensional model of affective, continuance and normative commitment includes a psychological state that links the contractors to the project they may be engaged in. These scholars further suggest that there is a decrease in affective and normative commitment, and an increase in professional engagement in the younger generations. Whatever the nature of the commitment may be, the three dimensions represent the different psychological states of a contractor. The degree to which a contractor is committed, based on whichever dimension, will determine the decision to deliver the project on time, within cost and quality (Noor, Khalfan, & Maqsood, 2013).

Although contractor commitment is considered to be an indicator of the delivery of road projects (Aluonzi et al., 2016), an earlier study by Khosravi and Afshari (2011) maintained that researchers still have no standard dimensions constituting road project delivery and how it should be measured. For example, the delivery of a road project can be categorized according to the objective measures of time, cost, safety, and environmental considerations, and the subjective measures of quality, functionality, and satisfaction of project participants (Nguyen et al., 2013). For the purposes of this study, the performance of road infrastructure projects was measured in terms of completion time, cost, and quality. This study left out functionality and the satisfaction of project participants and delimited the assumptions to contractors and consultants only. This assumption is backed up by authors Santoso, Ogunlana, and Minato (2003) who contend that flaws on construction projects can be minimized by avoiding or reducing client interference, while maintaining good communication and teamwork between contractors and consultants. A second reason for leaving out customer satisfaction was because the study did not examine the performance of road project contractors as perceived by customer groups. Torbica and Stroh (2001) assert that, in construction projects, the extent of customer satisfaction only becomes apparent late in the project when most of the customer’s money has already been spent. Therefore, customer satisfaction is a type of post-mortem activity

that is carried out to ascertain the customer's satisfaction, which was not the intention of this study. In addition, safety and environmental considerations were excluded, because these two variables consider the overall life cycle of a road construction project, which is divided into seven phases, namely, manufacturing, transportation, construction, maintenance, operational, recycling and deconstruction, prior to the start of the execution of the projects (Marzouk, Abdelkader, El-zayat, & Aboushady, 2017). To the best of our knowledge, little attention has been paid to the effect of contractor commitment on the delivery of road infrastructure projects.

This research study extends these concepts of commitment to the road sector. With the advent of the concept of contractor commitment, managers are starting to realize that effective project delivery requires a focus on the different forms of engagement (Khosravi & Afshari, 2011; Markovits, Boer, & van Dick, 2014). For the purpose of this study, however, it was more appropriate to examine contractor commitment in terms of the delivery of road projects than organizational performance.

Whilst several studies have reviewed commitment in different contexts, as seen in Table 1, few have been carried out in the context of road construction projects, making it difficult for scholars and practitioners to base planned interventions within the sector. Besides, as was previously alluded to, contractor commitment and the delivery of road infrastructure projects in Uganda are context sensitive. This study, therefore, was undertaken to attain context-specific insights.

From the summary of the literature in Table 1, it may be concluded that most of the studies on organizational commitment (OC) can potentially contribute to a better understanding of OC, and thus, cannot be ignored in any re-conceptualization of commitment. Kraus and Woschée (2015) observe that many scholars tend to study commitment from the perspective of the whole organization, without specifically focusing on teams and projects, which are characterized by unique, complex tasks and unknown solutions. The abovementioned scholars hasten to note that projects require highly committed members who identify with the tasks to ensure their success. However, none of these approaches have been conducted in the road sector, therefore, this gap in the literature.

3. Hypotheses Development

This section presents a review of the three modes of commitment, namely, continuance, affective, and normative, and the delivery of road infrastructure. Thereafter, hypotheses are developed that are later tested.

3.1. Continuance Commitment and the Delivery of Road Infrastructure Projects

Several studies have extensively examined the relationship between continuance commitment (CC) and performance in different contexts (Lam & Liu, 2014; McCormick & Donohue, 2016; Mercurio, 2015; Moin, 2018; Rusu, 2013; Taing, Granger, Groff, Jackson, & Johnson, 2011; Vandenberghe, Bentein, & Panaccio, 2017). Worldwide, governments are committed to the development of road infrastructure through the provision of increased budgets for road investments, maintenance, and rehabilitation. However, this is based on the assumption that contractors are committed to the delivery of quality works and services in line with the principles of the road concessions program.

Table 1. Summary of the context and forms of commitment.

Author (s)	Context	Forms of commitment		
		Affective commitment	Continuance commitment	Normative commitment
Mowday et al. (1979)	Various contexts, including the public sector, university settings, hospital settings, banks, telephone companies, scientists, engineers, automobile companies, psychiatric technicians, and retail management trainees	x	x	x
Allen and Meyer (1990)	Review of literature	x	x	x
Brierley (1996)	Literature review	x	x	x
Addae et al. (2006)	Media organizations in Trinidad and Tobago	x	x	x
Joshi (2006)	The random sample consisted of 240 executives and supervisors from the production and service departments of a public sector organization	x	x	x
Sarhan, Harb, Shrafat, and Alhusban (2020)	Jordanian hotel sector	x	x	x
Elkhdr and Kanbur (2018)	Lecturers working at Libyan universities in terms of their demographic characteristics	x	x	x
Jaros (2017)	A literature review	x	x	x
Gutiérrez-Broncano, Estévez, and Rubio-Andrés (2016)	A literature review	x	x	x
Fernandez-Lores, Gavilan, Avello, and Blasco (2016)	Qualitative research based on seven focus groups involving employees of three multinational companies in Spain	x		
Ahmad, Majid, and Mohd Zin (2015)	Academic staff working in public sector tertiary institutions in Pakistan	x	x	x
Wołowska (2014)	Polish employees from two organizations: state company and a private company	x	x	x
Ghosh and Swamy (2014)	An integrative literature review	x	x	x
Jonathan et al. (2013)	Secondary school teachers in Tanzania	x	x	x
Sendogdu et al. (2013)	Manufacturing companies in Konya, Turkey	x	x	x
Kessler (2013)	Review of the dominant theories of organizational commitment since 1960s	x	x	x
Filstad (2011)	Norwegian government organizations	x		
Somers (2010)	Hospital workers	x	x	x

Furthermore, transferring the responsibility to the contractors is also expected to reduce the management burden on a weak public sector (Ssebanakitta, 2013). This may explain why this topic is receiving so much attention from researchers in the developing world. Unfortunately, there is a lack of research from sub-Saharan Africa to corroborate these findings. What exists is speculative, and at best, anecdotal (Muhwezi & Ahimbisibwe, 2015; Ntayi, Rooks, Eyaa, & Qian, 2010).

Continuance commitment (CC) is a pledge by the contractor to deliver the project relative to fundamental performance criteria. However, there is always a certain amount of risk inherent in the award of a construction project to a contractor, notwithstanding

the positive attributes, ability, and experience of the contractor. Consequently, there may be delays in the successful realization of projects and cost overruns may occur (Brüggen & Luft, 2016; Narayanan et al., 2019).

Kuen, Zailani, and Fernando (2009) and Chan and Zailani (2012) assert that CC emphasizes the support of top management, commitment to the project, clear objectives and scope, and political support. In addition, the support of top management should go beyond the mere provision of funds and resources. Kerzner (2009), furthermore, observes project delivery is closely linked to a sense of collectivism, rather than individualism. An environment needs to be created in which team members experience job satisfaction and are motivated to be part of the project team. Although contractors honoring their contractual agreements plays a significant role in the delivery of a successful projects (Ndekugri, Braimah, & Gameson, 2008). Doloi, Sawhney, and Iyer (2012) argue that a lack of CC may lead to project delays. A study in South Sudan observed that the professional management challenges faced by contractors hampered their CC, and consequently contributed to delays in the delivery of projects (Ong'ondi, 2017). Similarly, Doloi et al. (2012) note that project execution could negatively impact the contractor's commitment to project delivery, especially if it is a once-off project. Therefore, CC impacts on project delivery as stated by our first hypothesis:

H₁: Continuance commitment has a direct effect on the delivery of road infrastructure projects.

3.2. Affective Commitment and the Delivery of Road Infrastructure Projects

Individuals with a high level of AC identify with the organization, engage in it, and they are satisfied with their professional roles within the organization. Therefore, this type of commitment is believed to be the most valuable for firms (Lam & Liu, 2014; Rusu, 2013; Stazyk, Pandey, & Wright, 2011). However, research shows a negative relationship between AC, turnover intention and turnover itself (Vandenberghe & Bentein, 2009). Although the competing and overlapping theoretical frameworks have been reviewed, the reasons for emotional attachment to the organization are varied (Mercurio, 2015; Vandenberghe et al., 2017). These include, for example, the seriousness with which supervisors regard the appraisal process, the importance that organizations attach to aspects of job performance, the extent to which the performance indicators reflect contractor motivation (e.g., initiative) versus non-motivational factors (e.g., ability), and the amount of control the contractor has over the outcomes that can be challenging and subjective.

Using multiple regression analysis, McCormick and Donohue (2016) found that AC was positively predicted by role scope, personal importance, organizational support, esteem-based need satisfaction, and value-based need satisfaction, and was negatively predicted by role ambiguity. This finding is further supported by Ortiz, Lau, Scholar, Kwan, and Lau (2011).

We thus hypothesize that:

H₂: Affective commitment has a direct effect on the delivery of road infrastructure projects.

3.3. Normative Commitment and the Delivery of Road Infrastructure Projects

Although various scholars have extensively examined the relationship between normative commitment (NC) and performance (Meyer & Parfyonova, 2010; Ortiz et al., 2011; Vandenberghe, Mignonac, & Manville, 2015), according to Meyer and Parfyonova (2010), NC, as such, has received little attention. It is sometimes dismissed as a redundant construct that bears many similarities to AC and does not explain work behaviors more than other components do. The same observation is supported by Vandenberghe et al. (2015) who argue that due to its two “faces”, NC’s self-determination level is influenced by the extent to which the individual feels stuck in the organization owing to few employment alternatives. These scholars, therefore, argue that NC has a dual nature and that it manifests itself differently, depending on the strength of the other components in the contractor’s commitment profile.

Normative commitment is determined by social norms defining the level of loyalty, the feelings of obligation and allegiance towards the organization. Based solely on this assumption, a person may act in a certain way, believing that these actions are appropriate and morally justified. According to the social exchange theory, when contractors feel that their organization is giving something of value, they consider it as their obligation to respond positively to the organization (Coyle-Shapiro & Diehl, 2018). Using a survey methodology, Ortiz et al. (2011) found a positive association with NC, while the reverse was found to lower wellbeing (Vandenberghe et al., 2015). We, therefore, hypothesize as follows:

H₃: Normative commitment has a direct effect on the delivery of road infrastructure projects.

4. Methodology

This section reports on the research design and procedure, the data collection instruments and measurement of variables, tests for assumptions of parametric data, and reliability of analysis of the study.

4.1. Research Design and Procedure

This study adopted a cross-quantitative research design to examine the association between contractor commitment and the delivery of road infrastructure in Uganda. In order to test our hypotheses, questionnaires were distributed to 316 road engineers from the Uganda National Roads Authority (UNRA), the Ministry of Works and Transport, and the Uganda National Association of Building and Civil Engineering Contractors. The primary respondents were certified Ugandan engineers.

The questionnaire for this study was first piloted on 10 engineers before conducting the main study in Wakiso District local government located in central Uganda. After piloting the questionnaire, all ambiguous, negatively worded, and difficult questions were deleted. We removed vague concepts, and kept questions simple, specific, concise, and focused, while avoiding double-barreled questions (Litwin, 2014). The study adopted a procedural, and not a statistical remedy (Ruel, Wagner, & Gillespie, 2018) by carefully constructing the items to avoid bias in the validity of conclusions about the relationships between measures.

A response rate of 84.2% was obtained, corresponding to 266 responses from the 316 questionnaires that were distributed. The descriptive statistics show that the majority (71.4%) were males, while females constituted 28.6%. This is not surprising as engineering is a male-dominated discipline. With regards to the educational level of the respondents, most of the respondents were Diploma holders (39.4%). This was followed by Certificate holders (32.4%), Degree holders (15.4%), and 9.1% with qualifications below Certificates. Respondents with master's degrees constituted 2.6% of the sample, and the lowest number of respondents (1.2%) had PhDs. The average tenure for the respondents was four years and longer, while most of the respondents had more than four years of experience (88.8%).

4.2. Data Collection Instruments and Measurement of Variables

The unit of analysis for this study was the individual responses of contractors engaged in road construction. The study used a questionnaire containing closed-ended questions to elicit responses from the respondents. All our measurement items were adopted from previous journal-referenced studies that were modified to suit the study. Specifically, contractor commitment was conceptualized to include the dimensions of affective, continuance and normative commitment. These dimensions were measured based on items developed by Allen and Meyer (1990) and Vandenberghe et al. (2015).

Affective commitment was measured using variables that had been utilized in previous research spanning several decades. The dimensions had been found to be psychometrically sound and valid through rigorous testing in various contexts (Cook & Wall, 1980). The measures consisted of 15 items designed to measure the feelings that contractors have about their work in the delivery of projects. The questions on the instrument were formulated in such a way that they control for response bias, and measure the variables of commitment, such as value congruence with the organization, feelings of care for the organization, pride in the organization, and a willingness to exert extra effort in the projects (Mowday et al., 2013). The measures selected for correlational and predictive purposes included, among others, career satisfaction, absenteeism, job satisfaction, job involvement, intent to leave, turnover, delivery of projects, and performance.

All the items that measured these constructs were simplified and localized to suit the respondents' context. The measurements for the delivery of road infrastructure were based on the scales developed by Aluonzi et al. (2016). The list of items used to measure the constructs are listed in [Appendix A](#).

4.3. Tests for Assumptions of Parametric Data and Reliability Analysis

Parametric tests were conducted to test whether our data were normally distributed (Field, 2005). We used three interrelated methods to test for normality in the data, namely, the histogram, normal p-p plots, and scatter plots. The results show that the histogram was bell-shaped, indicating that the data were normally distributed. The values were on a straight diagonal line, which demonstrated normal P-P plots, and indicated that the study data were normal. The scatter plots indicated that our data were normal, since most cases were clustered together and seemed to fall within the vicinity of other points, indicating signs of an association between the cases. The assumption of

normality implied that the data from the study were good for further statistical tests, as assumptions of normality were tested and confirmed.

Further tests for skewness (lack of symmetry) and kurtosis (pointiness) were performed on the study data (see Table 2). The analyses to determine positive (the frequent scores are clustered at the lower end, and the tail points towards the higher or more positive scores) and negative (the frequent scores are clustered at the higher end, and the tail points towards the lower more negative scores) skewness were carried out. A further test was also carried out to determine the degree to which scores clustered in the tail of the distribution (kurtosis). The characteristics of platykurtic distribution (heavy-tailed and quite flat) and leptokurtic distributions (thin-tailed and quite pointy) were tested by running the statistics.

The results from our data indicated that the values of skewness and kurtosis were close to zero (Shanmugam & Chattamvelli, 2016). This confirmed the assumption of normality, as the values of skewness and kurtosis were zero or near zero in a normal distribution. This implied that the data from our study were suitable for further statistical tests, as the assumption of normality using skewness and kurtosis was achieved and tenable.

The internal consistency of our instruments was measured by the Cronbach's alpha coefficient. Bernstein and Nunnally (1994) recommend that instruments used for social science research should have a reliability of about 0.70 or above. The alpha coefficients for all the study variables, as shown in Table 2, were above 0.70.

5. Results

This section presents the results of the Exploratory Factor Analysis (EFA) that was employed to identify the factors that best describe the commitment constructs, based on the derived correlation matrix. Additionally, the Pearson coefficient analysis is presented to reveal the independent and dependent variables.

5.1. Exploratory Factor Analysis

A set of simultaneous decision-making rules was used to determine the number of factors to retain when assessing dimensionality. Exploratory factor analysis (EFA) was employed to identify and reduce the number of hidden (latent) constructs, and the fundamental factor structure of a set of variables, based on the derived correlation matrix (Cooper & Schindler, 2011). All the items loaded onto their intended factors, with factor loadings greater than 0.50 and an eigenvalue greater than 1.0 for each factor (Slocum-Gori &

Table 2. Skewness and Kurtosis statistics for normality, internal consistency for reliability analysis.

	N Statistic	Skewness		Kurtosis		Cronbach
		Statistic	Std. Error	Statistic	Std. Error	
Affective	266	.527	.074	.518	.149	.86
Continuance	266	.665	.074	.074	.149	.88
Normative	266	.089	.074	.177	.149	.84
Delivery	266	.278	.074	.746	.149	.90
Valid N (list wise)	266					

Zumbo, 2011). Eigenvalues determine the number of factors to be retained using the most desirable factor structure.

In conducting the EFA, principal axis factor analysis with varimax rotation was used to assess the factor loadings and dimensionality of our scales, as well as to refine the measures. The considerations for the data reduction strategy included the size of the sample in relation to the model being tested. Finally, EFA was used to estimate the principal components.

The goal of EFA is to find the smallest number of interpretable factors that can adequately explain the correlations among a set of variables. Items that are grouped together are presumed to measure the same underlying construct (Widaman, 2012). It is important that the factors be interpretable according to a recognized theory, in addition to the model fitting the data well.

All the items that were cross-loading on other components with values exceeding 0.5 were included for further analysis, while items that had loadings below 0.5 were excluded from the analysis (Hair, Ringle, & Sarstedt, 2012). The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) for the study variables ranged between 0.917 and 0.953, implying that they were oscillating around only meritorious ranges (IBM, 2011).

The results from the data indicated that 15 items loaded well on the construct of contractor commitment, with a total component of three dimensions. The KMO was sufficient at .917 to predict that the data were likely to factor well, based on the correlation and the partial correlation between the variable constructs. Only items with absolute values above .50 were taken to determine the loadings on the three dimensions (affective, continuance and normative). Principal component analysis using varimax with Kaiser Normalization was performed to test the components of contractor commitment (see Table 3).

As presented in Table 4, EFA was also performed on the construct of Delivery of Road Infrastructure to identify patterns in the data and to reduce the data to a more manageable level (Watkins, 2018).

The results in Table 4 indicate that all three dimensions (cost, time, and quality) survived and yielded acceptable content validity indices (Salkind, 2013). Only items with absolute values above 0.50 were taken to determine the loadings on each of the factors. Cost retained 4 factors, while time and quality retained 5 items each that are indicators of the delivery of road infrastructure.

5.2. Pearson Correlation

Pearson's correlation coefficient analysis was conducted to examine the relationships between the independent variables and the dependent variable (see Table 5).

5.2.1. The Relationship Between Affective Commitment and the Delivery of Road Infrastructure in Uganda

The results in Table 5 show that there is a significant positive relationship between AC and the delivery of road infrastructure in Uganda ($r = .462^{**}$, $p \leq .01$). This means that a positive change in AC is associated with a positive change in the delivery of road infrastructure in Uganda. In other words, improvements in AC, such as being happy, attached, and facing fewer work challenges in road projects, enhance the quality and shorten the completion time of a road infrastructure project in Uganda.

Table 3. EFA for contractor commitment.

	Items	Affective	Continuance	Normative
AFC2	I would be very happy to spend the rest of my career working on road engineering projects with UNRA/MoWT	.885		
AFC3	I really feel as if the problems facing my firm during the execution of works are my own	.689		
AFC4	Road engineering works carried out by my firm have a great deal of personal meaning for me	.723		
AFC6	I could easily become as attached to another project as I am to this one	.663		
AFC5	I feel like "part of the family" at my firm	.652		
CON1	I am afraid of what might happen if I quit my job without having another one lined up		.551	
CON3	Right now, staying with my firm is a matter of necessity as much as a desire		.582	
CON5	It would be too costly for me to leave my firm now		.702	
CON6	I worry about the loss of investments I have made in this project		.624	
CON8	I often feel anxious about what I have to lose with this organization		.730	
NOR1	Jumping from organization to organization does not seem at all unethical to me			.512
NOR3	I believe that as an Engineer I must always be loyal to my firm			.662
NOR5	I was taught to believe in the value of remaining loyal to one organization			.504
NOR7	My organization deserves my loyalty because of the way its treatment towards me			.671
NOR9	I feel it is "morally correct" to dedicate myself to this organization			.727
	Eigen value	5.184	2.425	1.220
	Variance %	47.130	22.046	5.347
	Cumulative %	47.130	69.176	74.523
	Kaiser-Meyer-Olkin measure of sampling adequacy	0.917		
	Bartlett's test of sphericity			
	Approx. Chi-Square	3065.476		
	Df	55.000		
	Sig.	0.000		

Table 4. EFA for delivery of road infrastructure.

	Items	Cost	Time	Quality
CO1	Road projects are implemented within the contracted costs	.620		
CO2	The roads are always completed within the budgeted cost	.584		
CO4	Sometimes the road costs were inflated before the start of the contract	.513		
CO6	Changes in road designs are affecting the cost of road projects	.752		
T1	There are unexplained delays in the road projects commencement		.607	
T2	Road projects are completed in project scheduled time		.564	
T3	Delayed compensation affects the scheduled completion date		.697	
T4	Delayed payment to contractors leads to delays in completion		.646	
T5	Design reviews affect the delivery time of road projects		.716	
QU1	Material used on the road projects affected the quality			.555
QU2	There is poor workmanship of the road projects			.625
QU3	Poor designs affected the road quality			.507
QU4	Weak contractor capacity affected the road quality			.615
	Eigen values	4.818	3.247	2.620
	Variance	36.048	16.086	11.371
	Cumulative %	36.048	52.134	63.505
	Kaiser-Meyer-Olkin measure of sampling adequacy			.953
	Bartlett's test of sphericity		12546.279	
		Approx. Chi-Square		
	Df		496	
	Sig.		0.000	

Table 5. Correlation analysis.

	Mean	SD	1	2	3	4
Affective (1)	4.40	.63	1			
Continuance (2)	4.24	.55	.292**	1		
Normative (3)	4.49	.76	.251**	.486**	1	
Delivery of infrastructure (4)	4.06	.78	.462**	.613**	.205**	1

**Correlation is significant at the 0.01 level (2-tailed); $N = 266$.

5.2.2. The Relationship Between Continuance Commitment and the Delivery of Road Infrastructure in Uganda

The results in Table 5 show a significant positive relationship between CC and the delivery of road infrastructure in Uganda ($r = .613^{**}$, $p \leq .01$). This implies that any positive change in CC is associated with a positive change in the delivery of road infrastructure in Uganda. The implication of this is that the more road contractors sacrifice and are willing to remain working in the road sector, the more their road designs and plans will improve, and they will better execute them to completion in the set time.

5.2.3. The Relationship Between Normative Commitment and the Delivery of Road Infrastructure in Uganda

The results in Table 5 show a significant positive correlation between NC and the delivery of road infrastructure in Uganda ($r = .205^{**}$, $p \leq .01$). When contractors are loyal and value their firm, there is the likelihood that they will avoid delays in the execution of road works, and they will follow schedules, thus improving the delivery of road infrastructure in Uganda.

5.3. Regression Analysis of the Delivery of Road Infrastructure Projects

Regression analysis was used to test the impact of the predictor variables (affective, continuance and normative commitment) on the criterion variable (delivery of road infrastructure). This is illustrated in Table 6 that shows the Regression analysis of the delivery of road infrastructure projects.

The results in Table 6 show that commitment (in terms of affective, continuance and normative) explains 46.4% (Adjusted $R^2 = .464$) of the variance in the delivery of road

Table 6. Regression analysis of the delivery of road infrastructure projects.

Model	Unstandardized coefficients		Standardized coefficients Beta	T	Sig.
	B	Std. Error			
(Constant)	2.204	.568		3.882	.000
Affective	.734	.197	.362	3.729	.000
Continuance	.239	.100	.187	2.377	.019
Normative	.590	.190	.292	3.096	.003
Dependent variable: delivery of road infrastructure					
R	.692				
R square	.479				
Adjusted R square	.464				
Std. Error of the estimate	.688				
F statistic	31.307				
Sig.	.000				

infrastructure. This means that the three variables in the study influence the delivery of road infrastructure by 46.4%. However, there is the implication that factors falling outside the study explain the delivery of road infrastructure by 53.6%. Of the three independent variables in this study, affective commitment has the greatest influence on the delivery of road infrastructure (Beta = .362, sig. < .01).

6. Discussion of Findings

The findings of the study reveal significant positive relationships among the three stated objectives. Based on the interpretation of the results presented in the previous section, the findings are discussed in alignment with our three hypotheses:

H₁: There is a positive relationship between affective commitment and the delivery of road infrastructure in Uganda.

The results from the empirical analysis are satisfactory since there was considerable support for our first hypothesis. From the research results, hypothesis one (H₁) revealed a direct positive relationship between affective commitment and the delivery of road infrastructure in Uganda. The results indicated that feeling part of the road sector, being happy to work in the roads ministry, making sacrifices for road construction work, and desiring to continue working in the road sector are the factors that enhance the completion of road infrastructure projects in the stipulated time, with a minimum of additional costs. Additionally, the delivery of road infrastructure services will improve if employees are not thinking of leaving the road sector and are not facing serious problems at work.

This finding is supported by Lam and Liu (2014), Rusu (2013) and Stazyk et al. (2011) who argue that commitment is valuable in ensuring the delivery of services by organizations. Similarly, McCormick and Donohue (2016) provide support for these quantitative findings, and Ortiz et al. (2011) concur with this finding. This foregoing viewpoint is consistent with Mercurio (2015) who supports the notion that employees' emotional attachment to the organization is critical in enabling them to exercise their professional roles within the organization. This is because individuals who feel comfortable in the working environment and competent in their jobs, display higher levels of affective commitment. The study concurs with the work of Yoon and Suh (2003) conducted in a Korean context, that found a positive relationship between affective commitment and perceived service quality.

H₂: There is a positive and significant relationship between continuance commitment and the delivery of road infrastructure in Uganda.

The results confirm that there is a direct relationship between continuance commitment and the delivery of road infrastructure in Uganda. This implies that a positive change in continuance commitment in the form of staying and liking the same work, having a moral obligation to serve only the public road sector, and being unwilling to leave the road sector will promote the delivery of road infrastructure in Uganda.

In keeping with the aim of this hypothesis, whenever employees are treated well by the road management bosses, they work harder, which leads to the improvement of the road sector. This may imply strong support from top management, commitment to the project

with clearly defined objectives and scope, and political support (Chan & Zailani, 2012; Kuen et al., 2009). However, the support of top management should go beyond the mere provision of funds and resources, and should entail a sense of collectiveness rather than individualism. Kerzner (2009) observes that works project delivery is closely linked to a sense of collectivism, rather than individualism.

In support of the above research findings, a previous empirical research study found a positive relationship between perceived commitment and the quality of service delivery (Herrbach, 2006). Related to the findings of our study, Addae, Parboteeah, and Davis (2006) noted that committed project members more often have no intention of quitting, which saves the project the costs of recruiting and orienting new staff, both in the form of time and money. Also, the costs of supervision are mitigated if project members are committed to their tasks. It follows that when project stakeholders are content with the project's success, the road infrastructure projects may be executed to time, cost, and quality.

H₃: There is a significant positive relationship between normative commitment and the delivery of road infrastructure in Uganda.

This hypothesis sought to investigate the relationship between normative commitment and the delivery of road infrastructure in Uganda. The results reveal a direct positive association between the two constructs, thus supporting H₃. This implies that if people enjoy working with their colleagues, feel a sense of loyalty to their teammates and managers, feel like part of the team and appreciated, they will work harder and produce high quality and quantity output, thus enhancing the delivery of road infrastructure. Furthermore, dedicated employees who want to focus only on their work in the road sector, will dedicate their energies towards improving the tasks and duties associated with road infrastructure in Uganda.

The findings of the study are in line with those of Vandenberghe et al. (2015), who posit that despite normative commitment being two-“faced”, employees' self-determination, influenced by social norms, defines the level of loyalty, feeling of obligation, and allegiance towards the organization. The findings may also imply that contractors who feel that their organization is giving something of value may respond positively to the delivery of road projects. These findings relate well with the work of Ortiz et al. (2011), who found a positive association between normative commitment and service delivery. These research results, however, are inconsistent with those of Allen and Meyer (1996), who noted that the findings of initial studies on normative commitment and performance were mixed.

7. Conclusions and Managerial Implications

In a bid to make further improvements to the delivery of road infrastructure projects, contracting firms should encourage employees to express a positive emotional attitude without fear of any repercussions. This is because road engineers with a high level of affective commitment identify themselves with the organization, engage in it, and they are satisfied with realizing their professional roles within the organization. This calls for the establishment of a robust mechanism for the management of the relationships between contractors and contract managers/supervisors, payments to contractors and benefits' satisfaction. There is also a need to reduce information asymmetry between

contractors and contracting agencies to improve trust, which intrinsically improves the affective commitment of contractors.

Organizations, particularly in the road sector, should devise ways of rewarding their engineers in terms of bonuses depending on years in employment, and they should provide a sense of job and retirement security, among others. This may mean that the employee remains in the organization to fulfill his/her own needs, which may probably address the issue of cost and time overruns on road projects in Uganda. Therefore, contractors must demonstrate a commitment to quality, focus on contractors' internal controls, their capacity to execute the work, and their ability to deliver consistent results. A failure by contractors to achieve these should lead to steep penalties, including liquidated damages.

Measures should be taken to improve the normative commitment of contractors in efforts to improve the delivery of road infrastructure projects. There is need to revisit how contractors are being contracted, and efforts should be made to promote local contractors who may feel a sense of added loyalty because of their association with the society that will benefit from the road infrastructure project. This may be accomplished through measures such as reservation and preference schemes.

The study provides insight into the individual components of contractor commitment that enhance the delivery of road infrastructure. Furthermore, it contributes to the body of knowledge by collecting and analyzing quantitative data that offer a better understanding of the association between the dimensions of commitment and the delivery of road infrastructure in Uganda. This is because previous studies have largely used case and theoretically based approaches to investigate commitment and the delivery of road infrastructure independently. In addition, the available studies on these constructs have largely been done in developed economies, especially in Europe, the United States of America, and emerging Asian countries. The current study adopted and modified the measurement instruments, which resulted in an alternative explanation of the association between commitment and the delivery of road infrastructure in the Ugandan context.

8. Limitations and Directions for Future Research

The study focused on only the public road infrastructural sector. The researchers cross-examined only road engineers, and did not include engineers in other construction sectors, which limited the study's scope. The findings of this study are based on a sample from UNRA, the Ministry of Works and Transport, Uganda National Association of Building and Civil Engineering Contractors. Other construction or infrastructural institutions could be investigated.

The study adopted a cross-sectional approach to collect data and test the set hypotheses. This implies that the views of individuals that might change over time were not considered. A similar study using a longitudinal approach is worth undertaking to better unearth all salient issues that could have remained untouched in this study.

There is also a need for more in-depth interviews and/or case studies to find better explanations among the constructs under study. Most especially, there is a need to research why there are so many unsuccessful, liquidated, and poor-quality roads, despite the positive correlations. For instance, future studies could investigate client-related factors, contractor-related factors, consultant and design-related factors, material, and equipment-related factors.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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Appendix A: Questionnaire

Dear Respondent,

We are researchers conducting a study on contractor commitment and the delivery of public road infrastructure projects in Uganda. You are kindly requested to spare a few minutes to answer the questions in this questionnaire. Your responses will be treated with utmost confidentiality. Please note that taking part in the study is voluntary and you are free to withdraw from the study at any time without any repercussions. Please answer the questions by ticking or circling the alternative that is the most correct in your opinion.

Thank you.

Section A: Demographic Information

Gender	Male	Female			
Age	<20	20–30	30–39	40–49	>50
Education level	Certificate	Diploma	Degree	Masters	PhD
Position in the organization	Officer	Middle manager	Senior manager	Top management	
Length of time you have worked for the organization (years)	<1	1–3	4–6	7–9	>10

Section B: Contractor Commitment

Please circle the most appropriate option on the right-hand side of the questions concerning performance of procurement units: Strongly agree (5), Agree (4), Not sure (3), Disagree (2) and Strongly disagree (1).

Affective commitment		5	4	3	2	1
AFC1	I am enjoying my working relationship with my supervisor					
AFC2	I would be very happy to spend the rest of my career working on road engineering projects with UNRA/MoWT					
AFC3	I really feel as if the problems faced by my firm during execution of works are my own					
AFC4	Road engineering works carried out by my firm has a great deal of personal meaning for me					
AFC5	I feel like “part of the family” at my firm					
AFC6	I could easily become as attached to another project as I am to this one					
AFC7	I do not feel like “part of the family” at my firm					
AFC8	I think that I could easily become as attached to another organization as I am to this one					
Continuance commitment		5	4	3	2	1
CON1	I am afraid of what might happen if I quit my job without having another one lined up					
CON2	One of the major reasons I continue to work for my Engineering firm is that leaving would require considerable personal sacrifice – another organization may not match the overall benefits I have here					
CON3	Right now, staying with my firm is a matter of necessity as much as desire					
CON4	Too much in my life would be disrupted if my firm leave the road construction industry					
CON5	It would be too costly for me to leave my firm now					
CON6	I worry about the loss of investments I have made in this project					
CON7	I am loyal to this organization because I have invested a lot in it, emotionally, socially, and economically					
CON8	I often feel anxious about what I have to lose with this organization					
CON9	Sometimes I worry about what might happen if something was to happen to this organization and I was no longer a member					
CON10	If I was not a member of this organization, I would be sad because my life would be disrupted					
Normative commitment		5	4	3	2	1
NOR1	Jumping from organization to organization does not seem at all unethical to me.					

(Continued)

Continued.

		Affective commitment				
		5	4	3	2	1
NOR2	One of the major reasons I continue to partake in engineering work for my firm is that I believe loyalty is important and therefore feel a sense of moral obligation to remain.					
NOR3	I believe that an Engineer must always be loyal to my firm					
NOR4	If I got another offer for a better job elsewhere, I would not feel it was right to my firm					
NOR5	I was taught to believe in the value of remaining loyal to one organization.					
NOR6	I feel that I owe this organization quite a bit because of what it has done for me					
NOR7	My organization deserves my loyalty because of its treatment towards me					
NOR8	I feel I would be letting my co-workers down if I wasn't a member of this organization					
NOR9	I feel it is "morally correct" to dedicate myself to this organization					
NOR10	I am loyal to this organization because my values are largely its values					

Section C: Dependent Variable – Delivery of Road Infrastructure Projects

		Cost				
		5	4	3	2	1
CO1	Road project are implemented within the contracted costs					
CO2	The roads are always completed within the budgeted cost					
CO3	The road costs were inflated before the start of the contract					
CO4	Sometimes the road costs were inflated before the start of the contract					
CO5	The amount paid is worth the life span of roads					
CO6	Changes in road designs are affecting cost of road projects					
	Time	5	4	3	2	1
T1	There are unexplained delays in the road projects commencement					
T2	Road projects are completed in project scheduled time					
T3	Delayed compensation affects the scheduled completion date					
T4	Delayed payment to contractors leads to delays in completion					
T5	Design reviews affect delivery time of road projects					
	Quality	5	4	3	2	1
QU1	Material used on the road projects affected the quality					
QU2	There is poor workmanship of the road projects.					
QU3	Poor designs affected the road quality					
QU4	Weak contractor capacity affected the road quality					