# Effects of Construction Contracts on Performance: The Case of Construction Firms in Kampala, Uganda

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**DOI: https://doi.org/10.51244/IJRSI.2024.1104046**

**Received: 27 March 2024; Revised: 16 April 2024; Accepted: 17 April 2024; Published: 15 May 2024**

## ABSTRACT

The study aimed to investigate the influence of construction contracts on the overall performance of selected construction firms in Kampala district. Specifically, it sought to assess the impact of formally contracting personnel, evaluate the effect of special contract conditions, and examine the role of surety bonds on firm performance within the construction industry.

A descriptive design utilizing quantitative methods was utilized. The study utilized purposive and random sampling techniques to select relevant respondents from various positions within construction firms, ensuring a comprehensive analysis of the subject matter. A sample size of 76 respondents was involved in the study. Data collection was facilitated through a structured questionnaire comprising Likert scale type questions, piloted to ensure relevance and logical flow.

The study achieved an 88.3% response rate, with 80 questionnaires returned and analyzed. The study found that there exist a significant controlling effect on the relationship between (i) contracted (temporary) personnel and performance of construction firms (r=0.778, p=0.000), (ii) special conditions of contract and performance of construction firms (r=892, p=0.000) and (iii) surety bonds and performance of construction firms (r=0.830, p=0.000). Analysis of performance indicators highlighted the importance of factors such as adherence to construction codes, client satisfaction, and innovative practices in determining firm success.

In conclusion, the study underscored the critical role of construction contracts in shaping the performance of construction firms in Kampala district. To optimize firm performance, it is recommended that firms prioritize the recruitment and retention of skilled personnel, adhere meticulously to construction contracts, and leverage surety bonds for risk mitigation. These findings provide valuable insights for construction industry stakeholders, guiding strategic decision-making to enhance operational efficiency and project outcomes.

**Keywords:** Construction contracts, Firm performance, Surety bonds, and Performance indicators

## BACKGROUND

Globally, the advancement of engineering construction projects holds significant importance for all nations and stakeholders involved, including consumers and clients, as it plays a central role in driving socio-economic and political transformations. This aligns with Sustainable Development Goal 9, which emphasizes the development of resilient infrastructure, the promotion of inclusive and sustainable industrialization, and the fostering of innovation (Faremo, 2015; Szopik-Depczyńska et al., 2018; Dada & Mbohwa, 2018).

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IV April 2024

The construction industry stands as the largest engineering sector worldwide, yet it faces persistent challenges even during times of stability, despite its substantial contributions to both developed and emerging economies (Kale & Arditi, 2010). Despite enduring crises such as the COVID-19 pandemic, the industry remains resilient, exhibiting an estimated growth of 0.5% in 2020. Construction services play a crucial role in providing essential public infrastructures and private systems that support various sectors including services, commerce, and other industries.

Moreover, the industry not only impacts the final outcome of projects but also serves as a significant employer, thereby exerting a considerable influence on a country's economy throughout project execution. Consequently, it emerges as a key contributor to gross domestic product (GDP), capital formation, and employment. For instance, in 2018, the global construction industry represented 13% of world GDP and provided employment for 7% of the global workforce (Construction Conundrum, 2018; Wibowo, nd; GPoC 2019; the next normal in construction, 2020).

Table 1.1 Industry for Persons in Employment

| **Indicator** | **Units** | **2017** |
|---|---|---|
| 1. Agriculture, forestry & fishing | % | 1.7 |
| 2. Trade | % | 31.3 |
| 3. Manufacturing | % | 7.6 |
| 4. Transport and storage | % | 8.3 |
| 5. Construction | % | 7.1 |
| 6. Education | % | 5.3 |
| 7. Other service activities | % | 13.3 |
| 8. Hotels, restaurant eating places | % | 5.4 |
| 9. Others | % | 19.9 |
| Total | % | 100 |

Source: UBOSLS (2019)

Throughout human history, engineering construction projects have been integral to societal development (Wang et al., 2018). Originating in ancient civilizations like Egypt and Mesopotamia, construction began with rudimentary structures such as hand-built huts, eventually evolving to include trained artisans and, unfortunately, the use of slave labor. The 19th century marked a significant shift towards mechanization with the introduction of steam, diesel, and electric-powered machinery like cranes and excavators. Iconic constructions such as the Egyptian Pyramids, Ancient Greek temples, Roman civil engineering feats, and the Great Wall of China exemplify early large-scale projects. As populations grew and urbanization advanced, the demand for shelter intensified, emphasizing local construction materials and techniques.

Construction contracts serve as legal agreements between clients and contractors, specifying compensation and project details. Common types include lump sum, time and material, cost-plus, unit price, and guaranteed maximum price contracts. However, many contractors lack effective tools to assess vulnerabilities and risks accurately.

In Uganda, the construction industry plays a pivotal role in economic growth, contributing significantly to the GDP and infrastructure development. Government initiatives and strategic agendas, like Uganda Vision 2040, prioritize infrastructure projects to address deficits and capitalize on resources like petroleum.

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Table 1.2 East Africa industry, value added (% of GDP)

| Variable | Country | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|
| 1. Industry (including construction), value added (% of GDP) | Uganda | 25.7 | 25.3 | 24.6 | 25.2 | 26.4 | 26.3 | 26.0 |
| | Tanzania | 26.4 | 25.4 | 25.4 | 25.1 | 24.5 | 24.9 | 25.1 |
| | Rwanda | 18.2 | 18.3 | 17.6 | 17.6 | 17.5 | 16.9 | 17.3 |
| | Kenya | 18.9 | 18.6 | 18.0 | 17.4 | 17.3 | 17.9 | 16.8 |
| 2. GDP growth (annual %) | Uganda | 9.4 | 3.8 | 3.6 | 5.1 | 5.2 | 4.8 | 3.8 |
| | Tanzania | 7.7 | 4.5 | 6.8 | 6.7 | 6.2 | 6.9 | 6.8 |
| | Rwanda | 8.0 | 8.6 | 4.7 | 6.2 | 8.9 | 6.0 | 4.0 |
| | Kenya | 6.1 | 4.6 | 5.9 | 5.4 | 5.7 | 5.9 | 4.8 |

Source: Quality of Government Institute Standard Dataset (2021)

In recent years, Uganda's construction industry has shown a positive trajectory, albeit facing challenges like inflation. Despite this, it continues to progress steadily, exemplified by the approval of approximately 1,200 building plans annually in Kampala by the Capital City Authority. However, the industry remains vulnerable due to issues such as low cost-effectiveness, time efficiency, and negative attitudes towards individual and informal organizational culture (Muhwezi et al., 2014; Kibwami & Tutesigensi, 2016; Stables et al., 2018).

Moreover, inadequate risk management techniques contribute to the industry's susceptibility to extreme weather and other risks. Consequently, construction contracts include specific terms and conditions to mitigate foreseeable risks, defining legal obligations and project intents explicitly. These contracts distribute risks among parties, with the riskiest party often receiving the highest reward.

Given the complexity of the construction industry, these specialized contracts significantly impact project outcomes and the productivity of Ugandan construction firms. They establish procedures for handling contractor failures and compensating clients, typically involving bonds and guarantees. Notably, 99% of Uganda's construction industry comprises small and medium enterprises.

Against this backdrop, the study aims to examine the effects of construction contracts on the performance of construction firms in Kampala district, focusing on contracting personnel, special contract conditions, and surety bonds. Despite the industry's pivotal role in Uganda's economic transformation, challenges persist, including infrastructure deficits, technical skill shortages, and contract breaches. These issues underscore the importance of optimizing project deliverables and strengthening the position of construction firms through effective contract management.

**Purpose of the Study and objectives**

The purpose of the study was to determine the effect of construction contracts on the general performance of selected construction firms in Kampala district.

The study was specifically defined by the following objectives for Kampala district:

1. To examine the impact of formally contracting personnel towards the performance of construction firms;

2. To assess the impact of special contract conditions on performance of construction firms;

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3. To establish the effect of surety bonds on performance of construction firms.

**Scope of the Study**

The study is limited within Kampala district with five administrative divisions (Figure 1.1). Construction is one of the main activities within these division, ranging from road to building constructions and other civil works.

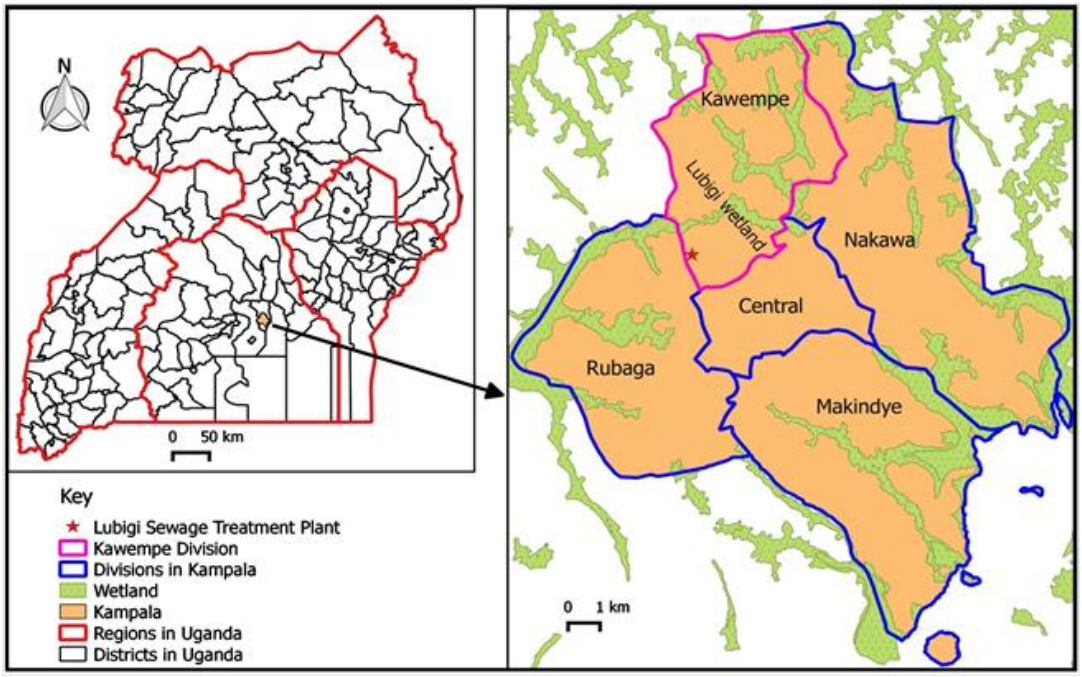


Figure 1.1 Map showing the divisions in Kampala district study area

## METHODOLOGY

**Research Design**

Accordingly, the present study utilized a descriptive survey design, thereby using quantitative methods. In addition to the descriptive, inferential and explanatory data it offers in the generation of numerical data in order to control key factors and variables for the derived frequencies, a broader representation of the target population is considered as representative of the whole group in which only a part of the population is studied, and findings generalized to the entire population (Lambert & Lambert, 2012; Siedlecki, 2020).

**Research Population**

The target population for the present study were construction workers who have worked in Kampala district (study location) for atleast five (5) years and are presumed to have the relevant data related to the present study. The records of the number of the target population is provided in Table 3.1. Most of the target group have years of experience in the industry that makes them the best respondents to provide the required data to process for the solution to the research question of the present study. Thus, the total population for this was 94 genuine players in Uganda's construction industry (The Contractor Uganda, 2020). The population of the different players in the industry for the present study was distributed as follows: Risk managers, 16; Contract manager, 16; Procurement and logistics, 11; Construction/project engineers, 8 and civil society/community, 24 from all races, age groups, and educational status among others.

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Table 3.1 Number of the target population in Kampala district

| Target group (Strata) | Study population in each stratum | Sample size | Sampling technique |
|---|---|---|---|
| 1. Risk managers | 20 | 16 | Purposive sampling |
| 2. Contract manager | 20 | 16 | Purposive sampling |
| 3. Procurement and logistics | 14 | 11 | Purposive sampling |
| 4. Project/site engineers | 10 | 8 | Purposive sampling |
| 5. Civil society/community | 30 | 24 | Random sampling |
| **Total** | | | |

Source: Primary data (2021)

**Sample Size**

There are numerous formulas for calculating the sample size for statistics and studies, but for the present study, the sample size for the target population was computed using Slovin's sampling formula (also called Yamane, 1967) in Equation (3.1)

$$n = \frac{N}{1+Ne^2} \qquad (3.1)$$

where; **N=94** is the population size, **e** is the assumed standard error or margin of error or the level of precision is taken as **0.05**. For the present study,

$$n = \frac{94}{1 + (94)(0.05)^2} \approx 76$$

The strata sample size proportion are determined using Equation (3.2).

$$n_x = \frac{N_x}{N} \cdot n \qquad (3.2)$$

where, the population size for stratum ***x***.

Purposive sampling helped to select different categories of respondents as outlined in Table 3.1 who are relevant to the research topic. The civil society/community was sampled using simple random sampling techniques where 24 of them were chosen as representative of the target population while the rest of the respondents were sampled purposively since they held confidential information related to risk management and performance of firms and the wide knowledge of the influence of construction contracts on construction firms in Kampala district.

## RESEARCH INSTRUMENTS

The researcher developed a questionnaire consisting of both structured and semi-structured questions. The questionnaire was pilot tested to ascertain the relevance of the question to the research variables, the logical flow of the questions and considered the time it will take to administer the questionnaire. After the pre-test, the schedule was adjusted and used for data collection. The questionnaires comprised of Likert scale type questions where several items that provided information on the assessment regarding Construction Contracts (contracting personnel, special contract conditions and surety bonds) and performance of construction firms in Kampala district were designed to elicit the appropriate responses of the respondents on each of the items. The respondents were requested to tick the appropriate box against the number that best reflects how they rate the item. The numbers ranged from 1 to 5 i.e.: Strongly Disagree 2.Disagree 3. Nuetral 4. Agree

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5.Strongly Agree.

The questionnaire was arranged into sections; section A covered socio-demographics of participants, Section B; had questions on "contracting personnel towards the performance of construction firms, Section C; special contract conditions, Section D; Surerity bonds and Section E: performance of construction firms and the number of items on each section are as seen in "N of Items" on **Table 3.2 Reliability Statistics**.

**Reliability Test of Instruments**

In essence, reliability implies consistency of outcomes (internal consistency of a questionnaire, in this case). Thus, reliability means the extent to which an evaluation instrument delivers the same results each time it is performed with the same types of individuals in the same environment.

Table 3.2 Reliability Statistics

| **Constructs** | **Reliability Statistics** | | |
|---|---|---|---|
| | **Cronbach's Alpha** | **Cronbach's Alpha Based on Standardized Items** | **N of Items** |
| **B.1** Formally Contracting Personnel | .840 | .838 | 11 |
| **B.2** Special Conditions of Contract | .872 | .875 | 18 |
| **B.3** Surety Bonds | .772 | .772 | 13 |
| **C** Performance Indicators of Construction Firms | .883 | .885 | 20 |

The test for reliability of the instruments for the present study was done using the test retest method, first piloted on small scale at two different times and the Cronbach alpha coefficient calculated (its value lies between 0 and 1).

**Data Analysis**

The field data obtained shall be mainly analyzed using quantitative methods. The Statistical Package for Social Scientists (SPSS) program was used in analyzing quantitative data.

Responses to open-ended and close ended questions were coded using the SPSS program. Data was then presented by using charts, graphs and tables for easy analysis and interpretation

**Ethical Considerations**

Informed consent of the respondents was sought prior to their involvement in the study. Any respondent was free to opt not to answer any question or part of the question. Confidentiality was maintained throughout the whole procedure by observing privacy during interviews, names of the respondents were not required; questionnaires were kept under lock and key only pulled out for study purposes.

## FINDINGS

**Questionnaire Response Rate**

A total of 76 questionnaires were distributed to all the target group of the study in the construction industry to determine the effect of construction contacts on the performance of construction firms, the case of

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Kampala district. The numbers of participants were distributed as below in table 4.1.

Table 4.1 Response Rate of Questionnaires

| **Respondent** | **Questionnaires** | |
|---|---|---|
| | **Distributed** | **Returned** |
| 1. Risk managers | 20 | 18 |
| 2. Contract manager | 18 | 15 |
| 3. Procurement and logistics | 13 | 11 |
| 4. Project/site engineers | 12 | 10 |
| 5. Civil society/community | 26 | 22 |
| **Total** | **89** | **76** |

**Bio-data of Respondents**

**Age Group**

Given the differences in life experience between different age groups, as well as changing interests and behaviors of people as they grow older, it can be very useful to include a question about age in a study.

Table 4.2 Distribution of Respondents by Age

| **Age (years)** | **Frequency** | **Percentage** | **Remarks** |
|---|---|---|---|
| 1. 21 – 30 | 49 | 64.4% | The dominant age range of the respondents for the present study is that from 21 to 30 years of age (64.4%) |
| 2. 31 – 40 | 24 | 32.2% | |
| 3. 41 – 50 | 03 | 3.4% | |
| 4. 51 – above | 0 | 0.0% | |
| **Total** | **76** | **100%** | |

In this study, participants were requested to disclose their ages to ascertain whether their involvement in construction firms was influenced by age. The age data collected was categorized into four groups: 21 – 30, 31 – 40, 41 – 50, and 51 years and above. The findings, detailed in Table 4.2, indicate that the mean age of all participants (including civil engineers, project/site managers, contract managers, surveyors, and procurement officers) lies within the mid-thirties range. This demographic characteristic likely facilitated efficient data collection processes.

Table 4.2 and Figure 4 illustrate that the majority of respondents, 49 individuals representing 64.4%, fall within the 21 – 30 age bracket. Conversely, only 3 participants belong to the 41 – 50 age group, and there were no respondents aged 51 years and above. This suggests that the predominant age group among participants in this study is 21 to 30 years old (64.4%).

**Level of Qualification**

Table 4.3 Distribution of Respondents by highest level of Qualification

| **Qualification** | **Frequency** | **Percentage** | **Remarks** |
|---|---|---|---|
| 1. Certificate | 0 | 0.0% | The dominant qualification of the respondents for the present study is Bachelor's degree (73.7%) |
| 2. Diploma | 12 | 15.8% | |

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| | | | |
|---|---|---|---|
| 3. Bachelor's degree | 56 | 73.7% | |
| 4. Masters | 8 | 10.5% | |
| 5. PhD | 0 | 0.0% | |
| **Total** | **76** | **100%** | |

The data collected during the fieldwork reveals that the most prevalent qualification among respondents in this study is a Bachelor's degree, with 56 participants accounting for 73.7% of the survey sample. Following closely behind are individuals holding diplomas, either ordinary or higher, comprising 12 respondents or 15.8% of the sample. This indicates that all participants included in the study possess formal training and qualifications deemed essential for engaging with the survey inquiries.

**Gender**

Table 4.4 Distribution of Respondents by Gender

| Gender | Frequency | Percentage | Remarks |
|---|---|---|---|
| 1. Male | 63 | 83.1% | The male population were dominant representing 83.1% of the total respondents for the present study |
| 2. Female | 13 | 16.9% | |
| **Total** | **76** | **100.0%** | |

Source: Fieldwork (2021)

The survey exhibits a notable gender disparity, with males comprising the majority of participants at 83.1%, while females represent a minority, accounting for only 16.9% of respondents (Table 4.4). This stark contrast underscores the limited involvement of women in the construction sector. Such under representation may stem from factors such as inadequate access to training opportunities or prevailing perceptions among women regarding the construction industry.

**Profession of Respondent**

The primary participants who exhibited substantial engagement in the survey for this study were civil engineers, representing the most prevalent group at 52.5%. Following civil engineers, procurement officers were the next most frequent respondents, constituting 13.6% of the sample. Additionally, members of civil society and community, including professionals such as manufacturing engineers, accountants, lawyers, architects, and industrial chemists, accounted for 11.8% of the survey participants.

Table 4.5 Distribution of Respondents by Profession

| Profession | Frequency | Percentage | Remarks |
|---|---|---|---|
| 1. Civil Engineer | 40 | 52.5% | The dominant or the most frequent respondents for the present study are civil engineer (52.5%) |
| 2. Contract Manager | 8 | 10.2% | |
| 3. Procurement | 10 | 13.6% | |
| 4. Project/site Manager | 6 | 8.5% | |
| 5. Surveyor | 3 | 3.4% | |
| 6. Civil society/community | 9 | 11.8% | |
| **Total** | **76** | **100%** | |

Source: Fieldwork (2021)

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**Duration of Service in the Construction Industry**

Table 4.6 illustrates that the majority of respondents fell within the category of 3 to 5 years of tenure in the construction industry, constituting 47.5% of the total. Furthermore, the table indicates that 13.6% of participants had served in the industry for 6 to 10 years, while approximately 16.9% possessed over a decade of experience in the field. Thus, the prevailing duration of service among respondents in this study spans from 3 to 5 years, representing 47.5% of the sample.

Table 4.6 Distribution of Respondents by Duration of Service

| **Duration of service (years)** | **Frequency** | **Percentage** | **Remarks** |
|---|---|---|---|
| 1. Less than 2 years | 17 | 22.0% | The dominant duration of service of the respondents for the present study is that from 3 to 5 years of age (47.5%) |
| 2. 3 – 5 | 36 | 47.5% | |
| 3. 6 – 10 | 10 | 13.6% | |
| 4. 10 – above | 13 | 16.9% | |
| **Total** | **76** | **100%** | |

Source: Fieldwork (2021)

**Formally Contracted Personnel and Performance of Construction Firms**

This study sought to determine the impact of formally contracting personnel on performance of construction firms in Kampala district (Objective 1). In this subsection, the data analysis is done by presenting; the item statistics of the constructs, custom tables and correlation analysis to establish the relationship that exists between the variables.

**Item Statistics of Constructs in Objective One (Section B.1)**

The data returns for this objective has been presented using descriptive statistics (Table 4.1) that gives the measure of the mean ($\mu$) and standard deviation of all the indicators of the study variable for this objective. The higher the mean (arithmetic average) value the higher the expectation of the random variable, the lower the mean outcome the lower is the expectation in measuring the random variable. Correspondingly, the statistics presented in Table 4.1 shows the mean outcomes ranging between 2.80 and 3.78 with the overall outcome of 3.22.

Though most of the respondents decided to remain silent on their overall opinion on whether formally contracting personnel has influence on performance of construction firms (Mean = 3.22), some of the individual indicators show that the respondents agreed that there is a relationship between the two constructs. This is supported by the observed high expectation (mean) scores in the constructs B.1.10 (Mean = 3.75) and B.1.11 (Mean = 3.78) in the variability of time schedules and a combination of poor induction and training that may lead to occupational safety and health related risks. Further, Table 4.1 displays the standard deviation ($\sigma$) which provides the amount of deviation of the statistical data in relation to the expectation value. The low values of the standard deviation (e.g, .665 and .614) indicates that the data is clustered near or around the mean. Other relatively higher values of is an indication of how the responses are widely spread.

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Table 4.7 Item Statistics for Constructs in Objective One (N = 76)

| **Contracted Personnel** | **Mean** | **Std. Deviation** |
|---|---|---|
| **B.1.1** An over-dependence on contracted personnel by construction firms may lead to a slow erosion of skills in the firm, thereby limiting its ability to respond to market fluctuations. | 3.03 | 1.143 |
| **B.1.2** Contracted personnel are usually over worked. They lack rest time during the workday resulting to fatigue with the consequential performance related problems | 3.04 | 1.026 |
| **B.1.3** Contracted personnel in a non-standard employment are less likely to receive formal on-the-job training, which can have negative impacts on their career development. | 2.80 | .952 |
| **B.1.4** Contracted personnel in a non-standard employment are usually excluded from social security coverage even when they are formally protected. | 3.37 | 1.118 |
| **B.1.5** Contracted personnel in a non-standard employment may also face violations of their fundamental rights at work, including discrimination and forced labour. | 3.05 | 1.221 |
| **B.1.6** Contracted personnel in a non-standard employment may lack access to freedom of association and collective bargaining rights either for legal reasons or because of their more tenuous attachment to the workplace. | 3.11 | 1.078 |
| **B.1.7** Contracted personnel is a non-standard employment (a temporary employment), employees are hired for a specific period of time (fixed-term, project based, seasonal, including day labour). | 3.21 | 1.225 |
| **B.1.8** Earnings. Contracted personnel face substantial wage penalties relative to standard or permanent workers, such may affect performance | 3.14 | 1.208 |
| **B.1.9** Employment security. The greater the incidence of temporary employment, the greater the likelihood that workers will transit between non-standard employment and unemployment. | 3.13 | 1.247 |
| **B.1.10** Hours of work. Contracted personnel have limited control over the schedule of their work. The variable schedules may make them take on a second contract elsewhere which may affect performance | 3.78 | .665 |
| **B.1.11** There is a possibility of having a significant occupational safety and health risks due to a combination of poor induction, training etc | 3.75 | .614 |
| **Overall mean** | **3.22** | **1.05** |

**Correlation Analysis**

A statistical analysis was further done to establish the level of fit between the contracted personnel and performance of construction firms. The coefficient of determination, value is 0.8624 (Figure 4.7) indicating high level of agreement between the variables.

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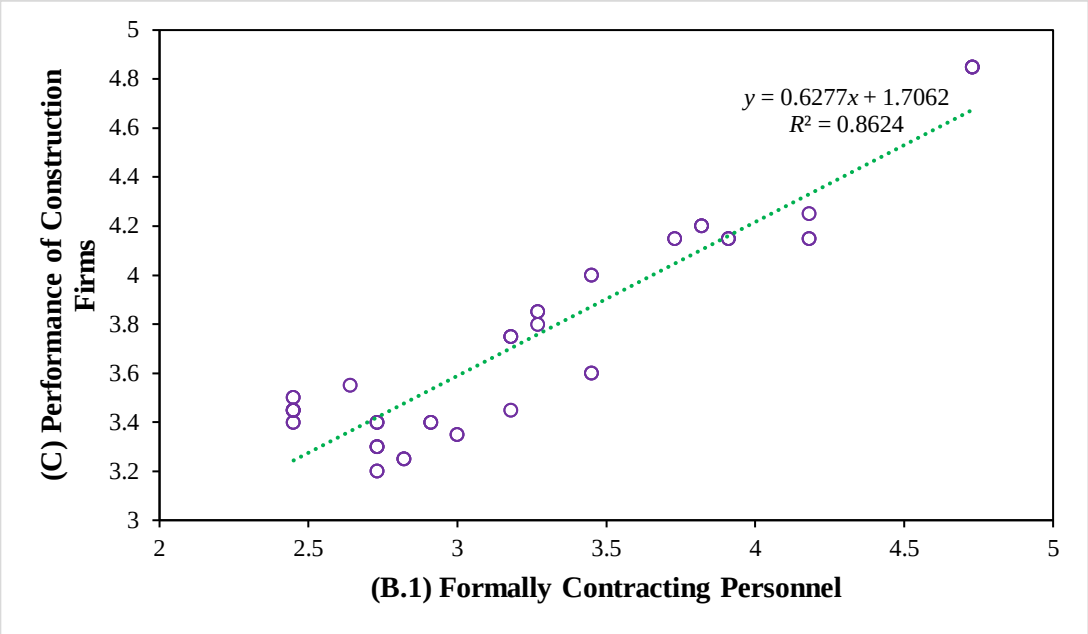


Figure 4.7 Relationship between formally contracted personnel and performance of construction firms

Similarly, the Spearman's rho Correlation coefficient yielded a value of 0.778 (Table 4.9) representing a perfect positive correlation between contracted personnel and performance of construction firms in Kampala district.

Table 4.9 Spearman's rho Correlation between formally contracted personnel and performance of construction firms

| **Variables Correlated** | | **Contracted personnel (B.1)** | **Performance of construction firms (C)** |
|---|---|---|---|
| Contracted personnel (B.1) | Correlation Coefficient | 1.000 | .778** |
| | Sig. (2-tailed) | . | .000 |
| | N | 76 | 76 |
| Performance of construction firms (C) | Correlation Coefficient | .778** | 1.000 |
| | Sig. (2-tailed) | .000 | . |
| | N | 76 | 76 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Special Conditions of Contract and Performance of Construction Firms**

The second objective of this study was to determine the impact of special conditions of contract on performance of construction firms. Similarly, in this section, the responses from the questionnaires have been analyzed in terms of; the item statistics of the constructs, custom tables and correlation analysis.

**Item Statistics of the Constructs in Objective Two (Section B.2)**

The descriptive statistics involving the mean and standard deviation for the analysis of the items in objective two has been presented in Table 4.10. Consequently, the responses on the researcher's pre-conceived ideas

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on the descriptors of special conditions of contracts on performance of construction firms indicate that most of the respondent are in agreement as demonstrated by the means of 4.00 (e.g.; Mean_ B.2.2 = 4.00, Mean_ B.2.4 = 4.03, Mean_ B.2.6 = 4.09, Mean_ B.2.8 = 4.03, Mean_ B.2.10 = 4.03, Mean_ B.2.16 = 4.00). Thus, the data returns (Table 4.10) indicate that the following items on special conditions of contract affect performance of construction firms; (i) the additional conditions of contracts become necessary when the general conditions do not comply with the standard requirements, (ii) it addresses the question on what will happen if the scope of the job changes? What will happen if the contract price or schedule changes? (iii) it gives guidance on how effects of weather can be dealt with, among others. Furthermore, most of the expectations of the random variables also indicate that the respondents were still in agreement with the pre-conceived items on the instrument that relate the variables on special conditions of contract and performance of firms. This can be attributed to the mean values approaching 4.0 (e.g.; Mean B.2.1 = 3.89, Mean B.2.3 = 3.82, Mean B.2.5 = 3.99, Mean B.2.7 = 3.82 among others).

Furthermore, Table 4.10 shows the standard deviations giving the amount to which the responses were distributed close to the mean. Lower values of the standard deviation is an indication of how clustered together the scores are (e.g., the overall standard deviation = 0.75).

Table 4.10 Item Statistics for Constructs in Objective Two (N = 76)

| **Special Conditions of Contract** | **Mean** | **Std. Deviation** |
|---|---|---|
| **B.2.1** A same goal is set by both owners and contractors. | 3.89 | .759 |
| **B.2.2** Additional conditions of contracts become necessary when the general conditions do not comply with the standard requirements. | 4.00 | .693 |
| **B.2.3** Additional conditions of contracts can help avoid contract disputes in cases where terms and conditions are breached by the parties. | 3.82 | .706 |
| **B.2.4** Addresses the question what will happen if the scope of the job changes? What will happen if the contract price or schedule changes? | 4.03 | .692 |
| **B.2.5** Design Issues. How much responsibility will each party bear if there is a design flaw in the project? | 3.99 | .702 |
| **B.2.6** It gives guidance on how Effects of Weather can be dealt with. A major storm could cause a delay or damage to the project. Who will be accountable for the associated loss? | 4.09 | .657 |
| **B.2.7** It makes sure that the homeowners (owners of a project) plans and conditions are laid out clearly. | 3.82 | .706 |
| **B.2.8** Lays further emphasis on the protection of the rights of both the homeowners (owners of a project) and project contractors. | 4.03 | .692 |
| **B.2.9** Project specific risks and risk distributions are addressed. | 3.99 | .702 |
| **B.2.10** The additional conditions of contracts help in filling the project-specific gaps that might have not been outlined in the general conditions of contracts e.g. rights on obligations | 4.03 | .711 |
| **B.2.11** They may encourage the inclusion of more rights without enough clarity as to how such duties and responsibilities are to be implemented | 3.78 | .665 |
| **B.2.12** Time. They shade more light on the extent, and on what basis, is a project's completion delayed? | 3.75 | .614 |
| **B.2.13** Specifying conditions of force majeure for the particular construction projects has improved conflict resolution among parties to the contract in case of such an occurrence. | 3.11 | 1.078 |
| **B.2.14** Specifying quality outputs for projects has improved the performance | 3.21 | 1.225 |

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| | | |
|---|---|---|
| **B.2.15** Specifying conditions for extension of project duration has prevented unnecessary time overruns in implementation of construction projects | 3.89 | .759 |
| **B.2.16** Specifying events for variations and compensation during project implementation has prevented unnecessary increase in scope of works | 4.00 | .693 |
| **B.2.17** Specifying payment terms/payment plan during project implementation has improved performance | 3.89 | .759 |
| **B.2.18** Conditional testing of materials by the contractor in specified laboratory has improved the performance of materials used in construction. | 3.83 | .737 |
| **Overall mean** | **3.84** | **0.75** |

**Correlation Analysis**

Figure 4.9 illustrate the extent to which special conditions of contracts affect performance of construction firms. The coefficient of determination, value is 0.8402, the closer the value of is to 1, the greater is the level of agreement between the two variables. Thus, this value of indicates that most of the additional terms of conditions outlined in the special condition of contract affects performance of construction firms. Moreover, since the normality test indicate that the responses for the present study are non-normal, Spearman's rho correlation coefficient was correlated for the two variables, special conditions of contracts and performance of construction firms.

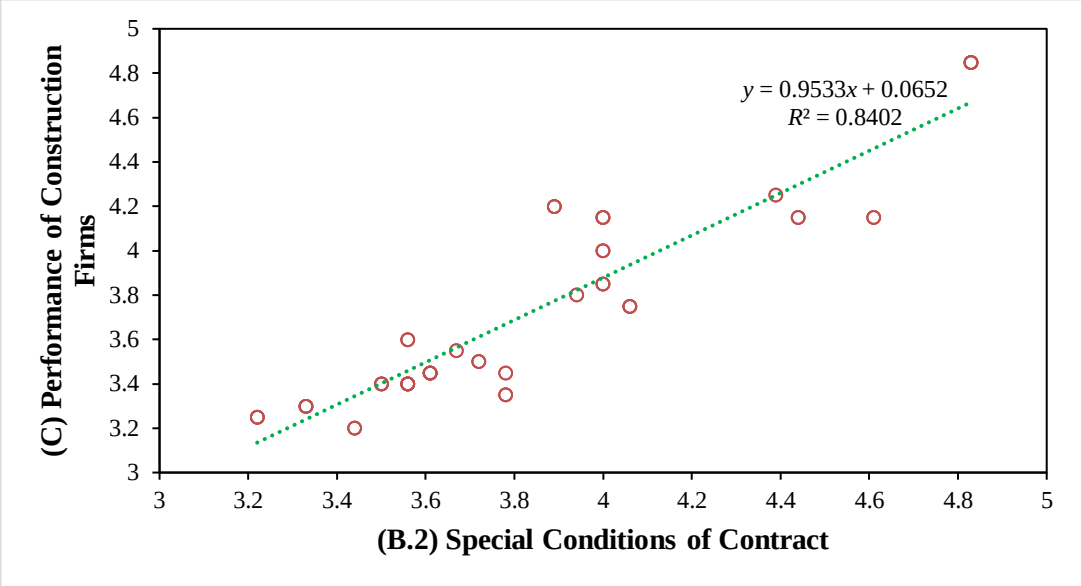


Figure 4.9 Relationship between special conditions of contract and performance of construction firms

The rho value shown in Table 4.12 (0.892) indicates a perfect positive correlation between the two variables.

Table 4.12 Spearman's rho correlation coefficient between special conditions of contract and performance of construction firms

| **Variables Correlated** | | **Special Conditions of Contract (B.2)** | **Performance of construction firms (C)** |
|---|---|---|---|
| Special Conditions of Contract (B.2) | Correlation Coefficient | 1.000 | . 892** |
| | Sig. (2-tailed) | . | .000 |
| | N | 76 | 76 |

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| | | | |
|---|---|---|---|
| Performance of construction firms (C) | Correlation Coefficient | . 892** | 1.000 |
| | Sig. (2-tailed) | .000 | . |
| | N | 76 | 76 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Surety Bonds and Performance of Construction Firms**

The third objective of this study was to determine the impact of surety bonds on performance of construction firms. The results have been presented as follows:

**Item Statistics of the Constructs in Objective Three (Section B.3)**

In the construction industry, a surety bond involves the proprietor, the construction company and the surety. Under this system, the contractors are mandated to do the work diligently in line with the term of reference. Correspondingly, Table 4.13 records the effectiveness of how surety bonds can affect the performance of a construction company. For example, the respondents were in agreement with the fact that providing these bonds before the commencement of projects have greatly increased performance of firms for the fear that the performance security would be lost (Mean B.3.11 = 4.00, StdD = .693). Further, the data returns also indicate that the respondents also agreed that a surety bond provides financial security and construction assurance by ensuring project owners that contractors will do the work and pay their subcontractors (Mean B.3.4 = 4.00, StdD = .693). Similarly, on the issue of whether project owners can lodge complaints with the surety business and receive support from the company, the responses returned were in agreement (Mean B.3.6 = 4.03, StdD = .692).

Table 4.13 Item Statistics for Constructs in Objective Three (n= 76)

| **Surety Bonds** | **Mean** | **Std. Deviation** |
|---|---|---|
| **B.3.1** A contractor's or subcontractor's bonding capability might boost their project opportunities. | 3.89 | .759 |
| **B.3.2** Surety bonds guarantee that the bonded project will be executed in accordance with the contract's conditions and at the contract's stipulated price | 3.71 | .670 |
| **B.3.3** If the contractor defaults, the surety firm will fulfil the contract. | 3.89 | .759 |
| **B.3.4** In the construction industry, a surety bond provides financial security and construction assurance by ensuring project owners that contractors will do the work and pay their subcontractors. | 4.00 | .693 |
| **B.3.5** It is important to reduce the chance that a contractor will divert funds from a project. | 3.82 | .706 |
| **B.3.6** Project owners can lodge complaints with the surety business and receive support from the company, if necessary. | 4.03 | .692 |
| **B.3.7** Surety bonds as a middleman enables contractors and project owners work together. | 3.99 | .702 |
| **B.3.8** Surety bonds ensure that specific standards of quality and performance are met in the construction business. For project owners, they help to minimize the risks associated with the project. | 3.01 | 1.281 |
| **B.3.9** The surety bond guarantor can provide the contractor with free and knowledge-based technical, financial, management insights and other aspects of a construction project. | 3.11 | 1.078 |

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|---|---|---|
| **B.3.10** Advance security and performance bond affect the financial performance (cash flows) prior to start of construction projects since a lot of cash is retained as collateral security | 3.89 | .759 |
| **B.3.11** Providing Performance bond by firms prior to start of work has improved the general quality of the works by reducing the defects, this is due to the fear to lose the performance security | 4.00 | .693 |
| **B.3.12** Surety bonds have greatly reduced time overruns in construction projects | 3.89 | .759 |
| **B.3.13** Specifying the allowed surety agencies/patterns has reduced fraud in acquiring these bonds | 3.83 | .737 |
| **Total** | **3.77** | **0.79** |

Moreover, for cases, where the means are low and the standard deviations are relatively high, it is an indication that the respondents are not in agreement with the constructs in the instrument. For example, the respondents did not agree with the claim that; (i) the bonds minimize the risks associated with the project, standards and quality are met (Mean B.3.8 = 3.01, StdD = 1.281), (ii) the surety bond guarantor can provide the contractor with free and knowledge-based technical, financial, management insights and other aspects of a construction project (Mean B.3.9 = 3.11, StdD = 1.078). However, to closer approximation, the overall mean and standard deviation indicates that the respondents are in agreement with the fact that surety bond affects performance of construction companies (Mean = 3.77, StdD = 0.79).

**Correlation Analysis**

For this particular objective (objective three), the variables that were correlated are; surety bonds (B.3) and performance of construction firms (C). The coefficient of determination, value is 0.7848, closely approaching unity, an indication of goodness of fit and high level of agreement between the two variables.

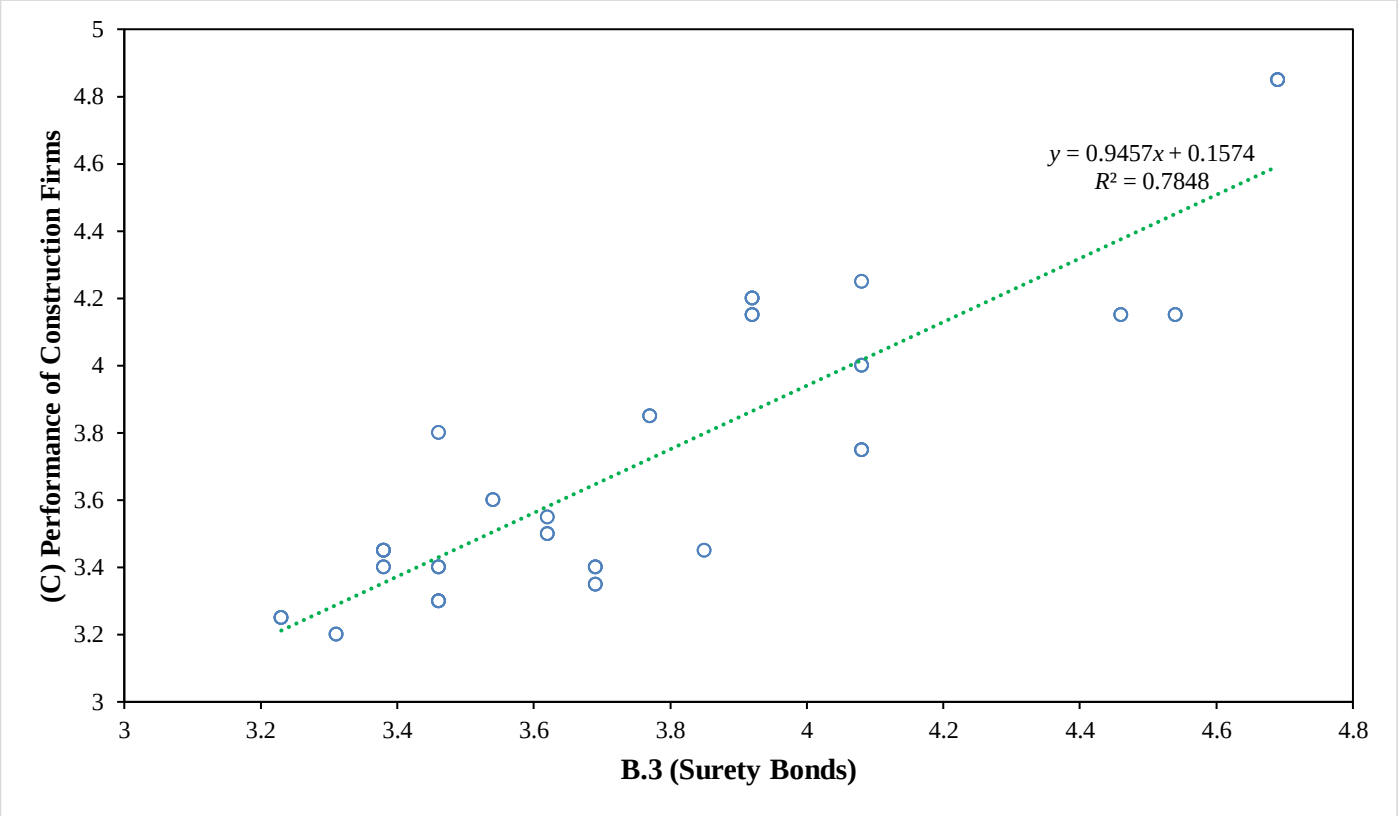


Figure 4.11 Relationship between surety bonds and performance of construction firms

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Moreover, the Spearman's rho value shown in Table 4.15 (0.830) indicates a perfect positive correlation between surety bonds (B.3) and performance of construction firms (C).

Table 4.15 Spearman's rho correlation coefficient between surety bonds and performance of construction firms

| **Variables Correlated** | | **Surety Bonds (B.3)** | **Performance of construction firms (C)** |
|---|---|---|---|
| Surety Bonds (B.3) | Correlation Coefficient | 1.000 | . 830** |
| | Sig. (2-tailed) | . | .000 |
| | N | 76 | 76 |
| Performance of construction firms (C) | Correlation Coefficient | . 830** | 1.000 |
| | Sig. (2-tailed) | .000 | . |
| | N | 76 | 76 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Performance Indicators of Construction Firms**

This subsection reports the performance indicators of construction firms.

**Item Statistics of Performance Indicators of Construction Firms (Section C)**

In this subsection, the respondents were tasked to rate the qualities of a well performing or a successful construction firm in terms of the preconceived ideas developed by the researcher (Appendix I: Section C). The findings indicate that this task was met with mixed reaction from the informants, but in favor of agreement with the qualities. This is buttressed by the high means and low standard deviations as shown in Table 4.16 (Mean_C.7 = 4.03, Std D = .692, Mean C.9 = 4.03, Std D = .711, Mean C.18 = 4.03, Std D = .692, Mean C.20 = 4.03, Std D = .711 etc.).

Table 4.16 Item Statistics for Performance Indicators (N = 76)

| **Performance Indicators** | **Mean** | **Std. Deviation** |
|---|---|---|
| **C.1** Adherence to the construction codes and regulations: design, construction and materials | 3.14 | 1.208 |
| **C.2** Application of improved technology in operation processes. | 3.13 | 1.247 |
| **C.3** Client Satisfaction. High client satisfaction rate shows that the firm is doing great. | 3.04 | 1.026 |
| **C.4** Community. Public relations and appreciation of projects undertaken, corporate social responsibility, company approach to community concerns | 2.80 | .952 |
| **C.5** Company strategic goal achievement and alignment with Government programs | 3.89 | .759 |
| **C.6** Competitive: both domestically and internationally with limited barriers to entry | 3.83 | .737 |
| **C.7** Continually trained human capital – especially in managerial duties. | 4.03 | .692 |

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| | | |
|---|---|---|
| **C.8** Industry profitability and growth resulting to increase in revenues visa' vi cost of sale ratio | 3.99 | .702 |
| **C.9** Innovation. Creative innovation, developing products/services effective & safely | 4.03 | .711 |
| **C.10** Labour productivity needed in terms of rate e.g. timely completion of task by personnel (team members) for every working day. | 3.78 | .665 |
| **C.11** Motivated personnels (employees) working and performing more efficiently. | 3.75 | .614 |
| **C.12** New projects/contract won the company | 3.89 | .759 |
| **C.13** Organizational teamwork and knowledge sharing | 3.93 | .736 |
| **C.14** Quality control. The overall quality of the projects keeps an observant look at quality metrics. | 3.78 | .665 |
| **C.15** Safety rating. A much safer site attracts lesser risks and long-term costs. | 3.75 | .614 |
| **C.16** Shared responsibility across the industry | 3.89 | .759 |
| **C.17** Stability of planning or scheduling of the company activities and stability of relationship between clients and company | 3.83 | .737 |
| **C.18** Subcontractor inventory in improving operation efficiency is an essential predictive performance indicator | 4.03 | .692 |
| **C.19** Sustainability: which is mainstreamed and more aware of hazards including climate change | 3.99 | .702 |
| **C.20** Time and cost of construction. The longer a project will be completed, the more costly it is likely to be. | 4.03 | .711 |
| **Total** | **3.73** | **0.78** |

**Correlation Analysis**

Besides establishing the correlation between the independent and dependent variables for the present study, the analysis portrayed in Table 4.18 is an inter-item or inter-variable correlation in which each of the constructs of the study have been correlated with each other. For example Table 4.18 shows that the Spearman's rho correlation between B.1 and B.2 is .734, B.1 and B.3 is .822, B.2 and B.3 is .894. With these high values of rho, it is evident from this statistics that all the variables are related to each other.

Table 4.18 Spearman's rho inter-item correlation matrix

| **Variables Correlated** | | **B.1** | **B.2** | **B.3** | **C** |
|---|---|---|---|---|---|
| Formally Contracting Personnel (**B.1**) | Correlation Coefficient | 1.000 | .734** | .822** | .778** |
| | Sig. (2-tailed) | . | .000 | .000 | .000 |
| | N | 76 | 76 | 76 | 76 |
| Special Conditions of Contract (**B.2**) | Correlation Coefficient | .734** | 1.000 | .894** | .892** |
| | Sig. (2-tailed) | .000 | . | .000 | .000 |
| | N | 76 | 76 | 76 | 76 |
| Surety Bonds (**B.3**) | Correlation Coefficient | .822** | .894** | 1.000 | .830** |
| | Sig. (2-tailed) | .000 | .000 | . | .000 |

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| | | | | | |
|---|---|---|---|---|---|
| | N | 76 | 76 | 76 | 76 |
| Performance of construction firms (**C**) | Correlation Coefficient | .778** | .892** | .830** | 1.000 |
| | Sig. (2-tailed) | .000 | .000 | .000 | . |
| | N | 76 | 76 | 76 | 76 |

**. Correlation is significant at the 0.01 level (2-tailed).

# DISCUSSION

### Formally Contracted Personnel and Performance of Construction Firms

The findings indicate that, there exist a significant relationship between the workmanship of contracted personnel and performance of construction firms. This is especially true as the correlation coefficient between the two variable is perfect and positive (r=0.778) with the accompanying high coefficient of determination approaching unity (0.8624). The Spearman's rho correlation coefficient yielded a value for contractedpersonnel and performance of construction firms of r=0.778 with a Sig. (2-tailed) value of .000, which is statistically significant at the 5% percent level of confidence. Further, from the responses of the respondents, the relationship that exists between the two variables has been clearly evident in some of the items in the constructs, for example; (i) relation in terms of hours of work, in that the contracted personnel have limited control over the schedule of their work that may make them take on a second contract elsewhere which may affect performance, (ii) there is a possibility of having a significant occupational safety and health risks dueto a combination of poor induction, training etc. these directly affects the performance of the construction firm. Moreover, there were several instances where the respondents could not define their positions on whether such relationship really do exist between the variables. For example, they wondered whether the following items in the construct have effects on the performance of construction firms; (i) an over- dependence on contracted personnel by construction firms may lead to a slow erosion of skills in the firm, thereby limiting its ability to respond to market fluctuations, (ii) contracted personnel are usually over worked. They lack rest time during the workday resulting to fatigue with the consequential performance related problems, (iii) contracted personnel in a non-standard employment are less likely not to receive formal on-the-job training, which can have negative impacts on their career development. These findings are consistent with the works of Alzahrani and Emsley (2013), Zannah *et al*. (2017), Utting (2009), Nyangwara and Datche (2015) in their locations and that of Alinaitwe (2008) and Alinaitwe *et al*. (2009) in Uganda.

### Special Conditions of Contract and Performance of Construction Firms

When the general conditions of contracts in a construction industry does not outline all the guideline for the implementation of a projects, additional conditions of contracts come into play, called special conditions of contract. These additional conditions of contracts become necessary when the general conditions do not comply with the standard requirements and therefore meant to help avoid contract disputes in cases where terms and conditions are breached by the parties. It further addresses the question what will happen if the scope of the job changes? What will happen if the contract price or schedule changes? The findings from the present study indicate that there is a positive relationship between these additional conditions of contract and the performance of construction firms. However, the findings has also shown that the extent to which the items in the special conditions of contract affect performance of construction firms is in the order ranging from (i) it gives guidance on how Effects of Weather can be dealt with. A major storm could cause a delay or damage to the project. Who will be accountable for the associated loss? to (ii) it addresses the question what will happen if the scope of the job changes? What will happen if the contract price or schedule changes?, (iii) it lays further emphasis on the protection of the rights of both the homeowners (owners of a project) and project contractors, (iv) it helps in filling the project-specific gaps that might have not been

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outlined in the general conditions of contracts e.g. rights on obligations, and (vi) in specifying events for variations and compensation during project implementation has prevented unnecessary increase in scope of works, among others.

**Surety Bonds and Performance of Construction Firms**

Surety bonds are a good way for smaller contractors to ensure they can be relied upon to complete a project. This bond is purchased to safeguard the contractor and the project owner from financial problems that may arise during construction. In the event of a malfunction, the owner can submit a claim against the bond to recover damages. When a bond claim is paid, the contractor is required to reimburse the surety firm. The findings also showed that the construction industry, a surety bond play the role of middle men to ensure that contractors and project owners work together by providing financial security and construction assurance through ensuring project owners that contractors will do the work and pay their subcontractors.

Correspondingly, though the findings are in agreement with the common practices in the construction industry, it rated the level of each item and how it plays its roles in shaping the construction firms. The ranks are of the order discussed herein for the first six items in the constructs on construction bonds, that: (i) project owners can lodge complaints with the surety business and receive support from the company, if necessary, (ii) in the construction industry, a surety bond provides financial security and construction assurance by ensuring project owners that contractors will do the work and pay their subcontractors, (iii) providing performance bond by firms prior to start of work has improved the general quality of the works by reducing the defects, this is due to the fear to lose the performance security, (iv) surety bonds as a middleman enables contractors and project owners work together, (v) a contractor's or subcontractor's bonding capability might boost their project opportunities and (vi) if the contractor defaults, the surety firm will fulfil the contract. These findings now agrees with Kangari & Bakheet, 2001; Oke & Ogunsemi, 2016 who studied risk management while emphasizing on the impact of proprietors, project and bonding decision. The present study further agrees with Kangari and Bakheet (2001), Tummalapudi *et al*. (2020) and Kim *et al* . (2019) who had the previous efforts on construction bonds.

**Performance Indicators of Construction Firms**

Undoubtedly, the performance and effectiveness of a contractual firm is critical to its success, and its competitiveness is typically defined by its ability to complete a project on schedule, under budget, and with high quality standards. In this study, some of the performance indicators of the construction industry were subjected to three variables (formally contracting personnel, special conditions of contract and surety bonds) to establish whether changes in the variables affects performance and effectiveness of firm. The findings presented for this study implies that all the variables tested (formally contracting personnel, special conditions of contract and surety bonds) correlated well with performance. The study also categorically established that, for the relationship between the variables to coexist, emphasis should be laid on the following top ten indicators among others: (i) continually trained human capital – especially in managerial duties, (ii) innovation, creative innovation, developing products/services effectively & safely, (iii) subcontractor inventory in improving operation efficiency is an essential, (iv) time and cost of construction- the longer a project will be completed, the more costly it is likely to be, (v) industry profitability and growth resulting to increase in revenues visa' vi cost of sale ratio, (vi) sustainability- which is mainstreamed and more aware of hazards including climate change, (vii) organizational teamwork and knowledge sharing, (viii) company strategic goal achievement and alignment with government programs, (ix) new projects/contract won the company and (x) shared responsibility across the industry.

## CONCLUSION

This study found that there exist a significant controlling effect on the relationship between (i) contracted

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(temporary) personnel and performance of construction firms ($r = 892$ with a Sig. (2-tailed) value of .000), (ii) special conditions of contract and performance of construction firms ($r = 892$ with a Sig. (2-tailed) value of .000)and (iii) surety bonds and performance of construction firms ( $r = 892$ with a Sig. (2-tailed) value of .000). Remarkably, the inter-item correlation also established that the high values of rho is evident that all the variables are related to each other.

After thorough examination of the study's outcomes, It is crucial for firms to prioritize the recruitment and retention of skilled personnel, as the study reveals a significant linear relationship between the quality of workmanship delivered by contracted individuals and overall firm performance. By ensuring that personnel possess the requisite expertise and capabilities, firms can bolster their operational efficiency and project outcomes.

Additionally, the study underscores the importance of meticulously crafting and adhering to construction contracts, as they directly impact firm performance. Moreover, the presence of surety bonds is identified as another significant factor positively influencing firm performance, emphasizing the importance of risk mitigation strategies.

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