# EFFECTS OF PROCUREMENT STRATEGIES AND CONTRACT MANAGEMENT PRACTICES ON THE PERFORMANCE OF ROAD CONSTRUCTION PROJECTS IN GHANA

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**Abstract**

Procurement is one of the public sector practices that have taken centre stage in Ghana. A major area where best practices in procurement had been employed is road construction. As a result of the volume of work that has to be done and resources to be utilized, there is the need to adopt best practices and strategies to ensure efficiency and quality delivery of service. This study assessed procurement strategies and contract management practices and how they affect performance of road construction projects in Ghana. The study found that competitive and restricted tendering give value for money because they had the lowest coefficient of variation when compared to the other attributes for road construction. The study dwells on the mixed method and purposive sampling has been deployed in the research. In conclusion, the study suggested that procurement strategy was a critical factor that positively affects performance of road construction projects in Ghana. The study recommends that Public Procurement Authority must strive to improve on its administrative role of monitoring the various District Assemblies to ensure proper Procurement Strategies and Contract Management Practices are always adhered to, so that there will be value for money in Public Procurement Process.

## Introduction

Choosing the best evaluated bidder or tender for a road contract involves a lot of serious work; a lot of preparations and strategies have to be employed to arrive at a decision that will be good for the country. After the most successful contractor is chosen, the authorizing organization does not need to go to sleep and expect the project to be delivered on a silver platter. There is the need to seriously manage the contract so that it is successfully delivered. A procurement approach is the calculated method of cost to effectively buy a firm's required supplies, having concern of the various components and reasons such as the timeline for procurement, the financing and budget, the expected risks, and prospects (Preuss, 2009). The main reason for finding and choosing a suitable procurement approach is to discover the best method to get the result to fulfill the desires of the consumer for goods and services by attaining the maximum profitable pricing and contractual conditions through a competitive procedure that will best bring what is necessary in the stipulated time while safeguarding the success of the guiding principles of procurement (Kinyua and Ogollah, 2011).

According to Basheka and Bisangabasaija (2009), public procurement is gradually being acknowledged as vital in service provision, and it caters for a greater percentage of the entire expenditure. For example, public procurement forms 58% Angola's expenditure (Wittig, 1999), 70% of Uganda public spending (Government of Uganda), 60% of Kenya expenditure (Akech, 2005), 40% in Malawi (Wittig, 1999) (Basheka and Bisangabasaija, 2009). Ghana employs the use of the Public Procurement act in order to enhance the public procurement system of the country based on international standards. Procurement has been identified to have a positive association with the performance of a project (Kabega et al., 2016; Eriksson and Westerberg,

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2015). For procurement to enhance project performance there should be effective contract management (Kabega et al., 2016).

CIPS (2007) referred to contract life cycle management as "the process of systematically and efficiently managing contract creation, execution and analysis for minimizing operational and financial performance and minimizing risk". Managing your organization's contract competently during the contract lifespan is a vital aspect of the procurement procedure, which can bring investments throughout every aspect of the supply chain (Bassion, 2004). Chan et al. (2001) referred to contract management as the proactive monitoring, evaluation and controlling of contractual terms safeguarded through the procurement procedure to guarantee that what is approved is really supplied by contractors.

**Definition of Concepts**

**A contract** is a written or oral agreement permitted by law between interested groups recognized in the agreement to achieve the terms and conditions stated in the agreement. According to Arrowsmith (2004), an essential criterion for the implementation of a contract is the term that the interest groups to the contract agree to the conditions of the requested contract.

**Procurement** is defined by Chan (2007) as the structure that characterizes the administrative system approved by customers for the execution of project procedures and subsequent management of the project.

**Competitive Tendering** is defined by Gordon (2009) as the company whose intention is to purchase goods and services advertise what it wants and invite tenderers to take actions and contend to earn the chance to supply.

**Contract Management** is the practice that guarantees both interested groups to a contract that completely satisfy their separate duties competently and effectively in order to provide the operational goals necessary from the contract and specifically to offer value for money.

**Performance** refers to "*the degree of achievement of certain effort or undertaking*" which is associated with the approved aims which constitute the project factors (Rashid, 2006).

**The Concept of Procurement**

Procurement is defined by Chan (2007) as the structure that characterizes the administrative system approved by customers for the execution of project procedures and subsequent management of the project. Molenaar *et al*. (2009) referred to procurement process as an all-inclusive process by which constructors, engineers, designers, and several consultants offer services for proposal and construction to carry out a comprehensive project to the customer. Several processes are contained in a procurement strategy. These processes are regularly interconnected and progressive in nature and their effectiveness and efficiency influence significantly on the achievement or flop of projects. The Public Procurement Act 663(2003) and amendment Act 914 (2016) clearly states out the methods to use when public entities in Ghana are acquiring goods, services and works. The following are the methods stated in the Acts. When taking into account the procurement of, and tendering for goods and services, a careful attention should be given to probity, accountability and value for money. The Trust values of transparency and fairness will inform our financial practices. The various procurement strategies used in this study are single sourcing, competitive tendering, restricted tendering, and price quotation.

**The Concept of Contract Management**

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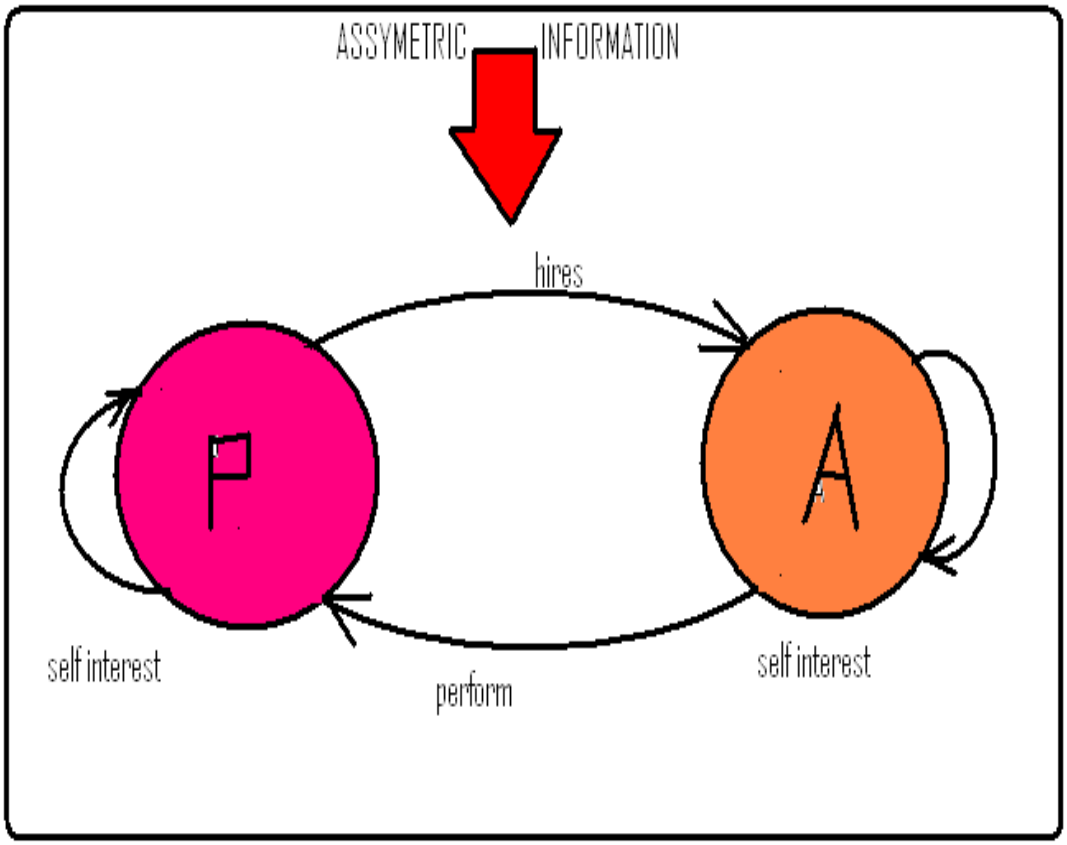
Contract management is the practice that guarantees both interested groups to a contract that completely satisfy their separate duties competently and effectively in order to provide the operational goals necessary from the contract and specifically to offer value for money. Due to this, formulating and handling contracts is a talent necessary by public agency units in the controlling of most of the activities. Nevertheless, according to Saxena (2008), contract management is not an end in itself and it is imperative that every contracting choices and activities concentrate on the results that units are pursuing to attain. Contract management in government has obtained growing interest since the late 1980s, promoted by the 're-inventing government' drive (Osbourne and Gaebler, 1992). This drive was a section of the New Public Management (NPM) that observed various public institutions modifications, a tendency of decentralization activities and the introduction of a business atmosphere in the running of government. The various contract management strategies used in the study are monitoring intensity, risk management, and evaluation.

**Theoretical framework: Agency Theory**

According to Lucian and Jesse (2003), the agency theory transpires when an individual or unit, (the agent) is capable of taking decisions for another individual or unit (the principal). That is, for road construction in Ghana, the agency theory is when the road project contractor makes decisions on behalf of the District Local Governments. This theory is applied to conditions where the agent is inspired to do something such as quality of work, client satisfaction, appropriate supply of goods and services based on his personal gain, which are important to the principals as well, and aspects of moral hazard. According to Eisenhardt (1989), issues of the agency those happens where the interest of the two groups are diverse and there is asymmetric information (the agent having more information) such that the agent cannot be trusted by the principal to be standing-in in for his interest (the two district) specifically when events are expensive to the agent but essential to the principal, and where elements of what the agent does are costly for the principal to observe (monitoring intensity, evaluation, and risk management).

**The Agency theory with Asymmetric Information**

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P (Principal), A (Agent), Source: Eisenhardt (1989)

That is asymmetric information happens when the Local Government needs quality materials to construct a road but the project contractor refuses to buy them because the materials are expensive. The variation from the interests of the principal such as appropriate supply, productivity and effectiveness, and client satisfaction by the agent are referred to as agency costs. Several ways can be employed to bring to par the interest of both the agent and principal. The principal can employ piece rate such as performance measurement, the warning of ending of work contract, or commissions to bring to par the interest of the workers and their own. Nevertheless, the theory does not reveal the association between the interest of the agent and the principal and the components perceived by the principal to reduce charges. Additional, the theory does not show the approach the agent uses to reduce information asymmetry to satisfy the principal's interest. That is, relating to this study, the theory does not show how the project contractor employs contract management strategies such as monitoring intensity, risk management and evaluation to satisfy the district assembly expectation of construction of road (appropriate supply of goods, decrease in charges on road construction, efficiency and effectiveness, and client satisfaction).

**Relational Contract Theory**

Mohr and Spekman (1994) stated that relational contracts are inspired by the mutual detection that the outcome of such exchange surpasses those that are mostly acquired from other kinds of exchange or exchange with another associate. Such exchange relations need high levels of interpersonal qualities namely commitment, shared adjustment to exchange associates' wants, trust, and the anticipations of continuousness of the association, communication, cooperation,

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commitment, shared aims, interdependence, and performance satisfaction. Hughes and Maeda (2002) stated that the contractual associations among main partners are critical; however, the influence of relational contract has limited research. According to Alsagoff and McDermott (1994), customers frequently heed to lawful and contractual sanctioning processes when disagreements transpired. The immediate gains of association between parties for contractors according to Akintoye et al. (2000), rest on increased competitiveness and profitability as well as decreased bureaucracy. Relational contract theory suggests that the social associations and effect of behavior activities causes' interpersonal authority to work to alleviate the specific interchange risks steered by formal contracts such as risks connected to exchange associations, specifically insecurity, particular investments and challenging performance dimension. This theory relates to the objective of this study on relationship between district assemblies procurement and contract management strategies and project contractors performance. That is, lawful systems provided by the road contracts allow the district assemblies to have a great interpersonal relationship with the project contractors which enable both parties to work in harmony.

## 3. Methodology

The paper dwelled on the mixed research method which covered four districts in Ghana. It was a survey because it has a high level of representing a large population, very low cost associated with it, convenient data gathering, precise results and many other advantages over the others (Sincero, 2012). The research is also exploratory in nature, which considered the procurement strategies, contract management and how they affect performance of the Road Construction Sector in Ghana, as well as descriptive. The population for this study includes all the staffs that work at the four District Assemblies (South Tongu, North Tongu, Central Tongu, and Adaklu district) in the Volta Region under study in any organization or company involved in road construction. The reason for this population is that these are the people that the study concerns and are directly involved in the contracting and construction of roads in the four districts. The staff comprises of DCEs, DCDs and Deputy, staff at Planning Department, staff at Budget Department, Procurement Department, Engineering Department, and Road Contractors. Purposive Random Sampling method was used to sample 120 respondents because of the close proximity of the researcher to the respondents who were ready to give information in certain criteria designed by the researcher One hundred and twenty (120) respondents out of a total of the 140 questionnaires distributed were successfully completed and returned. Data collected was then coded and entered into a Microsoft excel 2010 spread sheet and IBM SPPSS version 20. These were presented in frequency and percentage tables for easy interpretation and understanding.

## 4.0 Results and Discussions

This chapter reports the analysis of the data collected from 120 staffs at the four District Assemblies in the Volta Region. The data collected from the staff were discussed using tables and graphs as well as tested using multiple regression analysis. The multiple regression analysis test was used to examine the relationship between procurement strategies, contract management practices, and the performance of road construction projects in Ghana.

### 4.1 Procurement Strategies

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The types of Procurement Strategies used in the study are single sourcing, competitive tendering, restricted tendering, and priced quotation. The perception of staff on whether they agree or disagree to the statements on the various procurement strategies is as follows;

### 4.1.1 Single Sourcing

From Table 4.1, the means of the measurement items for single sourcing are generally low, with the highest being single sourced contracts gives value for money with a mean of 1.9500 and a standard deviation of 0.3937. The composite mean score of 1.6292 and a standard deviation of 0.2176 shows that the staffs generally disagree that single sourcing should be accepted as procurement strategy for road construction. The coefficient of variation which is the ratio of the standard deviation to the mean was used to show the deviation from the mean of single sourcing as procurement strategy. The lower the value of the coefficient of variation the more accurate the estimated values of single sourcing as procurement strategy. The coefficient of variation of single sourcing as procurement strategy variables stated in Table 4.1 showed that single sourced contracts gives value for money have the lowest coefficient of variation. This means that it has the smallest deviation from the mean and therefore the estimate is more accurate as compared to the other single sourcing as procurement strategy factors.

**Table 4.1: Descriptive Statistics of Single Sourcing as Procurement Strategy Variables**

| Statement | Mean | Standard Deviation | Coefficient of Variation |
|---|---|---|---|
| Single sourced contracts gives value for money. | 1.9500 | 0.3937 | 0.2019 |
| Single sourced contracts prices are usually low. | 1.4667 | 0.3092 | 0.2108 |
| Single sourced contracts are all fit for purpose. | 1.5583 | 0.3537 | 0.2270 |
| Single sourced contracts meets time deadlines. | 1.5417 | 0.3120 | 0.2024 |
| **Composite Score** | 1.6292 | 0.2176 | |

Source: Researcher's Field Survey, 2018.

### 4.1.2 Competitive Tendering

From Table 4.2, the means of the measurement items for competitive tendering are generally low; with the highest being competitive tendering methods give value for money with a mean of 4.875 and a standard deviation of 1.0735. The composite mean score of 4.2958 and a standard deviation of 0.3867 shows that the staffs generally agree that competitive tendering should be accepted as procurement strategy for road construction. The lower the value of the coefficient of variation the more accurate the estimated values of competitive tendering method as procurement strategy. The coefficient of variation of competitive tendering method as procurement strategy variables stated in Table 4.2 showed that competitive tendering method gives value for money have the lowest coefficient of variation. This means that it has the smallest deviation from the mean and therefore the estimate is more accurate as compared to the other competitive tendering method as procurement strategy factors.

**Table 4.2: Descriptive Statistics of Competitive tendering method as procurement strategy variables**

| Statement | Mean | Standard | Coefficient of |
|---|---|---|---|

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| | | Deviation | Variation |
|---|---|---|---|
| Competitive tendering method gives value for money. | 4.8750 | 1.0735 | 0.2202 |
| Competitive tendering method prices are usually low. | 4.0833 | 1.0282 | 0.2518 |
| Competitive tendering method is all fit for purpose. | 4.0917 | 1.0135 | 0.2477 |
| Competitive tendering method meets time deadlines. | 4.1333 | 1.0164 | 0.2459 |
| **Composite Score** | 4.2958 | 0.3867 | |

Source: Researcher's Field Survey, 2018.

### 4.1.3 Restricted Tendering

From Table 4.3, the means of the measurement items for restricted tendering are generally moderate; with the highest being restricted tendering methods give value for money with a mean of 2.8583 and a standard deviation of 0.5468. The composite mean score of 2.8 and a standard deviation of 0.0703 shows that the staffs generally neither agreed nor disagreed that restricted tendering should be accepted as procurement strategy for road construction. The lower the value of the coefficient of variation the more accurate the estimated values of restricted tendering method as procurement strategy. The coefficient of variation of restricted tendering method as procurement strategy variables stated in Table 4.3 showed that restricted tendering method gives value for money have the lowest coefficient of variation. This means that it has the smallest deviation from the mean and therefore the estimate is more accurate as compared to the other restricted tendering method as procurement strategy factors.

**Table 4.3: Descriptive Statistics of Restricted Tendering Method as Procurement Strategy Variables**

| Statement | Mean | Standard Deviation | Coefficient of Variation |
|---|---|---|---|
| Restricted tendering method gives value for money. | 2.8583 | 0.5468 | 0.1913 |
| Restricted tendering method prices are usually low. | 2.8583 | 0.6265 | 0.2192 |
| Restricted tendering method is all fit for purpose. | 2.7667 | 0.6214 | 0.2246 |
| Restricted tendering method meets time deadlines. | 2.7167 | 0.6218 | 0.2289 |
| **Composite Score** | 2.8000 | 0.0703 | |

Source: Researcher's Field Survey, 2018.

### 4.1.4 Price Quotation

From Table 4.4, the means of the measurement items for price quotations are generally moderate; with the highest being price quotation project meets time deadlines with a mean of 3.3583 and a standard deviation of 0.7432. The composite mean score of 3.1187 and a standard deviation of 0.3186 shows that the staffs generally neither agreed nor disagreed that price quotation should be accepted as procurement strategy for road construction. The lower the value of the coefficient of variation the more accurate the estimated values of price quotation project as procurement strategy. The coefficient of variation of price quotation project as procurement strategy variables stated in Table 4.4 showed that price quotation project gives value for money have the lowest coefficient of variation. This means that it has the smallest deviation from the mean and therefore the estimate is more accurate as compared to the other price quotation project as procurement strategy factors.

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**Table 4.4: Descriptive Statistics of Price Quotation Project as Procurement Strategy Variables**

| Statement | Mean | Standard Deviation | Coefficient of Variation |
|---|---|---|---|
| Price quotation project gives value for money. | 3.2583 | 0.6816 | 0.2092 |
| Price quotation project prices are usually low. | 2.6500 | 0.5700 | 0.2151 |
| Price quotation project is all fit for purpose. | 3.2083 | 0.6991 | 0.2179 |
| Price quotation project meets time deadlines. | 3.3583 | 0.7432 | 0.2213 |
| **Composite Score** | 3.1187 | 0.3186 | |

Source: Researcher's Field Survey, 2018.

### 4.1.5 Contract Management

The types of Contract Management Strategies used in the study are monitoring intensity, risk management, and evaluation. The perception of staff on whether they agree or disagree to the statements on the various contract management strategies is as follows;

### 4.1.6 Monitoring Intensity

From Table 4.6, the means of the measurement items monitoring intensity are generally moderate; with the highest being project managers carry out the necessary road projects inspections to meet the required standards with a mean of 3.7167 and a standard deviation of 0.8225. The composite mean score of 3.4188 and a standard deviation of 0.5462 shows that the staffs generally neither agree nor disagree that monitoring intensity should be accepted as contract management strategy for road construction. The lower the value of the coefficient of variation the more accurate the estimated values of monitoring intensity as contract management strategy. The coefficient of variation of monitoring intensity as contract management strategy variables stated in Table 4.6 showed that supervisors always carry out the necessary inspections as stipulated have the lowest coefficient of variation. This means that it has the smallest deviation from the mean and therefore the estimate is more accurate as compared to the other monitoring intensity as contract management strategy factors.

**Table 4.6: Coefficient of Variation of Monitoring Intensity as Contract Management Strategy Variables**

| Statement | Mean | Standard Deviation | Coefficient of Variation |
|---|---|---|---|
| Formal periodic/monthly inspections are carried out by authorities as stipulated in the contract. | 3.6917 | 0.7738 | 0.2096 |
| Supervisors always carry out the necessary inspections as stipulated. | 3.6667 | 0.7385 | 0.2014 |
| Project managers carry out the necessary road projects inspections to meet the required standards. | 3.7167 | 0.8225 | 0.2213 |
| Always funds are utilized only for the fulfillment of project objectives. | 2.6000 | 0.5647 | 0.2172 |
| **Composite Score** | 3.4188 | 0.5462 | |

Source: Researcher's Field Survey, 2018.

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### 4.1.7 Risk Management

From Table 4.7, the means of the measurement items risk management are generally moderate; with the highest being the contractor can easily identify the risks involved in the road construction projects with a mean of 3.5750 and a standard deviation of 0.7929. The composite mean score of 3.3542 and a standard deviation of 0.3008 shows that the staffs generally neither agree nor disagree that risk management should be accepted as contract management strategy for road construction. The lower the value of the coefficient of variation the more accurate the estimated values of risk management as contract management strategy. The coefficient of variation of risk management as contract management strategy variables stated in Table 4.7 showed that there is timely response to the risks to achieve road project objectives have the lowest coefficient of variation. This means that it has the smallest deviation from the mean and therefore the estimate is more accurate as compared to the other risk management as contract management strategy factors.

**Table 4.7: Descriptive Statistics of Risk Management as Contract Management Strategy Variables**

| Statement | Mean | Standard Deviation | Coefficient of Variation |
|---|---|---|---|
| The contractor can easily identify the risks involved in the road construction projects. | 3.5750 | 0.7929 | 0.2218 |
| There is timely response to the risks to achieve road project objectives. | 2.9167 | 0.6140 | 0.2105 |
| The risk involved in the road construction projects can easily be shifted to the contractor. | 3.525 | 0.8393 | 0.2381 |
| The construction projects are always challenged with the design and construction complexity. | 3.4000 | 0.7545 | 0.2219 |
| **Composite Score** | 3.3542 | 0.3008 | |

Source: Researcher's Field Survey, 2018.

### 4.1.8 Evaluation

From Table 4.8, the means of the measurement items evaluation are generally moderate; with the highest being there is always appropriate documentation by the road contractors with a mean of 3.5333 and a standard deviation of 0.7858. The composite mean score of 3.3292 and a standard deviation of 0.1992 shows that the staffs generally neither agree nor disagree that evaluation should be accepted as contract management strategy for road construction. The lower the value of the coefficient of variation the more accurate the estimated values of evaluation as contract management strategy. The coefficient of variation of evaluation as contract management strategy variables stated in Table 4.8 showed that road contract managers always carry out assessment in relation to goals and objectives as stipulated in the initial agreement have the lowest coefficient of variation. This means that it has the smallest deviation from the mean and therefore the estimate is more accurate as compared to the other evaluation as contract management strategy factors.

**Table 4.8: Descriptive Statistics of Evaluation as Contract Management Strategy Variables**

| Statement | Mean | Standard Deviation | Coefficient of Variation |
|---|---|---|---|
| There is always appropriate documentation by the road contractors. | 3.5333 | 0.7858 | 0.2224 |
| There is always enough documentation by the | 3.4167 | 0.7366 | 0.2156 |

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| | | | |
|---|---|---|---|
| district in relation to road construction projects. | | | |
| Road construction projects give voice to participant's experience. | 3.3 | 0.7250 | 0.2197 |
| Information is always provided to enhance the quality of the road construction projects. | 3.0667 | 0.6173 | 0.2013 |
| Composite Score | 3.3292 | 0.1992 | |

Source: Researcher's Field Survey, 2018

### 4.1.9 Project Performance

From Table 4.9, the means of the measurement items project performance are generally low; with the highest being the roads are always safe for users with a mean of 3.2417 and a standard deviation of 0.6957. The composite mean score of 2.4916 and a standard deviation of 0.4138 shows that the staffs generally neither agree nor disagree to the project performance strategy for road construction.

**Table 4.9: Descriptive Statistics of project performance strategy variables**

| Statement | Mean | Standard Deviation | Coefficient of Variation |
|---|---|---|---|
| The contractors always complete the project within the budget estimates. | 2.1083 | 0.4411 | 0.2092 |
| The cost of constructing roads is averagely low. | 2.0583 | 0.4357 | 0.2117 |
| Most road user is relatively satisfied with the standard of roads in the district. | 2.3833 | 0.5246 | 0.2201 |
| The road construction project is completed on scheduled time frame. | 2.3583 | 0.5294 | 0.2245 |
| The road projects meet the expected quality specifications. | 2.4833 | 0.5431 | 0.2187 |
| The roads are always safe for users. | 3.2417 | 0.6957 | 0.2146 |
| Government gets value for money. | 2.8083 | 0.5619 | 0.2001 |
| Composite Score | 2.4916 | 0.4138 | |

## Conclusion

The following conclusion were made after a critical analysis of the effect of procurement strategy on the performance of road construction projects; competitive tendering, restricted tendering, and price quotation have a positive significant influence on performance of road construction projects but single sourcing strategy has a negative influence on performance of road construction projects.

Also, assessing the influence of contract management on the performance of road construction projects, the following conclusions were made; monitoring intensity, risk management, and evaluation have a positive significant influence on performance of road construction projects.

Furthermore, the study concluded that both procurement and contract management together have a positive significant relationship with the performance of road construction projects.

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## Recommendations

On the basis of the forgoing analysis, the following recommendations are made from the findings; The District Chief Executives do not frequently ensure that there is proper Procurement and Contract Management practices in place at the assembly, therefore, the Public Procurement Authority must strive to improve on its administrative role of monitoring the various District Assemblies to ensure proper Procurement and Contract Management; this is by ensuring that proper procurement process is done before contracts are given. This is essential since it has been identified from the studies that procurement has a positive association with project performance.

Furthermore, staffs of the District Assembly do not apply the Public Procurement ACT 663 as amended in the procurement processes; therefore, procurement staffs must be encouraged to operate within the ACT 663 as amended even if they are faced with pressure from their Bosses. There are not enough sanctions or punishments for staffs who flout the procurement processes, therefore, Public Procurement Authority must use its governing powers to sanction any District Assembly that go contrary to ACT 663 as amended. This will dissuade other staff or District Assemblies from engaging in such conduct. There should be effective procurement planning by consulting all the stakeholders on the project.

Procurement planning is not taking seriously by the district assembly, therefore, the government of Ghana should inspect and audit the tendering processes to guarantee plainness and accountability is achieved, therefore, valve for money. The government should also include experienced legal group and road construction experts to design the project contract for efficient contract governance and management.

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