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RESEARCH ARTICLE

Cost Performance and Management Styles in Construction Projects in the Techiman Municipality

Douglas Kwoyigah[1], Imhotep Paul Alagidede[2], and Seidu Amidu[3]

[1]School of Meta Engineering and Construction, Nile Valley Multiversity, Techiman, Bono East, Ghana

[2] University of the Witwatersrand, Johannesburg, South Africa; , Simon Diedong Dombo University of Business and Integrated Development Studies, Upper West Region, Wa, Ghana.

[3]School of Meta Engineering and Construction, Nile Valley Multiversity, Techiman, Bono East, Ghana

Abstract: An important consideration in all construction projects is cost and the risks associated with it. The degree to which project estimates overshoots budgeted expenditures is a function of the management and leadership style of the project manager. This study focusses on the pertinent dilemmas of balancing quality and cost while managing the risk of cost over runs. With a sample size of twenty-five (25) building engineers, contractors and quantity surveyors respondents for the study showed that changes in building material prices account for the chunk of construction cost and it remains the key risk element to good project management and risk mitigation. Changes in project specification and design, inadequate budget analysis and lack of project management skills account for the other half of cost drivers. The study opined that project managers must clearly explain the project goals to members, share their responsibility and expectations and get feedback. Advance cost estimation in the construction sector, and proper risk analysis should precede project initiation. Careful planning and competent management can minimize cost and the usual delays and overruns associated with local, regional and global construction. Contractors must have contingencies that are adequate to handle the variability in market prices. These market wide changes call for innovation in the alternative building materials industry as well as the introduction of new styles of construction.

Keywords: Cost Performance; Project Management; Construction Risk; Techiman

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1 A general background

The construction industry plays a key role in national development. A number of studies have established that the sector is a good gauge of the performance of an economy, showing robustness in times of upturns, and generally bearish in down turns. As argued by Alagidede and Mensah (2017), the construction industry is a key barometer of the health of an economy because of its strong linkage to output fluctuations. By entering directly to GDP it counts as fixed investment, and hence the capital stock of a country. As part of aggregate output, it helps explain business cycle fluctuations and ultimately long run economic growth. A key element of the construction industry is risk, which can plague large scale infrastructure projects to the minutest design concept. The risk in turn is imbedded in not only the quality and quantity of materials, human and other environmental factors, but also non-human factors, psychological traits that have a magnifying effect on both the inception and completion costs, and its evolution through the project life cycle. The literature has so far focused mostly on the measureable aspects of cost and its performance, and the quantifiable components of risk. The economist conception of opportunity cost rarely feature in the discussion of cost performance. Most of the literature on the subject has been published by writers who have not had direct contact with an actual construction project as both contractors and project managers. This study is a departure.

The next section discusses cost performance and risk in the global and local construction industry. Subsequently, we specify the data collection process, the soundness and reliability of the methods, and the execution of the study. Next we analyze the results and reflect on the implications for practice and future research from the point of view of project managers and engineers.

2 Cost performance and risk in construction: Overview

Cost performance of construction projects is reported as a major problem globally (see Zarina et al, 2014; Chen et al, 2016). More formally, cost performance is the percentage difference in cost between final contract amount and the initial contract sum (Mckim, 2000). The cost of a building project can be measured in terms of unit cost, or percentage of net variation over the final cost (Chan and Chan, 2004). A number of researchers have used this criteria to measure building project success and cost performance of projects in the developed countries (see Dosumu and Onukwebe, 2013), however, these models are normally adopted in regional settings without much reflection and analysis of local conditions. Depending on owner specification, a project can exceed its estimated cost and getting funds after an agreed budget is always a complex maneuver to do. When the actual construction cost of a project is less than the estimated cost, the building project is adjudged to be successful thus meeting all project specification. In many settings, this may have two meanings; either the contractor used the best quality materials and arrived at the objective cost of the project, or the contractor used less quality materials which have an effect on price, and/ or engaged the services of inexperienced artisans whose work may affect the total quality of the project. Arguably, there is a great deal of different permutations between quality and not so quality work, and costly and reasonably priced projects. It is therefore not an understatement that cost performance of a project is very paramount to the success of the project by all parties. As Laryea and Huges (2008) argue, adopting different models

to estimate cost and price construction risk at the initial stages is not a wise thing to do. The key is how to estimate and account for such costs and the associated risks. In order to improve cost performance, it is necessary to identify the various factors affecting the project initiation, execution and completion.

In the construction industry in Ghana and several emerging economies, contractors use clever techniques to internalize risks, especially given the revelation in studies such as Olatunji (2008) that cost over runs can be in excess of 100% of the anticipated cost of building construction in Nigeria. Some project managers and contractors and other industry participants adopt several ad hoc measures to account for deviations between inception cost and final cost to ameliorate the risks involved in undue cost over runs. Using the 10% rule as a guide, some contractors stay within or go slightly above this benchmark to account for cost over runs. Although not exceptionally rigorous, it is the most common approach employed in many construction works. However, in environments where microeconomic conditions are volatile and financial systems are unable to properly monitor and estimate the risk of funds, such costs can be passed on to the project financing process. From the myriad of players who have different definitions of costs, risks and project execution, it would be interesting to study the key drivers of costs and risks. More specifically, these conjectures raise a number of interesting questions in need of answers such as what factors affect the risk and cost performance of a building project? How are these costs estimated and mitigated by contractors and other industry players? What accounts for the differential risk and cost performance between project inception and completion? What mechanisms exist for mitigating project cost over runs? These and many other questions face the typical contractor in any construction venture.

Answers to these questions will not only open up the debate on managing construction risk at the local level, but will also contribute to a good understanding of risk from a multiplicity of perspectives, especially in environments that are more complex, inherently lacking in previous research on the matter, and abundant in resources to fine tune construction activity to a higher level. This is a study of the factors affecting the risk of construction projects in the Bono East region. The study specifically looks at the phenomena from the point of view of the contractors and project managers to gauge the real factors behind cost performance of a real time project. This study seeks to lay a solid foundation for looking at construction generally, and the building industry in particular.

A number of studies have been conducted to examine factors affecting cost performance in construction projects in developing countries. Some of the early literature such as Han, Yusof and Aon (2012) assess the impact of project managers' experience on the project's success or failure. They use technical performance of the project as a measure of success and concluded that; (a) Project managers previous experience has minimal impact on the projects performance (b) Size of the previously managed project does affect the managers' performance. Avots (1969) also conducted a study to understand the reasons for project failure in which he concludes that choice of wrong project manager, unplanned project termination, and unsupportive top management are the main reasons of failure. Sayles and Chandler (1971), and Martin (1976) concluded that project managers' competence, scheduling, control systems and responsibilities, monitoring and feedback and continuing involvement in the project are important in good project delivery.

For efficient cost management it is essential to define goals, select project organizational philosophy, provide general management support, organize and delegate authority, select project team, allocate sufficient resources, provide for control and information mechanics,

and long term planning and review. Baker et al., (1983) suggested that instead of time, cost and performance as the project success criteria, perceived performance should be used as the success criteria. They observed that factors such as clear goals, goal commitment of project team, on site project manager, adequate funding to completion, adequate project team capability, accurate initial cost estimates, minimum start-up difficulties, planning and control techniques, task (vs. social orientation), absence of bureaucracy are key to the successful of projects. Another study by Cleland and King (1983) found that operational concept, top management support, financial support, logistic requirements, facility support, market intelligence, project schedule, executive development and training, manpower and organization, acquisition, information and communication channels and project review are essential in good project management. Locke (1967) argued that project commitments, project authority and competent project managers with clear cut control mechanisms schedules, progress meetings) are good ingredients for successful project execution. Hughes (1986) identified that most projects fail because of improper basic managerial principles, such as the improper focus of the management system, by rewarding the wrong actions, and the lack of communication of goals. Morris and Hough (1987) identified the following success factors through a study of eight large and complex projects having great potential for economic impact but poorly managed and generally failed "Project objectives, technical uncertainty innovation, politics, community involvement, schedule duration urgency, financial contracts, legal problems and implementation problems". Schultz et al., (1987) classified critical success factors in two groups that affect project performances at different phases of implementation. These strategies are (a) the strategic group consisting of factors like project mission, top management support and project scheduling and (b) tactical group consisting of factors like client consultation and personnel selection and training. Pinto and Slevin (1989) extend the previous work by Schultz et al., (1987) to evaluate the relative importance of tactical group and strategic group of factors over the project life cycle. Pinto and Slevin (1989) concluded that when external success measures are employed, planning factors dominate tactical factors throughout the project life cycle. Chua et al., (1999) proposes budget performance as the primary importance in the study. Through an application of neural network approach the authors identified the eight important project management attributes associated with achieving successful budget performance: (1) number of organizational levels between the project manager and craft workers;(2) amount of detailed design completed at the start of construction; (3) number of control meetings during the construction phase; (4) number of budget updates; (5) implementation of a constructability program; (6) team turnover; (7) amount of money expended on controlling the project; (8) the project managers technical experience. They also claim that their model can be used as a predictive tool to forecast budget performance of a construction project. Chan et al., (2001) identified a set of project success factors for design and building projects and examined the relative importance of these factors on project outcome. In their study, Iyer Jha (2005) analyzed the factors affecting cost performance of Indian construction projects as follows: Conflict among project participants; ignorance and lack of knowledge; presence of poor project specific attributes and non-existence of cooperation; hostile socio economic and climatic condition; reluctance in timely decision; aggressive competition at tender stage and short bid preparation time. In addition, Iyer Jha (2005) indicates coordination among project participants as the most significant of all the factors having maximum positive influence on cost performance.

2.1 Project Manager and Project Performance

A project manager co-ordinates the activities of every project, ensuring the team realize their intended tasks within an appropriate time frame, which in turn will contribute towards a more efficacious project team (Gido and Clements, 2003). This is akin to the project manager being a conductor if the project team were members of an orchestra. The project manager is entrusted with, and responsible for allocating the necessary project resources, monitoring of actual physical work progress as well as motivating and inspiring the project team members (Gido and Clements, 2003). According to Cooke-Davies (2001), the performance of the project manager hinges on his ability to control and monitor the processes and systems which make up the project. Low and Quek (2005) surmise based on their research that traditionally the success of a project indirectly infers to the capable performance of the project manager with emphasis on the achievement of time, cost and quality objectives. Nevertheless, there are still various other factors that can be used to gauge the performance of a project manager within the context of today's construction industry. Sinha (2004) explains that job performance is related to the willingness and openness to try and achieve new aspects of the job which in turn will bring about an increase in the individual's productivity. Howell (2004) on the other hand, states that job performance is actually related to the importance of social standing within the vocation and to a certain extent this opinion is similar to the earlier views put forth by Greenberg and Baron (2000) who point out a positive relationship between job performance and the status of the vocation itself. This positive relationship is brought on by the perks and benefits normally associated with a high standing occupation such as a higher remuneration, a more flexible working condition as well as an occupation which is less dependent on physical labor.

2.2 Performance of Project Manager

The success of a project is ultimately the aim of every project manager. This means that to achieve success appropriate project management tools and techniques must be in place. Traditionally, the success of a project is measured through the accomplishment of time, cost and quality objectives. However, the definition of project success over the years has come to include other more comprehensive aspects. Baker et al. (1983) defines project success by including the elements of achieving the desired technical specification as well as the accomplishments of the intended objectives. Baker et al. (1983) adds that success in a project will also be defined by the level of satisfaction of all important stakeholders, namely the client and the end-user. This definition brings into the fray the aspects of technical achievement as well as customer satisfaction. Therefore, as Freeman and Beale (1992) conclude, the definition of project success will be based on different things for different individuals, usually dependent on their role and responsibilities within a certain project. Liu and Walker (1998) share similar views as they state that the concept of project success is open to interpretation as it is reliant on individual perception. These differences in viewing success may often lead to protracted arguments whether a specific project is truly successful or otherwise. Lim and Mohamed (1999) state that the perceived success or failure of a project can be categorized into two sets of views. The first is the macro level perception which pertains to the achievement of the original and basic objectives of the project. Second is the micro level perception that deals with the accomplishment of smaller components within the same project. Lim and Mohamed (1999) analogize these two different perceptions by

comparing them to a forest and a tree, i.e., is the measure of success gauged from the forest or from the trees?

From this analogy, two distinct ways to gauge project success emerges. One would be by evaluating the end product of the construction process while the other would look more into the aspects of the process itself. Literature relating to construction research normally attempts to incorporate both these elements to act as one single entity in terms of measuring project performance (Baccarini, 2008). It is however more effective if these two elements were seen as different but complementing aspects and the measure of project success needs to be tailored to be able to cater for both this macro and micro level elements. It is in the element of the process that the role of project manager comes in. In executing his roles and responsibilities, the project manager is undoubtedly influenced by his work circumstances and environment. As such, it is only pertinent that job environment factors that can affect the effectiveness of the project manager be studied and reviewed.

2.3 Qualities and attribute of project managers

These factors are the attributes of project managers that makes them deliver projects within a reasonable time line.

Project managers are regarded as the leaders of the project. It is important to know the character traits of project managers that makes them deliver a well-grounded project on time. First and foremost, project managers must always define, commit and follow the laid down process of the project. It is also important for project managers to perform project assurance to ascertain the quality of the project before its inception. Again, the project manager must always focus the project requirements to give the best of service. A detail de-brief of the project must be done by the project manager to determine the responsibilities, challenges and the actions needed for the success of the project. Furthermore, the project manager also serve as the leader of the project therefore it is important to focus on the positive traits of project team members. As a leader, the members learn from the strategic decisions taken to make progress with the project therefore it is important for a project manager to acquire and exhibit technical astuteness in project delivery. The project manager is a motivator and driver of maximum performance, with good decision making skills. It is further important for project managers to clearly explain the project goals, member's task and what is expected of them and give feedback to help project manager improve on them.

2.4 Project Performance

Due to its inherent nature and characteristics, measuring the success of a construction project is a complex and complicated endeavor. Theoretically, the measure of productivity and level of quality may appear simple enough but in practice it may be very hard to replicate. Othman (2006) explains that due to this complexity in measuring project success, the bigger context should then be used, which is to say, the success of a project should be dependent on the satisfaction of the client in realizing his or her intended objectives. These objectives would normally center on cost, time and quality. However, Shenhar et al. (2002) point out that sometimes project success for one party often comes at the expense of another party. The case in point is when project management success neglects or overlooks

project product success. A project may have been objectively and appropriately managed but the overall goals of the client may still have not been achieved.

Kometa et al. (1998) lists criteria which may generally be used to measure and evaluate a project. These criteria include time, cost, aesthetics, function, quality, customer satisfaction and team relations. This view is somewhat shared by Pinto and Slevin (1988) who state that the use of the cost-quality-time triangle alone to measure success is too simplistic in nature and that the element of customer satisfaction should take precedence above all else. Freeman and Beale (1992) on the other hand propose five other criteria to gauge project success, namely technical performance, excellence of execution, management and organizational elements, self-development and finally business and productivity capacity. It is therefore vital that the project manager as well as the project participants and stakeholders be aware of the different success measures in order to partake a more holistic and comprehensive approach when it comes to managing projects.

2.5 Project Success Factors

Project success and failure factors were initially introduced by Rubin and Seeling (1967), where they identified that the experience of the project manager has a relationship with the success or failure of the project. They concluded that a project manager's past experience has minimal effect on the project performance while the size of past managed projects will influence the performance of the project manager. In the study to identify sources of project failure, Avots (1969) surmised that the key causal factors of failure are the wrong choice of a project manager, unscheduled project cancellation and lack of support from top management. Hayfiels (1998) further expands the study on the success factors and showed that there are some variables that a successful project must have to be able to deliver successfully. Setting smart goals help individuals and organizations to achieve objectives. Realistic and precise project brief, the project being efficiently implemented, better understanding of the project environment, the choice of project implementing organization and their competencies, proper record keeping, monitoring and control and effective communication among others facilitate the success of construction projects.

Might and Fischer (1985) conducted a research of the main factors that are considered to affect the success of a project. These factors included organizational structure, level of power designated to the project manager and project size. They discovered that there was a weak correlation between organizational structure and project success but evidently no relationship between the size of a project and its success. On the aspects of the failure of a project, Hughes (2015) concludes that project failure is caused by inappropriate managerial principles as well as a weak communication and delivery system. Pinto and Slevin (1988) report that the critical success of a project is dependent on clear project vision, ample support from top management, project schedule, consultations with the client, staff acquisition, technical specifications, client's acceptance, monitoring and reporting, communication and problem solving. Anton (1988) goes on further and elaborate on the factors that may improve project success, and these include planning efforts during design and construction phases, a committed and objective project manager, motivation of the project team, the technical capabilities of the project manager, work and scope definition as well as control systems. Another view comes from Belassi and Tukei (1996) who categorize success factors into four main groups relating to the project manager, organization and external environment. As it can be seen that different researches have resulted in numerous factors that can

contribute towards the success of a project, this study focuses on the aspects centered on the project manager in relation to his work environment within the project organization.

3 Research Design and Data Employed

A research design is a blueprint of schemes used in achieving expected results. The nature of the study at hand influences the research design to be employed. For the purpose of this study, a survey research method was employed. The choice was guided by the intent of the researchers to gather relevant information from building contractors, building engineers, quantity surveyors on their views on cost performance and risk in the building construction industry. This study adopts a qualitative approach, as the survey is intended to assess the factors affecting cost performance and risk in building construction industry of Bono East Region of Ghana. There was therefore the need to administer questionnaires to collect data for analysis.

The population of the study includes all building contractors, building engineers and quantity surveyors in Bono East. Questionnaires were administered to them and their response were used as unit of analysis for the study. A sample size of 25 building contractors, engineers, and quantity surveyors in Bono East were screened according to their knowledge based on the topic and availability to participate in the survey. Of this number, 20 actively participated and returned their response.

Content validity was employed. Considering the fact that the validity affects the extent to which the sample of items validates the items tested in content. To ensure this, the questionnaires were thoroughly assessed prior to processing the data for completeness and consistency. The questionnaires were pre-tested with a group of contractors, building engineers and project managers, after which copies were made and administered for data collection.

The respondents selected for the study are building contractors, building engineers and quantity surveyors who were earlier given notice through official letter to adequately inform them of the study and their need to participate. Consequently, they were engaged to enlighten them on the essence of the study and how the findings will be used in the long run. The researchers, ensured that respondents participating did that at their own volition without any form of compulsion. To ensure this, participants were assured of their security before and after the study to get the interest of the respondents willfully. Confidentiality of the respondent's personality and information divulged were kept as anonymous as possible. This study does not perform experiments on human subjects and the investigation is done according to the Nile Valley Multiversity's code of ethics. The data is analyzed using statistical package for social science (SPSS) version 20.

4 Results, analysis and discussions

We present the results of the field work, analyze and discuss in line with the objectives of the study. To recap, the study seeks to assess the factors affecting cost performance and risk in the building construction industry in the Techiman Municipality. With a chosen sample size of twenty-five (25) building engineers, contractors and quantity surveyors respondents for the study, an identical number of questionnaire were administered, of which twenty (20) were accurately completed and returned representing eighty percent (80%) response

rate. These returned responses formed the basis on which findings were obtained, and now discussed below.

4.1 Results, analysis and discussions

The demographic information of the respondents is displayed in Table 1. From Table 1 above 40% (N=8) of respondents hold master's degree, followed by 35% (N= 7) with a Bachelor of Science or Arts degree in building technology, and a 25% (N= 5) have higher national diploma. This indicate that the sample is very rich in terms of level of education among the respondents. All things being equal, the more formally educated and better trained the participants, the richer the results for completing projects on time and at the justifiable cost.

Table 1: Respondents Biographic Data

Variables	Dimensions	Frequency	Percent
Education	HND/Diploma	5	25
	BSc., B.A	7	35
	Masters	8	40
Profession	Project Manager	6	20
	Contractor	3	15
	Engineeer	5	25
	Quantity Surveyors	6	30
Years of Experience	0-4 years	7	25
	5-8 years	8	40
	9-12 years	1	5
	13-16 years	2	10
	16 years +	2	10

Source; author's computation, 2021

The dispersion of respondent's profession consisted of 30% (N=6) each who are quantity surveyors and project managers respectively, 25% (N=5) are construction engineers whiles 15% (N=3) are building contractors.

It was necessary to determine the number of years in their profession. The results from the data indicated that 40% (N=8) have worked between 5-8 years in their career, followed by 35% (N=7) who have also worked below 4 years, a 10% (N=2) have worked for 13-16 years and above 16 years each respectfully, and finally 5% (N=1) with 9-12 years' experience. In a nut shell, it can be concluded that the range of respondents used are knowledgeable with requisite qualifications to understand the subject matter and substance of the questions that were posed in the questionnaire and therefore elicited their different and accurate opinion.

4.2 What factors affect cost performance among contractors and project managers in the Techiman Municipality?

The empirical answer to this question is indicated in Table 2. An average mean score of 3.735 (SD= 1.054) was recorded for the factors affecting construction cost performance

among contractors and project managers in the Bono East region of Ghana. The highest mean score of 4.40 is related to changes in the price of goods and services.

Table 2: Descriptive Statistics

Statement	N	Min.	Max.	Mean	SD
1. Changes in schedule	20	2	5	4.05	0.686
2. Design complexity	20	1	5	2.90	1.119
3.Changes in design	20	2	5	4.05	0.887
4. Conflict among contract documents	20	1	5	3.15	1.182
5.Changes in specification by contractors	20	1	5	4.25	0.910
6.Changes in specification by owners	19	2	5	3.74	0.991
7.Weather conditions	20	1	5	3.85	1.089
8.Errors or omissions in design	20	1	5	3.35	1.182
9.Unforeseen site conditions	20	1	5	3.70	1.218
10.Owners financial challenge	20	2	5	4.35	0.489
11.Inadequate budget analysis	20	1	5	4.05	1.356
12.Changes in price of goods and service	20	3	5	4.40	0.821
13.Contractor's other work load leading to delay on site	20	2	5	3.95	0.887
14.Use of unskilled labor	20	1	5	3.40	1.456
15.Acquiring proper machines for work	20	1	5	2.85	1.531
Valid N (listwise)	19				

Source; author's computation, 2021

All items in the table measure the factors that affect construction cost performance recorded a mean score of no less than 2.85. The cost of building materials are very volatile. That means, the prices change very often and the changes are always an incremental price of building materials such as cement, iron rods, sand and gravels as well as services of contractors. The main components of the external structure of a project came up on top as the critical factors that drive cost of the building construction in Bono East. Cost is the major driving factor in building construction projects, the cost of a project increase when there is an upward adjustment of prices of fuel in Ghana. Apart from the cost of external building materials, the interior design is also important and relates with the services of artisan. When the cost of materials increase, it has a correlation with the services of artisan and building interior designers. Looking at the cost of building projects from the building materials perspective, it is clear that measures by unit cost, percentage of net variation over the final cost of a project is very common as discussed in studies such as Chan and Chan (2004). However, this study looks at cost performance beyond the survey by appealing to the project managers experience of practically initiating and supervising the headquarters and main campus of the Nile Valley Multiversity in Bono East Region of Ghana.

Table 3: Summary of Cost Drivers from Project inception to completion

	Frequency	Percent	Valid Percent	Cumulative Percent
Site assessment	4	20.0	20.0	20.0
Land litigation	10	50.0	50.0	70.0
Changes in price of goods	6	30.0	30.0	100.0
Total	20	100.0	100.0	

Source; author's computation, 2021

From Table 3 we summarise other factors that drive construction cost of projects from inception to completion. Of the 20 respondents who took part in the survey, 10 of them representing 50 percent stated clearly that land litigation caused undue delay, coupled with legal battles between chiefs or land owners which eventually makes the project owner spend more than the budget. Six of the respondents, representing 30 percent added that changes in the price of goods (materials) drive the cost of project to exceed budgets, and 20 percent (4 respondents) stated that land assessment sometimes drive the cost of a project to exceed the budget. This was on the basis that, the assessment done for the construction of a ten storey building is different depending on the environmental and physical conditions at the site. For instance, if the soil is clay then the contractor would have to prepare the land very well with concrete and rods before the beginning of the project. In some cases, after the assessment, the contractor may decide not to proceed with such a project, meanwhile greater portion of the budget has been invested in the land preparation and the contractor has to look for another land to serve the purpose of the project. These are some of the factors that lead to the increase of cost of projects.

Table 4: Reasons that account for delay in construction projects

	Frequency	Percent	Valid Percent	Cumulative Percent
Land litigation	4	20.0	20.0	20.0
Contractors attitude	4	20.0	20.0	40.0
Untimely funding	5	25.0	25.0	65.0
Improper project assessment	4	20.0	20.0	85.0
Lack of proper detail in project design	2	10.0	10.0	95.0
Constant changes in scope of project	1	5.0	5.0	100.0
Total	20	100.0	100.0	

Source; author's computation, 2021

Whereas 20% (N=4) of the respondents each indicated that land litigation, contractor's lackadaisical attitude, and improper project assessment could lead to delay in project completion. About 25% (N=5) are of the view that untimely funding also leads to delay in project completion. Lack of proper details in project design accounts for 10% (N=2) and constant changes in project scope accounts for a 5% (N=1).

4.3 How can we manage cost and risk in construction?

The management of risk in construction is as vital as the project itself. Risk management and mitigation skills is therefore a key quality of a good project manager/contractor/engineer. Table 5 depicts a number of mitigation measures or the risks and cost drivers identified.

An average mean score of 3.990 (SD=0.88) is recorded for addressing cost overruns and construction risk among 20 project managers, contractors and engineers in the Bono East region of Ghana. All the items scored above average of not less than 3.10 (SD= 1.021) measuring engagement of experienced consultants like construction economist and with a highest mean score of 4.55 (SD=0.510) which relates to proper planning of building projects. During the project planning process, lots of the challenges would be revealed and measures to rectify it adduced. Proper risk analysis can lead to an increase in the price of the project.

Table 5: Descriptive Statistics

Statement	N	Min.	Max.	Mean	SD
1. Adequate building project budget analysis	20	1	5	4.15	0.875
2.Proper design analysis	20	2	5	3.75	0.967
3.Financial stability of project owner	20	1	5	3.90	1.410
4.Engaging experienced consultants like construction economist	20	2	5	3.10	1.021
5.Contractor's knowledge about building projects	20	3	5	4.25	0.639
6.Proper consultation, planning before project inception	20	3	5	4.55	0.686
7.Use of quality building materials	20	2	5	4.50	0.513
8.Conducting cost and benefit analysis of building project in design	20	1	5	3.55	1.099
9.Use of modern equipment	20	1	5	3.40	1.353
10 Skilled labor	20	3	5	4.20	0.696
11.Proper planning of building project	20	2	5	4.55	0.510
Valid N (listwise)	20				

Source; author's computation, 2021

This is in line with a study by Schieg (2006) who indicated that proper risk management minimize crises by management and increase the probability of the success of the project.

4.4 Important factors in mitigating the cost

It is inevitable that beginning and ending cost estimates would be different for both minor and mega construction projects. The quality of a good project manager as discussed in the literature review section is to be able to articulate and put good solutions in place to arrest significant cost over runs. It is equally critical to effectively manage construction risk adequately and timeously. Table 6 presents mitigating measures.

Table 6: Cost mitigating measures between project Conception and final delivery

	Frequency	Percent	Valid Percent	Cumulative Percent
Timely purpose of materials	5	25.0	25.0	25.0
Contractors skills	3	15.0	15.0	40.0
Timely funding of project	1	5.0	5.0	45.0
Proper project assessment	3	15.0	15.0	60.0
Lack of proper detail in project design	4	20.0	20.0	80.0
Focus on scope of project	4	20.0	20.0	100.0
Total	20	100.0	100.0	

Source; author's computation, 2021

From the respondents own words, on the other factors considered most important in mitigating cost between project conception and completion, 25% (N=5) accounted for timely purpose of materials for construction, 20% (N=4) each also indicated proper details in project design and focus on scope of project respectively, and 15% each (N=3) accounted for contractor's skills, experience on the job and proper project assessment and 5% (N=1) timely funding of projects. The highest percent of 25% which relates to timely purpose of materials is very important because project manager planned ahead of the project and got all material ready such that prices increases may have little effect of the materials acquired for the project. This part of the study is in line with Gudiene et al., (2014) that clear and

realistic project goals, project planning and proper project assessment are some of the top factors of project success for construction projects in Lithuania.

Table 7: Qualities of Good Project Managers

	Statement	N	Min.	Max.	Mean	SD
1.	Project managers must define, commit and follow the project process	20	4	5	4.50	0.513
2.	Project managers must manage and perform quality assurance	20	3	5	4.25	0.639
3.	Project managers must stick focus in the project requirements	20	4	5	4.10	0.308
4.	Project managers must take time for thorough project de-brief	20	2	5	4.25	0.851
5.	Project managers must be responsible for challenges as a result of their actions towards a project	20	2	5	3.45	0.887
6.	Project manager need to give each team member the importance they need by focusing in their positive traits (Must be fair and just in dealing with team members)	20	3	5	3.95	0.759
7.	Sound technical knowledge to understand issues that are related to the technical aspect (theory and technical) in taking strategic decisions.	20	2	5	4.15	0.671
8.	Project manager need a good decision making skills	20	4	5	4.35	0.489
9.	Project managers need to motivate their team and drive them to maximize performance to achieve project objective	20	1	5	4.20	1.196
10.	Project managers must clearly explain the project goals as well as each members task, responsibilities, expectation and feedback	20	4	5	4.50	0.513
	Valid N (listwise)	20				

Source; author's computation, 2021

The average mean score for the qualities of a good project manager is 4.17 (SD=0.682) which is paramount in avoiding excessive spending on a project. The highest mean score is 4.50 (SD=0.513). This indicate that the project manager must define, commit and follow the project process. Also the project manager must clearly explain the project goals, each members' task, responsibility, expectation and get their feedback on the project. Followed by 4.35(SD=0.489) which indicates good decision making skills of project manager, then 4.20 (SD=4.20) which relates that project managers need to motivate their team to maximize performance to achieve project objectives. It corroborates assertion from previous studies that project managers are entrusted with resources, and responsible for allocating relevant resources, motivating and inspiring the team to achieve project objective (Gido and Clements, 2003).

5 Concluding remarks and reflections for practice

The main objective of the study was to assess the factors affecting cost performance and the risk in the building industry in Bono East Region, and the unique qualities of project managers in execute within budget contracts. The study used qualitative method through

purposive sampling in selecting the respondents from the study area. Descriptive method was used in the data analysis and meaning were deduced from the study objectives. First, the study established that changes in price of building materials could drive the costs high. Other cost drivers are changes in the project specification and design and inadequate budget analysis. Second, the study establishes that proper planning of building projects is the main factor to address cost over-runs and construction risk. Other factors include the use of quality building materials, and contractor's knowledge about building projects. The third conclusion of this study is that the attributes and traits of a project manager are key to determine success. Project managers must clearly explain the project goals to members, share their responsibility and expectations and getting their feedback is one of the qualities good project managers should possess in order to deliver on time, and in the money.

A number of lessons can be drawn from the results of the study. First, it is necessary to carry out advance cost estimation in the construction sector, and to do risk analysis to bring out all the risk factors that must be dealt with before initiating the project. While the micro details of cost and risk cannot all be estimated in advance, we argue that careful planning and competent management can minimize the usual delays and overruns associated with local, regional and global construction. Contractors must have contingencies that are adequate to handle the variability in market prices. These market wide changes call for innovation in the alternative building materials industry as well as the introduction of new styles of construction. Proper planning of building projects, adequate consultation at all levels before project conception, use of quality building materials, and the contractor's knowledge on building projects all rank high in our survey responses. When implemented correctly these items would help project managers, building engineers stay within the budget of a project or in excess of not more than 10 percent margin of the cost of the project. This is believed to reduce the issue of cost over-run and reduce construction risk to the barest minimum.

We highlight in this study that motivation is key to project success. It is therefore important for project managers to be team leaders and drive the team towards a successful completion by ensuring individual targets are met. Project managers should always read the market, be one step ahead of the game, embrace technology while locally grounded, and procure goods enough to complete projects on schedule.

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