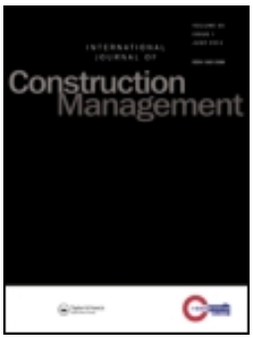

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ASSESSMENT OF THE PERFORMANCE OF LOCAL AND FOREIGN ROAD CONSTRUCTION FIRMS IN GHANA

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Abstract
The apparent imperfect competition that exists between local and foreign construction firms, coupled with the perception that governments give most of the big projects to the foreign firms has brought about the need to undertake a comparative study. The aim of this study was to determine whether there is a significant difference between the performance of local and foreign road construction firms in Ghana. The study involved a cross-sectional survey that used a structured questionnaire administered to 69 respondents of road construction professionals. The results ranked foreign firms significantly higher than their local counterparts in terms of effective cost management, time management and quality management practices at 95% confidence level. Therefore, the study found the foreign road construction firms more efficient in terms of performance (cost, time and quality) than their local counterparts in Ghana.

Keywords
Performance management, road construction firms, construction industry, time management, cost management, quality management

INTRODUCTION

The construction industry generally plays a vital role in every nation's economy due to the usage of its products such as roads, buildings and dams for the production of goods and services as well as the employment it generates. An enhanced productivity has a positive effect on the Gross Domestic Product (GDP) of every nation. In spite of the immense size and significance of the construction industry to the economies of most nations, its productivity is one of the controversial and least understood factors (Haskell, 2004). The construction industry accounts for about one-third of gross capital formation, therefore governments have major role as clients and regulators of construction companies (Kenny, 2007).

The relatively important role played by the client in the implementation process of a project has been well acknowledged (Bennet et al., 1988; Latham, 1994; Yisa and Edwards, 2002). With regard to improvements required in the industry, Latham (1994) emphasised the need of the government as a client to deliberately set out to use their spending power to assist the productivity and competitiveness of the industry, in

addition to obtaining value for money generally in the long term. In addition, he proposes that a government department should take the lead to ensure best practice and drive for improvements to be implemented throughout the public sector, and also, that leading clients have a substantial role to play in setting demanding standards and insisting upon improvements. Ultimately, he continued that they have the most to gain from ensuring the implementation of best practice. Apparently, the easiest way out for clients has been to depend on well resourced and efficiently performing contractors. This is because, all things being equal, it is the contractor whose performance is visible at the end of it all.

Since Independence, the Government of Ghana (GOG) has made several efforts to improve local capacity in the road construction industry as a means to reduce unemployment and retaining scarce foreign exchange in the local economy (Ntorinkansah, 2010). This is against the backdrop that local road construction firms have often complained about the preference given to their foreign competitors. This is epitomised in a statement in the General News of Friday, 20 February 2009, that the "Government would also insist that a portion of the road construction industry went to local contractors". It is however clear that most government interventions have failed to yield their desired results and the construction industry continues to rely rather heavily on foreign contractors for almost all important road projects. In view of the above, there is the need for a study to assess whether there is significant difference in the performance of local and foreign based road construction firms in Ghana.

The main aim of this study was to determine whether there is a significant difference between the performance of local and foreign road construction firms in Ghana. To achieve this aim, the following objectives were pursued:

- To compare the extent to which cost as a measure of performance is met in the management of road construction projects between local and foreign firms.
- To compare the extent to which time as a measure of performance is met in the management of road construction projects between local and foreign firms.
- To compare the extent to which quality as a measure of performance is met in the management of road construction projects between local and foreign firms.

LITERATURE REVIEW

Performance Management in Construction

The last two decades have seen changes in business perceptions of construction industry worldwide. Various researchers commented on poor performance and the inefficiency of the industry (Anumba and Evbuomwan, 199; Beatham, 2003), this can be buttressed by a general decline in the performance of construction companies which was also observed in US construction industry (Larson, 1995; Yasamis et al., 2002). Considering a publication by the UK government (Egan, 1998) explaining the targets for improvement in construction industry, all comments and recommendations for improvement were stressing the fact that determination of the performance measures was inevitable for sustainable improvement. Defining performance as being on-time, on-budget, and meeting quality expectations, Kashiwati (2002) concluded that construction is a business issue and not engineering technical issue. A layman can identify whether the contractor finished on time, on-budget, and whether the owner's expectations were met.

Traditionally, the construction industry was focused mainly on project performance (Ward et al., 1991; Mohsini and Davidson, 1992). Moreover, the performance of projects and contractors were assessed based on the extent to which the client's objectives like cost, time and quality were achieved on those projects (Smallwood and Venter, 2001). Although these three measures provide an indication of the success or failure of a project, they do not in isolation provide a balanced view of the project's performance, and their implementation in construction projects is apparent only at the end of the project. Therefore, as suggested by Kagioglou et al. (2001), these three measures can only be classified as "lagging" other than "leading" indicators of performance. International research also supports this argument, which indicates that performance relative to cost, quality and schedule is influenced by other factors like health and safety, productivity, performance relative to the environment, and employee satisfaction (Smallwood and Venter, 2001). Ward et al. (1991) mentioned that the evaluation of projects, contractors, professionals or procurement methods solely according to the client's objectives is problematic. Another research conducted by Atkinson et al. (1997) reveals that clients will not be satisfied if the end product fails to meet their price, quality, time frame, functionality and delivery performance standard.

Measuring Efficiency of Construction Firms

The common assessment of the success of construction projects is that they are delivered on time, to budget, to technical specification and meet client satisfaction (Baker et al., 1983; Slevin and Pinto, 1986). However, the criteria for success are in fact much wider, incorporating the performance of the stakeholders, evaluating their contributions and understanding their expectations (Atkinson et al., 1997; Wateridge, 1998). Construction projects potentially can have different sets of stakeholders such as client, consultant, contractor, supplier, end-user and the community. According to Atkinson et al. (1997), successful construction project performance is achieved when stakeholders meet their requirements, individually and collectively.

Estimating the performance efficiency of the Canadian construction subcontractors by Data Envelopment Analysis (DEA) with multi-inputs (such as indirect costs and fixed assets) and multi-outputs (such as revenue and net profit), a study of the Canadian National Steering Committee for Innovation in Construction showed that only 14 percent of subcontractors (or 183 out of 1,310) were efficient, and most of these efficient subcontractors had revenue of less than 10 million Canadian dollars (National Steering Committee for Innovation in Construction , 2003). Edvardsen (2003) applied DEA to analyze the performance efficiency of Norwegian construction firms in 2001, and then used the bootstrapping method to test estimated results. Estimated results indicated that the sample firms had a relatively high average efficiency score (83.4%).

Another study by Nguyen and Giang (2007) to estimate technical efficiency of 2,298 construction firms in Vietnam by using data from the 2002 Economic Census for Enterprises by the General Statistical Office of Vietnam (GSO) indicated that the average pure technical efficiency of these firms was about 60 percent (58.6% and 57.8% for DEA and SFPF, respectively). They further stated that the building and civil engineering construction firms usually had the lowest efficiency scores, which reflected the fact that they were operating with many inputs, and construction time was usually long. Moreover, it was shown that state firms were more efficient than

non-state ones, possibly because these firms could invest more capital and have better technical capacity. In addition, business location in Hanoi and Ho Chi Minh City had significant influence on these firms' efficiency scores, and the result could be explained by easier access to resources, such as labour and capital, in these cities.

According to Cooke-Davies (2002), performance predicts success and success factors affect performance. In order to identify the real success factors of construction projects, Cooke-Davies highlighted the importance of the stakeholders in relation to the construction project performance. This corroborates Slevin and Pinto's (1986) argument that a project is only successful to the extent that it satisfies the needs of its intended user. They identify the fact that the element of success in a project refers to efficiency and effectiveness measures. Efficiency measures correspond to the strong management and internal organizational structures (adhere to schedule, budget and specification) and effectiveness measures refer to user satisfaction of the project. In addition, efficiency would only be achieved through having standard, systems and appropriate methodology.

Project Time Management

Time refers to the duration for completing a project. It is scheduled to enable the building to be used by a date determined by the client's future plans (Hatush and Skitmore, 1997). Completion of a project on time is said to be the hallmark of the design and build industry. Stumpf (2000) defined delay as an act or event that extends the time required to perform the tasks under a contract. It usually shows up as additional days of work or as a delayed start of an activity. He showed, in his article, that delay does matter, and that different methods for analyzing schedule delay lead to different results for the owner and contractor. Construction delays have become an integral part of a construction project's life. Even with today's advanced technology, and management understanding of project management techniques, construction projects continue to suffer delays and project completion dates still get pushed back (Stumpf, 2000).

Current practices in the road construction industry suggested that planning and scheduling in road construction is inefficient and projects are often over budget and over time (Castro and Dawood, 2005). Also, project managers use only their experiences, historical and technical data and gut feeling to plan and manage the process. In order to have efficient gains and construct projects on time and on budget, more innovative tools and techniques are needed to assist managers in planning and managing road construction projects. The performance of construction in Ghana is faced with many challenges and many reports have decried the public sector's lack of commercial edge in the exercise of its procurement function. Contracts for both works and consultancy services take very lengthy periods to reach financial closure and are subject to unnecessary delays (Crown Agents, 1998). Westring (1997) attributes the causes of the delays to extensive post-award negotiations, delays in the preparation of technical specifications and drawings, delays in evaluation, an extensive system of controls, reviews and approvals, and land ownership disputes. Project implementation has itself been characterised by extensive cost and time overruns and poor quality (Crown Agents 1998; Westring 1997). The process for payment to contractors and suppliers is also long, involving over thirty steps from invoice to receipt of the payment cheque, and often over-centralized, thus leading to delays in project execution (World Bank, 2003).

Project Quality Management

Construction quality is defined as the totality of the features required to satisfy a given construction project (Parfit and Sanvido, 1993). The extent to which projects are monitored, the experience of project consultants, quality and past performance record of contractors (Kashiwagi and Parmar, 2004) and the number of variation orders issued all have effect on quality. How all these factors can be competently coordinated is relevant to achieving satisfactory quality performance. Researchers consider the term "quality" from different perspectives, from the perspective of the finished product or completed project. Ling et al. (2009) describes quality as the output of the service rendered or work done from the technical and workmanship aspects. In this description, the authors consider quality from the point of view of the standards of a completed project. From the perspective of specifications or plans earlier prepared, Arditi and Lee (2004) maintain that the quality of a project is measured by its conformity with a quality plan that is designed to satisfy a customer. In this description, the author also considers quality not just from the point of view of a completed project but whether or not the completed project is executed according to a quality plan earlier prepared for such purpose. Oakland (1995) defines quality control as essentially the activities and techniques employed to achieve and maintain the quality of a product. The Economic Construction Institute (1994) describes quality as all planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality.

The Project Management Institute (2000) identified three important components of quality management to be quality planning, quality assurance and quality control. In this description of the three components of quality management, the body considers quality as synonymous with management. Clients' long-term interests lie in the high quality of their projects. The work performed must conform to the specifications established for the project. Low cost and speedy construction should not be achieved at the expense of the quality of the project. In fact, poor quality of performance results in increased rework, which has significant cost and schedule implications (Hong and David, 2002). Quality of construction products as well as the quality of processes that produce the products is crucial to contractors' competitiveness in the market (Harris and McCaffer, 2002). However, construction quality may sometimes be taken for granted and insufficient attention may be paid to it (Rad and Khosrowshahi, 1998).

Research studies have shown that quality has numerous effects on a project. Griffith and Bhutto (2004) explained that quality standards implementation in the construction industry is more management driven with perceived efficiency gain. The effect of quality can be understood from the importance attached to it in the assessment of project performance. Egemen and Mohamed (2005) maintained that completing a project in accordance with the required quality standards is one of the three major performance elements generally used for the evaluation of performance in construction. Mahadevappa and Kotreshwar (2004) also stated that an emphasis on quality can be supportive by identifying and eliminating the causes of errors and rework thereby reducing costs and making more units of product available for meeting a delivery schedule. Banerji et al. (2005) were of the view that certain quality management practices have a significant impact on company's performance in terms of quality, profitability and productivity. They further stated that quality interventions have significant influence on productivity. Financial Standard (2004) maintained that the issue of quality performance of construction projects in Nigeria had resulted in the

collapse of several structures, colossal waste of human and material resources and in most cases, the indigenous contractors were found culpable.

Project Cost Management

Cost is defined as the degree to which the general conditions promote the completion of a project within the estimated budget (Bubashait and Almohawis, 1994). Cost is not only confined to the tender sum, it is the overall cost that a project incurs from inception to completion, which includes any costs that arise from variations and modification during the construction period (Ameyaw, 2009). Project cost management involves the processes necessary to keep a project within the budgeted cost. The processes include resource planning, cost estimating, cost budgeting and cost control. Cost management is critical to the success of every project and has numerous benefits.

METHODOLOGY

The design used for this study was that of a survey which relied on a questionnaire to generate data for the analysis. The study was to compare the performance of local and foreign road construction firms in Ghana.

The population for the study was the professionals from the road construction firms which included consultants, engineers and contractors of both local and foreign firms. Road construction firms which were of good standing financially with respect to the volume of present work in Ashanti and Brong-Ahafo regions of Ghana constituted the population. Four out of six firms were selected for the local category, while three out of four foreign firms were selected based on their good standing at the time of conducting this study. The total sample for the study was sixty nine (69) professionals, thirty seven (37) from local firms and thirty two (32) from foreign firms. A purposive sampling technique was adopted to select the professional for data collection because according to Bernard (2002) and Lewis and Sheppard (2006) the researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of their knowledge or experience.

The questionnaire items were based on the respondents' demographics and performance measures on both local and foreign firms with respect to cost, time and quality management (Appendix A). The questionnaire was personally administered by the researchers and that gave them the opportunity to interact with the respondents. The researchers explained in details the rationale for the research and gave explanations where necessary. Enough time was given to the respondents to answer the questionnaire. 41 questionnaires (21 from local firms and 20 from foreign firms) were returned, representing 59.4% response rate (Appendix B).

The data obtained were analyzed using the Statistical Package for Social Sciences (SPSS) version 19.0. The data from the questionnaire were inputted into SPSS and analysed by the use of descriptive statistics for options such as mean, standard deviation and standard error. In determining the causes of poor cost management practices, poor time management practices and causes of poor quality management practices on both local and foreign firms, a four-point Likert Scale was used from "not important" (0), "of little importance" (1), "important" (2), to "very important" (3). From the analysis, if an item receives a weighted average of 2, it means that the

respondents have ranked it as "important". If it falls between 2 and 3, for example, 2.3, it can be concluded that the response showed that the items was ranked between "important" and "very important" but ranks closer to "important".

In determining the efficiency of cost management practices, time management practices and quality management practices on both local and foreign firms, a four-point Likert Scale was used from "very efficient" (0), "efficient" (1), "a bit efficient" (2) to "not efficient" (3). From the analysis, if an item receives a weighted average of 1, it means that the respondents have ranked it as "efficient". If it falls between 2 and 3, for example, 2.3, it can be concluded that the item is ranked between "a bit efficient" and "not efficient" but ranks closer to "a bit efficient". To compare the performance of local and foreign construction firms with respect to effective cost management, a paired samples t-test was performed with the view to looking for significant difference between the means of the two samples. The data in SPSS were analysed for efficiency between the local and foreign firms through comparing means with sample t-test at 95% confidence interval for options such as t-value, p-value (significance at 2-tailed) and 95% confidence interval of the difference.

RESULTS AND DISCUSSION

This section presents, analyse and discusses the results obtained from the questionnaire. In addition, it addresses the research objectives stated in order to achieve the aim of the study.

Cost as a Measure of Performance

In addressing the first objective, the study presents the causes of poor cost management practices and compares the effective cost management practices of both local and foreign firms.

Factors Affecting Cost Management Practices

Tables 1 and 2 contain the analysed result on the causes of poor cost management practices of local and foreign firms respectively.

Table 1: Factors Affecting Cost Management of Local Road Construction Firms (N=21)

Items	Mean	S.D	Rank	Remarks
Fund constraints	2.68	0.662	1	Towards very important
Delays in honouring of IPCs	2.51	0.562	2	Towards very important
Low tender price	2.28	0.816	3	Close to important
Inexperienced contractors	2.24	0.821	4	Close to important
Lack of project knowledge	2.20	0.872	5	Close to important
Poor decision making	2.13	0.864	6	Close to important
Inadequate control procedure	2.08	0.797	7	Close to important
Inflation	2.00	0.972	8	Important
Government interferences	1.95	1.061	9	Close to important
Underestimating	1.92	1.025	10	Close to important
Variation	1.92	0.841	11	Close to important
Mistakes during construction	1.84	0.945	12	Close to important
Times for inclement weather	1.53	0.971	13	Towards important

Table 2: Factors Affecting Cost Management of Foreign Road Construction Firms (N=20)

Items	Mean	S.D	Ran	Remarks
Delays in honouring of IPCs	2.17	0.737	1	Close to important
Fund constraints	1.97	1.067	2	Close to important
Variation	1.74	0.95	3	Close to important
Inflation	1.71	1.037	4	Close to important
Poor decision making	1.66	0.998	5	Towards important
Times for inclement weather	1.62	1.010	6	Towards important
Low tender price	1.58	1.025	7	Towards important
Underestimating	1.58	1.131	8	Towards important
Government interferences	1.57	1.145	9	Towards important
Lack of project knowledge	1.43	1.220	10	Towards important
Mistakes during construction	1.43	1.094	11	Towards important
Inexperienced contractors	1.28	1.186	12	Close to of little importance
Inadequate control procedure	1.17	1.071	13	Close to of little importance

From Tables 1 and 2, delays in honouring of IPCs and fund constraints occupied the first two positions in rank for both local and foreign firms. These are the acute problems affecting all contractors in Ghana. About 70% of the total funding for road works in Ghana comes from multilateral and bilateral agencies whilst the remaining 30% is generated internally. Even though these funds are budgeted before road projects are given on contract to contractors, there is regular delay of payment to contractors (Danso and Antwi, 2012) as a result of bureaucracy in government departments, a rather elaborate and cumbersome processes a contractor has to go through before receiving payment and obvious delays in the release of funds from the donor agencies. Most road contractors in Ghana are not well resourced to fund the projects on their own and therefore abandon the projects during the period of delay in payment. The more worrying issue is the failure of clients (usually the government) to pay interest or compensation for delayed payment. The plain truth is that whereas local contractors find it difficult to claim interest on delayed payment for fear of being blacklisted, foreign contractors are bold to claim, and are duly paid interest and suffer no victimization. The funding constraint identified above is partly responsible for the rather long delays in paying contractors especially for government projects executed.

Other factors affecting the cost management practices of the foreign firms include variation, inflation and poor decision making. A critical examination of the above factors with particular reference to the foreign firms shows that these could be due to their inability to adjust to Ghana's economic situation which is characterized by rapid changes in inflation and interest rates. For instance, on the average fuel, bitumen and chippings, which are the main materials for road construction, prices could be increased about two or three times within a bad year. This makes the foreign firms face some degree of difficulties in adjusting to the local situations, especially in their early days in Ghana. Again, it could be deduced that the additions and omissions to the original works in a form of variation seem to be a danger to them since the situation pertaining in their respective countries may not be too rampant as compared

with the situation in Ghana. In addition, their decision making at times include whether to hire all their engineers locally or to rely solely on their expatriate engineers and whether to bring their own equipment or buy or hire some locally. For local contractors, those applicable include low tender price, inexperienced contractors and lack of project knowledge. These are indications of the inherent weaknesses of the contractors and places them badly in competition.

All the above factors go to support the findings by Danso (2007), who attributed the causes of the poor cost management to underestimating, delays in honouring of IPCs , variations, inadequate control procedure, government interference, inexperienced contractors, lack of project knowledge, fund constraints, poor decision making, times for inclement weather, mistakes during construction, inflation, design errors and omissions, and times for rework.

Efficient Cost Management Practices of Local and Foreign Road Construction Firms

Table 3 contains the analysed result on the ranking of local and foreign firms with respect to effective cost management practices, while Table 4 shows the test of significant difference on the ranking of local and foreign firms with respect to efficient cost management. In comparing the performance of local and foreign construction firms with respect to efficient cost management, a paired samples t-test was performed with the view of looking for significant difference between the means of the two samples.

Table 3: Effective Cost Management of Local and Foreign Road Construction Firms (N=41)

Firms	**Mean**	**Std. Deviation**	**Std. Error Mean**
Local	1.76	0.624	0.097
Foreign	0.56	0.502	0.078

Table 4 shows a mean value of 1.76 for the local firms and 0.56 for their foreign counterparts. It could be clearly seen that the mean value for the local firms lies within the range of ‘efficient’ and ‘a bit efficient’ whilst that of the foreign firms lie between the range of ‘efficient’ and ‘very efficient’. Hence the result indicates a difference in the performance of local and foreign firms with respect to effective cost management practices. The difference was tested at 5% significant level with a p-value of 0.000 which is less than 0.05 (Table 4).

Table 4: Test of Significant Difference

	t	**df**	**Sig. (2-tailed)**	**95% Confidence Interval**	
				Lower	**Upper**
Effective cost management of local and foreign firms	9.413	40	0.000	0.939	1.452

With respect to the ranking of local and foreign based road construction firms in Ghana in terms of effective cost management, the results produced were similar to that of Idoro (2007), which ranked the foreign firms significantly higher than their local counterparts. This could be one of the causes of the preference given to expatriate contractors in the award of contracts in Ghana and in most developing countries, which has become a subject of concern and controversy to the public in general. Some of these past and on-going projects which are dominated by the foreign firms in Ghana include the construction of Kumasi - Techiman Road, construction of Techiman – Kintampo Road, construction of Sofo Line Interchange, and construction of Asokwa Interchange, among others. The expatriate contractors who are few in number carry out majority of the total value of road construction in Ghana lately despite the fact that their charges are considerably higher than those of their local counterparts.

Time as a Measure of Performance

The second objective of the study is addressed by considering the factors affecting time management practices and efficient time management practices of local and foreign road construction firms.

Factors Affecting Time Management Practices

Tables 5 and 6 present the results on the factors affecting time management of local and foreign road construction firms respectively, while Table 8 shows the test for significant difference in comparing time management efficiency between local and foreign firms.

From Table 5, on the local firms, eight out of the nine causes fell within the mean range of 1.24 to 2.40 representing ‘of little importance’ and ‘towards very important’. Bureaucratic system of payment fell between the range of important and very important which means that among all the causes of poor time management, bureaucratic system of payment is rated the most influential for the local firms according to the respondents. This can be buttressed by the physically laborious and lengthy processes which the certified interim payment certificates go through in Ghana. A typical certificate passes through about twelve different offices before it finally gets to the ministry of finance for payment. This practice coupled with delays in monthly payment to contractors is a recipe for constraints which impede project progress. In one instance, a certificate submitted by a firm was kept on a desk for over 28 days whilst in circulation. This is result of the fact that most of the projects executed by the local firms are funded by the government; hence they are much more likely to face this problem than their foreign colleagues whose projects are mostly financed by donor agencies.

Table 5: Factors Affecting Time Management on the Part of Local Firms (N=21)

Items	Mean	S.D	Rank	Remarks
Bureaucratic system of payment	2.40	0.877	1	Towards very important
Inflation	1.79	1.005	2	Close to important
Land ownership disputes	1.74	1.061	3	Close to important
Delays in preparation of technical specifications and drawings	1.68	1.007	4	Towards important
Times for rework	1.49	0.997	5	Towards important
Design errors and omissions	1.44	1.007	6	Towards important
Extensive system of controls reviews and approvals	1.32	0.809	7	Towards important
Delays in evaluation processes	1.24	1.065	8	Close to of little importance
Extensive post award negotiations	1.13	1.056	9	Close to of little importance

Table 6: Factors Affecting Time Management on the Part of Foreign Firms (N=20)

Items	Mean	S.D	Rank	Remarks
Bureaucratic system of payment	1.97	0.959	1	Close to important
Land ownership disputes	1.87	0.923	2	Close to important
Inflation	1.61	0.916	3	Towards important
Delays in preparation of technical specifications and drawings	1.53	1.047	4	Towards important
Design errors and omissions	1.44	0.852	5	Towards important
Delays in evaluation processes	1.42	1.105	6	Towards important
Extensive system of controls reviews and approvals	1.38	0.953	7	Towards important
Times for rework	1.19	0.980	8	Close to of little importance
Extensive post -award negotiations	1.17	1.00	9	Close to of little importance

However, all the other factors namely inflation, land ownership disputes, delays in preparation of technical specifications and drawings, times for rework, design errors and omissions, extensive system of controls, reviews and approvals, delays in evaluation processes and extensive post-award negotiations affect their time management practices.

In Table 6, seven out of the nine items are either ‘close to important’ or ‘towards important’ which shows that most of these factors affect foreign road construction firms’ time management practices. As far as the foreign firms are concerned, all these causes were either of little importance or just important. This shows that most of these factors affect their time management practices almost at the same rate. Hence it could be seen that the two categories of firms have almost the same factors affecting their time management practices.

A critical observation of the above factors reveals that they are all beyond the scope or powers of the contractors. The delays in evaluation processes, bureaucratic system of payment, delays in preparation of technical specifications and drawings, design errors and omissions, extensive system of controls, reviews and approvals, and extensive post-award negotiations can all be attributed to the actions of either the consultant or client, hence their ranking as being either of little importance or just important is justifiable. The only factor that could be attributed to the action of the contractor is times for reworks. This was in line with a report by Westring (1997) which attributed the causes of the delays to extensive post-award negotiations, delays in the preparation of technical specifications and drawings, delays in evaluation, an extensive system of controls, reviews and approvals, and land ownership disputes.

Efficient Time Management Practices of Local and Foreign Road Construction Firms

Table 7 presents the ranking of local and foreign road construction firms with respect to effective time management, while Table 8 shows the test of significant difference. Considering a mean value of 2.02 for the local firms and 0.74 for their foreign counterparts (Table 7), it depicts that the mean of the local firms lies within the range of 'a bit efficient' and 'not efficient' whilst that of the foreign firms lies between the range of 'efficient' and 'very efficient'. Hence the study recorded a difference in the performance of local and foreign firms with respect to effective time management practices. In addition, this difference was tested to be significant at 5% significant level with a p-value of 0.000 which is less than 0.05 as seen in Table 8.

Table 7: Effective Time Management of Local and Foreign Road Construction Firms (N=41)

Firms	**Mean**	**Std. Deviation**	**Std. Error Mean**
Local	2.02	0.724	0.113
Foreign	0.74	0.581	0.093

Table 8: Test of Significant Difference

	t	**df**	**Sig. (2-tailed)**	**95% Confidence Interval**	
				Lower	**Upper**
Effective time management of local and foreign firms	11.039	40	0.000	1.056	1.529

Quality as a Measure of Performance

The third objective of the study- the causes of poor and effective quality management practices of local and foreign road construction firms are presented and discussed below.

Factors Affecting Quality Management Practices

The result as indicated in Table 9, shows that six factors for local firms, thus, ineffective control and monitoring, contractor's poor response to engineers' instructions, unavailability of resources (human, financial and materials), inexperienced contractors, lack of project knowledge and inefficiency of project team had a mean range of 2.08 to 2.21 all in the range of 'close to important'.

Table 9: Factors Affecting Quality Management of Local Road Construction Firms (N=21)

Response	Mean	Rank	Remarks
Ineffective control & monitoring	2.21	1	Close to important
Contractor's poor response to engineers' instructions	2.20	2	Close to important
Unavailability of resources	2.15	3	Close to important
Inexperienced contractors	2.14	4	Close to important
Lack of project knowledge	2.12	5	Close to important
Inefficiency of project team	2.08	6	Close to important
Poor decision making	1.95	7	Close to important
Mistakes during construction	1.78	8	Towards important
Design errors and omissions	1.54	9	Towards important
Variation	1.41	10	Towards important
Uniqueness of the project	1.28	11	Close to little importance
Uniqueness of project activities	1.19	12	Close to little importance

The first four factors on the part of foreign firms as shown in Table 10 are inefficiency of project team, ineffective control and monitoring, contractor's poor response to engineers' instructions and inexperienced contractors with all of them having a mean range of 1.82 to 2.03 representing 'close to important'.

Table 10: Factors Affecting Quality Management of Foreign Road Construction Firms (N=20)

Response	Mean	Rank	Remarks
Inefficiency of project team	2.03	1	Close to important
Ineffective control & monitoring	2.02	2	Close to important
Contractor's poor response to engineers' instructions	1.92	3	Close to important
Inexperienced contractors	1.82	4	Close to important
Lack of project knowledge	1.79	5	Towards important
Unavailability of resources (human, financial, materials)	1.68	6	Towards important
Mistakes during construction	1.68	7	Towards important
Poor decision making	1.62	8	Towards important
Design errors and omissions	1.42	9	Towards important
Variation	1.34	10	Towards important
Uniqueness of the project	1.19	11	Close to little importance
Uniqueness of project activities	0.97	12	Close to little importance

The results could mean that the firms themselves are not that conscious since they fail to do proper planning and scheduling with regard to quality assurance. This will in turn lead to their refusal to respond to engineers' instructions. The above situation shows that their constant refusal to undertake ineffective control and monitoring as well as to demonstrate poor response to engineers' instructions could be attributed to the fact that either they are inexperienced or lack the appropriate project knowledge.

Efficient Quality Management Practices of Local and Foreign Road Construction Firms

Table 11 shows the ranking of the quality performance of local and foreign firms, while Table 12 summarises the test for significant difference. Considering a mean value of 1.79 for the local firms and 0.69 for their foreign counterparts, it indicates that the mean of the local firms lies within the range of 'efficient' and 'a bit efficient' whilst that of the foreign firms lies between the range 'efficient' and 'very efficient' as shown in Table 11. Hence the result indicates a difference in the performance of local and foreign firms with respect to quality management practices. In addition, the difference was tested at 5% significant level with a p-value of 0.000 which is less than 0.05 as shown in Table 12.

Table 11: Efficient Quality Management of Local and Foreign Road Construction Firms (N=41)

Category	Mean	Std. Deviation	Std. Error Mean
Local Firms	1.79	0.724	0.105
Foreign Firms	0.69	0.581	0.087

Table 12: Test for Significant Difference

	t	df	Sig. (2-tailed)	95% Confidence Interval	
				Lower	
Effective quality management practices of local and foreign firms	8.979	40	0.000	0.849	1.342

CONCLUSION

With respect to the grading of local and foreign based construction firms in Ghana in terms of effective cost management, the results ranked the foreign firms significantly higher than their local counterparts. Fund constraints and delays in honouring of IPCs were common factors for both the local and foreign firms as being responsible for poor cost management. On the grading of local and foreign firms with respect to effective time management, the performance of the foreign firm were ranked to be significantly higher than the local firms at the 95% confidence level. Almost all the factors namely; bureaucratic system of payment, inflation, land ownership disputes, delays in preparation of technical specifications and drawings , times for rework, design errors and omissions, extensive system of controls, reviews and approvals, delays in evaluation processes and extensive post-award negotiations were seen to be applicable factors responsible for poor time management practices in Ghana. The performance of the foreign firms with respect to effective quality management practices was also tested and found to be significantly higher than that of the local firms. The study therefore found the foreign road construction firms more efficient in terms of cost, time and quality as performance measures than the local road construction firms in Ghana. The paper contributes to the volume of literature in construction project management, specifically in the assessment of performance of local and foreign road construction firms in a developing country context.

RECOMMENDATIONS

Based on the findings and conclusion of the study, the following recommendations are made:

- There is the urgent need for government to empower local road construction firms to develop the requisite capacity to enable them to compete favourably with their foreign counterparts for road contracts.
- Government must endeavour to pay the contractors on time. Considering the current payment system especially with regard to GOG funded projects which are normally executed by the local firms.
- Contractual provisions to check delays should be enforced on contractors who delay unduly on their project without justifiable reasons. However, this action will only be effective after the government has agreed to honour all certificates on time as per the corresponding contract conditions and is prepared to equally subject itself to the necessary conditions on default.

REFERENCE

Ameyaw, C. (2009). Comparative performance evaluation of the traditional Design-Bid-Build (Dbb) and Design-Build (Db) procurement methods in Ghana. MSc Thesis submitted to Department of Building Technology, Kwame Nkrumah University of Science and Technology.

Anumba, C. J. and Evbuomwan, N. F. O. (1999). "A taxonomy for communication facets in concurrent life-cycle design and construction." Computer-Aided Civil and Infrastructure Engineering, 14, 37-44.

Arditi, D. and Lee, D. E. (2004). "Service quality performance of design/build contractors using quality function deployment." Construction Management and Economics, 22(1), 123–127.

Atkinson, A. A., Waterhouse, J. H. and Wells, R. B. (1997). "A stakeholder approach to strategic performance measurement." Sloan Management Review; Cambridge, 38(3), 25-37.

Baker, B. N., Murphy, D. C. and Fisher, D. (1983). Factors affecting project success. In: D.I. Cleland, Ed., Project Management handbook. Van Nostrand Reinhold, New York.

Banerji, K., Gundersen, D. E. and Bahara, R. S. (2005). "Quality management practices in Indian service firms." Total Quality Management, 16(3), 321-330.

Beatham, S. (2003). Development of an integrated business improvement system for construction. EngD Thesis submitted to CICE, Loughborough University.

Bennett, J., Flanagan, R., Lansley, P., Gray, C. and Atkin, B. (1988), Building Britain 2001: Centre for Strategic Studies in Construction. University of Reading.

Bernard, H. R. (2002). Research Methods in Anthropology: Qualitative and quantitative methods, 3rd Ed., AltaMira Press, Walnut Creek, California.

Bubshait, A. A. and Almohawis, S. A. (1994). "Evaluating the general conditions of a construction contract." International Journal of Project Management, 12(3), 133-135.

Castro, S. and Dawood, N. (2005). RoadSim: A road construction knowledge-based simulation system. Proceedings of the CIB W102 Conference, May 19-25, Lisbon, Portugal.

Cooke-Davis, T. (2002). "The real success factors on projects." International Journal of Project Management, 20, 185-190.

Crown Agents (1998). Value for money audit report for Ghana. The World Bank Procurement Audit in Ghana. Crown Agents for Overseas Governments and Administrations Ltd, UK.

Danso, B. P. (2007). Project cost overrun in the road construction industry in Ghana. MSc dissertation submitted to the School of Development and Society, Sheffield Hallam University.

Danso, H. and Antwi, J. K. (2012). "Evaluation of the factors influencing time and cost overruns in telecom tower construction in Ghana." Civil and Environmental Research, 2(6), 15 – 24

Economic Construction Institute, ECI. (1994). Total productivity management: guidelines for the construction phase. Productivity Task Force, Economic Construction Institute, Loughborough University.

Edvarsen, D. F. (2003). "Efficiency of Norwegian Construction Firms." In Four Essays in the Measurement of Production Efficiency, School of Economics and Commercial Law, Goterborg University.

Egan, J. (1998). Rethinking construction report of the construction task force on the scope for improving the quality and efficiency of UK construction. Department of the Environment, Transport and the Regions, London.

Egemen, M. and Mohamed, A. N. (2005). "Different approaches of clients and consultants to contractors' qualification and selection." Journal of Civil Engineering and Management, 11(4), 267-276.

Financial Standard (2004). Construction industry operators call for review of Road Maintenance Act. Financial Standard, December 20, Financial Standard Newspapers, Lagos.

Griffith, A. and Bhutto, K. (2004). "The integrated management system for project quality, safety and environment: Pilot study research findings of developments in IMS." International Journal of Construction Management, 4(1), 75-81.

Hatush, Z. and Skitmore, M. (1997), "Evaluating Contractor prequalification data: Selection criteria and project success factors", Construction Management and Economics, Vol. 15 No. 2, pp. 129 – 47

Harris, F. and McCaffer, R. (2002). Modern construction management, 5th Ed, Blackwell Scientific Publishing.

Haskell P. H. (2004). Construction productivity: its history and future direction. America's Design-Build Leader White Paper.

Hong, X. and David, P. (2002). "The performance of contractors in Japan, the UK and the USA: An evaluation of construction quality." International Journal for Quality and Reliability Management, 19(6), 672-687.

Idoro, G. I. (2007). A Comparative study of direct labour and design-tender-construct procurement systems in Nigeria. PhD Thesis submitted to Department of Building, University of Lagos, Nigeria.

Kagioglou, M., Cooper, R. and Aouad, G. (2001). "Performance management in construction: A conceptual framework." Journal of Construction Management and Economics, 19(1), 85-95.

Kashiwai, D. T. (2002). The difficulty in implementing performance specifications in construction industry. Paper presented at the International Symposium of the Working Committee, CIB W92 (Procurement Systems).

Kashiwagi, T. and Parmar, D. (2004). Past performance information in the construction industry. ASC Proceedings of the 40th Annual Conference, Brigham Young University -Provo, Utah April 8 - 10, 2004.

Kenny C. (2007). Construction, corruption and developing countries. World Bank Policy Research Working Paper 4271, June 2007.

Bernstein, H. M. and Lemer, A. C. (1996). "Solving the innovation puzzle - challenges facing the U.S design & construction industry." American Society of Civil Engineers, 127.

Laborde, M. and Sanvido, V. (1994). "Introducing new process technologies into construction companies." Journal of Construction Engineering and Management, 120(3), 488-508.

Larson, E. (1995). "Project partnering: Results of study of 280 construction projects." Journal of Management in Engineering, 11(2), 30–35.

Latham, M. (1994). Constructing the team, Joint Review of Procurement and Contractual Arrangement in the United Kingdom. Design, Drawing and Print Services.

Lewis, J. L. and Sheppard, S. R. J. (2006). "Culture and communication: can landscape visualization improve forest management consultation with indigenous communities?" Landscape and Urban Planning, 77, 291–313.

Ling, F. Y. Y., Low, S. P., Wang, S. O. and Lim, H. H. (2009). "Key project management practices affecting Singaporean firms' project performance in China." International Journal of Project Management, 27, 59-71.

Mahadevappa, B. and Kotreshwar, G. (2004). "Quality management practices in India ISO 9000 certified companies." Total Quality Management, 15(3), 295-305.

Mohsini, R. A. and Davidson, C. H. (1992). "Determinants of performance in the traditional building process." Construction Management & Economics, 10(4), 343-59.

Ntorinkansa, H. (2010). NEWS: Presidential Palace Ghana - "Jubilee House" costs $176 million (US-Dollar). Retrieved from: www.Ghana-Net.com.

National Steering Committee for Innovation in Construction, NSCIC (2003). The construction industry as a place to invest. Presentation from the NSCIC's Second Canadian Construction Innovation Forum: Building a Strategy for Tomorrow.

Nguyen, K. M. and Giang, T. L. (2007). On measuring efficiency of hospitals and medical centers in vietnam: a non-parametric approach. Paper prepared for the Regional Economic Development Workshop at Thammasat University, Thailand.

Oakland, J. S. (1995). Total quality management, 1st Ed., Butterworth-Heinemann, Oxford.

Parfitt, M. K. and Sanvido, V. E. (1993). "Checklist of critical success factors for building projects." Journal of Management in Engineering, 9(3), 243-249.

Project Management Institute, PMI. (2000). A guide to project management body of knowledge. Upper Derby.

Rad, H. N. and Khosrowshahi, F. (1998). "Quality measurement in construction Project." ARCOM 14th Annual conference 1998, University of Reading, 389-397

Slevin, D. P. and Pinto, J. K. (1986). "The project implementation profile: a new tool for project managers." Project Management Journal, 17(4), 57 -70.

Smallwood, J. and Venter, D. (2001). The performance of contractors: client's perceptions, performance in product and service. CIB World Building Congress, Wellington, New Zealand.

Stumpf, J. (2000). "Schedule delay analysis." Cost Engineering, 42(7), 32–43.

Walker D. H. T. (1995). "An investigation into construction time performance." Construction Management and Economics, 13, 263–274.

Wateridge, J. (1998). "How can IS/IT projects be measured for success." International Journal of Project Management, 16(1), 59-63.

Ward, S. C., Curtis, B. and Chapman, C. B. (1991). "Objectives and performance in construction projects." Construction Management and Economics, 9(4), 343-353.

Westring, G. (1997). Ghana Public Procurement Reform. An Audit Report prepared for the World Bank, Advokatfirman Cederquist KB, Stockholm.

World Bank (2003). Ghana 2003 Country Procurement Assessment Report. Ghana Country Department, Washington DC.

Yasamis, F., Arditi, D. and Mohammadi, J. (2002). "Assessing contractor quality performance." Construction Management and Economics, 20(3), 211–223.

Yisa, S., and Edwards, D.J. (2002). "Evaluation of Business Strategies in the UK Construction Engineering Consultancy." Measuring Business Excellence, 6(1), 23-32.

Appendix A: A Sample Questionnaire

QUESTIONNAIRE FOR ROAD CONSTUCTION PROFESSIONALS

This questionnaire is designed to collect information about the performance of both local and foreign road construction firms in Ghana. Your identity will not be disclosed to any other person. Your answers will be completely confidential. Kindly remain anonymous and feel free to provide your responses in the best way you can. Please indicate your respond by placing a tick [√] in the appropriate box.

Section A: Demographic Data of Respondents

1. Please select your Gender: [ ] Male [ ] Female
2. Please select your Profession: [ ] Consultant [ ] Engineer [ ] Contractor
3. Please select your Firm: [ ] P & W Ghana Ltd [ ] Cymain Ghana Ltd [ ] J. Adom Company Ltd [ ] Ussuyah Ghana Ltd [ ] Shinshun Ltd [ ] Sonitra Ghana Ltd [ ] China Geo Ltd

Response Scale: (0) = Not Important, (1) = Of Little Importance, (2) = Important, (3) = Very Important

Please tick [√] only one option

S/N	Statement	Response			
		0	**1**	**2**	**3**
Causes of poor cost management					
4	Underestimating				
5	Delays in honouring of IPCs				
6	Low tender price				
7	Variation				
8	Inadequate control procedure				
9	Government interferences				
10	Inexperienced contractors				
11	Lack of project knowledge				
12	Fund constraints				
13	Poor decision making				
14	Times for inclement weather				
15	Mistakes during construction				
16	Inflation				
Causes of poor time management					
17	Times for rework				
18	Extensive post award negotiations				
19	Design errors and omissions				
20	Delays in preparation of technical specifications and drawings				
21	Bureaucratic system of payment				
22	Land ownership disputes				
23	Extensive system of controls reviews and approvals				
24	Delays in evaluation processes				
25	Inflation				

Causes of poor quality management					
26	Uniqueness of project activities				
27	Contractor's poor response to engineers' instructions				
28	Design errors and omissions				
29	Mistakes during construction				
30	Lack of project knowledge				
31	Inefficiency of project team				
32	Poor decision making				
33	Inexperienced contractors				
34	Unavailability of resources				
35	Variation				
36	Uniqueness of the project				
37	Ineffective control & monitoring				

Appendix B: Questionnaire Distribution and Response Rate

Category of firm	Name of firm	Questionnaire sent	Questionnaire returned	Response rate
Local	P & W Ghana Ltd	9	5	55.5
	Cymain Ghana Ltd	9	4	44.4
	J. Adom Company Ltd	9	6	66.6
	Ussuyah Ghana Ltd	10	6	60.0
Foreign	Shinshun Ltd	10	7	70.0
	Sonitra Ghana Ltd	11	6	54.5
	China Geo Ltd	11	7	63.6
Total		**69**	**41**	**59.4**