

Factors Affecting Quality Performance of Construction Firms in Ghana: Evidence from Small-Scale Contractors

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Abstract

In response to the poor quality workmanship by small scale contractors (SSCs) in Ghana, evaluating quality performance is particularly important especially in developing countries where construction works are largely manual. The aim of this paper is to identify, evaluate by ranking critical factors that influenced the quality performance of small scale contractors according to their relative importance and recommend measures to reduce its significance on project outcome. Sixty-nine (69) questionnaires were self-administered to professional staff including architects, quantity surveyors, and engineers engaged by small scale contractors. The relative importance index (RII) was used to rank factors for the analysis. The study identified: fraudulent practices and kickbacks, lack of coordination between designers and contractors and; poor monitoring and feedback are ranked as the first three factors that affected the QP of SCC and related to consultants. In addition, lack of training on quality for staff, lack of management leadership and lack of previous experience of contractor were also identified as factors related to contractors as the most critically ranked factors. It is therefore recommended that policy makers, researchers and practitioners look at improving the human resource base through continuous professional and skill development. Again monitoring systems should be improved at various district offices for the implementation of good construction procedure with the aim of ensuring quality practices. More importantly, design should be reevaluated before the actual construction through pre-construction conference in order to do away with unnecessary design that will not ensure quality.

Keywords: Quality Performance (QP), Relative Importance, Small Scale Contractors (SSC), Critical factors, Ghana

1.0 Introduction

In executing construction project, achieving quality among others is the ultimate objective of all stakeholders (Ofori, G. 2006). Quality as described by Collins (1996) is the oldest documented profession though there exist several defining for project quality pushed forward by quality professionals. Quality can therefore be generally defined as meeting specifications agreed by stakeholders. Thus client/consultants, contractor and financiers. It is also described as the totality of features and characteristics of production process that bear on its ability and capacity to satisfy the stated need or fitness (Aoieong, R. T., Tang, S. L. & Ahmed, S. M., 2002). Nonetheless this has been extremely difficult to achieve in practice (Jha, K. N. & Iyer, K. C., 2006). In developing countries like Ghana, poor productivity is a major concern in the construction industry. Although literature exists on contractor performance in the construction industry, the need to evaluate the critical factors affecting the quality performance of small scale contractors (SSCs) is apt as they constitute a greater percentage of contractors in developing countries. To this, SSCs in the Ghanaian construction industry are estimated to be about 90% of registered building and civil contractors (Amoah, P., Ahadzie, D. K., and Danso, Ayirebi 2011) with the remaining 10% being big scale contractors (BSCs); thus D3-D4/K3-K4 and D1-D2/K1-K2 respectively. Amoah *et al.*, 2011 and Asamoah, 2009 jointly postulates that SSCs perform abysmally regarding quality of construction due to poor managerial skills, lack of technical and professional staff as well as poor skilled and unskilled labour. This notwithstanding, the role played by the SSC's can't be overemphasized as they together contributes over 50% and 80% of all building material production and short term employment respectively in Ghana (Amoah *et al.*, 2011). Greater percentage of projects are executed by small scale contractors in Ghana but have largely been met with poor quality. There is therefore the need to jointly mitigate factors promoting this bad project outcome.

Following the above revelation, the research identified and ranked the factors established from literature according to their relative importance. Questionnaires were designed based on the factors obtained from literature and self-administered to professional staffs of small scale contractors. The research is purposely to address the poor quality performance of SSCs and so was limited to building and civil contractors within the financial class of D3/K3 and D4/K4 who are regarded as SSCs. Geographical the study was restricted to Accra (the Capital of Ghana) and Kumasi (the second largest city) due to the high presence of construction activities and economic growth in these capital cities. These two cities were reported by Owusu-Manu, *et al.*, 2010 to

harbor approximately 70% of building and civil engineering contractors registered in Ghana. Contractors were sampled randomly (simple) since the population for the research had similar characteristics. Retrieved questionnaires were analyzed using the relative important index (RII) to rank the critical factor that affected the quality performance of small scale contractors in Ghana. Strategic recommendations are made.

2.1 Relevance of SSCs in the Construction Industry

The construction industry remains very critical in the socio-economic development of every nation. Fugar and Agyakwa-Baah (2010) has indicated the construction industry is an important sector of the every developing economy. In Ghana, the industry has been adjudged as one of the main determinants of a country's Gross Domestic Product (GDP), as it contributed an average of 8.9% to its GDP (Ghana Statistical Service, 2010). The industry further plays a pivotal role in the development of local and rural communities and provides employment to a greater portion of the populace (Amoah, P. *et al*, 2011). In India, the industry contributes 45% of the industrial production, 80% of industrial employment and 35% of total exports (Verma, 2005). The contribution of Small Scale companies/industries to GDP (gross domestic product) of India was to the tune of 37.94% between 1999 and 2000. The industry in every nation can best be access base on its stakeholders, thus the professionals (architect, quantity surveyor, project manager, and engineers), contractor and client. The need for best practices in the field has been a cost to be paid by stakeholders to achieve the ultimate in quality performance base on the agreed specifications. In conglomeration market economy like the construction industry, the importance of small companies serve as major job suppliers, innovators and source of growth is widely recognized (Lussier and Pfeifer, 2001). Furthermore, Acs and Audretsch (1991), indicated four key contributions of small firm which was reemphasis by Barrett and Sexton, (2006): they play an important part in the process of technological change; generate much of the turbulence that not only creates an additional dimension of competition; but also provide a mechanism for (market) regeneration; international competitiveness in newly created product niches and job generation. In the United Kingdom (UK), Small scale companies/enterprises have at most 100 employees, but have large numbers as they account for approximately 98.6% of all companies in UK (Sels *et al.*, 2002). In Ghana they constitute about 90% of registered contractors as reported by Amoah *et al.*, 2011. The importance of small scale industry to the economy of Ghana and other developing Africa countries as a whole cannot be over emphasized (Antony *et al.*, 2005). Japan remain outstanding example of countries, which have achieved rapid industrialization through the small Scale industry. Likewise, Taiwan has 90% of its industrial output coming out of small scale industries which employing not more than 15 workers each. However, throughout the world, one finds that SMME's are playing a critical role in the creation of employment, penetrating new markets and generally expanding economies in creative and innovative ways. In the Sub-Sahara Africa countries the evidence is very clear that the SMME's is on the increase, with many from the private sector. To this small scale construction industry requires innovative strategies in order to achieve its optimum performance in project delivery to time, cost and quality. SSCs in Ghana face constraints to their development mainly originating from the socio-cultural and economic situation of the country (Kheni, 2008).

2.2 Quality Performance

Quality Performance (QP) is a management tool which aims at giving necessary information to identify quality improvement opportunities which is geared towards cost reduction and quality improving (Abdul, 2011). The Project Management Institute (PMI, 1987) explains that QP is the calculation of achievement used to measure and manage project quality. However, the perception of poor quality performance of Ghanaian small scale contractors has turned out to be of great concern to stakeholders (Taskforce Report, 2007). Poor quality performance (PQP) has potentially reduced the level of employment rate, influenced the completion time of projects due to re-work and ultimately pushing client's budget beyond reach. Factors affecting quality performance are inevitable but when identified and knowing the significance of them, steps would be taken to curb the menace. Contractor quality performance is critical to the success of any construction project since improved contractor quality performance leads to increase client satisfaction, an improvement in the reputation of contractor and hence competitiveness in the market (Xiao and Proverbs, 2003).

2.3 Small Scale Contractors in Ghana

There are diverse definitions to Small scale contractors (SSCs) and this varies from country to country. However, it can broadly be defined as a contractor limited with capital investments, plant & equipment and managerial resources and therefore needs some support to efficiently run and compete in the industry (Sibanda, 1999). In Ghana the Ministry of Water Resource Works and Housing classifies building contractors as D1, D2, D3 or D4 whereas civil engineering contractors are classified as K1, K2, K3 or K4. The Contractors in each category are further grouped into financial classes 1, 2, 3 and 4 (with 1 being the highest and 4, the lowest) based on their technical and managerial expertise, financial standing, previous performance, and equipment and plant holding (Laryea, S. & Mensah, S. 2010). SSCs are put into groups in Ghana and are classified into financial classes of D3-D4 and K3-K4 showing their financial standing and the value of work they can execute, plant and equipment holding etc. They constitute a greater majority of about 90% of registered building and civil engineering contractors in Ghana (Amoah *et al.*, 2011). SSCs plays a key role in the development of local and rural

communities of Ghana as they together contributes over 50% and 80% of all building material production and short term employment respectively (Amoah *et al.*, 2011; Asamoah, 2009). They are also perceived to perform poorly on quality (Asamoah, 2009).

2.4 Critical Factors that affect Quality Performance (QP)

The construction industry like any other production industry is faced with challenges that affect the performance and output of the endeavor. Identifying potential critical factors that affect the quality performance of small scale contractors before the commencement of projects will ensure client satisfaction at the completion of project. Identifying the potential critical factors will however not eliminate the problem of quality but to a large extent help project team to avoid such negative factors and strictly adhere to project specifications to reduce errors which will call for re-work by consultants.

Reviewing literature for potential factors that affect quality performance, Arditi & Gunaydin (1998) as cited by Jha, K. N & Iyer, K. C, (2006) identifies among other factors; lack of management commitment to continual quality improvement; lack of quality training of staff; management leadership; efficient team work among stakeholders as generic factors that affect the quality process. Factors affecting the cost and quality of construction were studied by Shri, B. S. P. *et al.*, 2009 and also; fraudulent practices and kickbacks; incorrect planning; Level of competition; Number of competitors; Lack of coordination between designers and contractors; poor financial control on site; wastage on site; previous experience of contractor and frequent design changes as factors affecting quality performance. Tengan, C., (2007) identify lack of technical and professional expertise and resources to perform task, lack of employee commitment and understanding, lack of education and training to drive the improvement process when he studied the quality assurance practices of some selected construction firms in the Kumasi metropolis in Ghana. Other factors included project managers competence, poor monitoring and feedback, lack of on-site project manager, inadequate project team capability, poor planning and control techniques, poor/insufficient information and communication channels, lack of early and continual client/consultant consultation by contractor and insufficient project managers experience (Sayles & Chadler, 1971; Baker, M. & Fisher, 1983; Cleland & King, 1983; Pinto and Slevin, 1987; Tukel & Rom, 1995; Walid & Oya, 1996 and Pinto & Kharbanda, 1995 as cited in Olav, T., Kjell, A. & Wubishet, J. M., 2000)

3.0 Methodology

The study took the form of a survey using questionnaire. The research strategy adopted was qualitative.

3.1 Profile of the study area

The study was carried out in the Ashanti and Greater Accra region (Kumasi and Accra) of Ghana. The study however was limited to the stated cities since they harbor approximately seventy percent (70%) of the all registered building contractors in the country (Owusu-Manu, *et al.*, 2010).

3.2 Data Collection

The approach for collecting data primarily was through a field survey. The field survey dealt with the administration and retrieval of the survey questionnaires.

3.3 Sampling and Sample Size Determination

The sampling technique for this study was randomly done but for the purpose of the study, it was limited to professionals engaged by small scale contractors; thus D3/K3 and D4/K4 contractors. A total of sixty (69) questionnaires were randomly but purposively administered. The study enjoyed a hundred percent response rate as questionnaires were administered and collected the same day when completed.

3.4 Relative Importance Index

The relative importance index (RII) used to indicate the relative importance of each variable contributing to the poor quality performance of small scale contractors was calculated with the formula below:

$$RII = \frac{\sum W}{A \times N} \quad (1)$$

Where: *W* - scale for rating a factor (ranges from 1 to 5); *A* - is the highest weight in the scale; *N* - total number of respondents.

4.0 Results and Discussion

The results of the factors influencing quality performance of small scale contractors are presented in Table 1 below under consultant and contractor related factors. The results are therefore discussed under consultant and contractor related factors affecting poor quality performance of SSCs.

4.1 Contractor Related Factors

As indicated in table 1 below, eleven (11) factors were identified to be contractor related affecting the quality performance of SSCs in Ghana. **Lack of quality training for staff** was ranked first (1st) with relative importance index (RII) of 1.3043. This was followed by **lack of management leadership** which had a RII of 1.1644. The

third (3rd) contractor related factor affecting QP as ranked by respondents was *lack of previous experience* with RII of 1.1344. Interestingly, *poor planning and control techniques* and *High number of competitors* were ranked tenth (10th) and eleventh (11th) with RII 1.0045 and 0.9995 respectively.

4.2 Consultant Related Factors

As indicated in table 1 below, ten (10) factors relating to the consultants practice that affected the quality performance of small scale contractors were identified and ranked. *Fraudulent practices and kickbacks* was ranked first (1st) with RII 1.0245, *poor monitoring and feedbacks* obtaining a RII of 0.9945 was ranked second (2nd), *Lack of coordination between designers and contractors* was ranked third (3rd) with a relative importance index of 0.9645. Small scale contractors indicated that *inefficient team work among stakeholders* contributed little to poor quality performance as indicated in its least ranking (tenth) and low relative importance index (0.7096).

Table 1: Factors influencing the quality performance of small scale contractors in Ghana

QUALITY FACTORS	RESPONSES (RANKINGS)					TOTAL (N)	ΣW	MEAN (ΣW/N)	RII	RANK
	1	2	3	4	5					
Contractor Related Factors										
Lack of management commitment to continual quality improvement	15	9	12	21	12	69	213	3.087	1.0645	6th
Lack of training on quality for staff	4	7	16	15	27	69	261	3.783	1.3043	1th
Lack of Management leadership	7	13	12	21	16	69	233	3.377	1.1644	2th
Poor Planning and control techniques	21	11	9	9	19	69	201	2.913	1.0045	10th
High Level of competition	13	15	11	14	16	69	212	3.072	1.0595	7th
High number of competitors	17	12	10	21	9	69	200	2.899	0.9995	11th
Poor financial control on site	14	11	17	13	14	69	209	3.029	1.0445	8th
Resource wastage on site	11	15	18	13	12	69	207	3.000	1.0345	9th
Lack of previous experience of contractor	7	17	14	11	20	69	227	3.290	1.1344	3th
Lack of technical and professional expertise and resources to perform task,	8	16	14	19	12	69	218	3.159	1.0895	5th
Lack of education and training to drive the improvement process	5	19	15	17	13	69	221	3.203	1.1044	4th
Consultant Related Factors										
Lack of On-Site project manager/ supervisor/ clerk of works	21	14	18	12	4	69	171	2.478	0.8546	8th
Inadequate project team capability	17	14	21	11	6	69	182	2.638	0.9095	6th
Poor Information and communication channels	27	11	14	9	8	69	167	2.420	0.8346	9th
Inadequate Early and continual client/consultant consultation by contractor	24	9	17	12	7	69	176	2.551	0.8796	7th
Project managers competence / experience	22	7	17	12	11	69	190	2.754	0.9495	5th
Fraudulent practices and kickbacks	18	9	12	17	13	69	205	2.971	1.0245	1st
Lack of employee commitment and understanding	22	10	11	14	12	69	191	2.768	0.9545	4th
Lack of coordination between designers and contractors	11	21	15	15	7	69	193	2.797	0.9645	3rd
Inefficient team work among stakeholders	31	19	7	8	4	69	142	2.058	0.7096	10th
Poor Monitoring and feedback	14	17	11	17	10	69	199	2.884	0.9945	2nd

5.0 Conclusions

Performance measurement in the construction industry remain a critical tool for effective administration of the project delivery in both developed and developing countries. However, in developing countries where most construction firm are SCC find themselves confronted with quality performance which it is believe that it presents a mechanism for dispensation of robust construction industry these countries. This study therefore,

identified critical factors affecting quality performance as been perceived by small scale contractors in the Ghanaian construction industry. Through a literature review the study established twenty-one (21) factors that affected the quality performance of small scale contractors in the Ghanaian construction industry. Hence study employs quantitative technique in data collection and the data collected was analyzed Using Relative Important Index (RII).

To this extent, the paper has identified: fraudulent practices and kickbacks, lack of coordination between designers and contractors and; poor monitoring and feedback as rank as the first three factors that affected the QP of SCC and related to consultants. In addition, lack of training on quality for staff, lack of management leadership and lack of previous experience of contractor were also identified as contractor related factors that affected the performance of SSC as the first three ranked.

Hence, addressing the research objectives and drawing on the research findings, with it wider implications for the quality practices in the Ghanaian Construction Industry. It is therefore suggested that policy makers, researchers and practitioners look at improving the human resource base through continuous professional and skill development. Again monitoring systems should be improved at various district offices for the implementation of good construction procedure with the aim of ensuring quality practices. More importantly, design should be reevaluated before the actual construction through pre-construction conference in order to do away with unnecessary alteration to design during construction that will not ensure quality.

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