Cost Estimating Skill as a Performance Driver for SME Contractors in South Africa

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ABSTRACT

Purpose

The development of emerging contractors has been studied for many years in South Africa. These studies attempted to influence the growth of small and medium enterprises (SMEs). Some of these studies have shown that most SME contractors struggle to adjust and adopt technical methods crucial to project and business success. Therefore, this study focused on the effectiveness of various project cost techniques to improve the performance of SMEs.

Design

The research data were collected interviewing and observing quantity surveyors in Bloemfontein, South Africa. The interviews were conducted with purposively selected SME contractors in Bloemfontein.

Findings

The study showed that only experienced and well educated personnel should be allowed to manage SMEs. The study also showed that adequate use of project cost estimating techniques amongst SMEs resulted in improved delivery of projects.

Practical implications

The research also established various factors that deter the adequate implementation of such techniques. Among these are lack of adequate project information from professionals, and time and financial constraints.

Originality/value

Construction SMEs in South Africa have to attempt to improve project cost estimating techniques to forestall factors that are detrimental to the effective implementation of cost management measures in construction.

Keywords: Construction, Contractor, Cost estimation, South Africa

1 INTRODUCTION

The low skill level of SMEs in the construction industry of South Africa leads to poor productivity in terms of infrastructure delivery. This is as a result of poor planning and control, poor scheduling and general inadequate levels of project management techniques. The challenges are perhaps why SME contractors struggle to adjust and learn technical techniques crucial to project and business success (Garbharran, Govender and Msani, 2012). Management tools and cost estimating techniques have undergone dramatic changes in recent years, and there have been significant advances in this field. This is borne out of advances in management practices and successful managers have to keep abreast of such developments in the ever challenging and competitive environment. An area of concern is whether SME building contractors have the expertise or facilities to keep abreast of these changing techniques. According to the built environment literature, South African emerging contractors operating in the SME sector seem to lag behind in catching up with the modern trends in project costing. The contractors seem to suffer from the way they develop project proposals, as it relates to proper planning and cost management (Seeletse & Ladzani, 2012). Construction projects are becoming more complicated with each project being unique in terms of risk and challenges throughout the construction phase. The contractor's ability to succeed depends on expertise, organisational capabilities, risk management, adequate planning and cost management of each project. According to Seeletse and Ladzani (2012), the project cost process considers the different project life cycle phases in preparing the Bill of Quantities (BOQ) based on the working drawings. The BOQ is necessary to start cost estimations and control. Cost estimates are done for initial estimation to determine the feasibility of a project, tender evaluation to reach a successful bid, and cost control based on project scheduling for improved project delivery and profitable venture.

The increasing competition in the construction industry in South Africa is causing a serious shortage of construction work for emerging building contractors, which in turn has led to contractors cutting corners by tendering at very low prices in order to secure tenders (Gasa, 2012). In so doing, they do not price for all the risks they are expected to carry under the contract. This has led to contractors submitting unrealistically low or high tender prices that cause abandonment, time and cost over-runs, and a multiplicity of claims during the construction stage (Maina, 2006). The preliminary finding that shows a high rate of failure of SMEs within the industry when the notion that SMEs have a major role to play in the South African economy is considered. It is then pertinent to look at the operating systems and their level of competence to arrest the unpleasant trend. The questions then are: is formal cost estimating techniques and knowledge skills of SME firms adequate for successful project delivery in the construction industry?, and to what extent can project cost estimating techniques improve the delivery of projects in terms of quality and cost? Therefore, the research attempted to provide answers by examining the level of manpower relating to cost management and a way to ameliorate the current situation. The study also focused on the effectiveness of various project cost techniques in improving the performance of the SMEs. It identified the external and internal factors detrimental to the effective implementation of Project Cost Estimating Techniques (PCETs).

2 LITERATURE REVIEW

The need to develop SMEs and emerging contractors has to be understood in the light of the government's policy of providing infrastructure in underdeveloped areas in order to improve the standard of living in those areas. The Public Works Policy on labour intensive projects is driven by the needs of SME contractors (DPW, 1999). Miles (1997) and Gounden (1997) argue that SMEs are vital for economic growth. While SMEs have features in common with large organizations, they also have unique characteristics that are reflected in the manner in which they are organized and managed. Furthermore, the importance of small and medium enterprises and emerging contractors, in line with the government policies, is to create employment and hence promote economic development in an integrated and cohesive fashion. The National Small Business Act of 1996 defines a 'small business' as: "a separate and distinct business entity, including co-operative enterprises and nongovernmental organisations, managed by one owner or more which, including its branches or subsidiaries, if any, is predominantly

carried on in any sector or sub sector of the economy mentioned in column I of the Schedule" An adequate definition of SMEs is only developed by incorporating both the qualitative and quantitative attributes in the definition. Qualitative attributes include management structure and decision making, control and independence of ownership, financial practice and trading style, while the quantitative parameters include market share, turnover, number of people employed, size of capital invested, net worth, value added, and volume of production (Hodgetts Kuratko, 1995).

Similarly, the key issues that must be considered to determine if an enterprise is an SMME, are: entrepreneurial orientation, management and ownership, labour status, informal or semi-formal economy and the size of an entity (DTI, 2007). It is difficult to arrive at a standard definition of a small business as they differ in many ways, i.e. some businesses may be small in terms of labour employed but may be large in terms of turnover or profits or any other criteria used to define small businesses. According to Phago and Tsoabisi (2010), SMME establishments in South Africa refer to small businesses or enterprises. This means any entity, whether or not they are incorporated or registered under any law, consisting mainly of persons operating small enterprise concerns in any economic sector, and established for the purpose of promoting the interests of small enterprises, are considered SMEs. The previous Tender Board policies and procedures favoured the larger and better established entrepreneurs and therefore did not create an environment that allowed easy access for SMEs into the mainstream procurement activities funded by the public sector (Ten Point Plan, 1995). According to the DPW (1999), reasons for the importance of small and medium firms in any country include:

- Small and medium firms form a large population of suppliers of employment and creators of work opportunities, innovators and initiators. Subcontractors for large firms are responsible for the entry point into the business world, thus playing an important socio-economic role.
- Small and medium firms can have a multiplying effect on the economy.
- Small and medium firms provide economic stability and a better distribution of economic activities.

DPW (1999) also categorised Malaysian contractors with four different backgrounds (Jaafar et al., 2005 as cited in Makhura, 2011):

- Highly qualified people with education and experience related to the construction industry.
- Highly qualified people with an education and experience related to other industries.
- People who inherit a family business.
- People with craft-based experience in doing projects.

The success of a small construction company depends on a number of factors but entrepreneurship is of vital importance (Makhura, 2011).

2.1 Small and medium enterprises (SMEs) contractors and their challenges

With all other factors remaining constant, the weak link in the development of small contractors is the absence of entrepreneurial talent. The international labour organisation (ILO) (1996 as cited by Makhura, 2011) argues that without an adequate supply of competent entrepreneurs, the industry cannot be efficient, and will fail in its bid to generate or keep employment of which it was capable and will be a weak link in development at national level. The South African government believes that SME contractors can, however, contribute significantly to the realisation of key economic and redistributive objectives for a number of reasons (Thwala & Phaladi, 2009; Makhura, 2011):

- They can be powerful generators of income and employment opportunities since they generally use less capital investment per unit of output than larger enterprises.
- Small medium enterprises can be more competitive than larger companies on certain types of small, disparately and geographically dispersed projects because they generally have relatively low overheads.
- The relatively low entry constraints, in terms of skills (technical and managerial) and capital requirements, make small medium enterprises contracting an important entry point for historically disadvantaged persons into the construction industry.

Nevertheless, Agumba (2006), and Thwala and Phaladi (2009) state that despite the importance and relative successes of small firms, there are also some basic hindrances confronting the SMEs. The following are some of the observed barriers to SMEs' development:

- Poor management is a common reason for the failure of small firms. A lack of business training and knowledge often leads to insolvency. Using outside professionals is essential.
- Inadequate financing in many small firms eventually causes the firms to run short of money. They often lack the resources to survive through the tough economic times or to expand if they are successful.

- Negligence occurs amongst many small enterprises when management ignores aspects of operation. They may ignore key areas like inventory control and collections, customer dissatisfaction, worker unrest or financial difficulties, while hoping that things will improve on their own with time. Such neglect can lead to major problems.

Weak control systems imply that the systems that are in place do not provide adequate information on a timely basis. Hence, an entrepreneur may be in trouble before he or she knows it. For example, customers not paying on time may cause cash flow problems, employee theft, poor quality products, plummeting sales and inadequate profit margins. If the control system cannot detect the problem or alert the entrepreneur, recovery may be difficult or impossible. As part of the procurement reform initiatives in the country, the Ministry of Finance and the Ministry of Public Works established a task team, with funding from the World Bank, which produced the Green Paper on the Public Sector Procurement Reform to make the tendering system more easily accessible to SMEs. The strategy further integrates the following interventions to create a favourable environment for enterprise development:

- Creating favourable procurement opportunities and suitable tender specifications for SMMEs and promote set-asides for SME participation in procurement.
- Supporting small business development in high-growth sectors and the growth of SMMEs owned and managed by black people and black women, in particular the youth, the disabled, and cooperatives.
- Providing financial and non-financial support including access to procurement opportunities and contract guarantees.

2.2 Cost and associated management

In order for the cost target of a project to be attained, cost planning and cost control is required. Cost planning of the work involves the development of a financial budget against which cost variances may be considered and future forecasts made in terms of using cash flow forecast. Cost control involves measuring the actual cost expenditure using interim payment certificates, and the final account against the cost budget (Chartered Institute of Building (CIOB), 2002). Cost management is one of the major components of project management and an important tool to control and improve cost performance of

projects. Project cost management helps in keeping the project within its defined budget and guide against projects cost overrun and incessant dispute in project management. Aftab et al. (2012) state that cost management differs from cost control. It is a proactive process that focuses on the elimination of waste in business processes and procedures. Cost management is a strategic process that stresses the optimization of efficiency and focuses on the customer and on profitability. It is “a philosophy”, “an attitude” and “a set of techniques” to create more value at lower cost. Cost management meets the need of both accurate costs and other relevant information for decision making.

Having accurate costs and creating more value at lower cost is essential in the competitive world where survival is supreme (Aftab et al., 2012). Cost management promotes the idea of finding ways to help organizations in making the right decisions to improve project performance. Cost management should be closely aligned to form part of corporate growth strategies, as the challenge is not just to lower costs of projects but also to ‘out invest’ competitors on growth. The basic principles for achieving effective cost management include setting growth targets, tailoring cost-reduction targets, and selecting cost cutting and improved organizational capabilities. Hence, effective cost management is very important to understand the cost structure and analysing the costs flowing through that structure. Aftab et al. (2012) further state that there are basically six steps in achieving productive cost management. These are:

- Understanding what causes the cost and revenue structure of the business.
- Understanding and reducing inter-functional complexity
- Providing the tools to managing costs;
- Involving employees in decisions;
- Increasing effectiveness and continuously improving costs, and

Measuring decisions against the strategic business plan. However, cost management in construction industry is less effective and most projects fail to achieve a higher completion ratio, resulting in a significant amount of cost overrun. Cost management systems are composed of cost management techniques, which are not limited to cost planning and control, estimating, budgeting, cash flow forecasting, financial reporting and cost reporting, cost code systems, and general value management (Aftab et al., 2014).

A proper grasp of the above-mentioned cost estimating skills are vital to successful SME ventures. This is particularly pertinent to the construction industry when considering its complexity and variety of clients. The shared business scale of SMEs and the level of employees, coupled with the overhead allowable limits, call for serious strategies for successful operations.

3 RESEARCH METHODOLOGY

The purpose of this study was to contribute to the national discussion on how SMEs can be propelled towards sustainable practices from the cost estimating skill platform. Within the construction context, the understanding of the significance of cost management, its tools and techniques can serve as a major driver for SMEs' growth and sustainable development. This study was qualitative in nature, thus employed an interpretative paradigm to explore the phenomenon in South Africa (Creswell, 2013). The collection, categorisation and analysis of interview transcripts and a discussion of the findings, in Bloemfontein, South Africa, in 2014, led to some salient insights. The participants were registered with the Construction Industry Development Board (CIDB) and based in Bloemfontein. It was pre-determined that the companies selected were categorised as small and medium companies according to the definition proffered previously. The selection was based on 'purposive sampling', as this was vital to the success of the interviews. Purposive sampling means that participants are selected according to a defining characteristic that makes them role players/holders of the data needed for the study (Nieuwenhuis, 2007; Leedy & Ormrod, 2010).

In particular, fifteen (15) contractors involved in various types of infrastructure projects participated in the study, although thirty (30) SME contractors were approached. The interviewees cover a range of professionals in the field. The semi-structured questions were initially sent to them by e-mail before the actual interviews. In fact, a follow-up telephone call to confirm the appointment with the interviewee was also made. This was done to make the interview exercise consistent. The interviews were conducted over a period of two weeks. Interviews, generally, were between 20 to 30 minutes in duration. At the commencement of the interviews, each participant was reminded of the research question and of the interview processes. Each interviewee was then provided with a covering letter to read, and a confidentiality agreement to sign, based on preference. This process was then followed by the actual interview during which the interview protocol was used as a guide. Each participant was asked about his/her experience and perception of the numerous themes related to the phenomenon. All interviews were recorded and transcribed manually.

Brief demographic information is indicated in Table 1 and Table 2. These tables show that the interviewees consisted of 5 women and 10 men between the ages of 28 and 47. The educational levels of the participants ranged from a senior certificate to a master's degree, and construction industry experience ranged from 2 to 13 years. The management levels of interviewees were mostly senior management, with varying management level and company profile of interviewees (see Table 1 and 2).

Table 1: Demographics of the interviewees

S/N	Sex	Size of Firm	Highest Level of Education	Years of Expe-rience	Current Position
1	Male	Small	B. Tech. Civil engineering	3	Man. Director
2	Male	Small	B. Tech. Constr. Man.	10	Construction Manager
3	Male	Medium	Master's Degree	12	Director
4	Female	Small	National Diploma	8	Contract Manager
5	Male	Medium	National Diploma	7	Contract Manager
6	Male	Small	B.Sc. Quantity Surveying	11	Director
7	Female	Small	B.Sc. Quantity Surveying	3	Quantity Surveyor
8	Female	Small	B. Tech. Constr. Man.	9	Construction Manager
9	Male	Small	B. Tech. Project Man.	6	Project Manager
10	Female	Small	B.Sc. Quantity Surveying	2	Quantity Surveyor
11	Male	Medium	B. Tech. Constr. Man.	13	Construction Manager
12	Male	Small	B. Tech. Constr Man.	2	Managing Director
13	Female	Medium	B.Sc. Constr Man.	4	Construction Manager
14	Male	Medium	B.Sc. Constr. Man.	7	Director
15	Male	Small	Senior certificate	5	Construction Manager

Table 2: Management level and company profile of interviewees

S/N	Management Level	Field of Business	Estimated Turnover (‘Million (R))	No of Projects
1	Managing Director	Home Improvement	Between 1 – 5	Less than 20
2	Construction Manager	Building Construction	Between 5 – 10	Between 50 - 100
3	Director	Commercial Properties	Between 10- 50	Between 50 - 100
4	Contract Manager	Home Improvement	Less than 1	Between 20 - 50
5	Contract Manager	Building Construction	Between 5 – 10	Between 20 - 50
6	Director	Building and Construction	Civil Between 10- 50	Between 50 - 100
7	Quantity Surveyor	Building Construction	Between 1 – 5	Less than 20
8	Construction Manager	Renovators	Less than 1	Less than 20
9	Project Manager	Building Construction	Between 1 – 5	Less than 20
10	Quantity Surveyor	Building Construction	Between 1 – 5	Less than 20
11	Construction Manager	Building and Construction	Civil Between 10- 50	Between 20 - 50

12	Managing Director	Building Construction	Between 1 – 5	Between 20 - 50
13	Construction Manager	Building and Civil	Between 5 – 10	Between 20 - 50
14	Construction Director	Building Construction	Between 5 – 10	Between 20 - 50
15	Construction Manager	Home Improvement	Between 1 – 5	Less than 20

Among the fifteen 15 interviewed firms, ten (10) small contractors had between five (5) and twenty (20) permanent employees, while two (2) of the five (5) medium contractors were in the category of their appropriate delineation (Table 3). The other three (3) had less than fifty (50) permanent employees (Table 3). From these, there is a slight disparity of the medium contractors' permanent employees. This might be attributed by the amount of work being undertaken by the contractors currently. Despite no contractor exceeding two hundred (200) employees, this sample was purposive and hence meeting the expectation of the research.

Table 3: Number of permanent employees in respondent companies

Range of permanent	Size of firm		Total employees
	Small	Medium	
Less than 20	10	0	10
Between 20-50	0	3	3
Between 50-100	0	2	2
More than 200	0	0	0
Total	10	5	15

4 DATA ANALYSIS AND FINDINGS

From a critical review of the data available, the following findings can be thematically presented and discussed.

Theme 1: Level of cost estimating skills within the contracting firms

Most of interviewees affirmed that through training in graduate and post graduate levels, they have come in contact with some level of training in cost estimating techniques that is helpful in the course of their work. Apart from four (4) interviewees who are professional quantity surveyors by training, some of the firms have quantity surveyors as members of the permanent employees. For most of the small firms, although attesting to the need for a cost expert, the cost of hiring and maintaining one is beyond them, hence the use of consultants when the need arises or they make do with what they have, which has its own significance. On the whole, it can be said that there is a fair level of cost estimating skills within the contracting firms but much work is still needed for optimal performance.

Theme 2: Strategies for cost management by firms

Fewer interviewees with the right personnel mentioned the use of common cost management tools and practices for planning and control, budgeting, estimating and financing. The techniques used frequently are project administration meeting, work breakdown structure, budget/cost analysis, bar chart, cost breakdown structure (CBS), specifications and standards, monitoring project progress against baseline plan, monitoring and tracking, inspection of work, and performance measurement. However, a large number of the small firms rely on the BOQ and lump sum pricing of works only. Interviewee 5 said “we don’t know these things, we rely on our knowledge of the industry for the work we do”. This limits the level of work that such firms can handle and may be responsible for the high cost/cash flow problems in such firms.

Theme 3: Effectiveness and effects of firm cost management strategies

Two of the medium firms interviewed affirmed that they have a well-established cost management unit with a proper plan for cost management strategies, which they deemed effective over time. However, most of the firms cannot recommend their cost management strategies for future practices. They are of the opinion that the lack of cost management strategies is affecting the progress of their firms and the size of project they can put in a bid. Most of the interviewees agree with interviewee number 4, who stated that “we don’t do such job, our proposal are always turn down”. Inadequate preparation of the cost breakdown document might have also created difficulties in managing the cost of most of their

projects. Only a few are looking for ways to improve their strategies while not more than 2 have a working implementation strategy in place to help speed up performance and update their techniques easily.

Theme 4: Level of firm's commitment to training and cost estimating skills development Even though the firms are aware of the need for competency in cost estimating skills, the level of their commitment to regular training and skills development is still low, as shown in Table 4. However, five (5) of the well-established interviewees perceived that their firms need to update their techniques to be more efficient and effective. They mentioned the need to update their techniques of managing their project cost. This comment reverberated among all the interviewees. Some of the small firms show some willingness but are limited by the lack of personnel to use the available techniques adequately, which may have been cumbersome for their level. The need for a professional workshop that will focus more on cost re-engineering to the benefit of the industry was also highlighted by some interviewees.

Table 4: Attendance of management courses

Duration	Size of		Tota
	Small	Medium	
After 6 months	3	0	3
After 1 year	1	0	1
After 1 ½ years	1	0	1
Not at all	5	5	10
Total	10	5	15

Theme 5: Factors for effective implementation of Project Cost Estimating Techniques (PCETs) Most of the interviewees considered the dearth of qualified personnel as a major drawback for effective implementation of Project Cost Estimating Techniques (PCETs). The lack of adequate capacity to handle the uniqueness, complexity and risks in PCETs and the lack of effective management during the early stages of work were also highlighted (Thwala & Phaladi, 2009; Windapo & Ogunsanmi, 2014). These contribute to cost mismatch and most importantly, the endemic cost overrun with in the industry.

Cost management

Interviewee 3 also mentioned the fact that different types of clients have a preferred way of cost management, which in turn affects the PCETs that a firm can use. Other factors are prompt payments from the government and other clients, in line with the contract data, will go a long way in meeting standards in terms of cost, time and quality.

5 CONCLUSIONS AND RECOMMENDATIONS

A discussion on the cost estimating skills as driver for SMEs proved to be necessary in order to enhance the contributions of SMEs to nation building. The delivery of projects may be improved when experienced and educated personnel manage their projects using project management techniques adequately. This will assist the contractors to trace deviations from the actual plan for a project. Most of the SMEs are owned and managed by experienced and educated personnel, and they are also involved in diverse types of construction activities. The study verified that in Bloemfontein, small contractors may be employing less than twenty (20) employees and they have a turnover of less than R10 million, whereas medium contractors employ between fifty (50) and two hundred (200) permanent employees and have a turnover of between R10 million and R50 million. The results also suggest that SMEs are part of the mainstream economy as they are managing various projects and hence creating employment. The strategy for contractors updating their management skills is not in place. There is also an indication that the SMEs that were interviewed are attempting to use the various project management techniques during the different phases of project management in terms of time, cost and quality. Despite knowledge of the fact that cost estimating skills can serve as driver for SMEs in the industry in terms of meeting the performance indices of time, cost and quality, some limiting internal and external factors still deter the interviewees from total implementation of the techniques. Coordination within the stakeholders is also important for proper project information flow to ease some of the external factors that deter the contractor from carrying out the work as per the programme of work, to budget and even to required specification, thus creating misunderstanding between the client and contractor. Time and financial constraints also exacerbates the inadequacy of using techniques from within the company, the latter factor prevents the SMEs from being able to afford buying the current programmes for managing their projects. Budget management is a crucial issue in achieving the completion of projects within the estimated budget and essential for any firm's productivity and sustainability.

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