The Challenges of Cost Control Practice in the Construction Industry: A Literature Review

*1Adjei, K. O., 2Aigbavboa, C. O. And 2Thwala, W. D.

1Department of Building Technology, Faculty of Built and Natural Environment, Kumasi Technical University, Kumasi, Ghana

2Dept. of Construction Management and Quantity Surveying, Faculty of Engineering and Built Environment, University of Johannesburg, Johannesburg, South Africa

*Corresponding author: kofiwusugh@yahoo.com

Abstract

Construction project cost control practice is one of the difficult tasks in cost management of which most contractors have not fully enjoyed its benefits. The aim was to identify current challenges of project cost control practice in the construction industry. The methodology followed literature searching, and selecting and analysing the selected papers. Thirty-three challenges were identified. Out of the thirty-three challenges, eleven were thoroughly elaborated whereas the rest lacked detailed literature. The eleven challenges are; using obsolete methods and concepts, lack of knowledge on the use of available tools and technology, overemphasizing on results while ignoring the cost control process, lack of project cost control processes and systems suitable to the enterprise, abandonment of complicated strategies, lack of consistency in cost management by managers, serious decision failure, exorbitant marketing expenses, poor attitude towards information communication technology (ICT) usage, difficulty in monitoring different sources of day-to-day cost data, variations in contract and lack of financial commitment in projects. It was realised that the challenges can be grouped under managers' personal characteristics, knowledge of cost control process and technology used in the practice of cost control. Attitudinal change is required for the successful implementation of project cost control practice in organisations.

Key words: challenges, cost control practice, cost management, construction project, construction industry.

Introduction

Construction project cost control (PCC) practice is one of the difficult tasks in the current project cost management faced by most contractors and have not fully enjoyed its benefits. The practice of cost control is a required task for the survival and growth of every construction organization in every nation. The practice of PCC assists organizations to eliminate and/or reduce unnecessary wastage of resources in the execution of construction projects (Bahauadin et al., 2012; Adjei et al., 2017). According to Cleland and Ireland (2002) cost control is the process of monitoring; evaluating and comparing planned results with actual results to determine the status of the cost of the project, schedule and technical performance objectives of the project. It is therefore essential that, every construction
company operates in an effective way by practicing cost control procedure during the post construction stage of the construction project, to keep the cost of executing the project within the budgeted cost as initially prepared and approved for (Adjei et al. 2017; Adjei et al. 2015; Sanni and Hashim 2013; Olawale and Sun 2010). Bahaudin et al. (2012) have also explained that when construction work commences, the budgeted cost of the construction project serves as the baseline for the contractor or whoever is undertaking cost control to use it to check and control the construction costs. A broader understanding of the various aspect of cost control principles are vital to enable project managers or cost engineers to effectively prepare their PCC and in the development of future cost forecasting techniques for effective project delivery (Skitmore and Marston 2005).

The cost control principles are also expected to act as telltale or offer early warning system, notifications of possible budget difficulties at predetermined periods for corrective measures to be decided to solve the cost variances. The project quantity surveyor or the cost engineer needs to apply the cost control methods to develop a series of options for the other project members to consider and select one of the best options that fit within the approved budget limit (Adjei et al., 2017; Khamidi et al., 2011; Dikko 2002).

There exist high numbers of projects that fail to meet critical success factors like cost and time over the years. Both private and public sectors in the construction industry have lost substantial amounts of money as a result of failed projects in cost and time. In the developing and Sub-Saharan countries, project cost overrun is severe which indicate that PCC is a challenge to contractors and also among project team members handling construction projects.

In the construction industry, very little study has been conducted on the challenges of cost control. Researchers such as Kirun and Varghese (2015); Sanni and Hashim, (2013) and Ademola, (2012) identified challenges of PCC but with very limited literature review. The aim of the study is to identify current challenges of project cost control practice in the construction industry. This study therefore assessed the current challenges of project cost control practices that are related to the construction industry. It will enable construction project members or cost engineers develop mitigating measures in order for construction organisations to fully enjoy the benefits of the practice of cost control.

**Research Methods**

This study was conducted using research papers from the literature search and successively processing and analyzing the papers gotten. Well-known texts relating to cost control and other cited publications in referred journals but limited to papers that relates to issues focusing on the challenges of cost control.

The following steps were used:

i) Searching for titles, keywords and abstracts with words like ‘challenges’, ‘cost control’, ‘cost management’ through the electronic databases since such platform has a lot of collection of texts and therefore provides an extensive coverage of texts than of individual journals.

The electronic databases used includes Google scholar, Google search engine,
Ebscohost ASCE, Emeralds, Taylor and Francis, Sage, Wiley online library, DOAJ, AJOL, and Science Direct. Different papers identified were scanned with the keywords above. The papers included research articles that principally focused on the challenges of cost control and others that relate to cost control practice.

ii) An appraisal of the abstracts of these papers were conducted to sieve out the less related papers. This was attained by means of selecting technical papers and reviews, eliminating duplicate articles, and doing away with papers which were not directly related with the topic of the study.

iii) All the outstanding papers were read, analyzed and numerous descriptive words were identified. The part of the paper that relate to challenges of cost control were singled out for further examination for the purpose of this study.

Conceptualization of Cost Control in Construction

**Definition of Cost Control**

According to Cleland and Ireland (2002) cost control is the process of monitoring; evaluating and comparing planned result with actual results to determine the status of the project cost, schedule and technical performance objectives.

**Challenges of Project Cost Control**

The following are challenges of PCC practice:

- **Using obsolete Methods and Concepts**

Small and medium construction firms are currently using primitive PCC processes which rely mainly on manual, paper-based information, instinct, and former work experiences (Benjaoran, 2009). Ademola, (2012) citation of using the manual and paper-based means for cost control is where site managers, quantity surveyors or cost engineers prefer to use calculators and notebooks or writing pads to arrive at cost control analysis instead of using the appropriate tools and technology available. Song, (2014) added that most owners of construction firms have little level of education or no knowledge on cost management which hinders practises in the knowledge of cost control. This make them rely on previous work experiences acquired from previous projects undertaken. The limitation of current cost management competences, and self-learning narrowed knowledge, continuous development of organisations, and the changing of work environment have turned their previous work experiences and methods into unfashionable ones. The challenge is that these outdated cost management practices cannot be used to solve current real-world situation of cost variances.

In situations where construction firms do not develop themselves further to be acquainted with the constantly changing work environment, their problems will get worse and cost control issues will be tough for them. So, using obsolete methods and concepts without constantly upgrading members knowledge and practices do not help in the practice of cost control (Song, 2014).
• **Lack of knowledge on the use of available tools and technology**

Knowledge is considered as the key element for every construction organisation to do well and to be competitive in the construction sector (Martin, 2010; Ademola, 2012). The ‘knowledge’ of cost control can be considered as technical and managerial knowledge and the lack of it affects the practice of PCC (Ademola, 2012). It is quite surprising most times to see current graduates who are site managers, quantity surveyors or cost engineers using mostly calculators and notebooks to arrive at the cost control analysis of the project rather than using current technology and complicated methods available for use for cost control practice. The battle to always study and understand complex procedures and steps of cost control using appropriate tools is a challenge for some professionals. (Ademola, 2012).

• **Over emphasizing on results while ignoring the process of PCC**

Managers of construction companies are very mindful of cost control issues, and have repeatedly stressed it as a necessity. The managers are only concerned about the cost variances in a particular or predetermined period. The managers fail to examine the sources of cost change(s) and how to handle the change management process. This means that some managers of organisations just disregard the method of cost control in the construction project execution (Song, 2014). The PCC process should not be inactive, but it should always be active, alive and operational particularly during the execution of the construction project. Nevertheless, the basis of real time PCC is monitoring and reporting cost variances at regular periods, hence the PCC process demands not just a series of records of costs changes but also the probability of subsequent cost commitments in the construction project (Bahaudin et al, 2012; Ferry et al, 1999). Most contractors are not willing to invest in cost management methods or not ready to pay a professional to handle cost issues for the organisation. It is considered as a waste of money to the company or a way to cut down unnecessary expenses during the execution of the construction project, although it could have saved the organisation huge money loss with the practice of cost control. Cost managers necessarily need to undertake PCC processes right at the beginning of the construction project and keep the PCC practice active always (Song, 2014).

• **Lacking PCC processes and systems suitable to the enterprise**

As previously explained, managers of construction companies are very mindful of cost control issues, and have repeatedly stressed it as a necessity. The managers always prefer an easy way of performing cost control processes without following due process which eventually become a bad practice. Most cost managers are always mindful of the need to focus and keep construction cost on track but are not prepared to spend much time in developing a cost control template for very construction project for use in the PCC process, this is because of the fact that, formulating the cost control process for a project takes much time. Notwithstanding that fact, only specific attention is given to some aspects of the construction project activities where variances of cost have or are likely to occur.

The procedural and systematic structures can be executed for a long time by corporate managers at all levels. The PCC flow is to be undertaken for a long term instead of just once when the construction project commences. It is also very important for simplifying
the management of cost; specifically cost control in construction project delivery (Song, 2014; Adjei et al., 2015).

- **Abandonment of complicated strategies**
  Most often than not, most site managers, quantity surveyors or cost engineers find it difficult to combine residual knowledge with experiences from previous endeavours (Ademola, 2012). The systematic strategies where one uses mathematics with computerised base is a problem for some professionals in the day-to-day activities in managing cost (Ademola, 2012).

- **Lack of consistency in cost management by managers**
  Many construction companies will take the initiative to perform or undertake PCC process only when there exist cost problems, predicaments, or thoughtful cost issues. This is a common phenomenon with most construction managers. Conversely, the organisation will only be executing or delivering the construction project as planned. Although cost manager recognises the essence of performing PCC process, they fail to pass the concept to the other members of organisation to accomplish the cost objectives of the project. Instead of being consistent in the practice of cost control during construction project execution, managers mostly do so irregularly or occasionally when the need arises. Not only is there a lack of PCC processes and systems, but also the many cost managers’ maladies, which is a lack of continuous engagement of PCC processes in the delivery of construction projects (Song, 2014; Adjei et al., 2015).

- **Serious decision failure, exorbitant marketing expenses**
  This is also an important aspect of PCC practice. The project quantity surveyor or the cost engineer needs to apply the cost control practice to develop a series of options for the other project members to consider and also select the best option that fits within the approved budget limit (Khamidi et al., 2011; Dikko, 2002). Corrective measures are therefore considered as a decision-making concept to be used to solve the variances that occur in the construction cost. Alternative solutions must be undertaken to solve the cost problems identified (Adjei et al, 2017). The failure in effective decision making and corrective actions affects the organisation leading to a high cost of project. This depends on whether cost managers of the organisations are knowledgeable and experience in the practice of PCC in decision-making and cost management. Decision failures, including malapportioning of funds or loss of opportunities caused by decision delays, will indirectly affect the organisational cost expenses. Initial slight decisions failures made by managers will eventually be catered for by the organisation (Song, 2014; Adjei et al., 2015).

- **Poor attitude towards Information Communication Technology (ICT) usage**
  ICT tools and knowledge are widespread for use in the construction industry. Regardless of the existence of numerous advantages ICT offers to construction firms, the organisations are still very slow in exploring its potential benefits (Egbru and Botterill, 2002). The barriers of ICT adoption in the construction industry include cultural, psychological, technical and financial factors (e.g. of technical and financial factors are continuous call for advancement
and high investment budgets) (Bäckblom et al., 2003; Björk, 2003). Construction professionals are also very satisfied with using traditional methods and tools in managing cost which makes it a barrier in cost control (Samuelson, 2002; Achar et al., 2005). One of the key critical factors for the successful use of ICT is the individual and organisation's attitude to communication. In most construction firms, individual attitude and behaviour towards technology usage and attitudinal change have always become a problem in the delivery of construction projects (Brewer and Gajendran, 2009; Brewer and Gajendran, 2006; Davis and Songer, 2008).

- **Difficulty in monitoring different sources of day-to-day cost data**

Charoenngan and Sriprasert, (2001), advocate that “accurate and realistic estimate” helps organisations to win a construction contract, it also will offer a path to attain maximum return and finally aids as an effective idea for PCC. The method used in the monitoring of construction cost might be seen as the most problematic function to be accomplished. It is the responsibility of the staff who are dealing with the main cost data at the construction site to monitor them in their routine dynamic construction operations. As the construction work advance, earned value of each work element must be monitored to permit the identification of cost status at any given progress. The monitoring process may be involved with a vast amount of data collection from many different sources or parties. Well-established standard procedures can assist smoothen the advancement as well as guarantee completeness of data for the PCC practice (Sanni and Hashim 2013; Charoenngam and Sriprasert, 2001).

- **Variations in contract**

Ashworth and Hogg (2002) stated “that the initial estimate of variations to the contract is likely to be of a budgetary nature and it is important that such estimates be progressively updated as more detailed information becomes available in the form of measurement quotations or day work records”. Charoenngam and Sriprasert (2001) recommended that some decision support systems must be provided at all levels of management with updated information about the various aspects of the project cost performance. Besides, exception reports can enhance the management's productivity by concentrating on the most critical subset of performance information. Moselhi et al (2004), added that “the earned-value method is widely used for reporting project status with consideration of two performance indicators (time and cost) in an integrated manner”. The competencies of the personnel in the contracting organization should be high in construction PCC practices. The more efficient the cost managers are, the better for the progress and growth of every construction organisation. Pries et al. (2004) stated that, the construction businesses today are about fulfilling client satisfaction through efficient production and delivery of construction projects. So, if the contractor's cost managers are very efficient in discharging their work, it may result in high cost-effective construction project delivery by the organization (Sanni and Hashim, 2013).
• **Lack of financial commitment in projects**

The most important factor that is being considered by every contractor is the opportunity to remain in business by taking up some construction projects. Most contractors are always concerned with profit or turnover before taking up a new construction project. Contractors are well aware of the need to maintain a flow of cash for the day-to-day activities in project delivery and also maintain a cash flow for the survival of the company. Additionally, some contractors have suffered liquidation or bankruptcy not because their construction work was unprofitable but because of cash flow problem in the short term during construction project delivery (Sanni and Hashim, 2013).

**Summary of Findings from Literature**

The table 1 below shows the summary of the challenges of cost control identified from different countries.

**Table 1: Summary of findings from literature**

<table>
<thead>
<tr>
<th>S/No.</th>
<th>Source</th>
<th>Country</th>
<th>Challenges of cost control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Kirun and Varghese, 2015)</td>
<td>India</td>
<td>Improper planning and scheduling, ineffective planning, reworks due to errors, due to defective work, wastage of materials, design changes, additional works, currency value, fluctuation in material cost and increase in interest rate</td>
</tr>
<tr>
<td>2</td>
<td>(Sanni &amp; Hashim, 2013)</td>
<td>Nigeria</td>
<td>Improper contract document, engagement of inexperienced staff, unstable market condition, complexity of the project, unstable government regulations, choice of procurement method, lack of research and innovation, price and design risk, quality factors of cost information, non-provision of training of young professionals, inadequate access to software packages, non-clarity of exclusions, and ineffectiveness of professional bodies.</td>
</tr>
<tr>
<td>3</td>
<td>(Ademola, 2012)</td>
<td>South Africa</td>
<td>Lack of knowledge on the use of available tools and technology, Abandonment of complicated strategies</td>
</tr>
<tr>
<td>4</td>
<td>(Song, 2014)</td>
<td>China</td>
<td>Using obsolete methods and concepts, Over emphasizing results, and ignoring the process of PCC, Lacking PCC processes and systems suitable to the enterprise, Lack of consistency in cost management by managers, Serious decision failure, exorbitant marketing expenses.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thailand</td>
<td>Difficulty in monitoring different sources of day-to-day cost data</td>
</tr>
<tr>
<td>---</td>
<td>----------</td>
<td>----------</td>
<td>-------------------------------------------------------------------</td>
</tr>
<tr>
<td>6</td>
<td>Authors construct, 2017</td>
<td></td>
<td>Poor attitude towards ICT usage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lack of financial commitment in projects</td>
</tr>
</tbody>
</table>

Source: literature review

**Lessons Learnt**

Lessons learnt from the study include the classification of the challenges under managers’ personal characteristics, knowledge of cost control process and technology used in the practice of cost control. Critically studying the challenges, some of the managers’ personal characteristic challenges include poor attitude towards ICT usage, using obsolete methods and concepts, and over emphasizing results, and ignoring the process of PCC. This shows that cost mangers have a role to play in the practice of cost control in the organisation. Their individual personal skills and characters will as much affect the practice of cost control. Some of the cost control process challenges include serious decision failure, inadequate access to software packages, difficulty in monitoring different sources of day-to-day cost data. These challenges also clearly indicate that the cost control process and structures should be considered by every organisation. The organisations should make good decisions as well have a clear monitoring system.

Surprisingly, some of the challenges of cost control identified are really factors that affect construction cost or barriers that make controlling of projects cost very difficult. It is not directly connected to the practice of cost control. Most challenges identified by Kirun & Varghese, (2015) and Sanni & Hashim, (2013) include unstable market condition, choice of procurement method, non-clarity of exclusions, improper planning and schedule, reworks due to errors, lack of research and innovation, price and design risk. It is quite debatable that barriers of controlling construction cost could be considered as challenges of cost control practice. This study draws challenges mainly for the practice of cost control.

**Conclusion**

PCC practice plays a key role for the successful delivery of construction project and also enables contractors to remain in business. The aim is to identify current challenges of project cost control practice in the construction industry. The source of data for conducting this study was literature review. Current related literature was consulted and successively processed and analysed.

The study has showed that challenges are plugging the way of the implementation of effective cost control practices in the construction industry. The antecedents of these challenges are to a large extent, the results of attitude of management and the people in whose hands cost control practices lay. This has created the barriers preventing the adoption and implementation of modern cost control practices in the construction industry.

Attitudinal change is required for the successful implementation of project cost control practice in construction firms.
References

Journal Articles


Theses

Ademola, W. O. (2012). Examining a new approach to cost control methods and mechanisms for SMMEs in construction projects, MSc Thesis, University of Johannesburg, South Africa

Martin, L. (2010). Transfer mechanisms of knowledge and skills in co-operations between emerging and established civil engineering contractors, PhD Thesis, University of Cape Town, South Africa

Conference Proceedings


Books

