



MANAGEMENT RELATED CRITICAL SUCCESS FACTORS FOR THE ADMINISTRATION OF BUILDING PROJECTS

OSEI YAW SAFO-KANTANKA, CLINTON OHIS AIGBAVBOA, and WELLINGTON DIDIBHUKU THWALA

Sustainable Human Settlement and Construction Research Centre, Faculty of Engineering and the Built Environment, University of Johannesburg, Johannesburg, South Africa

The failure of building projects or works is becoming endemic in the global stage, of which Ghana is of no exception. This study identified project manager related critical success factors that affect the success of building projects in Technical Universities in Ghana. Five technical universities were randomly selected for the study. The study selected 120 respondents using a purposive sampling technique. A self-administered questionnaire was used to collect data from the respondents. Descriptive data analysis methods such as mean, standard deviation, standard error was used to analyze the data. The analysis revealed that the project manager related critical success factors for construction projects in technical universities in Ghana included: the competence of the project manager; the experience of the project manager; the quality, cost and time commitment of the project manager; the project manager's authority to take decisions; and the leadership skills of the project manager. The conclusion from the study is that project managers play a very crucial role towards the success of building projects in the technical universities in Ghana.

Keywords: Competence, Experience, Quality, Cost and time commitment, Decisions, Leadership skills.

1 INTRODUCTION

In Ghana, like the global stage, abandonment has been common for construction projects for years or decades. This failure of building projects or works is becoming endemic in the Ghanaian construction industry. It has been established that contractors and project owners are jointly and severally responsible for the rise in non-completion of building projects within the agreed contract period (Ofori 2012). To ensure a successful project, it is important to understand the requirements of projects right from the beginning and put in place an appropriate project plan, which offers the right direction to project managers and their teams and accordingly execute the project (Alias *et al.* 2014). This is because; Ghazali *et al.* (2017) and Dosumu and Onukwube (2013) assert that a successful project is the one that is completed within time and budget. Quality, cost, time, users' satisfaction, professionals' commitment and attainment of organizational goals have been recognised as essential elements of project success (Jha and Iyer 2006). In addition, the success of a project and project critical success factors (CSFs) is regarded as one of the main ways to improve the effective delivery of a project (Almarri and Hijleh 2017). The successful delivery of building projects is largely dependent on how the projects are

controlled and managed (Young and Mustaffa 2012). The critical success factors (CSFs) are very supportive to a useful decision making Young and Mustaffa (2012).

The mandates of the polytechnics have been strengthened and expanded by the parliament of Ghana under a new Act, the Polytechnic Act 2007 (Act 745) to provide a wide range of science disciplines and applied arts at sub-degree, degree and postgraduate degree levels. Currently, eight polytechnics have been upgraded to technical university status, which is expected to result in monumental building projects hence the need to ensure the success of such projects.

However, it is mostly reported that the building construction projects in Ghana are confronted with many challenges that results to poor delivery of building projects. This normally leads to calamities, disputes, non-payments or delays in the payment of contract sums. It is therefore important to avoid these challenges by identifying the factors that affect the delivery of building projects in Ghana. Project managers are the vehicles towards the delivery of building projects. Understanding the project managers related factors that affect the construction of building projects is critical towards finding solutions to this challenge. There are however dearth of empirical evidence on the various project manager related factors that affect the success of building projects in Ghana. As a result, this research examines the Critical Success Factors (CSFs) for the delivery of technical universities building projects.

2 LITERATURE REVIEW

2.1 Project Success Factors

CSFs in construction are factors that are significant towards the success of an activity (Han *et al.* 2012). There are a number of studies on CSF for a successful project, however there is lack of consensus among these studies on the criteria for determining the success of a project and the factors that influence these successes. Majority of the studies only concentrates on the critical project attributes that are unique to green building projects like the early involvement of the project team members and integrated project execution methods that are mostly not regarded as a significant success factor for the improvement of project performance with regards to time, cost and quality by majority of previous studies (Chan *et al.* 2004).

Han *et al.* (2012) identified 15 factors that are critical to construction project success in Malaysia and grouped them under seven key headings. The results suggest a strong consistency in perception between respondents in recognizing the significance of human related factors such as competence, commitment, communication and cooperation towards the success of a construction project. They further recommended that more emphasis be placed on improving the human related factors in order to ensure the successful implementation of a construction project in future. Furthermore, it is stressed that in order to improve project performance and industry, there is a need to look into industry specific strategies and research to be carried out within the local context and business operating environment. Dosumu and Onukwube (2013) also identified 18 CSF in construction industry in South Africa and grouped them according to four models: comfort, competence, communication and commitment. The findings suggest that both project managers and contractors strongly support the CSF as significant in achieving project success.

Pinto and Slevin (1988), Silva *et al.* (2016) also identified various CSFs that affect the management of projects and these factors include client and consultant related factors, construction industry related factors, political, economic, legal and social environment related factors etc. Project CSFs identified by these different researchers stated above can be categorised into two broad types/categories, which are having little or no control/influence on the success factors as to the manager having full or a considerable degree of control/influence. Eleven

success factors, on which project manager has a considerable level of control were identified as presented in Table 1.

Table 1. The contractor and project manager related factors.

Project Manager related Critical Success Factors	Authors Listed in References
Project Manager's competence	4, 5, 7, 10, 12, 13
Project Manager's experience	3, 4, 7, 8, 12, 14
Project Manager's authority to take day-to-day decisions	3, 5, 7, 12, 13
Project Manager's authority to take financial decision, selecting key team members, etc.	7, 10, 12, 13
Technical capability of project manager	5, 6, 12, 13
Leadership skills of project manager	4, 7, 8, 10, 12
Organizing skills of project manager	10, 11, 13,
Project manager's commitment to meet quality, cost & time	3, 8, 10, 14
Project manager's early & continued involvement in project	4, 10, 13, 14
Project manager's adaptability to changes in project plan	3, 5, 10, 12, 13
Project manager's ability to delegate authority	4, 10, 13

3 RESEARCH METHODOLOGY

Both descriptive and survey methods were adopted for the study. The population comprised five technical universities from Ghana. Accra Technical University in Greater Accra region; Kumasi Technical University in Ashanti region, Sunyani Technical University in Brong Ahafo Region, Koforidua Technical University in Eastern Region and Tamale Technical University in Northern Region, which were chosen by using simple random sampling technique.

The respondents of the study comprised consultants, project officers, procurement staff, other university authorities and construction firms involved in the execution of projects in the selected technical universities in Ghana between 2010 and 2017. Another major criterion in selecting the consultants was based on experience and scope of the work-experience of more than 5 years for project worth GHS 200,000.00 (USD 50,000.00) and above. One hundred and twenty (120) respondents were purposively selected for the study. Self-administered questionnaires were used to collect data from the respondents. The questionnaire consists of closed-ended questions. The closed-ended items were mainly made up of Likert scale questions. The researcher used a digital recording device, which ensured that participant responses to questions accurately reflected in the data transcript to facilitate data analysis. Descriptive data analysis methods such as mean, standard deviation, and standard error were used to analyze the data. Similarly, the quantitative aspect of the data was analyzed using descriptive statistics through the SPSS software (23.0).

4 DATA ANALYSIS AND RESULTS

Table 2. presents the results on the project managers related factors that affect the success of building projects in Technical Universities in Ghana.

A total of eight project manager related CSFs were identified. Table 2 shows that the 'competence of the project manager' was the highest ranked project manager related CSF to building projects. This response item obtained a mean rating of 4.33 and standard deviation of 0.955. In addition, the 'experience of the project manager' (mean = 4.15 and SD = 0.903) was the second ranked project manager related CSF to building projects. The results further indicate that the 'quality, cost and time of the project manager' (mean = 4.10 and SD = 0.856) was the

fourth ranked project manager related factor for building projects at Technical Universities in Ghana. The ‘project manager’s authority to take decisions’ and the ‘leadership skill of the project manager’ were ranked fourth and fifth respectively.

Table 2. Project manager related CSF for building projects.

Project Manager Related CSF for Building Projects	N	Mean	Std. Deviation	Std. Error Mean	Sig. (1-tailed)	Rank
Project Manager's competence	94	4.33	.955	.098	.000	1
Project Manager's experience	94	4.15	.903	.093	.000	2
Quality, cost & time of project manager	94	4.10	.856	.088	.000	3
Authority to take financial decisions	94	4.02	1.005	.104	.000	4
Leadership skills of project manager	94	3.96	.879	.091	.000	5
Organizing skills of project manager	94	3.88	.866	.089	.000	6
PM's adaptability to make changes in project plan	94	3.85	.867	.089	.000	7
Motivating skills of project manager	94	3.74	.879	.091	.004	8

It can be obtained that the ‘project manager’s authority to take decisions’ and the ‘leadership skill of the project manager’ obtained mean ratings of 4.02 and 3.96 respectively. Table 2 further shows that the sixth ranked project manager related CSF for building projects at Technical Universities in Ghana was ‘organizing skills of the project manager’ (mean = 3.88 and SD = 0.866). In addition, the ‘project manager’s adaptability to make changes in project plan’ with a mean of 3.85 and standard deviation of 0.867 was the seventh ranked project manager related CSF. The results presented in Table 2 further indicates that the ‘motivation skill of the project manager’ (mean = 3.74 and SD = 0.879) was the eighth ranked.

The results revealed that the ‘competence of the project manager’ was the highest ranked project manager related CSF to building projects. This confirms the findings of earlier studies such as Han *et al.* (2012), Pinto and Slevin (1988). In addition, the ‘experience of the project manager’ was the second ranked project manager related CSF to building projects. Then again, this result is a confirmation of the findings of Jha and Iyer (2006) and Ghazali *et al.* (2017). These authors reported that the success of a project is largely influenced by the experience and level of competence of project managers.

These results are also in consonance with the findings of (Ofori 2014, Han *et al.* 2012, Ghazali *et al.* 2017) who found that the ability of the project manager to take decisions relating to finance and project team members is critical to a project’s success. In addition, the ‘project manager’s adaptability to make changes in a project plan’s and his organizing skills was ranked quite high for project manager related CSF.

The results further revealed that the ‘motivation skill of the project manager’ was also important to a project manager’s CSF, which obtained a mean rating of more than 3.7. In addition, the ‘average’ mean value of the project manager related CSF for building projects was 4.00, which is more than 3.5. It is clear here that project manager related CSFs are very important for building projects of Technical Universities in Ghana.

To determine whether the population considered a particular CSF as important or not, a one sample t-test was carried out. Table 3 showing rankings of various project related CSF was also examined. In addition to the mean ratings, the level of significance of the various CSF is presented. A critical factor, variable or response item with a p-value of less than .05 indicates that such critical factor is significant. The results revealed that the ‘competence of the project

manager' was ranked highest among the rest of the project CSF. This was followed by 'contractors cash flow', 'project monitoring', 'experience of project manager', 'effectiveness of project supervision' and quality, 'cost and time of project manager', which were ranked second, third, fourth, fifth and sixth respectively. In addition, the p-value of each of these CSF was .000. This suggests that these projects CSF were very important for the building projects.

Table 3. T-test summary of rankings of various project critical success factors.

T-test rankings of various project CSF	Mean	SD	Rank	Sig.
				(1-tailed)
PM Related Factors: Project Manager's competence	4.33	.955	1	.000
Contractor Related Factors: Contractor's cash flow	4.30	1.014	2	.000
PM Related Factors: Project Manager's experience	4.15	.903	3	.000
PM Related Factors: Quality, cost & time of PM	4.10	.856	4	.000
Contractor Related Factors: Contractor's experience	4.10	1.108	5	.000
PM Related Factors: Authority to take financial decisions	4.02	1.005	6	.000
Client Related Factors: Timely decision on project variations	4.00	1.037	7	.000
Project Related Factors: Stakeholders Communication system	3.97	.978	8	.000
PM Related Factors: Leadership skills of project manager	3.96	.879	9	.000
PM Related Factors: Organizing skills of project manager	3.88	.866	10	.000
Client Related Factors: Clear definition of project scope	3.87	1.080	11	.0005
Project Related Factors: Stakeholders Coordination effectiveness	3.86	1.043	12	.0005
PM Related Factors: Manager's adaptability to make changes	3.85	.867	13	.000
Project Related Factors: Effective site quality assurance program	3.84	1.009	14	.0005
Contractor Related Factors: Site management activities efficiency	3.77	.921	15	.003
PM Related Factors: Motivating skills of project manager	3.74	.879	16	.004

4.1 Implications of the Findings

These results suggest that project managers play critical roles towards the success of building projects in Technical Universities in Ghana. These results imply that contractors or clients must appoint experienced and knowledgeable individuals to manage their projects. Indeed, a competent and experience project manager will have the foresight to anticipate problems and put measures in place to mitigate such problems. In addition, it is important to note that project managers have scope of authority defined by the contractor or clients and this scope should be clear and unambiguous. The scope should be based on experience and competence of the project managers and must possess motivation skills. In this way, they must have the ability to motivate themselves and others. This is critically important because construction projects are always met with uncertainties and challenges and a project manager should be able to 'whip' the workers and other parties to the project along. The implication of this result is that project managers must abreast themselves with emerging technologies that can be used to ensure the success of projects.

5 CONCLUSIONS

The study concludes that a project managers CSF is crucial to the successful implementation of Technical University projects. The Project manager's CSF's must include: the competence, the experience, appreciate and commitment to a higher sense of quality, cost and time. The project manager's authority to take decisions and the leadership skills should not be over looked in addition to his organizing skills, adaptability to or make changes in project plan and motivation skill of the manager. It is thus concluded that project manager's play crucial role towards the success of a building projects in the Technical Universities in Ghana. It is recommended that the government of Ghana and the technical universities authorities identify reliable Project managers

with such skills and also resource adequately before a project is started to ensure projects success but further studies should look into CSF for effective stakeholder participation or engagement.

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