

The Problem of Quality of Electrical Work in Malaysian Construction Projects

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ABSTRACT

In Malaysian building construction projects, quality assessment is important to ensure the success of a project. The Quality Assessment System for Building Construction Work (QLASSIC) introduced by the Construction Industry Development Board (CIDB) covers four main components, which are structural works, architectural works mechanical and electrical works and external works. This paper examines problems in assessing the quality of building construction work in electrical work. This research used the concurrent triangulation design, which implemented the quantitative and qualitative methods. Three instruments were used in this preliminary research, which were the focus group, interview and QLASSIC assessment questionnaire. A total of 69 respondents comprising clients, contractors and QLASSIC assessors took part in the questionnaire survey. Focus group discussions and semi-structured interviews were held with 20 site supervisors and five site supervisors from the Selangor State Development Corporation, respectively. The data analysis shows two main problems faced by construction site supervisors, which are lack of quality assessment training held by the company and incompetence of site supervisors in assessing electrical work quality. Thus, the quality of building construction projects can be influenced by on-site competency and training.

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INTRODUCTION

In the construction industry, the construction phase is important because most of the project budget is expended during construction (Oberlander, 2000). Poor quality resulting from non-conformity during construction leads to extra costs and time for all members of the project team (Abdul Rahman, 1995). Quality has become a very popular subject in recent years due to conceptual changes in the industry. The elements affecting building construction projects are design, contract, material, labour, equipment, sub-contractors, site layout, systems, site staff and execution (Abdul-Razeq, 2001). There are many problems that affect the quality of construction projects such as standard reduction, increased cost, project delay, unskilled workers and less qualified construction technologists (Memon, 2010). To address issues concerning quality, the Construction Industry Board of Malaysia (CIDB) introduced a Quality Assessment System in Construction (QLASSIC) as an independent method to assess and evaluate the quality of workmanship of construction work based on an approved standard (CIDB, 2006). Hence, the introduction of QLASSIC is expected to address several predominant quality issues that prevail in construction (Mukhtar, 2010).

Quality Assessment System in Construction (QLASSIC)

QLASSIC is an independent method to assess and evaluate the quality of workmanship of a building project based on the CIS 7:2006 document. The Quality Assessment System

for Building Construction Work covers four main components, which are structural works, architectural works, mechanical and electrical works and external works (CIDB, 2006). Appointed assessors conduct physical assessments using appropriate tools for building inspection (Mukhtar, 2010). The QLASSIC assessment of a construction project is carried out by competent assessors appointed by CIDB.

Any person who is a construction practitioner can attend the QLASSIC assessment training to become a QLASSIC assessor (CIDB, 2006). Construction projects require coordination between many different contributors or construction practitioners as labourers, managers, supervisors, clients and other stakeholders work together to ensure that the projects proceed as planned. The responsibilities of site supervisors include assessing construction projects by completing quality inspections of the construction works at project sites.

Electrical Work Quality in Construction

The quality of electrical and mechanical works is important because they increase high-cost proportion and impact on the performance of a building (CIDB, 2006) and the highest percentage of defects in construction comes from electrical and mechanical works, and can be as high as 55% (JKR, 2009). Electrical design documents are schematic in nature and require an educated, experienced sub-contractor to understand in order to complete the work (Smith & Hinze, 2010). The focus on electrical work quality is important because

the scope of work in electrical work is often the most technical and confusing work of a project (Smith & Hinze, 2011).

METHODOLOGY

This research adopted the triangulation design, which implemented the quantitative and qualitative methods simultaneously, giving them equal priority and merging them during the interpretation (Plato & Creswell, 2008). The triangulation design is a one-phase design in which researchers implement the quantitative and qualitative methods in the same time frame with equal weight. The triangulation design is also referred to as the concurrent triangulation design (Creswell et al., 2003).

In the qualitative phase, the instruments used were the focus group and interviews. The focus group method entails engaging a small group of participants in a moderated group discussion on a certain topic (Bloor, 2001). This research also used the semi-structured interview. Semi-structured interviews are often used when the researcher wants to delve deep into a topic in order to understand it thoroughly (Newton, 2010).

The qualitative data collection involved a group of site supervisors from the Selangor State Development Corporation. Site supervisors were chosen because their scope of work is based on the site and they have specialised experience in building construction projects. Four focus groups assisted in this study. A total of 20 site supervisors participated in these focus group sessions. The semi-structured interviews were conducted with five experienced

site supervisors in building construction projects.

Quantitative research work utilised a set of QLASSIC assessment questionnaires. The descriptive analysis of the collected questionnaires was used to as data in this study. The mean value was used to represent the results of the questionnaire. A set of 100 questionnaires was prepared and distributed to respondents in the construction industry. A total 69 responses from 17 clients, 29 contractors and 23 QLASSIC assessors were returned.

RESULTS AND DISCUSSION

Focus Group Analysis

The results from the focus group revealed 11 problems faced by construction site supervisors, which were: (1) There are too many amendments and procedures; (2) There are no correct guidelines or procedures based on the work and no updated guidelines; (3) The course or workshop that they attend does not include practical training; (4) Need training in quality control for staff or the team that handles a project; (5) Have a problem with the contractor and consultant; (6) The contractor chosen lacked experience and was not competent; (7) Bad attitude of contractor; (8) The contractor failed to finish the job; (9) The consultant had low competency; (10) The consultant was not focussed on the ongoing project; (11) Workload for the site supervisor was increased. Lack of competency was frequently cited as a problem in the focus groups, followed by lack of training i.e. practical and quality control training, lack

of procedures and lack of guidelines for the site supervisor to do the job.

Analysis of Interview Sessions

The results of the interviews showed that the problems of site supervisors were: (1) There is no ISO staff at the project site; (2) Any amendments in ISO are not informed to site supervisors; (3) There is not enough training; (4) Site supervisors need more training in quality and in every aspect of construction work; (5) Workload is heavy because site supervisors need to supervise everything from infrastructure, architecture, mechanical and electrical work and landscape; (6) Site supervisors do not have enough skill and knowledge of mechanical and electrical work. For instance, according to one of the interviewees, "We need to assess all work that is, architectural work, structural work, mechanical and electrical work. But, we have difficulty in assessing mechanical and electrical work because it is not our expertise. If there is any problem in mechanical and electrical work, we have to assess it based on our experience or refer to seniors who have faced the problem before. So, this can lead to a problem in quality assessment." This finding was supported by Serpell and Ferrada (2007), who stated that due to lack of training, workers generally learnt skills on the job from their more experienced peers. The respondents frequently cited the problem of lack of skill or competence in construction works and assessing quality, especially of electrical work. Another problem that was frequently cited was lack of training in technical and

quality assessment. The quality of site supervision is indeed a major influence on the overall performance and efficiency of construction projects (Ahzahar et al., 2011).

QLASSIC Assessment Questionnaire Analysis

The Statistical Package for the Social Sciences (SPSS) programme version 20.0 was used to analyse this questionnaire. The analysis was used to rank the degree of importance of the factors that were a barrier to the QLASSIC assessment and generated suggestions for improving the QLASSIC assessment. Table 1 shows the factors that hindered the QLASSIC assessment and Table 2 shows the suggestions for improving it.

Table 1 shows that a total of seven items were regarded as being important factors that hindered QLASSIC assessment. The results showed that the most important factor was difficulty in getting the right skilled sub-contractors/tradesmen to carry out the work and lack of competent quality supervisors to control the project quality and architect as a consultant team does not possess adequate competency to manage the quality of work at the project site. Skill has been one of the most important issues in the construction industry. Lack of training for implementing quality management according to QLASSIC standards was shown to be an important factor that hindered QLASSIC assessment.

Table 2 shows that QLASSIC training was very important to ensure that a project could achieve a good QLASSIC rating. It is suggested that sub-contractors, consultants

Table 1
Factors that hindered the QLASSIC assessment

Items	Mean Scale	Description
Difficulty in getting the right skilled sub-contractors/tradesmen to carry out the work.	3.7667	Considerably important
Absence/weakness of effective quality management system within the project	3.6500	Considerably important
Contractors lack competent quality supervisors to control the project quality.	3.7288	Considerably important
Lack of training to implement quality management according to QLASSIC standard	3.1167	Important
The following consultant teams do not possess adequate competency to manage the quality of work at the project site:		Considerably important
i) Architects	3.6102	
ii) Civil & Structural Engineers	3.0667	Important
iii) Mechanical & Electrical Engineers	3.1000	Important

Table 2
Suggestions for improving the QLASSIC assessment process

Items	Mean Scale	Description
It is important for consultants and the Superintending Officer (SO) to also take part in QLASSIC training to ensure that the project will receive a good QLASSIC rating.	4.2712	Very important
It is important for sub-contractors to also take part in QLASSIC training to ensure that the project will receive a good QLASSIC rating.	4.4833	Very important
It is important for the project management team to have an in-house QLASSIC officer so that the project will receive a good QLASSIC rating.	4.3333	Very important

and the Superintending Officer (SO) should take part in QLASSIC training as it would give a positive impact on their performance in quality assessment. Jraisat et al. (2016) revealed that education and training are the most important elements affecting quality, while Sharmma and Gudanne (2002), studying Australian construction companies, stated that an ongoing quality training programme was an important quality strategy. QLASSIC training is an

opportunity for construction practitioners to expand their knowledge and skill in quality assessment. When completed, the training will surely boost the skill of every worker (Ling et al., 2007).

CONCLUSION

A construction site supervisor is responsible for project site operations. His performance impacts directly on the productivity and final quality of the construction project. The data

analysis carried out in this study showed there were two main problems faced by construction site supervisors, which were lack of quality assessment training held by the company and incompetency of site supervisors in assessing electrical work quality. Site supervisors are responsible for assessing construction work i.e. architectural works, structural works, mechanical and electrical works and external works. However, their knowledge of electrical work is basic. They shared that they had difficulty identifying types of defect and the course of action to correct them. Thus, the quality of building construction projects can be influenced by the competency and training of site supervisors.

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