



Project and Quality

Elixir Project & Quality 76 (2014) 28341-28349

Elixir
ISSN: 2229-712X

Preliminary findings on potential areas of improvement in QCLASSIC

Mukhtar Che Ali^{1,*}, Radzi Ismail¹, Kenn Jhun Kam² and Natasha Dzulkalnine¹

¹School of Housing, Building and Planning, Universiti Sains Malaysia, 11800 Penang, Malaysia.

²School of Architecture, Building Design, Taylor's University, 47500 Selangor, Malaysia.

ARTICLE INFO

Article history:

Received: 21 September 2014;

Received in revised form:

27 October 2014;

Accepted: 5 November 2014;

Keywords

Assessment,
Building Work, CIS,
Construction, QCLASSIC, Quality.

ABSTRACT

Quality Assessment System in Construction (QCLASSIC) was promoted by Construction Industry Development Board (CIDB) in late 2006. Apparently its main aim is to assess objectively the level of quality of the building construction work. Essentially the program comprised of two main components which are the assessment standard known as Construction Industry Standard (CIS) 7:2006 and the operation of the QCLASSIC assessment. After more than five years of its existence, inevitably there are several issues prevailed that need to be addressed. Having said that leads to the primary objective of having this study is to explore the potential areas of improvement in QCLASSIC. The respondents for this research were the construction personnel that have fair knowledge on CIS 7: 2006 and considerable years of experience in QCLASSIC assessments. The data were collected through five focus group workshops consisted representative from the key stakeholders in QCLASSIC assessments namely developer, consultant, contractor, Housing Tribunal and QCLASSIC assessor. Altogether 66 respondents have participated in the workshops. This study had utilized questionnaire form as the research instrument. The data collected were analyzed using SPSS version 17. Generally this study was able to identify potential areas of improvement in CIS 7: 2006 as well as the operational of QCLASSIC assessment. The output of this research is expected to provide the preliminary indications as areas that need to review and improve in an effort to improvise the implementation of QCLASSIC by CIDB.

© 2014 Elixir All rights reserved.

Introduction

QCLASSIC is an acronym for 'Quality Assessment System in Construction. It was mooted by Construction Industry Development Board (CIDB) somewhere in late 2006. One of its main aims is to establish an assessment tool that commonly be used in the industry to measure objectively the level of quality of building construction work. Hence the introduction of QCLASSIC is expected to address several of the predominant quality issues that prevailed in the construction realm (Ali, 2010a) Indeed QCLASSIC can become the national yardstick to benchmark the level of quality performance in the Malaysian construction landscape. The main assessment elements in QCLASSIC are adapted from 6th edition Construction Quality Assessment System (CONQUAS) 21 which was published by Building and Construction Authority (BCA), Singapore in year 2005 (CIDB, 2009a). In lieu of this there are several similarities in the assessment structure of these assessment systems. According to statistical data published by CIDB (2013a), since late 2006 till the year 2012 altogether 545 building construction projects have been assessed with QCLASSIC with an industry average score of 70 %. In the year 2012, altogether 139 projects have been assessed representing 96 % projects from the private sector and 4 % projects from the public sector. Furthermore the data also revealed that in the year 2012, 66 % of the projects fall under category of landed housing.

Problem Statement

The craved for quality has and will always be the prime concerned of the project stakeholders in the construction industry (CIDB, 2009b). In this regard, quality is one of the areas that had been emphasized in the Construction Industry

Master Plan (CIMP), 2006-2015 (CIDB, 2007). Notwithstanding this, there are several quality related programs that had been formulated by CIDB among this is QCLASSIC (Ali *et al.*, 2012). After more than 5 years in implementation of QCLASSIC, obviously its presence has generated some kind of impact to the construction industry (Kam, Hilmy and Hamid, 2012). On that note that in the year 2012, CIDB has conducted a study to ascertain the impact on implementation of QCLASSIC. Several of key findings from the impact study (CIDB, 2013b) are as follows:

- Majority of the applications (76%) for QCLASSIC assessments are from companies which have been certified with ISO 9001 Quality Management System (QMS). This indicates that majority of the applications for QCLASSIC assessments were contractors and developers that were certified to ISO 9001 QMS. This denotes that ISO 9001 QMS certified construction companies have shown their interest in using QCLASSIC to measure the level of quality of their construction output.
- Majority of the respondents (84%) opined that practicing ISO 9001 QMS can influence in achieving QCLASSIC score. This result is almost similar to the finding by Low *et al.*, 1999 that contractors who are certified to ISO 9001 QMS appear to have achieved higher CONQUAS scores albeit not significantly.
- QCLASSIC has proven to help improve the performance of a construction project. The study showed that majority of respondents (85 %), agreed with the statement that QCLASSIC helps to improve the quality of a project
- QCLASSIC Score can also increase company marketability. A major percentage of respondents (67 %) agreed that track record

Tele:

E-mail addresses: mukhtar@cidb.gov.my

© 2014 Elixir All rights reserved

on QLASSIC relatively high scores can boost the company's marketability

- Overall, the QLASSIC implementation is well received by the developers and contractors, whereby the research results showed that majority of the respondents, who were formerly involved with QLASSIC, would like to continue practicing QLASSIC in the future.

Based on the above findings one can deduce that generally QLASSIC can drive towards improving the quality of project performance as well as enhance the marketability of the company. Apart from that another finding is that it appears construction companies that were certified ISO 9001 QMS have shown their interest in using QLASSIC to measure the quality performance of their projects.

Fundamentally QLASSIC comprised of two main components namely Construction Industry Standard (CIS) 7: 2006 which is the assessment standard and the operation of QLASSIC assessment. The implementation of QLASSIC which used the document CIS 7:2006 was introduced by CIDB in year 2006, now has reached more than 5 years of its presence. Being the standard itself, it is a good practice to review CIS 7:2006 for every 5 years adopting the practiced by ISO (ISO, 2008). Standard which is a dynamic document should be reviewed periodically in order to align with changes of technology or the emergence of new technology. With regard to QLASSIC assessments which had been operating more than 5 years inevitably there are some operational issues prevailed that need to be addressed. Ironically QLASSIC which had been existence for more than 5 years has never been reviewed. Hence purportedly QLASSIC is due for revision. In view of this thus the primary objective of having this study is to explore the potential areas of improvement in QLASSIC. Consequently it has prompted several research questions as follows:

- Is it timely to review CIS 7: 2006?
- What are the potential areas of improvement in CIS 7: 2006?
- What are the potential areas of improvement in implementation of QLASSIC assessment?

Methodology

This study is basically an exploratory survey to have an insight from the industry stakeholders on the preliminary indication on the potential areas of improvement in QLASSIC. According to Robson (2002), the exploration study is conducted in order to find out what is happening, particularly in a little understood situation, to seek new insight, to assess phenomenon and to generate idea and hypothesis for future research.

Designed of Questionnaire

This study adopted questionnaire survey form as the research instrument. Normally questionnaire comprises a mixture of closed and open-ended questions. However for convenience in performing data analysis in this survey which mainly to explore the current situation in the industry thus this research preferred to utilise more on closed ended questions. Furthermore, questionnaire surveys have been found to be the most common way of data collection for exploring organizations' performance. The questionnaire survey was executed primarily to collect representative data from the industry for exploratory survey on potential areas of improvement in QLASSIC.

As described earlier that the questionnaire was designed basically to obtain a broad indication from the industry on this research proponent. The developed questionnaire was divided into six sections as listed below:

Section A	-	Basic Company Profile
Section B	-	Respondent Background
Section C	-	Areas of Improvement in CIS 7:2006
Section D	-	Areas of Improvement in Assessment Report
Section E	-	Areas of Improvement on Implementation
Section F	-	Potential Areas of Changes to be Continual Improvement Tool

Section A is basically an introductory section of the form. It briefly touched on company background which entails company name, whether public listed, whether certified to ISO and the business nature of the organization. Where else in Section B covered on respondent background which comprised of designation, academic background, tenure of service in construction sector and whether the respondents have attended any trainings on QLASSIC. Altogether seven questions and most of the questions in these two sections are close ended. Next is Section C which was aimed at ascertaining the key areas that can be improved in the document CIS7:2006. There are five closed ended questions and two opened ended questions. In Section D was aimed to collect some insight about the possible changes in the current QLASSIC assessment report so that it can provide a broad indication on the possible areas of improvement. This section comprised of eight closed ended questions and four opened ended questions. For Section E is to seek the views from the respondents on the potential areas of improvement on the implementation of QLASSIC. In this section there are two questions whereby one is opened ended and the other one with five options that are provided for the respondents to tick. Finally Section F is to get the feedback from the respondents on the possible changes in QLASSIC in order it to become continual improvement tool. There are four opened ended questions and one closed ended question.

Sampling Population

The targeted respondents for this study are obviously those who fair knowledge in CIS 7: 2006 and acceptable years of experienced in QLASSIC assessment. They are the ones who have the credibility in providing their views on potential areas of improvement. Since the expected output is to provide the preliminary indication on the proposed research which would not required high number of respondents. The most important thing is to get views representing from all categories of stakeholders i.e. developers, contractors, consultants, QLASSIC assessors and Housing Tribunal from Ministry of Urban Wellbeing, Housing and Local Government (MUWHLG). Each of these stakeholders has different interest on QLASSIC. For instance the developers used QLASSIC as one of their marketing tools and selection criteria for capable contractors. The contractors used QLASSIC to identify the potential areas of quality improvement. Where else the consultants used QLASSIC to reflect the effectiveness of their supervisions. While the tribunal officers used QLASSIC as a reference document to assist them to address complaints from the house buyers on the quality of the purchased houses. Taking into considerations of these differences among the stakeholders that warrant the researcher opted for focus group workshops in data collection.

Questionnaire Administration and Data Collection

Questionnaire can be administered personally, mailed to the respondents or electronically distributed (Sekaran, 2003). Since it was decided to advocate focus group workshop hence for this part of data collection the researcher capitalised administered personally

approach.

Table 1. Stakeholders' Focus Group Workshops

Nature of Organization	Number of Invitations	No. of Participants	% of Attendance	Date	Venue
Developer	30	15	50	18-19 April 2012	Equatorial Hotel, Bangi
Consultant	20	6	40	24 May 2012	Cyberview Resort, Cyberjaya
Contractor	30	17	63	21-22 Jun 2012	Grand Blue Wave, Shah Alam
QLASSIC Assessor	20	14	60	26-27 Jun 2012	Concorde Hotel, Shah Alam
Tribunal	25	14	88	8 August 2012	Equatorial Hotel, Bangi
Total	125	66			

Table 2: Distribution of respondent's designation

Designation	Number	Percentage
Project Director	3	5
Project Manager	14	22
Project Engineer	6	9
QA/QC Manager	13	20
Construction Manager	3	5
Assistant Manager	16	24
Others	11	15
Total	66	100

With reference to CIDB's data base the researcher had identified 125 respondents for the workshops but 66 (52.8 %) respondents have turned up as shown in Table 1. Noticed from Table 1, that the highest number of participants that came for the workshops were from the QLASSIC assessor group (70 %) and the lowest came from the consultant group (30 %). As rules of thumb, Roscoe, 1975 proposed that sample sizes larger than 30 and less than 500 are appropriate for most research. On that note the researcher considered the number of respondents gathered was sufficient for further analysis.

In the workshop, initially the questionnaire forms were distributed to all the participants. Then they were explained on the objectives of the research and briskly run through the questions in the questionnaire. However the participants were encouraged to ask for clarity of any questions while they were completing the forms. That will reduce the elements of uncertainty for the respondents to complete the forms. On average each session took almost one hour. At the end of the session the participants returned the completed forms. Since the number was relatively small the researcher immediately checked for incompleteness of each form. For any incomplete form found then requested the respective respondents to complete it.

Apart from performing questionnaire survey, the research also facilitated the brainstorming session with the participants. The aimed of this session was to obtain maximum input on issues and recommendations from respondents for improvement of QLASSIC. Since that was a brainstorming session which allow free flow of ideas which enable the researcher to garnered quite significant number of fruitful suggestions from the participants.

Analysis of Data

Data collected from the above were key in software Statistical Package for Social Science (SPSS) version 17. Since the output of the research is on preliminary findings thus only descriptive analysis was used to analyze the collected data.

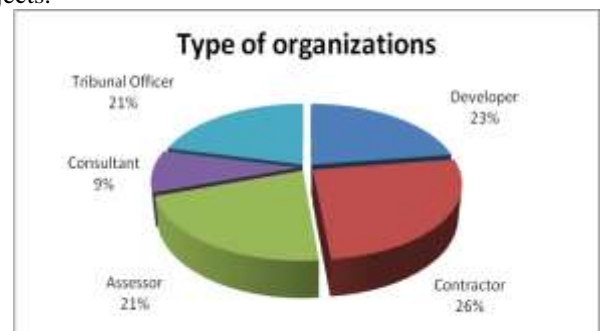
Findings

Respondents Background

Distribution of Respondents According to Organisations

As mentioned earlier, this survey was conducted through focus group workshops. Altogether the researcher was able to garner 66 respondents that have participated in this survey

exercise. Most of the respondents were from companies in Selangor and Kuala Lumpur. The distribution of the respondents is shown in Figure 5.1. From the data gathered shows that the respondents from developers, contractors, QLASSIC assessors and tribunal officers are almost equally distributed whereby each represents about 20 % from the total number of respondents. The lowest respondent is from the consultant group which is about 11 %. Albeit of it, the distribution of the respondents represents the key players in the construction value chain that are involved in the implementation of QLASSIC. Hence this survey can represent the feedback from the key stakeholders that are involved in managing construction projects.

**Figure 1: Distribution of respondents according to organization**

Based on the information gathered noticed that all contractors' companies which have participated in the survey were certified to ISO 9001 QMS as well as they were of Grade 7 contractors i.e. the highest grade contractor in the CIDB's registration scheme. Apart from that 23 % of these contractors were also public listed companies. Where else for the developers, 40 % of them were certified to ISO 9001 QMS. Thus this information implies that considerable number of the construction companies that have participated in this survey were relatively well established companies.

Respondents Designation in The Company

Initially it is advisable to analyse the designations of the respondents that were involved in the survey. That will provide an insight on the level of personnel that have participated in this survey. With reference on data shown in Table 2 the highest

number of respondents was Project Manager (21.0 %), followed by Assistant Manager (19.0 %) and next QA/QC Managers (15.0 %). However the summation of Project Director, Project Manager, Project Engineer, QA/QC Manager and Construction Manager representing 58 % of the total number of respondents. Hence it can be deduced that quite high number of the respondents that had participated in the survey were the key personnel at managerial level in a construction project team.

In term of academic background of these respondents is shown in Figure 2. The information revealed that 59 % of the respondents were of engineering background which formed the majority of the respondents. Next highest number of academic background was construction management which comprised virtually 15 % of the total respondents. Hence it denotes that the engineers are the key profession that is involved in managing quality activities in the construction projects.

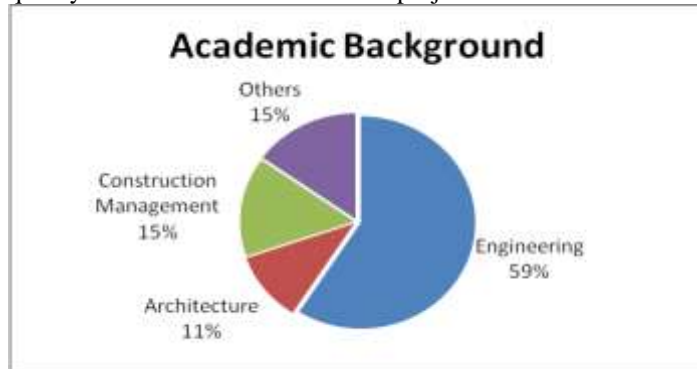


Figure 2: Distribution of respondent's academic background

Table 3: Distribution on years of experience by the respondents

Range Of Years Service	Number Of Respondents	Percentage
≤ 2 years	9	13
3 to 5 years	21	32
6 to 10 years	12	18
≥ 11 years	24	37
Total	66	100

Respondents Years of Service in Construction

Next area is to examine the years of tenure in construction sector among the respondents. The years of service is breakdown into four categories i.e. less than 2 years, 3 to 5 years, 6 to 10 years and finally more than 11 years. Referring to information in Table 3, indicates that the highest number of respondents (37%) have been working for more than 11 years. Followed by number of respondents, that has been working in construction within the between 3 to 5 years which is 32 %. However if the two categories i.e. years of experience 6 to 10 years and more than 11 years of service are combine which will give rise to 55 %. Therefore it can be postulated that majority of the respondents were those that have been working in construction industry for not less than 5 years.

Respondents Knowledge in QLASSIC

One of the important attribute in providing the credible feedback on the survey is the level of knowledge of the respondents on QLASSIC. On this note that two related questions were formulated. The two questions are whether the respondents have attended 'QLASSIC Awareness Course' and 'QLASSIC Assessor Course'. They were required to answer 'Yes' or 'No'. For the first question 75.7 % answered 'Yes' and for the second questions 72.7 % answered 'Yes'. These two results indicate that majority of the respondents were equipped with fair knowledge on QLASSIC in particular on the document CIS 7: 2006. Apart from that compounded with their reasonable

years of exposure to QLASSIC assessments hence they possessed the credibility in providing an acceptable quality of feedbacks on the research area.

In relation to the above, one question was developed to solicit the respondents views on whether it is timely to review CIS 7: 2006. They were required to choose the answer 'Yes' or 'No' or 'Not Sure' and the result is manifested in Figure 3.

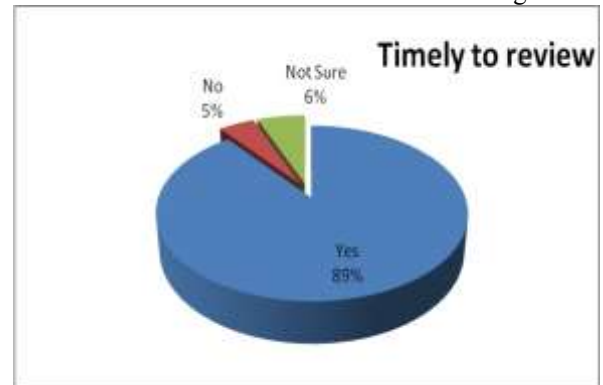


Figure 3: Result on whether it is timely to review CIS 7:2006

Based on information displayed in Figure 3, 89 % of the respondents agreed that it is timely to review CIS 7: 2006. Indeed noticed that 100 % of the respondents from the assessor and tribunal officer categories agreed that it is timely to review CIS 7: 2006. This implies that generally the key stakeholders agree that it is timely to review CIS 7: 2006.

In this survey exercise the researcher also took the opportunity to seek the opinion of the respondents on whether quality standards requirements in CIS 7: 2006 comprised of quantitative and qualitative measurements. Hence a questioned was deployed and the respondents were required to answer 'Yes' or 'No' or 'Not Sure'. It is found that 100 % of the respondents answered 'Yes'. Thus this overwhelming result can deduce that the quality standards stipulated in CIS 7: 2006 can be measured quantitatively and qualitatively.

Potential Areas of Improvement in CIS 7: 2006

As abovementioned that CIS7: 2006 is the standard being referred in executing QLASSIC assessment. According to the assessment requirements stipulated in CIS 7:2006, the first level of the assessment is the descriptions on the categories of buildings. Currently the document has categorised four categories of buildings namely landed housing, stratified housing, public building and specialised public building. After five years of implementation of QLASSIC it would be advisable to ascertain whether the current descriptions on the categories of buildings need to be reviewed. Hence a closed ended questioned was developed on the matter. The respondents were required to select the answers provided either 'Yes' or 'No' or 'Not sure' and the result is disclosed in Figure 4.

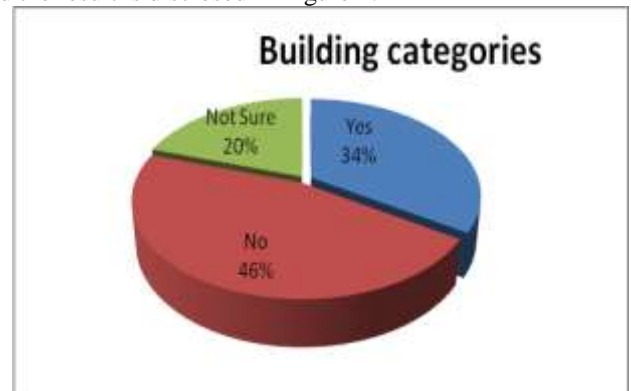


Figure 4: Result on review on categories of buildings

As shown in Figure 4, 46 % of the respondents disagreed to review the current description on categories of buildings. Therefore the result purportedly indicates that the current description on categories of buildings do not posed significant problem in the present QLASSIC assessment.

Another area that may need to review is the requirements on performance tests that are stipulated in the document. Under each building components, the referred standard has listed several performance tests. However currently not all these performance tests are carried out by CIDB during the QLASSIC site assessment due to few operational issues. The related question is whether to review these performance tests? In view of this a closed ended question was developed where by the respondents were requested to answer 'Yes' or 'No' or 'Not Sure'. Based on the result depicted in Figure 5.5, 63 % of the respondents agreed that the present test requirements need to be reviewed.

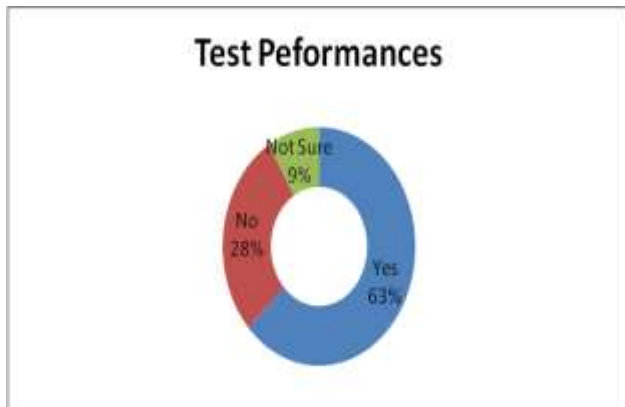


Figure 5: Result on review of test performances

In relation to the above, the other area that may need to review is on the tolerance values on the acceptance criteria of the construction works. Since these values were introduced in late 2006, tendency that some of these values may be obsolete. It is advisable to review these values so as to align and be updated with other acceptable quality standards either locally or internationally. On this note a related question was developed for the respondents to response either 'Yes' or 'No' or 'Not Sure'. Judging from the result displayed in Figure 6, 55 % of the respondents agreed that the current tolerance values listed in CIS 7: 2006 need to be reviewed. Ironically noticed that majority of the respondents from the Assessor group did not agree to review the current tolerances. This is something interesting to probe further on the different views from the Assessors.

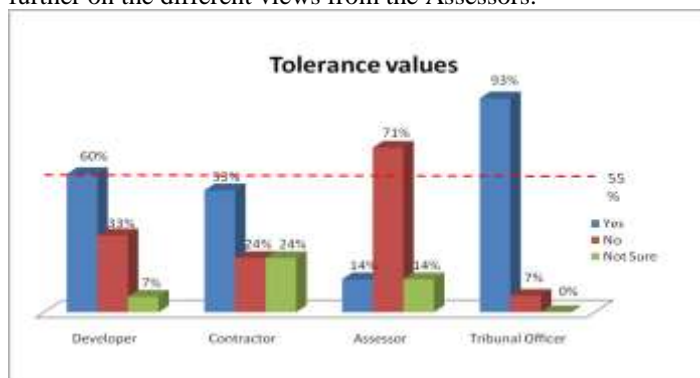


Figure 6: Result on review of tolerance values
Potential of Using QLASSIC Assessment Report for Continual Quality Improvement

One of the key deliverables in QLASSIC assessment is the QLASSIC assessment report. However the pertaining issue is whether the current data in the report is suitable and adequate

for the industry players to use for analysing towards continual quality improvement in project performance. Notwithstanding this gives rise to several research questions as below:

- Does the present QLASSIC report can assist the industry players to identify areas for quality improvement?
- Does the current report is being used by the industry players to analyse the possible areas of quality improvement?
- Is the present QLASSIC report can be an effective continual quality improvement tool?

Taking into account of the above questions, three closed ended questions were devised in the survey form. The respondents were required to answer 'Yes' or 'No' or 'Not Sure'. The related results are shown in Figure 7, Figure 8 and Figure 9 consecutively. It is found that 85 % of the respondents agreed that the current QLASSIC report can assist to identify areas of improvement in quality performance. With regard to question (ii), 81 % of the respondents have answered 'Yes' that they have used the mentioned report to identify areas of quality improvement. On the issue whether the current QLASSIC report can be an effective continual quality improvement tool, 87 % of the respondents answered 'Yes'. In light of all these three results, it deemed to construe that the current report can be an effective continual improvement tool for quality performance in construction projects.

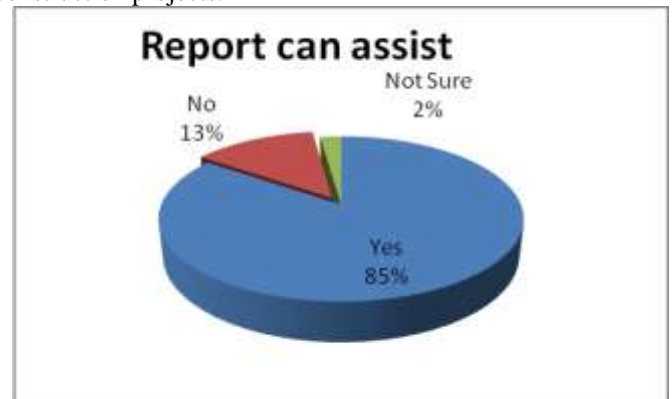


Figure 7: Result on whether the current QLASSIC report can assist in identifying areas of improvement
Potential Areas of Improvement in QLASSIC Implementation

CIDB had embarked QLASSIC assessment since end of the year 2006. After more than five years of operation inevitably there are few operational problems have prevailed that need to be addressed. Having said that had triggered the researcher to develop a question in an effort to obtain feedback from the respondents on the potential areas of improvement in implementation of QLASSIC. Five options of statements were provided for the respondents to select their preference answers. The result is been disclosed in Table 4.

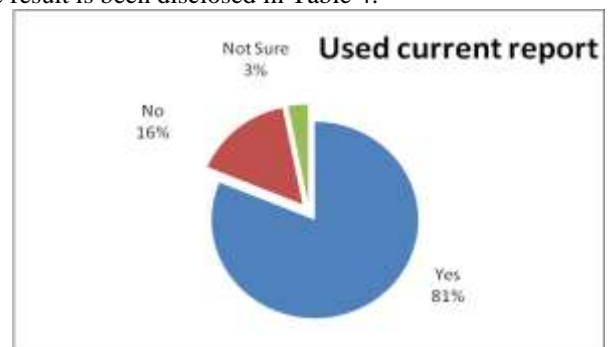


Figure 8: Result on whether the current QLASSIC report is being used to analyse on areas of improvement

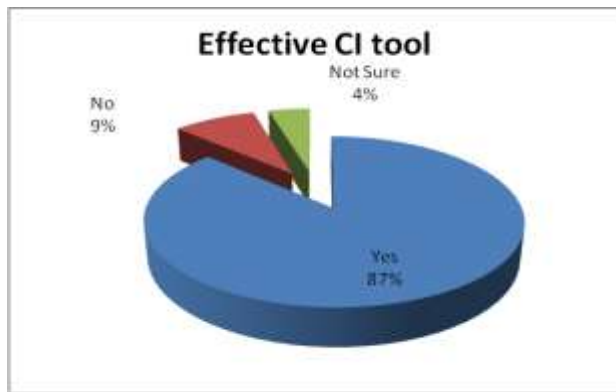


Figure 9: Result on whether QLASSIC report can be an effective continual improvement tool

It is found that two areas that received the highest preference for improvement from the respondents i.e. strengthen the supervision by CIDB on the assessments by the appointed external assessors and improve the credibility and competency of the QLASSIC assessors. The next highest preference from the respondents is to reduce the current time taken in producing QLASSIC reports. These are the three areas that had been identified in this research that should be given the priority by CIDB in an effort to improve the implementation of QLASSIC assessment.

Table 4: Potential areas of improvement in implementation of QLASSIC assessment

Areas of Improvement on Assessment	Percentage (%)	Ranking
Strengthen supervision by CIDB on the assessment by the appointed external assessors	26.4	1
Improve credibility and competency of the QLASSIC assessors	26.4	1
Reduce the current time taken in producing QLASSIC reports	24.5	2
Widen the implementation of M & E component rather than basic M & E fittings	13.2	3
Increase implementation of structural component	9.5	4
TOTAL	100.0	

The Importance of QLASSIC to Developer

The highest player in the hierarchy of construction value chain is the client or the project owner. In context of commercial property development, in particular the residential building, the client is the developer. They are the one that provide the land and the essential project funding for commercial development. They are directly related to the end user or the consumer. They are obligated to produce exceptional quality of building works in order to satisfy their customers. Apparently the developers need a performance indicator that can broadly reflects the level of quality of their completed building construction works. Among the readily available quality performance indicators in the local construction industry is the QLASSIC score. Hence this survey provides an avenue to explore the importance of QLASSIC to the developer group. In this respect four related questions were formulated as below:

- Do QLASSIC score track records are being used as one of the criteria in selection of potential contractors?
- Does the company determine the threshold value of QLASSIC score in the contractual requirement?
- If the answer to the above question is 'Yes', what is the threshold value?

iv. Can QLASSIC score be correlated with the level of customer satisfaction on the quality of the completed projects?

The related results are being displayed in Table 5. The data shows that 60 % of the developer respondents have used QLASSIC score track records as one of the criteria in selection of potential contractors for their projects. On the item whether QLASSIC score can be correlated with the level of customer satisfaction, 74 % of the respondents answered 'Yes'.

The first result indicates that several of developers have been using QLASSIC performance to select their contractors. The second result reflects majority of the developers agreed that QLASSIC score can be used to gauge the level of customer satisfaction on their completed projects. Even though this result is not conclusive due to relatively small numbers of respondents, nevertheless it provides a signal that QLASSIC is gradually gaining its importance among the developers fraternity.

Table 5: Relevant questions on importance of QLASSIC to developer

Items	Yes	No	Not Sure
Used QLASSIC score track records in selection of contractors	60 %	33 %	7 %
QLASSIC score threshold value in contract	53 %	33 %	14 %
Can QLASSIC score be correlated with customer satisfaction	74 %	13 %	13 %

On the issue whether QLASSIC threshold value is specified in the project contract, 53 % of the respondents have answered 'Yes'. Even though the result is not convincing because of slight majority, however it noteworthy that there are developers which have included the QLASSIC threshold value as one of their contractual requirements. In relation to this an open ended question was developed which required the respondents to state their respective threshold value. Based on the answers provided by the respondents noticed the range of the threshold values used by the developers was between (70-75) %. This means that if a contractor fails to attain the required QLASSIC score of the completed project then it deems that the contractor fails to meet one of the contractual requirements. Consequently it will affect the future business relationship between the developer and the affected contractor. In the worse scenario the affected contractor may be marginalised in being awarded future contracts by the developer. However on positive note, the threshold value set by the developers will force the contractors to take serious measures in ensuring that they are able to attain the targeted QLASSIC score set by the clients. That affirmative step undertaken by the developers would enable to elevate the level of quality of completed projects in the construction realm.

Research Proposal on Potential Integration of QLASSIC with ISO 9001 QMS

ISO 9001 QMS is an internationally recognized quality management regime (Srivastav, 2007). One of its key areas being emphasized in ISO 9001 QMS is performance measurement towards continual improvement (Ali *et al.*, 2010). This is basically to measure objectively the effectiveness of the established QMS. Where else QLASSIC is an assessment tool which is used to measure objectively the level of quality of the completed building construction works that can be considered as an outcome based performance indicator. In this light, there is a potential of integrating QLASSIC with ISO 9001 QMS. Taking heed of this leads the researcher to develop a related closed ended question on research proponent regarding the matter. The

question is 'Do you think that it is timely to undertake a research on potential integration of QCLASSIC with ISO 9001 QMS towards continual improvement?'. The respondents were requested to select the answers provided either 'Yes' or 'No' or 'Not Sure'. The result is shown in Table 5.10. It is found that 84 % of the respondents answered 'Yes'. Indeed the result also disclosed that developer, consultant and assessor groups awesomely agreed with the intention to undertake the proposed research work. Therefore the result tends to support the initiative taken by the researcher to conduct a research on the potential integration of QCLASSIC with ISO 9001 QMS.

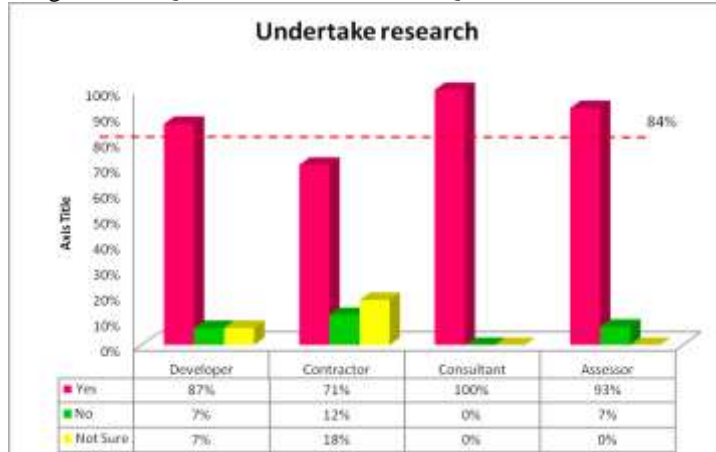


Figure 10: Feedback of respondents to undertake the proposed research work

Discussion and recommendations

This exploratory survey was executed primarily to ascertain the potential areas of improvement in QCLASSIC. The later comprised of two components which are the assessment reference document namely CIS 7: 2006 and the operational of QCLASSIC assessment. This survey encompassed both components. This study was able to garner the targeted respondents from the industry that have fair knowledge on document CIS 7: 2006 as well as considerable years of experience in operational aspect of QCLASSIC assessment. That will enhance the credibility and reliability of the views from the respondents.

On the issue of whether it is timely to review CIS 7: 2006, the result shows that 89 % of the respondents agreed. This is an expected result from the respondents. Since its existence for more than five years this document has never been reviewed. In view of this CIS 7: 2006 being a standard which is always considered as a dynamic document should be reviewed for every five years. This is in line with ISO practices that generally review the standards for every five years. (ISO, 2008). With regard to potential areas of improvement, the results show that the majority of the respondents do not agree to review on description on categories of buildings but they agreed to review on performance tests and tolerance values in the acceptance quality standard of the construction building works.

Under each building components there are several performance tests. For instance under structural component, the standard has specified two non destructive testing (NDT) to test for concrete uniformity and test for concrete cover that need to carry out. Apart from that there is also functional test for welding work. Where else for architectural component there are three performance tests i.e. field window water tightness test, wet area water-tightness test and pull-off-test for internal wall tiles. For M & E work performance test is essentially testing and commissioning of electrical supply, water supply and sanitary flushing system. Since the result unfolded that 63 % agreed to

review the performance tests purportedly there are several issues prevailed in performance tests. Firstly few of these tests seemingly redundant to testing performed by the engineering consultants. For instance M & E testing and commissioning is part of contractual requirements and sometimes these testing and commissioning are performed with the presence of the relevant regulators. Thus another round of similar performance tests by QCLASSIC assessors seems to be considered redundant and inappropriate. Secondly the damages cause in post testing. For instance the performance tests on pull-off-test for internal wall tiles which is basically destructive test. Tendency that it might cause damages to the surrounding area at the affected part and the rework on the damaged area will not able to produce an acceptable quality of finished work as originally. Thirdly is the competency of the QCLASSIC assessors in conducting the tests especially engineering works in comparatively large scale and substantial degree of complexity of the building for instance intelligence buildings, hotels, hospitals and airports. In these scenarios the testing may required highly qualified person such as professional engineers. Albeit majority of the QCLASSIC assessors are largely of technical personnel in construction but not many are accredited as a professionally qualified person. Technically they are not qualified to undertake testing and commissioning of M & E works. Fourthly is the issue on feasibility of having the testing equipments. Based on CIDB's record, some of these equipments are quite expensive for instance the cost for one NDT equipment is about RM 20,000. Moreover this equipment needs to re-calibrate periodically which is also quite costly. Taking into consideration of the relatively high in owning and operating costs deems not feasible to purchase the required measuring equipments. Due to these several described operational issues that has resulted the need to re-visit on the performance test requirements stipulated in CIS 7: 2006.

On the issue of reviewing the tolerance values, the result depicted that 55 % of the respondents agreed. This means slightly more than half of the respondents agreed which is not very convincing. In fact 71 % respondents from the assessor group disagreed to review the tolerance values in the referred standard. This leads to deduce that the assessors' perceptions on the current values are still relevant and it is not appropriate to review at this juncture. However since slight majority of the respondents agreed to review, the researcher opines that it should be reviewed to ensure the relevancy and improving of the current tolerance values. For instance the accepted tolerances for comfort level of room temperature and Indoor Air Quality (IAQ) need to be updated with the regulations by the respective regulatory bodies. However it need to be done systematically. It is recommended CIDB to play the lead role in reviewing these values. In addition CIDB has been accumulating the assessment data for over the years. Hence it is recommended CIDB to analyse the available data and identified which corresponding values suitable to be reviewed. Preferentially should be given to values in the building elements and sub elements that consistently have received extremely high or low scores.

Basically there are two key deliverables in post QCLASSIC assessment namely the QCLASSIC certificate and QCLASSIC assessment report. The earlier exhibits the overall result of the assessment in the form of percentage, known as QCLASSIC Score. Where else the QCLASSIC assessment report manifests the detail breakdown of the assessment results according to elements and sub elements. Therefore theoretically the said report would enable to assist in identifying areas of quality improvement in project performance. How far is it true? Based

on the result of the survey had unleashed that 85 % of the respondents agreed on this theoretical statement. Next is to explore whether currently it is being used to identify areas of quality improvement? It is found that 81 % of the respondents answered 'Yes'. Based on these two results signify that QLASSIC assessment report can assist in identifying areas of quality improvement for construction projects. For ISO 9001 QMS certified construction companies are required to continually improve their quality performance. Therefore for ISO 9001 QMS certified construction companies they should be able to capitalise QLASSIC assessment report as one of the sources for continually improve for their quality performance in construction projects.

With regard to operational assessment of QLASSIC several areas of improvement have been identified in this study. Two areas that were found which need further improvement are CIDB's supervision during assessments by the appointed external assessors and the competency of the assessors. One of the challenges in conducting QLASSIC assessment is the constraint of manpower in CIDB. Consequently that had warranted CIDB to outsource the QLASSIC assessments to external assessors. These assessors are essentially technical personnel from construction industry that have met to the vital requirements to become QLASSIC assessors as outlined by CIDB. The issue arise is that these external assessors may come from competitors' companies that may give rise to elements of prejudice during assessments. Thus in order to address this issue that it is recommended CIDB officers to frequently supervise assessments by the appointed external assessors so as to ensure elements of integrity and the impartiality among the assessors prevail during assessments. This aspect is impetus to gain respect from the industry on the results of the QLASSIC assessments.

While pertaining to the issue on competency of the assessors is essentially to harmonise the acceptance criteria on qualitative measurements. As mentioned earlier QLASSIC assessment comprised of quantitative and qualitative measurements. The later are likely subject to discrepancies among the assessors because the defects are assessed merely by visual inspections. If any contentions arise from the applicants on the assessors' decisions of non compliance, the assessors are able to provide acceptable technical explanations. One of the recommendations to address this issue is CIDB to have periodic re-training for the assessors as well as calibration workshops among the assessors to harmonise the difference of opinions among the assessors on the selected building defects that can be considered as non compliance. These two areas that have been identified for improvement are able to elevate the level of the confidence of the applicants on the results of QLASSIC assessments.

Another area that should be considered for improvement is on time taken by CIDB to issue QLASSIC reports and QLASSIC score. Based on the informal feedbacks gathered from the respondents during the focus group workshops that they felt the current time taken to produce the required reports is reasonably long, normally more than six weeks from the last date of assessment. Preferably the duration for producing the required reports should be reduced. Many applicants such as developers and contractors required faster QLASSIC reports for them to have an insight on broad indication on the level of quality of their completed projects. Indeed QLASSIC score can also reflect on the possible level of customer satisfaction that can be associated with the expected number of complaints from the customers. Relatively longer time in producing QLASSIC

assessments reports can become a deterrent factor for applications of QLASSIC assessments.

Generally this study postulates that it is timely to review and improves QLASSIC i.e. its assessment standard CIS 7: 2006 and assessment operation. The concerted effort in reviewing QLASSIC will be able to sustain its relevancy, improves its credibility as well as its integrity (Ali, 2012). The expected impact is to elevate the level of confidence and respect from the industry on QLASSIC assessments which could create higher demand for QLASSIC assessments.

Conclusion

This exploratory survey was undertaken primarily to ascertain broadly the potential areas of improvement in QLASSIC. Beside that this survey is also to obtain preliminary reaction from the industry on the proposed research on integration of QLASSIC and ISO 9001 QMS. Fundamentally QLASSIC is divided into two components i.e. assessment standard, CIS 7: 2006 and the operational of assessment of QLASSIC. In context of CIS 7: 2006, generally the result of the study found that it is timely for review. On potential areas of improvement in CIS 7: 2006, two areas that need to review which are the performance tests and the tolerance values for the acceptance criteria of the assessed building works. While in operation of QLASSIC assessment, the study found that there are three potential areas for improvement, namely improvise supervision by CIDB on assessments by external assessors, competency enhancement of the QLASSIC assessors and improve time frame in producing the assessment certificate and report. Another finding from this survey is that generally the industry supports the proposal of having a research on potential integration of QLASSIC with ISO 9001 QMS.

References

- Ali M. C., Zin R.M., Hamid Z.A. and Ayob A.R. (2010), "Quality cost in the construction industry – preliminary findings in Malaysia", *Journal of Design and Built Environment*, Vol. 6, June 2010, pp. 29-43
- Ali M.C., (2010), "Understanding the Underlying Principles of QLASSIC Assessment", *Bulletin The Ingenieur*, Vol 45, March-May 2010 edition, pp 51-54
- Ali M.C., Pakir A.H.K., Hamid Z.A., Kamar A.M.K., and Dzulkalnine N.,(2012), "QLASSIC – Can It be an Effective Continual Improvement tool for Industrialized Building System (IBS) Projects?", *Malaysian Construction Research Journal*, Vol. 11, No. 2, pp 37-53
- Ali M.C., (2012), "QLASSIC – Can It be an Effective Continual Improvement tool?" Seminar on QLASSIC – Way Forward for Quality Enhancement, 23 May 2012, Kuala Lumpur
- CIDB (2006), *Quality Assessment System for Building Construction Work*, Construction Industry Standard, CIS 7: 2006
- CIDB (2007), *Construction Industry Master Plan 2006-2015*
- CIDB (2009a), *Report on Quality Assessment System in Construction (QLASSIC) Score for the year 2007-2008*
- CIDB (2009b), *'Developing Quality Management System in Construction – A Guide Book for Contractor'*
- CIDB (2013a), *Info SHEQ issue 01/2013*
- CIDB (2013b), *Impact Study on the Implementation of Quality Assessment System in Construction (QLASSIC) for building construction work.*
- ISO (2008), "Quality Management System – Requirements", 4th edition
- Kam, K. J., Hilmy, A., and Hamid, A. (2012). THE RELATIONSHIP BETWEEN MOTIVES AND BENEFITS ON ADOPTING QLASSIC--CIS 7: 2006 IN MALAYSIA

CONSTRUCTION INDUSTRY. *International Journal for Quality Research*, 6(4).

Low S.P., Tan B.K. and Allen A. A. L., (1999), "Effectiveness of ISO 9000 in raising construction quality standard: some empirical evidence using CONQUAS Scores", *Structural Survey*, Vol.2, No. 2, pp 89-108

Robson, C. (2002), *Real world research* (2nd Edition), Blackwell Publisher, Oxford

Roscoe, J.T. (1975), "Fundamental research

statistics for the behavioral sciences", 2nd Edition, Holt, Rinehart and Winston, N.Y.

Sekaran U. (2003), "Research Methods For Business – A Skill Building Approach", John Wiley & Sons Inc., N.Y.

Srivastaz A.K. (2007), "ISO 9000 implementation: can system improvement lower role stress?", Case-Study Reference No. 407-059-1, European Case Clearing House, Cranfield.

www.cidb.gov.my