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QUALITY PAPER

The true motives behind the adoption of QLASSIC-CIS 7: 2006

As a quality assurance initiative in construction industry

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Abstract

Purpose – The purpose of this paper is to investigate contractors' awareness level and adoption of QLASSIC assessment system in construction industry and to identify the variables that influenced the adoption of QLASSIC assessment system.

Design/methodology/approach – Quantitative research method was adopted in order to test the above issues. The questionnaire composed for two parts: awareness and adoption of QLASSIC system; and the factors that influenced the adoption of QLASSIC system. Those contractors who registered under grade 6 and 7 are the scope of respondents in this study.

Findings – The adoption of QLASSIC assessment is not significantly affected by the awareness whereas the motivations and barrier factors do. It was discovered that the contractors perception on QLASSIC adoption are basically due to the significant factors; the internal motivations and barrier. The major influencing factors are internal motivation factors, external motivation factors and barrier factors.

Originality/value – This study reveals the true motives behind the adoption of QLASSIC assessment in the construction industry, where this finding significantly contributes to the understanding of contractors' perception on this quality assurance program for the construction industry.

Keywords Awareness, Motivation, Construction industry, QLASSIC assessment system, Quality assurance initiatives

Paper type Research paper

Introduction

In the year 1987, the ISO 9000 standards were introduced by the International Standardization Organization (ISO) into the construction industry to serve as a quality assurance system as it was based on the existing British Standards 5,750, introduced earlier by the British Standards Institution group. As mentioned by Dale (1994), such introduction of quality reference standards allows the international quality systems to be integrated in a more convenient manner, allowing the systems to be acknowledged widely.

However, the adoption of the ISO 9000 standards was not extensive in the construction industry unlike other industries (Karthi *et al.*, 2012). Example of an industry which heavily adopted the ISO standards was the manufacturing industry. One of the contributing factors to this failure was the versatility of the construction industry proving to be more challenging and it rather evolves and changes based on the current circumstances unlike the systematic routines of the manufacturing industry. This was indeed pointed out by Shanmas-Toma *et al.* (1998), citing that the implementation of quality management system such as the ISO 9000 standards would

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only be restricted by the characteristics of the construction industry. In addition, Tsiotras and Gotzamani (1996) also mentioned that the ISO 9000 standards are only able to suggest the important features of an appropriate quality assurance system and not suggesting methods of application. In fact, Phenol (1994) did mention several features of the construction industry which would hamper the implementation of the ISO 9000 standards:

- Unlike manufacturing which is a system operating in a constant environment, producing similar products in mass, construction project actually combines several unique features such as people, equipment and materials at a unique location under unique weather conditions.
- The roles, responsibilities and communication between the various parties in a construction project are more complex than in manufacturing due to the large number of parties involved. Therefore, efforts from all parties are required to ensure a quality construction.
- Construction projects tend to be more complex than of manufacturing and most of their executions require years.

Thus, Quality Assessment System in Construction or better known as QLASSIC-Construction Industry Standard (CIS) 7: 2006 was introduced into the Malaysian construction industry by the Construction Industry Development Board (CIDB) of Malaysia to achieve success criteria on delivering a good quality product (Samiaah *et al.*, 2011). QLASSIC which was adopted from the Construction Quality Assessment System of Singapore aims to address the on-going issues in the Malaysian construction industry. One of the issues plaguing the Malaysian construction industry is the inability of local buildings to achieve the required standards of workmanship, creating buildings of substandard quality (CIDB News, 2008).

The optimistic and pessimistic views regarding QLASSIC-CIS 7: 2006

QLASSIC-CIS 7: 2006 serves as a system to evaluate the standards of workmanship in a particular construction project against a set of approved standards. In this study, the ISO 9000 standards are used as a reference for QLASSIC as it is a rather low-profile quality assessment system presently. However, not every construction company which seeks the adoption of QLASSIC truly aims to improve the quality of the company or to satisfy the requirements of its customers. Some companies have their true motives which remain unrevealed to the customers, leading to the need for the adoption. Carlsson and Carlsson (1996), Jones *et al.* (1997) and Lee (1998) mentioned that there are companies which seek certification resulting from reasons of external nature although there are companies which may be able to improve their internal performance if the reason of such companies seeking certification is internally based, whereby also supported by Singels *et al.* (2001), Williams (2004) and Prajogo (2010). Such reasons can also be derived as motivational aspects.

Lamprecht (1996) and Dale (1994) stated that reasons of external nature include enhancing the image of the company and solidifying its position in the market, and matching the efforts of a competitor who has already implemented a recognized quality system. Casadesus *et al.* (1998, 1999) suggested that such companies might be aiming to consolidate and increase its market share. In addition, Huarng *et al.* (1999) and Arauz and Suzuki (2004) also stated that there are companies which obtained QLASSIC for the sole purpose of being accepted by some specific tender. Meanwhile, the reasons of

internal nature can be regarded as an effort of a company to improve its total quality management (TQM) by addressing issues such as cost efficiency, company productivity, company efficiency and customer satisfaction which directly enhances the related company as a whole (Hwang *et al.*, 2013). Moreover, reasons of internal nature are also driven to facilitate continuous improvement of internal processes of a company as mentioned by Dale (1994) and Llopis and Tari (2003). Reasons of external and internal nature do yield advantages and provide a competitive edge over rivaling companies which do not possess QLASSIC certification. A quality assessment system such as QLASSIC also provides a platform on how to assess the quality of works in order to achieve the desired results which enable the top management of companies to commit to it more effectively and conveniently (Senaratne and Jayarathna, 2012). However, it should be advised that total compliance with the quality assessment system do not necessarily yield the positive results desired by such companies. The prime factor toward the success of the quality assessment system lies in the commitment of a company in meeting the requirements as suggested by Brecka (1994) and Kochan (1993).

However, there are also disadvantages associated with the certification of QLASSIC such as the extra costs required in order to achieve the certification of QLASSIC and less attention is being paid to the development of company personnel (Peter *et al.*, 2010). In addition, the discouragement of critical and analytical thinking within the personnel of the company resulting from the routine assessment procedures also occurs as they are required to work according to the predetermined rules, procedures and system of QLASSIC (Fuentes *et al.*, 2000). Such compliance with QLASSIC encourages reliance toward it, rendering the personnel of the certified companies unable to evaluate the quality of works on site analytically and independently without the quality assessment system, resulting in the decrease of employee development although the quality of works on site may be at the very least assured. As QLASSIC generates both benefits and disadvantages for certified companies, it is at the discretion of a company should it opt to pursue the certification of QLASSIC to ensure that the benefits outweigh the disadvantages.

In order to obtain the certification of QLASSIC, there are barriers normally faced by applying companies though none other is more obvious than financial constraints. In fact, this was pointed out by Barrier and Zuckerman (1994) and Axland (1992) who suggested that the main reason remains the inability to meet the implementation and maintenance costs due to insufficient financial capacity; from ISO 9000 certification studies. Small construction companies especially newly set companies or low-graded contractors; such as contractors who registered under Grade G1-G3 with Malaysia's CIDB with project tendering capacity not more than, Ringgit Malaysia 200,000 for G1 contractors and Ringgit Malaysia 1,000,000 for G3 contractors would mostly face problems if they seek for the certification of QLASSIC as it may be possible that their initial capital does not allow such hefty investment into QLASSIC certification in the initial phase of such companies. In addition, there is still a lack of knowledge regarding QLASSIC certification especially among small construction companies as not many companies are notified regarding the benefits QLASSIC yields to them. A small company may perceive QLASSIC as an unnecessary luxury as it may only deal mostly in minor works such as renovation works and its customers might even disregard such certification due to poor public knowledge. A medium-graded construction company might contemplate to seek QLASSIC certification to improve its company image or to shift its attention toward an improved target market. However,

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should such company fail in obtaining QLASSIC certification, the overall morale of the company might be affected resulting from the disappointment among employees, thus adversely affecting the quality and productivity of works as well. Unfortunately, this leaves only a small amount of high-graded construction companies which consists of approximately 9 percent of the entire figure of construction companies registered under CIDB to have an optimistic view on successfully obtaining QLASSIC certification. Even so, the true motives of construction companies in seeking QLASSIC certification remain the key determinants in ensuring that such quality assessment system is able to assist companies in creating quality-assuring procedures in the works sustainably.

The need for empirical study

As mentioned previously, a quality assessment system such as QLASSIC yields both benefits and disadvantages to the certified construction companies. In addition, hopeful construction companies would also encounter barriers to successfully obtain the certification of QLASSIC. It is important that QLASSIC is properly executed as QLASSIC paves way toward an effective implementation of TQM in the future. Therefore, an empirical study is required to determine the relationship between the different true motives and barriers in pursuing QLASSIC certification and the results of QLASSIC implementation after the certification of QLASSIC resulting in various consequences to the affected construction companies. The true motives of seeking QLASSIC certification remain the key determinant in determining the success of implementing QLASSIC as the initial phase of such TQM implementation has a large impact and impression on the trust and support of a company's management and personnel and if executed correctly, can contribute to such benefits in the long-term as mentioned by Ahire and Rana (1995).

Thus, the objectives of this study are:

(1) to investigate contractors' awareness level and adoption of QLASSIC assessment system in construction industry; and

(2) to identify the variables that influenced the adoption of QLASSIC assessment system.

Empirical study methodology design

Quantitative research method was adopted in order to test the above issues. The questionnaire composed for two parts: awareness and adoption of QLASSIC system; and the factors that influenced the adoption of QLASSIC system.

Those contractors who registered under grade 6 and 7; where grade 6 contractors' tender capacity must not more than Ringgit Malaysia 10,000,000 and grade 7 contractors' tender capacity is no limit, are the scope of respondents in this study. These contractors are selected because they are those main contractors who can probably deal with entire quality concern of the projects. The respondents' sample size was computed based on 95 percent of confidence level and 5 percent of confidence interval according to the formula suggested by Robert and Daryle (1970):

$$s = X^2NP(1-P) \div d^2(N-1) + X^2P(1-P).$$

where s is the required sample size; X the table value of χ^2 for 1 df at the desired confidence level (3.841); N the population size; P the population proportion (assumed to

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be 0.50 since this would provide the maximum sample size); and d the degree of accuracy expressed as a proportion (0.05).

In addition, the five-point Likert scale was used in the questionnaire design, ranging from 1 = strongly disagree to 5 = strongly agree.

Before the actual survey study is carried out, a pilot study is conducted to test the validity and reliability. Factor analysis was carried out to examine the proposed model of the variables that are adapted into this study. Varimax rotation factor analysis was used to ensure the questionnaire items have high correlation between the identical factors and low inter-correlation relation with other factors (Hair *et al.*, 2006). The Kaiser-Meyer-Olkin (KMO) yielded three distinct dimensions accounted for 83.25 percent in the cumulative percentages of variance, with (KMO = 0.935, $p < 0.01$), refer Tables I and II. Whereby thisfulfilled the requirement, as the minimum acceptable value of KMO is 0.60 or above according to Pallant (2005).

From this analysis, the final model was summarized into three major variables, which are internal motivation factor, external motivation factor and barriers, instead of four, from other quality assurances studies; ISO 9000 and TQM, which in related to construction quality. The reliability of the pilot study variables was confirmed reliable in the range of 0.717-0.927 on the Cronbach's α coefficient values, where the acceptable value is above 0.7 according to Pallant (2005).

The first part of this study is to examine the contractors' awareness and adoption level of QLASSIC system. Descriptive analysis was addressed to image and explain this part of study. Descriptive statistics are the methods used to organize, display, describe and explain a set of data with the use of table, graphs and summary measures (Johnson and Christensen, 2000). For this part of study, descriptive statistic such as normality test, frequency, mean and standard deviation are used to describe the basic features of the overall data.

Meanwhile, for the second part of questionnaire design, basically focus on the factors that influence the adoption of QLASSIC system, descriptive analysis and multiple regression analysis were addressed. Multiple regression is useful for situations in which to be able to predict the presence or absence of a characteristic or outcome based on values of a set of predictor variables.

Data analysis and discussion

Objective (1)

Table III describes the contractors' awareness on adoption of the QLASSIC assessment system in the industry. It was found that 64.8 percent of the respondents were introduced by CIDB, while 22 percent were introduced by the developer or project owner and 0.5 percent were introduced by other contractors. 12.6 percent of the contractors were not aware on adoption of the QLASSIC assessment system in the industry.

KMO and Bartlett's test		
Kaiser-Meyer-Olkin measure of sampling adequacy		0.935
Bartlett's test of sphericity	Approx. χ^2	19,608.492
	df	406
	Sig.	0.000

Table I. KMO and Bartlett's test

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Table II. Total variance explained

	Total variance explained								
	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
Component	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	14.200	48.966	48.966	14.200	48.966	48.966	9.434	32.530	32.530
2	5.254	18.118	67.084	5.254	18.118	67.084	8.841	30.487	63.018
3	4.687	16.161	83.245	4.687	16.161	83.245	5.866	20.227	83.245
4	0.958	3.304	86.549						
5	0.760	2.619	89.168						
6	0.531	1.830	90.998						
7	0.360	1.241	92.239						
8	0.305	1.051	93.290						
9	0.244	0.843	94.133						
10	0.222	0.765	94.898						
11	0.197	0.679	95.577						
12	0.188	0.647	96.224						
13	0.155	0.535	96.759						
14	0.124	0.427	97.186						
15	0.116	0.399	97.585						
16	0.103	0.356	97.941						
17	0.095	0.328	98.269						
18	0.093	0.322	98.591						
19	0.079	0.271	98.862						
20	0.070	0.242	99.105						
21	0.059	0.204	99.309						
22	0.048	0.166	99.475						
23	0.041	0.143	99.617						
24	0.034	0.117	99.734						
25	0.024	0.084	99.818						
26	0.022	0.077	99.895						
27	0.013	0.045	99.940						
28	0.010	0.035	99.975						
29	0.007	0.025	100.000						

Note: Extraction method: principal component analysis

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Table III. Awareness level and adoption of QLASSIC assessment system in construction industry

	Frequency	%
Awareness on adoption of QLASSIC assessment system in the industry		
Introduced by CIDB	236	64.8
Introduced by developer/project owner	80	22.0
Introduced by other contractor	2	0.5
Not aware	46	12.6
Adoption of QLASSIC assessment system		
No	207	56.9
Partially	54	14.8
Yes	103	28.3
Will adopt QLASSIC assessment in future project		
Definitely not adopt	14	3.8
Probably not adopt	63	17.3
Not sure	131	36.0
Probably adopt	47	12.9
Definitely adopt	6	1.6

Table III also shows majority of the contractors has not adopted QLASSIC system in their current projects which is 56.9 percent. 14.8 percent were partially adopted (using the QLASSIC as a quality standard but not apply for assessment), and 28.3 percent has already adopted the system.

It was also found in Table III that contractors' willingness to adopt QLASSIC assessment in the future project. There is 3.8 percent of the contractors stated that there were definitely not adopt QLASSIS assessment system, while 17.3 percent stated that they will probably not adopt. 36.0 percent of them were not sure. 12.9 percent stated that they were probably adopted and only 1.6 percent were definitely adopt QLASSIC assessment system in their future project.

Objective (2)

Contractors were asked for their perception toward factors influencing the adoption of QLASSIC system. Based on construct validity analysis, the factors were measured using three dimensions; those are internal motivation factors, external motivation factor and barriers. Descriptive analysis was used to determine the level of perceptions toward each variable and dimension. To determine the perception level of these factors, the mean was computed and the middle point was used to separate the level from low, moderate and high as mentioned by Healey (2005). Mean score is divided into three levels as follows:

(1) low importance = 1.00-2.25;

(2) moderate importance = 2.26-3.75; and

(3) high importance = 3.76-5.00.

Internal motivation was measured using ten items. Descriptive analysis was deployed to examine the level of contractors' perception toward internal motivation is summarized in Table IV. Overall, contractors perceived that the internal motivation was a moderate importance variable which influence them to adopt QLASSIC assessment system (mean = 2.34, SD = 1.22). It is revealed that the most important

Table IV. Descriptive analysis of internal motivation factor

	Mean	SD	Level	Rank
Internal motivation factor	2.34	1.22	Moderate	
1. Benchmark quality level of project	2.79	1.43	Moderate	1
2. Improvement of final product quality	2.73	1.36	Moderate	2
3. Improvement workmanship performance	2.46	1.45	Moderate	3
4. Quality assurance	2.33	1.33	Moderate	5
5. To provide a foundation for continuous improvement	2.10	1.27	Low	8
6. Good start for total quality management initiative	2.12	1.20	Low	7
7. Less rework and defectives	2.44	1.21	Moderate	4
8. Reduce cost for rectification work	2.29	1.18	Moderate	6
9. Development of quality culture	2.06	1.18	Low	10
10. Increased quality awareness among employees	2.08	1.22	Low	9

items in internal motivation is the "benchmark quality level of project" (mean = 2.79, SD = 1.43), followed by "improvement of final product quality" (mean = 2.73, SD = 1.36) and "improvement workmanship performance" (mean = 2.46, SD = 1.45). Contractors also perceived that "development of quality culture" (mean = 2.06, SD = 1.18), "increased quality awareness among employees" (mean = 2.08, SD = 1.22) and "to provide a foundation for continuous improvement" (mean = 2.10, SD = 1.27) were the least important in internal motivation factor.

In internal motivation factor, the item "Benchmark quality level of a project" scored the highest mean, where this finding shows that this item is the most considerable item from the contractors' perception to influence the adoption of QLASSIC assessment. The ranking followed by "improvement of final product quality," "improvement workmanship performance," "less rework and defectives," "quality assurance" and "reduce the cost for rectification work" from ranking second to sixth, respectively in moderate level of importance group.

Where "good start for total quality management initiative," "to provide a foundation for continuous improvement," "increased quality awareness among employees," "development of quality culture" were ranked seventh to tenth, respectively, and they were categorized into the low level of importance group as their mean is fall in range of (2.06-2.12).

The finding from this study shows the items from the moderate levels of importance group which are the items that focus on end product quality. However, the items from the low levels of importance group are the items that focus on organizational quality improvement. Therefore, this study shows that the end product quality concerned group is the major items in internal motivation factor whereby the contractors' perception in influencing the QLASSIC assessment adoption, compared to the concern of organizational quality improvement.

Table V describes the descriptive analysis to examine contractors' perception toward external motivation factor. This revealed in Table V the contractors perceived that external motivation factor was not the influencing factor to adopt QLASSIC assessment systems (mean = 2.15, SD = 1.31). Contractors perceived the highest importance in "Complying the industry policies or regulations" (mean = 2.41, SD = 1.36), "to meet customer's demands" (mean = 2.41, SD = 1.36) and "target preferential tender eligibility" (mean = 2.37, SD = 1.45). Other items showed low level of importance.

From external motivation factor, the finding shows the top four items which fall in the moderate-level group, are the items that focus on policies and regulation from their

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	Mean	SD	Level	Rank
External motivation factor	2.15	1.31	Low	
1. Complying the industry policies or regulations	2.41	1.36	Moderate	1
2. To meet customer's demands	2.41	1.38	Moderate	2
3. Target premium scheme	2.31	1.42	Moderate	4
4. Target preferential tender eligibility	2.37	1.45	Moderate	3
5. To match other contractors' actions	1.98	1.35	Low	9
6. To enhance the company's image	1.99	1.40	Low	7
7. Improvement of corporate reputation	2.01	1.42	Low	6
8. Useful marketing or public relations tools	2.09	1.37	Low	5
9. Penetration in new markets	1.99	1.44	Low	8
10. Increase competitiveness	1.97	1.39	Low	10

Table V. Descriptive analysis of external motivation factor

clients. The following items which were categorized into the low-level group are the items that focus on fulfilling external parties' perception toward the organization. This study shows that the policies and regulation from clients are the major items in external motivation factor that the contractors considered in influencing the adoption of QLASSIC assessment.

Results from descriptive analysis examine contractors' perception toward barrier factor was illustrated in Table VI. It was found that contractors' barrier was a moderate factor to influence their adoption of QLASSIC system in their project (mean = 2.62, SD = 0.70). Most of the contractors agreed that the most important barrier factors were "Less urgent from government enforcement" (mean = 3.76, SD = 1.40) and "Minimal benefits from adopting this assessment" (mean = 3.51, SD = 1.53).

The finding from this study shows that the "urgencies from government to enforce the adoption of QLASSIC assessment among the industry players" and "benefits from adopting QLASSIC assessment" are the two most contribution items in barrier factor. This finding shows that the government enforcements on a new policies among contractors in construction industry could enhance the adoption of QLASSIC assessment from the contractors' point of view. The additional benefits from adopting the QLASSIC assessment would put many contributions too as this item "minimal benefit from adopting the assessment" was ranked high level in barrier factor.

In addition, multiple regression with standardized value was further carried out to determine the variables that significantly influenced on QLASSIC assessment system.

	Mean	SD	Level	Rank
Barrier	2.62	0.70	Moderate	
1. Lack of confident on appropriate technical skill	2.36	0.90	Moderate	7
2. Lack of human resources	2.76	1.24	Moderate	5
3. Cost consumption to meet quality requirement	3.00	1.26	Moderate	3
4. Higher responsibilities to quality standard requirement	2.42	0.90	Moderate	6
5. Less urgent from government enforcement	3.76	1.40	High	1
6. Lack of training programs related to QLASSIC assessment standard	2.94	1.13	Moderate	4
7. Lack of co-operation from customers/client	1.88	0.72	Low	8
8. Minimal benefits from adopting this assessment	3.51	1.53	High	2
9. Using other quality assessment system	1.83	1.46	Low	9

Table VI. Descriptive analysis of barrier factor

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Multiple regression with standardize value; is a regression analysis, deployed to conduct when the dependent variable is dichotomous (binary). Like all linear regressions the multiple regression is a predictive analysis. The multiple regression is used to describe the data and to explain the relationship between one dependent binary variable and one or more continuous-level (interval or ratio scale) independent variables.

The R^2 in this table is 0.969, indicating that 96.9 percent of probability of the event to adopt QLASSIC assessment system. All three factors are significant predict the adoption of QLASSIC assessment system by the contractors shown in Table VII. It can be concluded that the regression function developed can be written as follows:

$$Y = -1.932 + (-0.032)X_1 + 0.950X_2 + (-0.126)X_3$$

where Y is the probability to adopt QLASSIC system; and X_1-X_3 are as in Table VII.

Further regression was carried out on variables' items to determine the items that influenced on the QLASSIC assessment system. The R^2 in Table VIII is 0.476, indicating that 47.6 percent of probability of the event to adopt the QLASSIC assessment system from internal motivation factor. As shown in Table VIII, there are seven items from internal motivation factor that made a unique statistically significant contribution to the variable. The revealed items rank from most to least likely to influence the contractors' decision on adoption of the QLASSIC assessment system are: increased quality awareness among employees; good start for TQM initiative; benchmark quality level of project; improvement workmanship performance; to provide a foundation for a continuous improvement; development of quality culture; and quality assurance.

Table VII. Multiple regression on probability to adopt QLASSIC system

	B	*t*	Sig.
*X*1 internal motivation	−0.032	−2.846	0.005
*X*2 external motivation	0.950	86.533	0.000
*X*3 barrier	−0.126	−12.083	0.000
R^2	0.969		
Sig.	0.000		

Table VIII. Multiple regression on probability to adopt QLASSIC system (internal motivation)

	B	*t*	Sig.
Benchmark quality level of project	0.767	3.922	0.000
Improvement of final product quality	0.230	1.389	0.166
Improvement workmanship performance	−0.675	−4.476	0.000
Quality assurance	0.317	2.087	0.038
To provide a foundation for continuous improvement	−0.468	−3.010	0.003
Good start for total quality management initiative	−0.871	−6.506	0.000
Less rework and defectives	−0.257	−1.896	0.059
Reduce cost for rectification work	0.064	0.563	0.574
Development of quality culture	0.361	2.654	0.008
Increased quality awareness among employees	1.044	7.801	0.000
R^2	0.476		
Sig.	0.000		

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Table IX shows the R^2 value of 0.972, indicating that 97.2 percent of probability of the event to adopt the QLASSIC assessment system from external motivation factor. There are eight items from external motivation factors which significantly predict the adoption of the QLASSIC assessment system by the contractors. The items are rank from most to least that probably influence the contractors' decision on adoption of QLASSIC assessment system are as: target premium scheme; penetration in new markets; to enhance the company's image; improvement of corporate reputation; to meet customer's demands; complying the industry policies or regulations; useful marketing or public relations tools; and to match other contractors' actions.

Table X shows the R^2 value of 0.371, indicating that 37.1 percent of probability of the event to adopt the QLASSIC assessment system from barrier factor. As shown in Table X, there are seven items from barrier factor that made a unique statistically significant contribution to the variable. The revealed items that contributed to the adoption of the QLASSIC assessment system are: minimal benefits from adopting this assessment; less urgent from government enforcement; cost consumption to meet quality requirement; lack of training programs related to QLASSIC assessment standard; lack of co-operation form customers/client; using other quality assessment systems; and higher responsibilities to quality standard requirement.

	B	*t*	Sig.
Complying the industry policies or regulations	−0.175	−2.019	0.044
To meet customer's demands	0.187	2.183	0.030
Target premium scheme	0.267	9.308	0.000
Target preferential tender eligibility	0.013	0.394	0.694
To match other contractors' actions	0.092	2.782	0.006
To enhance the company's image	0.216	4.560	0.000
Improvement of corporate reputation	0.202	3.843	0.000
Useful marketing or public relations tools	−0.118	−2.402	0.017
Penetration in new markets	0.241	3.132	0.002
Increase competitiveness	0.099	1.425	0.155
R^2	0.972		
Sig.	0.000		

Table IX. Multiple regression on probability to adopt QLASSIC system (external motivation)

	B	*t*	Sig.
Lack of confident on appropriate technical skill	0.033	0.447	0.655
Lack of human resources	0.070	0.832	0.406
Cost consumption to meet quality requirement	−0.255	−3.008	0.003
Higher responsibilities to quality standard requirement	0.146	2.111	0.036
Less urgent from government enforcement	0.288	3.288	0.001
Lack of training programs related to QLASSIC assessment standard	0.233	3.007	0.003
Lack of co-operation from customers/client	0.158	3.297	0.001
Minimal benefits from adopting this assessment	−0.851	−9.686	0.000
Using other quality assessment system/standard	−0.158	−3.324	0.001
R^2	0.371		
Sig.	0.000		

Table X. Multiple regression on probability to adopt QLASSIC system (barrier)

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Conclusion

The basic conclusion drawn from this study is that motivations and barrier factors drive the construction companies; the contractors, to QLASSIC adoption are particularly significant for its real contribution. The adoption of QLASSIC assessment is not significantly affected by the awareness whereas the motivations and barrier factors do, which answered the first (1) objective of this study.

It was discovered that the contractors' perception on QLASSIC adoption are basically due to the significant factors; the internal motivations and barrier. The major influencing factors from the regression analysis on affecting the contractors to adopt this quality approach, QLASSIC assessment, are: external motivation factors; followed by barrier factors; and lastly internal motivation factors. The items from each factors which significantly contributed in influencing the adoption of QLASSIC, were revealed with ranked decreasingly from above discussion. This finding resolved the second (2) objective whereby the variables that influenced the adoption of QLASSIC assessment system were identified.

In addtion, this study proves that some of the fundamental aspects regarding quality, which were used in the ISO 9000 and TQM studies can be adapted into the QLASSIC assessment study model. The factor analysis test; goodness of fit test, was carried out to test the validity of the model adapted from previous researchers such as Prajogo (2010), Singels *et al.* (2001) and Fuentes *et al.* (2000), were proven positive and valid for this model. Those factors that proven significantly contributed toward the QLASSIC adoption could be addressed in future studies with some modification. The significance level of this factor may also be affected by the number of respondents, as the QLASSIC assessment system are still not widely adopted by the key players within the construction industry. The lack of enforcement from the government sector is one of the major reasons affecting the adoption level in the construction industry, where this issue of the reason found from this study in relation toward the adoption of QLASSIC assessment.

Conclusively, this study reveals the true motives behind the adoption of QLASSIC assessment in the construction industry, where this finding significantly contributes to the understanding of contractors' perception on this quality assurance program; the QLASSIC assessment system, for the understanding on quality in the construction industry.

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