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THE RELATIONSHIP BETWEEN MOTIVES AND BENEFITS ON ADOPTING QLASSIC – CIS 7: 2006 IN MALAYSIA CONSTRUCTION INDUSTRY

Abstract: *This paper reviews on the building contractors motivating factors on adopting the newly imposed quality assurance initiative in Malaysia's construction industry. The quality assurance initiative named Quality Assessment System in Construction (QLASSIC) - The Construction Industry Standard (CIS) - CIS 7:2006. It is introduced by the Construction Industry Development Board of Malaysia (CIDB). This QLASSIC system consists of a building construction standard where all the contractors must follow the specification, if adopting this system in their construction project. Literature commonly categorized motivation factor into two types, which are internally and externally. Both types of motivation factors are put into study in related to the benefits on adopting the QLASSIC system. Further analysis will be done to determine the motives and benefits relationship behind the adoption of the QLASSIC system in the construction projects.*

Key words: *quality assurance initiative, construction industry, QLASSIC, motives, benefits*

1. INTRODUCTION

In the early stage, British Standard (BS) 5750 was introduced by BSI Group of United Kingdom as a quality assurance system and this standard was bringing the quality concerns into construction industry ever since after that. Later, ISO 9000 standard was brought into construction industry in the year 1987, there are many construction organizations from United Kingdom and other European countries starting to adopt the ISO 9000 standards since late 1980 (Kam and Tang, 1997).

Aspect of quality in construction product also gives a big impact on the construction industry in Malaysia. Malaysian government introduced ISO 9000 certification in the construction industry in order to raise the consciousness about the quality in the industry among the construction industry players (Tang *et al*., 2003). Enforcement has been made for all G7 contractors to obtain ISO 9000 certification before July, 2009. Those G7 contractors' grade will be dropped if they fail to comply with the certification regulation.

The construction industry on adopting the ISO 9000 system is not as wide as others industries such as manufacturing industry. A great debate has been going on regarding the appropriateness of this system. Seymour and Low (1990) and Shammas-Toma *et al*. (1998) have argued on the construction industry characteristics that would limit the quality management system implementation, example like ISO 9000 series of standards. This is due to the construction industry's

special characteristics that are different from manufacturing and servicing industry.

The construction industry's special characteristics are as (Phenol, 1994; "Quality" 1992):

- *The contract is usually separate in order to design contract and construction contract.*
- *Each construction project is unique in terms of people, equipment and materials at a unique location and under unique weather condition.*
- *Not practicable to disapprove the whole constructed project after completion while attached to purchase's land.*
- *Rejection of a defective part need to taken before the succeeding parts are constructed.*
- *Numbers of parties involved in a project are big which makes the interface and responsibilities of various individual and organizations more complicated.*
- *The organizations structure of a construction company varies depending on the nature of the project. This will affect the communication and coordination between each party.*

However, the issue especially related to quality of building does not comply with workmanship standards and specifications are still occurred in Malaysia's construction industry (CIDB, 2008). Added, construction players always argue on the ISO 9000 implementation in construction industry is difficult and not practical (Leung, 1993). Researcher Yuen (1999) stated from his study that ISO 9000 quality system might not be suitable to work with the construction industry, although it is suitable to be adopted into manufacturing industry. From the result from his research, there are only 19.51% ISO 9000 certified companies strongly agree ISO 9000 is relevant to apply in construction industry. There are 48.78% agreed ISO 9000 is suitable to be applied in construction due to the clauses are applicable. 26.83% slightly agreed and 4.88% are not agreed at all the application suitability of ISO 9000 in construction industry. The reason given are looking into factors, which are documentation benefits from adopting ISO 9000 is not relevant and important to put into actual practice in construction industry, system like Construction Quality Assessment System (CONQUAS) from Singapore is claimed as more suitable to be apply in construction industry.

As a result, the Construction Industry Development Board (CIDB) of Malaysia introduced QLASSIC - Construction Industry Standard (CIS) - CIS 7:2006 which is adapted from CONQUAS Singapore to be suit into Malaysia's construction industry. QLASSIC system consists of a building construction standard where all the contractors must follow the specification, if adopting this system in their construction project. On the other hand, it is used to measure the workmanship quality of a completed building project and benchmarking the contractor's workmanship quality in Malaysia's construction industry (CIS 7, 2006).

2. ISSUE RELATED TO THE NEW QUALITY ASSURANCE APPROACH

Since quality approach such as ISO 9000 standard was introduced in 1987, there are dilemmas about the effectiveness of the standard in the industry. Since then, ISO 9000 becomes one of the important topics in the management journal. From literature, there are researchers Arauz and Suzuki (2004); Naveh and Marcus (2004); Briscoe *et al*. (2005) study on the relationship between the implementation process and benefits from adopting ISO 9000. Lee (1995); Jones *et al*. (1997); Singels *et al*. (2001); Gotzamani and Tsiotras, (2002); Chow-Chua *et al*. (2003); and Williams (2004) who attempt to link the motives for ISO 9000 certification and the benefits.

None of the previous studies have been made on quality assurance approach – QLASSIC standard instead of ISO 9000

standard. The true motives behind the adoption of this QLASSIC system should be put into consideration, where as the motives and effects of ISO 9000 adoption in construction are still been put into research study until today to identify the outcome from ISO 9000 adoption.

The contractors' motives to adopt the QLASSIC system provide a gap of available research study in Malaysia's construction industry. By filling up this gap, this paper seeks and examines the interrelationship between motives and benefits to identify the contractor's perspective towards this newly introduced system in the Malaysia construction industry.

3. THE WAY TOWARDS THE EMPIRICAL STUDY

In order to test the motives and benefit from the contractors to adopt this new approach - the QLASSIC system, a set of questionnaire was designed by adapting previous ISO 9000 quality assurance approach literatures. According to Brown *et al.* (1998), Fuentes *et al.* (2000) and Williams (2004), they stated internal motives are more likely to reflect the organization's intention to improve quality, to develop a quality culture and resource development. Meanwhile external motives, do not lead organizations to the same direction as internal motives. External motives are focusing on fulfilling the customers' demand, enhance the company's images and marketing tools (Carlsson and Carlsson, 1996; Llopis and Tari, 2003; Arauz and Suzuki, 2004).

Base on the theoretical arguments, we posit the applicant internal motives have an influence towards their operational performance while the applicant external motives have an influence toward the competitiveness. Thus, the questionnaire is constructed into two independent variables, which are internal motives and external motives, and two dependent variables, which are operational benefits and competitive benefits by adapting the research framework from Prajogo (2011) and Gotzamani and Tsiotras (2002).

From the review of literature for this study, a research question arises in term what relationship existing between the motives and benefits on adopting the QLASSIC assessment system in construction industry? Two hypotheses were formulated to identify the relationship between the variables. The hypotheses are:

H1 (1): Contractors' internal motives have a positive relationship with operational benefits on adoption of the QLASSIC assessment system.

H1 (2): Contractors' external motives have a positive relationship with competitive benefits on adoption of the QLASSIC assessment system.

4. RESEARCH METHODOLOGY

4.1 Research Scope

The population of this research study is the contractors who registered under Grade 6 and Grade 7 from Malaysia CIDB database. Grade 6 and Grade 7 contractors are chosen as the research population as they are those main contractors who are mainly responsible on the entire project quality. The contractors are asked to be assuming if they are applying this QLASSIC system in their practice to answer the survey, as the actual numbers of the applicant on this system are still very low in numbers. According to CIDB database, there are total of 5786 numbers of contractors. While, stated by Robert & Daryle (1970), a population of 5000 numbers needed sample size of 357 numbers and population of 6000 numbers needed sample size of 361 numbers. Thus, the sample size of this study is decided to be 361 numbers as providing some number of tolerances for rejected questionnaire.

4.2 Research Design

This survey study is conducted by postal questionnaire. There are at most 6% to 16% respondent rates from a postal survey according to literatures. (Dawson & Dickinson, 1988; Jobber & Saunders, 1988; Jobber *et al.*, 1991; Ghoshal & Nohria, 1993; Shipchandler *et al.*, 1994; Wolf, 1994). Resulting from this phenomenon, the sample size of 361 numbers would be merely getting results of 32 numbers to 60 numbers of replied. In order to increase the respondent rate from the respondents, a total 2500 numbers of postal questionnaire were sent out to the respondents. The selection of respondents is using simple random sampling to avoid bias. On the other hand, a reply envelop with attached stamp is provided and a follow-up call is done to each respondent to enhance the respond rate of this study.

4.3 Questionnaire Design

The questionnaire is structured and designed into 5 sections and the details of each section will be described in the Table 1 below.

The items adopted to measure the internal motives factors are:

1. To benchmark quality of project (IM 1)
2. To combat poor quality product (IM 2)
3. To improve workmanship performance (IM 3)
4. Quality Assurance (IM 4)
5. To realize company's strategy for pursuing quality (IM 5)
6. To build foundation for a systematic defect management (IM 6)
7. To provide a foundation for continuous improvement (IM 7)
8. Good start for total quality management initiative (IM 8)
9. Cost reduction (IM 9)

The items adopted to measure the external motives factors are:

1. To comply with industry policies or regulations (EM 1)
2. To target premium scheme (EM 2)
3. Preferential tender eligibility (EM 3)
4. To meet customers' demands (EM 4)
5. To match competitors' actions (EM 5)
6. To enhance the company's image (EM 6)
7. Useful marketing tools (EM 7)

Table 1. Questionnaire Section

Section	Topics
A	Respondent's Details
B	Internal Motives to Adopt QLASSIC Assessment
C	External Motives to Adopt QLASSIC Assessment
D	Operational Benefits
E	Competitive Benefits

The items adopted to measure the dependent variable on operational benefits are:

1. Development of quality culture (OB 1)
2. Higher profit (OB 2)
3. Less rework ad defectives (OB 3)
4. Improvement of final product quality (OB 4)
5. Increase quality awareness among employees (OB 5)

The items adopted to measure the dependent variable on competitive benefits are:

1. Less customer complains (CB 1)
2. Easier penetration in new markets (CB 2)
3. Improvement of corporate reputation (CB 3)
4. Increase competitiveness (CB 4)

Meanwhile, for the scale of the questionnaire, five points Likert scale is been used on this survey questionnaire. A five-point scale is stated to be sufficient and easily understand by the respondent (Brace, 2004). Figure 1 below shows the scale rating and description of: (1) Disagree, (2) Less Agree, (3) Moderate Agree, (4) Agree and (5) Strongly Agree.

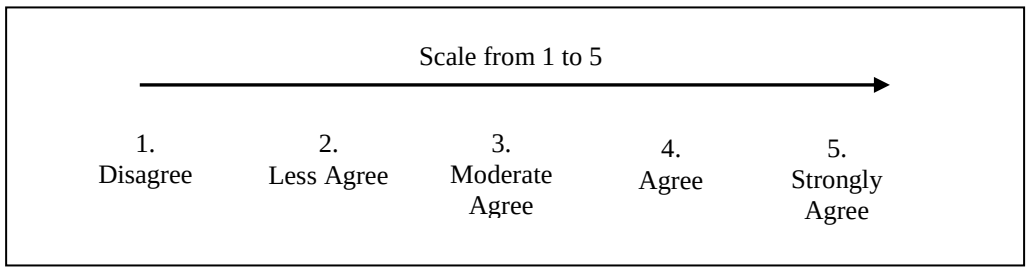

Figure 1. Contractor's Questionnaire Scale Design

4.4 Data Analysis Design

When it comes to data analysis part, the data were analysed by using Statistical Package for the Social Sciences – SPSS. When measuring a proposed concept in a research study, a reliability test must be carried out on a pilot study before the actual study can be done, the measurement mean must be valid and reliable by determining the Cronbach's alpha value (Bryman and Cramer, 1994). The Cronbach's alpha value should be not less than 0.7 for the questionnaire measurement to be valid and reliable (Allan, 2005). During the actual analysis process, correlation coefficient test will be carried out to test the possible relationship between both internal and external motives and benefits. The correlation coefficient Pearson's "*r*" was calculated from the Bivariate correlation analysis test on this study.

Finally, after all the data were analyzed, discussion and conclusion will be come to the end of this paper as a summary.

5. DATA ANALYSIS AND FINDINGS

5.1 Respondents Profile

There are 296 valid and useful responses, 3.1% were account executive, 4.4% were general manager, 5.1% were contract manager, 5.4% were project engineer, 6.4% were admin manager, 11.8% were quantity surveyor, 13.2% were QA/QC manager, 22.6% were director and 28% were project manager. The respondents' profiles are summarized into table 2 below.

Table 2: Respondent Profile

Designation	Frequency	Percentage, %
Account executives	9	3.1
General manager	13	4.4
Contract manager	15	5.1
Project engineer	16	5.4
Admin manager	19	6.4
Quantity surveyor	35	11.8
QA/QC manager	39	13.2
Director	67	22.6
Project manager	83	28.0
Total	296	100

Table 3. Respondents' Contractor Grade

Contractor Grade	Frequency	Percentage, %
6	44	14.9
7	252	85.1
Total	296	100

Table 4. Period of Involvement in Construction Industry

Period of involvement	Frequency	Percentage, %
Less than 2 years	2	0.7
2 to 5 years	38	12.8
6 to 10 years	44	14.9
10 years above	212	71.6
Total	296	100

The respondents' contractor grade for contractor grade 6 is 14.9% and contractor grade 7 are 85.1% respectively from the total of 296 numbers of respondents. Table 3 below shows the frequency of respondents' contractor grade.

While, the respondent's period of involvement in construction industry is summarized into table 4.

5.2 Analysis and Results

Reliability test was performed to check the questionnaire scale consistency. Referring to Hair *et al*. (1998) Cronbach's α coefficient of 0.6 and above and Allan (2005) Cronbach's α coefficient of 0.7 and above is considered acceptable. In following table 5 show the summary of Cronbach's α for each questionnaire construct.

Each item from motives and benefits variables are summarized into correlation table in tables 6 and 7 below. Table 6 show the summary of correlation between internal motives and operational benefits factors. According to Cohen (1988) for the guideline on strength of the variables relationship in table 10 below, there are 8 data points that score "large" strength of variables relation, 21 data points that score "medium" strength of variables relation and 16 data points that score "small" strength of variable relation from the total of 45 correlation data. The highest strength of correlation was IM9 vs. OB2 r = .590 followed by IM3 vs. OB4 r = .584, IM5 vs. OB5 r =.550, IM8 vs. OB1 r = .541, IM7 vs. OB1 r = .540, IM8 vs. OB5 r = .515, IM7 vs. OB5 r =.508 and IM5 vs. OB1 r = .503. For the medium strength of variables relation would be start from IM4 vs. OB4 r = .484 and the lowest strength would be IM1 vs. OB2 r = .121. In summary, a relationship exists between 64.5% from 45 data points from the correlation test.

Table 5. Cronbach αfor Questionnaire Variables

Dimension	No. of items	Cronbach α
Internal motives	9	0.852
External motives	7	0.799
Operational benefits	5	0.717
Competitive benefits	4	0.794

For the correlation between external motives and competitive benefits factors, table 7 below shows the summary of correlation. There are 1 data point which is consider "large" strength of variable relation, 8 data points which consider "medium" strength of variable relation and 19 data points that score "small" strength of variable relation from the total of 28 correlation data. The highest strength of correlation was EM6 vs. CB3 r = .540, followed by 8 "medium" strength variable that score between r = .466 to .300 and the lowest strength score at r =.105. In summary, a relationship exists between 32.1% from 28 data points from the correlation test.

Table 6. Summary of Correlation between Internal Motives vs. Operational Benefits

	IM 1	IM 2	IM 3	IM 4	IM 5	IM 6	IM7	IM 8	IM9
OB 1	**.436 ****	**.376 ****	**.456 ****	**.363 ****	**.503 ****	**.471 ****	**.540 ****	**.541 ****	**.185 ****
OB 2	**.121 ***	**.134 ***	**.266 ****	**.217 ****	**.262 ****	**.278 ****	**.214 ****	**.216 ****	**.590 ****
OB 3	**.131 ***	**.354 ****	**.367 ****	**.323 ****	**.223 ****	**.360 ****	**.329 ****	**.212 ****	**.286 ****
OB 4	**.375 ****	**.363 ****	**.584 ****	**.484 ****	**.361 ****	**.425 ****	**.432 ****	**.352 ****	**.226 ****
OB 5	**.307 ****	**.330 ****	**.381 ****	**.291 ****	**.550 ****	**.434 ****	**.508 ****	**.515 ****	**.263 ****

Note: Significance at: * $p < 0.05$ and **$p < 0.01$

Table 7. Summary of Correlation between External Motives vs. Competitive Benefits

	EM 1	EM 2	EM 3	EM 4	EM 5	EM 6	EM7
CB 1	**.105 ***	**.155 ****	**.209 ****	**.253 ****	**.211 ****	**.420 ****	**.296 ****
CB 2	**.245 ****	**.285 ****	**.403 ****	**.177 ****	**.218 ****	**.392 ****	**.391 ****
CB 3	**.221 ****	**.291 ****	**.300 ****	**.182 ****	**.273 ****	**.540 ****	**.444 ****
CB 4	**.165 ****	**.247 ****	**.292 ****	**.134 ***	**.221 ****	**.466 ****	**.419 ****

Note: Significance at: * $p < 0.05$ and **$p < 0.01$

In order to test both hypotheses, further total scale score correlation analysis was then performed to identify the relationship of the dimensions. Table 8 shows the correlation results of first correlation model. The first model examines the relationship between internal motives and operational benefits of contractors to adopt the QLASSIC assessment system in construction practice.

Table 8. Correlation Results for First Model

		1.	2.
1. Internal Motives	Pearson Correlation Sig. (2-tailed)	1	0.713** .000
2.Operational Benefits	Pearson Correlation Sig. (2-tailed)	0.713** .000	1

Note: Significance at: * $p < 0.05$ and **$p < 0.01$

The relationship between both internal motives and operational benefits variables are (r = 0.713 at $p < 0.01$) suggested the strength of the relationship between both variables are "large" according to Cohen (1988). Both internal motives and operational benefits are positively correlated.

Meanwhile, the second correlation model examines the relationship between both external motives and competitive benefits. Table 9 shows the correlation results of the second model. The correlation value of external motives and competitive benefits are (r = 0.528 at $p < 0.01$) suggested the strength of the relationship between both variables are "large" according to Cohen (1988), where both variables are positively correlated.

Table 9. Correlation Results for Second Model

		1.	2.
1. External Motives	Pearson Correlation Sig. (2-tailed)	1	0.528** .000
2.Competitive Benefits	Pearson Correlation Sig. (2-tailed)	0.528** .000	1

Note: Significance at: * $p < 0.05$ and **$p < 0.01$

Table 10 below shows the guideline on strength of the variables relationship suggested by Cohen (1988):

Table 10. Guideline on Strength of the Variables Relationship

Correlation, r	Strength
r = .10 to .29 OR r = -.10 to -.29	small
r = .30 to .49 OR r = -.30 to -.49	Medium
r = .50 to 1.0 OR r = -.50 to -1.0	large

Source: (Cohen, 1988)

The results in model 1 shows that internal motives have a significantly "large" positive correlation relationship on operational benefits; therefore, H1 (1) is supported. Meanwhile, model 2 is run to test the relationship between external motives and the competitive benefits. The result shows a significantly "large" positive correlation relationship between both variables, thus supporting H1 (2).

6. CONCLUSION

The basic conclusion from this survey shows that the contractors' motives driving them to adopt QLASSIC system in their practice are particularly significant for both beneficial objectives. This study proves that both internal and external motives have influenced the contractors' objectives for seeking the benefits in terms of organizational operational aspect and competitiveness aspect.

The relationship between internal motives and operational benefits are respectively high in correlation which could be concluded that those contractors who focusing on internal motives aspect would be aiming to enhance their organizational and operational improvement. They focus mainly on true quality improvement for their internal operation.

Meanwhile, the relationship between external motives and competitive benefits are respectively high in correlation too. This could be concluded that those contractors who focusing on external motives aspects are aiming to enhance their company image, reducing client complain, fulfilling the client requirement and penetrate to a new quality culture market.

Though, according to this correlation testing result where the relationship between internal motives and operational benefits scores $r = 0.713$ and relationship between external motives and competitive benefits scores $r = 0.528$, we can conclude that the reason contractors adopting QLASSIC system are tended to aim and gain benefits from firm operational part more than external benefits in terms of competitiveness.

However, the contractors' motives in adopting the QLASSIC system are revealed, and the results provide the understanding on the relationship between motives and benefits on adopting QLASSIC system in construction practice, there are still limitations on this study. Others factors that may contribute in influence the contractors' motives on adopting the QLASSIC system could be adopted into the future study; organization financial status, project cost, regulation requirement and, etc. Further research that investigates this relationship

should add more values to the current knowledge on this new quality assurance initiative in Malaysia's construction industry.

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