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Malaysia, Singapore and Hong Kong approach towards quality assurance initiative in the building construction industry; the three major countries which have the small land for fast development progress

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ABSTRACT

This paper reviews on the potential impacts of quality assurance approaches on the construction industry. Previously, researchers discovered that better product quality, not the price of the product is the key point in sustaining competition in the construction market. Hence to this fact, many construction organizations are beginning to invest relentless amounts of efforts and attention into the quality of their products as the product quality itself is the winning key in obtaining the competitive edge over local competitors in the market to ensure the sustainability of their own businesses. Quality has long been identified as one of the most basic requirements of clients as the necessity for product quality is undeniable and understandable. This is due to the fact that such buildings might be one of the biggest investments in the lives of most clients. Besides that, with the information regarding construction industry readily available for the public, potential clients are more educated and well-informed. To cater the different needs of clients, contractors have to be creative and innovative, to try their best to perform better. They must not only aim to deliver projects on time but also projects of excellent quality and price.

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Introduction

Although the quality of products is often stressed, massive attention was paid onto improving this aspect of products in the early 1970s. In 1976, British Standards BS5750 was introduced to serve as a quality assurance initiative and as a guideline for products in the construction industry. In 1987, the ISO 9000 standard was introduced to ensure that the quality of the output of a company is well maintained.

Recently, the construction industry in most countries is associated with poor quality. (Tam and Tong, 1996). Construction is a labour intensive industry. The lack of skilled labour in this industry and poor management resulted in poor workmanship in construction projects. Besides that, potential clients today are well informed of information from the construction industry, thus becoming increasingly demanding in terms of quality towards their potential purchases as these clients want to get what they paid for in the first place. This triggers a shift of attention from the costs and prices to the quality assurance in work processes. To survive in the construction industry, the industry players must deliver good quality work which is worth the value of money of the client by constantly improving and upgrading themselves (Kam and Tang, 1997).

The meaning of quality in the construction industry is determined by the ever-changing needs of a client. Quality movement of the product are not initiated by the building contractors but in fact is mainly tailored to customer's expectation (Tam et al., 2000). Many countries had introduced quality assurance assessments to ensure the quality of building products and ultimately, the construction industry,. This paper will review the quality assurance approaches developed by three countries to improve the quality of building products in their respective construction industries. The three countries that are reviewed are Singapore, Hong Kong and Malaysia.

The Construction Industry Development Board (CIDB) of Singapore had taken several initiatives in promoting quality building products in the past two decades. CIDB of Singapore first introduced Construction Quality Assessment System (CONQUAS) in 1989 for public building and Building Quality Assessment Service (BQAS) in 1991 for private sectors. In 1993, CIDB of Singapore introduced Civil engineering Construction Quality Assessment System (CE CONQUAS) based on CONQUAS to measure the quality of contractors and benchmarking the value of quality into a more standard form for better reference and understanding.

Due to the constant discovery of poor building construction in Hong Kong, the Hong Kong Housing Authority (HKHA) had adopted Performance Assessment Scoring System (PASS) in 1990 based on Singapore's CONQUAS of 1989. Maintenance Assessment Scoring System (MASS) was also developed to evaluate and maintain the quality of buildings. Over in Malaysia, CIDB of Malaysia had adopted Singapore's CONQUAS and created their own quality assessment system known as Quality Assessment System In Construction (QLASSIC) to set benchmarks for the quality performance of contractors in construction works. Further elaborations on the quality assurance approaches undertaken by Singapore, Hong Kong and Malaysia is available below

Customer Perspective

The main business strategy is always to remain the customer's proposition (Chan, 2009). Rather than viewing quality assurance internally, we should see from the customer's perspective which is viewing quality assurance externally as suggested by Garvin, (1984).

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To sustain businesses in a competitive market such as the construction market, contractors have to acknowledge that customer satisfaction is the prime factor to success. There are three aspects of project performance which potential clients are concerned of; time, cost and quality. In order to cater and satisfy the customers with the product they purchase, the building constructed must have the minimum satisfaction level in term of build quality (Ofori and Gu, 2001). Clients are increasingly aware of the importance of quality in building products. Therefore, construction companies are often requested to prove their commitment to delivering quality building products before being awarded contracts. In large-scaled projects awarded by large developing firms, there is usually a higher demand for quality as the reputations of these developers come into play.

The importance of the implementation of quality assessment systems in the construction industry was highlighted by the ever-increasing demand for quality building products by clients. Therefore, governmental bodies and authorities of the construction industry should not treat the performance-related data of contractors confidentially. Instead, the contractor's performance score should be open for review as a guide line for the customer perspective on new building projects (HKHA, 2003).

A framework proposed by Iacobucci et al. (1994) reviewed the relationship between quality and customer satisfaction as shown in Figure 1 below.

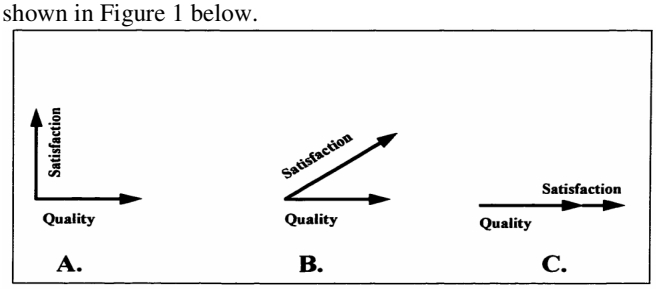

Figure 1: The Possible Relationship between Quality and Customer Satisfaction

Source: (Iacobucci et al., 1994)

According to Figure 1 above, the quality and client satisfaction can be viewed in three different ways. As client satisfaction and quality is interrelated, client satisfaction and quality is distinct according to the theoretical framework shown above. Transcendental logic says that the better the product quality and services are, the higher the satisfaction level is.

Quality Assurance Approach

Governments of most countries today had implemented approaches to stimulate the improvement and sustainability of construction quality. In Singapore, various measures were taken by the government to enhance the quality standards of Singaporean construction industry. Construction Industry Development Board (CIDB) of Singapore played an important role in raising the bar of quality standards level in the construction industry. To promote and enhance the quality construction of the country, CIDB developed Construction Quality Assessment System (CONQUAS) in 1989. Quality performance of the building contractor of a public building is evaluated using the CONQUAS system (Low et al., 1999).

In 1991, Building Quality Assessment Service (BQAS) was developed by CIDB of Singapore based on the widely successful CONQUAS. The function of BQAS was to evaluate construction projects of the private sector. Since the launch of BQAS in 1991, more than 300 building projects of the private sector were successfully assessed. In 1993, all private projects required BQAS assessment which was built on land and sold by the Urban Redevelopment Authority and Housing and Development Board of Singapore (low et al., 1999).

In 1990, CONQUAS premium scheme was introduced by CIDB of Singapore. The purpose of this premium scheme was to serve as a catalyst for contractors to improve or at least maintain the quality standards of their construction works by providing an incentive for those with good track records. A total of 65 CONQUAS points was needed for contractors to gain project tendering advantage over competitors. A premium of 0.2 percent would be given for every point to contractors with CONQUAS score of 65, with a premium totaling up to a maximum of 5 percent or S$5 million. This scheme proved to be successful as contractors who constantly delivered good quality buildings were rewarded for their sustained efforts. The number of contractors in the premium list has increased while the average CONQUAS scores have improve as well (Kam and Tang, 1997).

As CONQUAS and BQAS stimulated and enhanced the improvement of project quality, a new quality assessment system known as Civil engineering Construction Quality Assessment System (CE CONQUAS) was developed in 1993 based on the successful CONQUAS. The function of CE CONQUAS was to evaluate civil engineering works.

Besides that, CIDB of Singapore had introduced ISO 9000 quality management standard for the construction industry in 1991. The aim of ISO 9000 was to further enhance and boost the quality standards of construction industry. However, some organizations claimed that ISO 9000 quality management standard gives rise in adverse effects to the organizational systems in terms of increased amount of paper work and unnecessary cost. But Low and Goh (1994) found that contractors who are certified to ISO 9000 standards seem to have achieved higher CONQUAS scores than non certified contractors firms, which means ISO 9000 serve a directly proportional relationship towards the level of quality standard in construction industry.

As announced on 3 June 1994, all G6 to G8 contractors and consultants registered under CIDB in engineering, architectural and quantity surveying works with a project tendering capacity between S$30 million and S$50 million must be certified ISO 9000 in five years time which was by July 1999. During tendering for public works, those organizations which have CIDB-SISIR ISO 9000 certificates can enjoy a premium of 0.5 percent or S$0.5M ceiling (CIDB Newsletter, 1994).

In Hong Kong, the Hong Kong Housing Authority (HKHA) was also rocked by quality assurance issues in the construction industry. In 1987, HKHA encourage two of the biggest precast spun concrete pile company to adopt the quality assurance scheme for their product, by understanding the importance and benefits of quality assurance management system towards the industry (McNicholl, 1989).

HKHA require that all contractors should obtain ISO 9000 certification by 31 March 1993 by preparing their own list of building contractors in April 1990 (Kam and Tang, 1997). HKHA had adopted Performance Assessment Scoring System (PASS) based on CONQUAS of Singapore and Maintenance Assessment Scoring System (MASS) to monitor, record and assess the performance of contractors and maintenance works. PASS was used in the entire construction contract period to evaluate the performance of contractors and measure the level of quality of a building. This assessment is mainly used to guide

contractors to keep track their build quality and improve their workmanship performance (PASS manual, 1994).

Similar to PASS, MASS is used to measure the maintenance work of the building which including re-roofing, asbestos abatement, toilet renovation, spalling repair, redecoration, plumbing work, floor re-surface as well as lift maintenance work. (MASS manual, 1992). According to Hong Kong's PASS scoring system, there is no premium scheme incentive to the contractors as seen in Singapore's CONQUAS scoring system. PASS merely offers better tendering opportunities if the contractors achieved higher quality standard according to PASS assessment scores. HKHA will arrange those public project contractor's into group of composite target quality score (CTQS) and composite lower score threshold (CLST) respectively with upper 75 percent position and lower 25 percent position.

This type of grouping will encourage those lower 25 percent position contractors to keep track with their quality performance and improve their product and management quality. On the other hand, contractors must have ISO9000 certification, in order to remain in the HKHA list of contractors for the opportunities in public projects for the purpose of promoting quality development in Hong Kong construction industry (Kam and Tang, 1997).

Quality in construction products also gives a big impact towards the construction industry in Malaysia. The Malaysian government introduced ISO 9000 certification in the construction industry in order to raise the consciousness toward the quality in the industry among the construction industry players (Tang, Ogunlana and Stephen, 2003). In 2001, Quality Assessment System In Construction (QLASSIC) was introduced by CIDB of Malaysia. QLASSIC is used to measure the workmanship quality of a completed building project. There are three main components: structural, architectural and external works will be measured according to QLASSIC assessment (CIS 7, 2006). The results from the QLASSIC score can be an indicator to a building quality as the QLASSIC assessment is directly used to measure the workmanship quality of completed projects (Chan, 2009).

According to QLASSIC from Malaysia's CIDB database, average QLASSIC score by the existing projects which hit score of 60 in the year of 2006. CIDB Malaysia proposed the QLASSIC score for building project will be improved to 70 at the end of the second phase and eventually hit score of 80 in the year 2015 (CIDB, 2008c).

Eventually, the QLASSIC assessment construction projects in Malaysia still very low in numbers. The graph below shows the number of QLASSIC assessment construction projects towards non QLASSIC assessment construction projects in Malaysia. The source of the data is obtained from "Buletin Statistik Pembinaan Suku Tahun - CIDB Malaysia" (Buletin Statistik Pembinaan Suku Tahun, 2008-2011) and QLASSIC online portal (eQlassic, 2011).

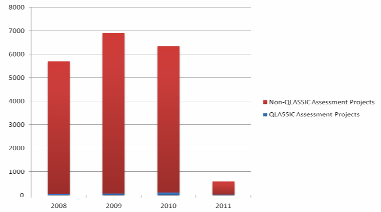

Figure 2: Numbers of QLASSIC Assessment Projects and Non-QLASSIC Assessment Projects
Source: (eQlassic, 2011)

From the Figure 2 above, the chart shows the total number of construction projects carried out in Malaysia from year 2008 to 2011. QLASSIC assessment projects are indicated in blue and non-QLASSIC assessment projects are indicated in brown. As we can see from the graph, QLASSIC assessment projects serve a very small percentage towards the total construction projects carried out in Malaysia.

According to the table above, in year 2008 QLASSIC assessment projects were 45 in numbers and non-QLASSIC assessment projects had 5648 numbers, which means there were only 0.79% of QLASSIC assessment projects from the total number of projects in Malaysia. During year of 2009, the percentage of QLASSIC assessment projects was 1.14% from the total numbers of projects in Malaysia follow by 1.84% in year 2010 and 5.26% in year 2011 (from January to March) respectively.

The average percentage (2008 – 2011; March) of QLASSIC assessment projects in Malaysia is not more than 2.3% of the total annual projects. QLASSIC assessment should be introduced to the contractors in the Malaysian construction industry, for benchmarking the building and workmanship quality of the contractors on the remaining 97.7% projects. This is a great opportunity for the contractors to maintain and prove their workmanship quality and convince the clients for their future business opportunities approach.

The Malaysian government should increase the number of participating contractors which involve the QLASSIC assessment in the construction projects. They can implement several premium scheme and incentives such as Singapore and Hong Kong to urge contractors to perform better in the construction process to maintain the product quality in Malaysia is up to a satisfaction standard or more. On the other hand, mandatory approach on this QLASSIC assessment can be applied toward Malaysia's public project as well to stimulate the quality approach in the construction industry in Malaysia.

Conclusion

In conclusion, the introduction of quality assurance approach in the construction industry serves a very big impact towards the construction industry players. The quality assurance approach contributes towards motivating the industry key players especially the contractors to deliver a good quality building for sustaining the client's satisfaction. By maintaining the quality standards, reduction of rework and additional repair cost will be gradually reduced while ensuring a sustainable development in the industry.

Malaysia CIDB could adapt the incentive methods from Singapore and Hong Kong such as premium scheme and tendering opportunities and apply those to local contractors to improve the implementation of QLASSIC system in the construction industry and to boost up the quality standards in this industry.

The implementation of quality assurance approach is important, but the participation of the key player towards the approach is vital. The level of acceptance on participating in the quality assurance approach will tend to make the traditional industry culture move towards quality culture which looks forward to total quality assurance by delivering good quality products and services.

Although, quality assurance system implementation will enhanced the organization's image, provide better procedure in organization operations, increase competitiveness among the players and enhanced productivity and quality, the industry

players still need to see successful models before adopting the new system in their organizations.

Time is needed to improve the level of acceptance toward the quality assurance system approach in the construction industry. The government in each countries discussed believe that gradual improvement of the quality of product in the building construction industry can be achieved by the introduction of the quality assurance approach.

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Table 1: Quality Management System in Singapore and Hong Kong

Quality management system in Singapore and Hong Kong		
Quality Management System	Singapore	Hong Kong
Quality assessment system		
Public building	CONQUAS	PASS and MASS (HKHA)
Private building	BQAS	Nil
Civil engineering works	CE CONQUAS	Nil
ISO 9000 certification required of		
Consultants	Jul-99	April 1996 (WB)
Contractors	Jul-99	October 1996 (WB)
Financial assistance scheme	LETAS	ISF
Recognized certification body	CIDB-SISIR	HKQAA and others
Incentive	Premium scheme tender advantage for all public works.	Preferential tender eligibility for public housing projects.

Source: (Kam and Tang, 1997)

Table 2: Numbers of QLASSIC Assessment Projects and Non-QLASSIC Assessment Projects

	Total no. of Projects	non-QLASSIC Assessment Projects	QLASSIC Assessment Projects	% of QLASSIC Assessment Projects Towards Total Annual Projects
2008	5693	5648	45	0.79%
2009	6898	6819	79	1.14%
2010	6344	6227	117	1.84%
2011 (Jan to Mar)	589	558	31	5.26%

Source: (eQlassic, 2011)