

IMPROVEMENT TO CONSTRUCTOR QUALITY DELIVERY BY QCLASSIC
INTERGRATION INTO ISO 9001 WORK PROCESS

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DEDICATION

This report dedicated to my lovely mother, who taught me that the best kind of knowledge to have is that which learned for its own sake. It is also dedicated to my sisters and brother, who taught me that even the largest task it could accomplish if it is done one step at a time. To my beloved friends, thank you for always trust and keep support by your inspired spirit for me to keep calm and keep going with my dreams.

‘Nothing worst come easy’.

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ABSTRACT

Quality is the essential issues in construction industries. The quality of end product of construction will repo the quality of the responsible parties who handle the process of the construction works. The focus will be on the developers and contractors who implemented quality monitoring and control on their management system, planning system, work process, material selection, workers selection and others towards a quality goal. Quality Assessment System in Construction (QLASSIC) was introduced by CIDB to assess the quality of construction works. Whilst, ISO 9001 is the Quality Management System (QMS) which provides guideline towards quality achievement in an organisation. This study aims to identify the improvement of constructor quality delivery by the potential integration between QLASSIC and ISO 9000 work process. Challenges and barriers to implementing the QLASSIC system and the advantages benefits and profits from QLASSIC adaptation are investigated. Furthermore, strategies of QLASSIC implementation towards corporate image and profit to developers and contractors companies also have been interviewed. This research utilised mixed methodology which questionnaire and semi-structured interview were applied in data collection. The analysis used descriptive statistical analysis and the significant correlation factor with the help of SPSS tool. The semi-structured interview was analysed using content analysis method which portrays the comparison of opinion in a table form. This study concluded the strategies to integrate QLASSIC within ISO 9001 work process whereby the corporate image improvement agreed will increase profits thus balance the challenges and barriers in the implementation of QLASSIC for the quality building assessment.

ABSTRAK

Kualiti adalah isu yang penting di dalam industri pembinaan. Kualiti produk bergantung kepada kualiti pihak yang bertanggungjawab menggalas tugas menggendalikan proses kerja-kerja pembinaan. Tumpuan ditekankan kepada pemaju dan kontraktor yang melaksanakan kawalan dan pemantauan kualiti dalam sistem pengurusan, sistem perancangan, proses kerja, pemilihan bahan, pemilihan pekerja dan lain-lain ke arah mencapai tahap kualiti yang disasarkan. Sistem Penilaian Kualiti dalam Pembinaan (QLASSIC) diperkenalkan oleh CIDB untuk menilai kualiti di dalam kerja-kerja pembinaan. Sementara, ISO 9001 adalah Sistem Pengurusan Kualiti (QMS) yang menyediakan garis panduan ke arah mencapai kualiti di dalam sesebuah organisasi. Kajian ini bertujuan untuk mengenalpasti peningkatan kualiti pembinaan yang diberikan oleh pemaju dan kontraktor dengan potensi penyepaduan antara proses kerja QLASSIC dan ISO 9000. Kajian dijalankan terhadap cabaran dan halangan untuk melaksanakan sistem QLASSIC, serta kelebihan, faedah dan keuntungan daripada adaptasi QLASSIC. Selain itu, strategi pelaksanaan QLASSIC terhadap imej korporat dan keuntungan kepada syarikat pemaju dan kontraktor juga di selidik secara menemuramah responden yang terlibat dan berkecenderungan di dalam pengurusan kualiti. Kajian ini menggunakan kaedah metodologi campuran iaitu melalui soal selidik dan wawancara separa berstruktur bagi tujuan pengumpulan data. Bagi tujuan menganalisa data, analisis statistik diskriptif dan '*correlation coefficient*' Analisis data ini dilakukan dengan bantuan perisian IBM SPSS. Temubual separa struktur dianalisis menggunakan kaedah analisis kandungan yang mengilustrasikan perbandingan pendapat responden di dalam bentuk jadual. Kajian ini mencadangkan strategi untuk mengintegrasikan QLASSIC dalam proses kerja ISO 9001 bagi tujuan peningkatan imej korporat serta meningkatkan keuntungan syarikat. Dengan itu, ianya dapat mengimbangi cabaran dan halangan dalam pelaksanaan QLASSIC untuk penilaian kualiti bangunan.

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LIST OF ABBREVIATIONS

QLASSIC	Quality Assessment System in Construction
ISO	International Organization for Standardization
QMS	Quality Management System
CIS	Construction Industry Standard
CIDB	Construction Industry Development Board Malaysia
PDCA	Plan Do Check Act
RD	Respondent Developer

LIST OF SYMBOLS

x	-	Mean value
$\sum xi$	-	Total of all score in set
N	-	Number of the score in a set

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CHAPTER 1

INTRODUCTION

1.0 Introduction

Time, cost and quality are the three essential vital elements to determine the success of the construction project. The project team needs to ensure, and well manage the three key elements to achieve the target for the project to complete on time as scheduled, under the budget as per estimation made and with satisfied quality as mentioned in the contract. Time, cost and quality are always synchronising to one and another. To achieve good quality, it may need proper time management for the works to deliver smooth and acquire enough budget for good quality of materials, thus enough workers to get the best quality of workmanship. Quality must be developed from the planning stage of construction. Several quality systems have enforced by CIDB Malaysia for best quality and ensuring deliverable in the construction project.

1.1 Research Background

Quality is commons issues in the construction project. Quality issues are not just arising in the construction phase. However, it started from the planning phase. Quality deliver at every phase are essential to determine the success of the project. Quality at every phase is continuing and related to one another until the completion and handing over the project. Qualities initiatives of a project also may affect the cycle

cost of the project (Newton, 1999). It may cause the project life cycle cost higher and overestimated cost may occur due to the poor quality of the project from the beginning until the end.

There are several types of Quality Management System (QMS). The most relevant and appropriate QMS in construction industries are ISO 9001 standard and QLASSIC System. Both of the systems are the most implemented system in this field. However, several constructors refused to implement the QMS. According to the research by Farah (2013), the reason for the constructors refused to implement the system as listed below:

- (I) Less knowledge to implement the system
- (II) The top management did not interest with the system
- (III) Lack of staff to assess the quality works
- (IV) Bad reputation to the company if they gain lower score than CIDB requirements.
- (V) Less competence personnel to handle the system
- (VI) Less care of quality

This study investigated the advantages benefit that obtained from developers and the contractors who have implemented QLASSIC system and ISO 9001 into their project, to overcome the situation of refusal implement the QMS.

1.2 Problem Statement

Quality is the main concerns among the property buyer (Vijenthi, 2016). To somebody who spends out their tremendous amount of money for something,

they always need and hopes for a good quality returns on the things they bought. There is nobody wants to spend something for nothing.

Even though CIDB had introduced the Quality Assessment System in Construction (QLASSIC), there is only 3 per cent of the project that implemented the systems (CIDB, 2017). The statement from CIDB shows that there are only several contractors and developers who have the knowledge and practically implement the quality systems in their project. Another 97 per cent of the construction project in our country do not dare to take the challenge to commit with quality control and improvement in their project. Refuse to take the challenge may cause the quality of the end products are not guaranteed. The purchases of building property may not 100 percents warranty that with suitable material and quality.

QLASSIC was proposed by CIDB to be compulsory in every construction project in *Rancangan Malaysia Ke-11(RMK-11)* in years 2020 (Edge Financial Daily,2014). Since the record of acceptance to use QLASSIC system in building construction project, it is an argument why it is not preamble by developers and contractor, while in virtue of construction project it helps to increase building finishes quality and performance. Therefore, this study raises the following research questions.

1.3 Research Questions

The research questions of this study are listed below:

1) Why is QLASSIC System low accepted in Construction Project?

- What are the challenges to implementing the QLASSIC system?
- What are the barriers to implement the QLASSIC system?

2) Are the QLASSIC Systems contributing benefits and advantages to the Developers and Contractors?

- What are the advantages of QLASSIC adaptation in Construction Projects?
- What is the benefits of QLASSIC system implementation to Developers and Contractors?

3) How will the QLASSIC implementation give profits and enhance the good image to the Developers and Contractors?

- What are the strategies with the implementation of QLASSIC Systems that will give a good corporate image and profit to Developers and Contractors?

1.4 Aims and Objectives Study

This study aims to explore and investigate current QLASSIC system and ISO 9001 implementation in building projects. Thus, at the same time to determine the importance of its practices in given certain advantages, profits, and benefits to developer and contractors.

The objective of this research had been retrieved from the problem statement stated before. The objectives are listed below:

- i) to identify the challenges and barriers to implementing the QLASSIC system.
- ii) to investigate the advantages, benefits and profits from the importance of QLASSIC adaptation to the developers and contractors.
- iii) to proposed strategies of QLASSIC integration into the ISO 9001 implementation towards corporate image and profit to developers and contractors companies.

1.5 Scope of Works

This research scope is focused on the developers and contractors that later called as constructors in Klang Valley who practices the ISO 9001 and adopt QLASSIC system. The respective project that is used in the investigation must suit the criteria of the ISO 9001 and QLASSIC system in their construction project.

1.6 Significant of the Study

The significant of the study is to highlight the challenges and barriers of QLASSIC implementation in building construction project. The outcome of challenges and barrier is expected to realise what are the hardest barriers and challenges that lead to a reluctance of implementation of QMS in the scenario of practising QMS system in constructor companies. Thus, later it may encourage in implementing the QLASSIC system. It will reduce negative perceptions that scores lower than the QLASSIC standard might affect the constructor's reputation, and the saleability of their project will be decreased. On the other hand, the user may focus on constructor's that have achieved higher QLASSIC score in their construction projects. This is proof that the application of the QMS system can increase the quality of construction projects.

Secondly, the significance of the study is to portray the advantages, benefits and profits to implement QLASSIC in building construction project. For example, MAH SING Group and I&P Group gain the benefits from the awards that they received on QLASSIC Day by CIDB on 21st August 2017 (CIDB, 2017). With that award, they carry their good names and high reputation based on the quality of building construction. The awards proved that they have delivered a good quality of the project and enhance their marketability and saleability.

Thirdly, this study proposed strategies of QLASSIC implementation towards corporate image and profit to developers and contractors companies. The corporate image is essential for project exposure and project marketability. If the corporate image is low, the reputation and credibility also become low. This also works vice versa. As an example, the construction company such as Sunway Construction Group Berhad had won many awards since they established. They also won the QLASSIC awards in the year 2015 (Sunway Report, 2016). The achievements gave them high reputation and show that they have the best quality development. The reputation approached high marketability, saleability and profitability.

1.7 Research Methodology

A methodology is a process which is closely related to data research questions. The research methodology needs to be designed and implemented correctly and comprehensively to ensure data which have collected are from facts that are dependable, possible, reliable and must be according to the objective of the study (Denzin and Lincoln, 1994). Thereby, the methodology of the research is the most important key to make the research successful.

1.7.1 The Research Steps

First Step: Initial Study and Development Issues

The first stage was initiated by conducting a literature review to obtain written materials related to the subjects studied. Data on research resources are derived from

books, journals, internet sources, previous theses, local newspaper clippings as well as articles. The purpose of this stage is to determine the following:

- a) To determine the issues
- b) To determine the research title
- c) To determine the objectives
- d) To determine the research scope

Second Steps: Collection Data

The questionnaire is used for data collection that is needed for objective 1 and objective 2, while for objective three the data collection is proceeded by using the semi-structured interview. The questionnaire is designed to gain information on the challenges and barriers to implementing QLASSIC systems. It is also to gain information on the advantages, benefits and profits from the adaptations of QLASSIC construction development. The semi-structured interview is focused on the strategies of QLASSIC integration into ISO 9001 implementation towards corporate image and profit to constructors. In a big screen, mix method has been used to achieve these study objectives. The detailed explanation will be in Chapter 3.

Third Steps: Analysis Data

Data analysis was conducted to identify which data can be used in this study to fulfil the research objectives. The overview of the developer's perceptions on the application of QLASSIC system was actualised from the questionnaires. Among the components that had analysed are their views on the benefits and advantages of the implementations of the QLASSIC System, and the barriers and challenges which was slightly different from the data gained in the literature review. The analysis data method that is used for the questionnaire is mean analysis, standard deviation and also the correlation of significant to identify the significance of each variable. Besides, the third objective used the semi-structured interview to obtain data. The method that was

REFERENCES

- 9000Store (2018). What is ISO 9000?. ISO 9000 Series of Quality Standards. <https://the9000store.com/>
- 9001Academy.(2016) Clause-by-clause explanation of ISO 9001:2015. Advisera Expert Solutions Ltd. United Kingdom
- Asim, M., Zaman, S., Zarif, T. (2013) Implementation of Total Quality Management in Construction Industry: A Pakistani Perspective. *Journal of Management and Social Sciences*, 9(1), pp 4-39.
- Chai Yee Hoong (2014, November 21) CIDB seeks mandatory Qlassic by 2020. *The Edge Financial Daily. The Edge Markets*. <http://www.theedgemarkets.com/article/cidb-seeks-mandatory-qlassic-2020>
- CIDB (2013b), Impact Study on the Implementation of Quality Assessment System in Construction (QLASSIC) for building construction work. Malaysia
- CIDB Malaysia. (2017). Taking Malaysian Construction to New Levels. *Height*, Volume 1
- CIDB. (2014) *Standard Industry Pembinaan CIS 7:2014*. Construction Industry Development Board Malaysia. Perpustakaan Negara Malaysia Data Pengkatalogan-dalam-Penerbitan
- CIDB. (2014) The way forward in Construction Industry, *The article of QLASSIC: CIDB Malaysia*.
- Construction Industry Development Board Malaysia (CIDB) (2017). QLASSIC Process Flow. Official Portal Of Construction Industry Development Board (CIDB) <http://www.cidb.gov.my/index.php/en/aliran-proses-qlassic>
- Creswell, J., & Plano Clark, V. (2007) *Designing and Conducting Mixed Methods Research*. Thousand Oaks, CA: Sage
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (1994). *Handbook of qualitative research*. Thousand Oaks, CA, US: Sage Publications, Inc.
- Dr. Peter Hatto. (2010) *Standards and Standardization Handbook*. European Commission

- Emily Hill (2017). *Clause of ISO 9001:2015*. Governance, Risk and Compliance Blog. <https://quality.eqms.co.uk/>. England
- Farrah Rina (2013) *Challenges of Quality Assessment System (QLASSIC) In Construction Industry In Malaysia*. M.Sc Dissertation, Universiti Teknologi Malaysia, Skudai.
- Frederick L. Coolidge (2006) *Statistical Parameters Measures of Central General vocabulary for Tendency and Variation* (Chapter 3) Pg [67:87]
- International Organization for Standardization (ISO). (2015) *Moving from ISO 9001:2008 to ISO 9001:2015*, Switzerland.
- ISO (2015). ISO 9001:2015, *How to use it*. International Organization for Standardization. iso.org. Geneva Switzerland.
- ISO 19011:2018 (2018). ISO 19011:2018 Guidelines for auditing management systems. International Organization for Standardization. <https://www.iso.org/standard/70017.html>
- ISO/IEC Guide 2:2004, 1.4] ISO/ IEC Guide 2. Standardization and related activities
L.A. Newton, A.J. Christian (1999) Determining The Impact of Quality Upon Life Cycle Costs. National Research Council Canada 1999
- 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
- Luc Marivoet. (2018) Pauwels Consulting. Differences between ISO 9001:2015 and ISO 9001:2008. <https://www.pauwelsconsulting.com/blog/iso-9001-2015/>
- Mahajan Ganesh S. (2016) Poor quality in building projects. International Journal Of Engineering Sciences & Research Technology. Maharashtra, India
- Master Builders. (2006) Quality Assessment System In Construction QLASSIC
- Minter E, Michaud M.(2003) Using Graphics to Report.Evaluation Results. University of Wisconsin. Cooperative Extension. 2003. Available at. http://learningstore.uwex.edu/pdf/G3658-13.PDF*
- Mukhtar Che Ali. (2014) Exploring The Potential Of Integration Quality Assessment System In Construction (Qlassic) With Iso 9001 Quality Management System (Qms). International Journal for Quality Research

Pheng L. S., & Yeo, H. K. (1998). A construction quality costs quantifying system for the building industry — *International Journal of Quality & Reliability Management*, 15 (3), 329-349.

Sunway Berhad Annual Report. (2016). *Today, Tomorrow and Beyond*. Malaysia: Sunway Berhad.

Vijenthi Nair, (2016, July 21) Qlassic case of setting high standards. *Metro News.The Stars Online*. <https://www.thestar.com.my/metro/community/>