

LANDSCAPE WORKMANSHIP QUALITY THROUGH QUALITY ASSESSMENT SYSTEM: WHY NON-COMPLIANCE CONTINUED?

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ABSTRACT

In 2007, the QLASSIC was introduced to assess the quality in projects workmanship which included landscaping works and due to this, many elements of non-compliance were recorded all round. The purpose of the paper is to discuss the possibility of why non-compliance in the QLASSIC assessments continued, which had-opened up several subjects' worth re-examining. A combination of mixed qualitative and quantitative research methods were employed. Critical literature review in revisiting the landscape workmanship's quality definition and construct was conducted by using the Atlas.Ti software. Meanwhile, QLASSIC data was obtained from the on-site certified third party quality assessor over a period of nine years, which began from 2007 until 2015. The findings suggested that problems of workmanship quality in landscape architecture works are quite significant. The tip of the iceberg tends to replicate that there is absence of recognised landscape workmanship assessment standards and best practices regarding landscape workmanship quality. Strategically, certification for landscape quality that encompasses the elements and assessment method is necessary as a way forward. Subsequently, it is also vital that the industry at large delivers a higher quality of physical landscape towards environmental sustainability. The construction workmanship quality should be measured through its very basic external work s elements in the construction industry through QLASSIC. Furthermore, this article provides insight on the Malaysian workmanship quality in landscape works of public construction projects for over nine years. It also pinpoints the gap in landscape workmanship quality that must be seriously considered for future projects.

Keywords: Construction workmanship, Landscape Construction, Landscape Workmanship Quality, QLASSIC

1. INTRODUCTION

The quality of landscape architecture in the Malaysian construction industry has always been a subject of debate based on its tangible element (e.g: public art) more so than its intangible element (e.g: genus locii). In addition, studies that ascertain the quality of landscape construction workmanship are limited (CIDB, 2016). The Quality Assessment System for Building Construction (QLASSIC) was introduced in the Malaysian construction industry to meet the assessment of workmanship quality for construction projects. The findings that emerged from the audit support showed that the quality of landscape architecture quality was 70% poor (CIDB, 2016). The questions that emerged from this observation are; (i) what are the elements of the landscape in QLASSIC assessments that reflects the level of seriousness regarding the poor quality of landscape architecture works and (ii) what other dimension of landscape quality could represent landscape quality worth re-examining for landscape quality assessment idea to be more precise.

This may entail nuance which establishes a unique ground in the theoretical aspect of landscape construction workmanship quality that leads to landscape physical quality, although in practice, it is absent in QLASSIC. Later, discussions will highlight the contrasts between landscape physical quality and workmanship quality. Then, several dimensions were ascertained which has been dimmed in landscape physical quality, an idea worth caring about that may be absent in QLASSIC. Finally, it is suggested that landscape architecture in Malaysia is in need of its own landscape assessment reference framework for the construction industry.

2. QUALITY IN THE CONSTRUCTION INDUSTRY

The construction industry is market driven which means the provider of service and product must meet the expectations of its customer (Bamgbade et al, 2017). The concept of quality means the provider must adhere to service or product purpose of the customer accordingly, thus providing the best quality to distinguish its existence in the marketplace as a mark of performance (Harvey, 1998). Smith (1993) defined quality as 'the goodness or excellence of any product, process, structure, or other things that an organisation consists or creates. It is assessed against standards of merit for such things and against the interest/needs of products, consumers and other stakeholders.' Therefore, the idea of quality needs to be looked upon as a whole, not partially for both demand and supply in nature.

Achieving quality is not bounded by quality management, but putting in place sound principles of good business, quality will thus become an intrinsic product of good management (Garvin, 1988). There are different perspectives in quality management by different scholars. These include the Kaizen concept, Total Quality Management (TQM), European Foundation of Quality Management (EFQM), Sig Sigma and Lean Sigma, Garvin 8 Dimension of Quality and Benchmarking. Recognizing the importance of quality requires using the Quality Management System (QMS) to ensure quality is undertaken systematically, rigorously and continuously through tested standards (Koc, 2007). The suggested dynamic leadership and management are founded in the ISO 9000 family of standards where it is part of the Total Quality Management (TQM) system principle which expands along the value chain of the building and landscape life cycle. The ISO 9000 also facilitates the alignment with other management systems such as environment, health and safety (Wilkinson and Dale, 1999; Griffith, 2011, 2017).

It is also learnt that quality is the key performance indicator by which construction output is judged in many dimensions (Francis et al, 2016). The construction industry poses challenges in delivering quality due to its complexity and fragmented nature (Nawi et al, 2014). Clients expect their product to be delivered within a certain timeframe, cost and quality – thus, bringing value for money. This intrinsic value – quality, emanates from characteristics such as reliability and durability, manifested in endless forms and functions (Foraker et al, 1996). Quality also may be appreciated through ease of using the product or its aesthetic value. In essence, quality is 'what is right' in building or physical landscape from the perspective of the client (Garvin, 1993) which could be traced down to the classical philosophical argument.

3. QLASSIC IN MEASURING LANDSCAPE WORKMANSHIP QUALITY

In a precise simplistic view, QLASSIC is a tool of assessment developed by the Construction Industry Board Development (CIDB) in 2006, seeing that the adaptation of ISO 9000 family is incompatible with the industry (Seymour and Low, 1990; Leung, 1993; Kam and Tang, 1997; Yuen, 1999; Shamma-Toma et al. 1998). It is defined as an assessment system that measures and evaluates the workmanship quality of a building construction work based on Construction Industry Standard 7 (CIS 7:2014) (REHDA, 2015). Within four (4) types of buildings, this scoring system is used to compare the quality of workmanship between construction projects objectively, carried out only once by qualified persons. A thorough building construction work inspection and testing in the assessment becomes a hope to benchmark the quality of workmanship, establish a standard quality assessment system on quality, assess the quality of workmanship, and turns the criterion to evaluate the performance of contractors. In 2018, QLASSIC assessment became compulsory for all public projects under the Construction Industry Transformation Programme (CITP) (CIDB, 2015; 2017). The assessment processes are divided into four (4) phases, starting with an application to CIDB, sampling by assessors who will determine the construction drawing, followed by onsite assessment by independent qualified assessors in the assessment form, and finally, issuance of quality reports from CIDB (CIDB, 2016). Among the four (4) types of criteria assessed, landscape works falls under one criteria, which is External Works.

To date, there is a dearth of study on the landscape workmanship quality, more so the landscape physical quality in Malaysia. Even though QLASSIC external work elements do not deliberately declare landscape work, in some ways it does represent landscape elements in several of the elements assessed (NOSS, 2016) which can benefit the landscape architecture and construction field. The assessed external work elements in QLASSIC carries a total of 10% score overall (CIDB, 2016). These elements of the landscape architecture field must be highlighted to deepen the understanding of its workmanship performance and nuance within the construction workmanship quality among different dimensions.

4. QUALITY IN LANDSCAPE ARCHITECTURE

In brief, perhaps landscape architecture embodies quality as an idea in three (3) forms. The foundational idea is the landscape beauty which can only be discussed within a philosophical dimension (Jorgensen, 2011).

Then, definition of landscape physical quality can be assessed with various interdisciplinary tools (Kerebel et al, 2019; Lu et al, 2020) whereas, the construction workmanship quality is permeated in the implementation level on site within the construction project management (Abdullah et al, 2018).

4.1 Landscape Inherent or in the Eye of Beholder

Detached from consideration, the dominant view of landscape aesthetics has been discreet and challenged by ecological aesthetic linked with intrinsic value such as biodiversity (Jorgensen, 2011). On a more serious and complex note, landscape aesthetics is argued to be abandoned in favour of landscape pragmatism and instrumentality that emerged at the end of the perceived biological status quo and the necessity of aesthetics.

4.2 Landscape Physical Quality

As such, defining landscape physical quality has been daunting and problematic. This emanated from the landscape terminology ambiguity translated in two dynamic interrelationship spectrums of ‘land’ (space and place with boundary) and ‘scape’ (human activity) (Antrop, 2005). Various landscape physical quality assessments exist in trans and/or interdisciplinary context characterized in a strategic manner (Bruni, 2016; Varela et al, 2016; Swierkoszand Chmielewski, 2016; Hughey et al, 2016; Bruton et al, 2016).

4.3 Landscape Workmanship Quality

Infused in Quality Management System (QMS), quality is the characteristic of product and service which customers expect (Griffith, 2011). Therefore, construction workmanship quality resides in the QMS as the foundation of which construction workmanship quality is being delivered among the executives, directives and operational management (Samsona and Terziovskib, 1999). Moreover, the process of quality management lies along quality policy, organisation, risk management, project quality plan (on site), and implementation management procedure plus work instruction and audits (Dale et al, 1999; Griffith, 2011).

At the end of the QMS process, quality assurance and control are employed through audit. Various construction quality assessment tools are based on scoring, such as the Construction Quality in Assessment System (CONQUAS) in Singapore, Performance Assessment Scoring System (PASS) in Hong Kong, International Building Codes (IBC) in America, National Pre-Qualification System in Australia and QCLASSIC in Malaysia (CIDB, 2016). In QCLASSIC, five annexes on quality standard for structural, architectural, mechanical and structural, external and defect group assessment of architectural are based on

standard requirements guided in CIS 7. These elements quality are acquired using designated assessment tools, respectively. Table 1 below simplifies the elements assessed in QCLASSIC (CIDB; 2016).

External Works	Element Assess
External Woks 1	Link-ways/ shelters, external drains, roadwork and parking bays on the ground, footpaths and turfing
External Woks 2	Playground, court, fence and gate, electric substation, guard house, bin centre and swimming pool

Table 1: Elements of Landscape Assessed in QCLASSIC (CIDB, 2016)

It can be concluded that construction quality and landscape physical quality underpins both theoretically and in practice. In philosophy, landscape quality is being described based on its nature. Additionally, it is in the context of a physical land categorized into visual, cognitive and experiential aspects (Lothian, 1999; Gustafson, 2001; Terkenli, 2001) that resides in a bigger context of the interdisciplinary spectrum. On the other hand, the construction workmanship quality infused from a market economic theory of neo-classical economic thinking, which originated from the satisfaction of customers and optimisation of cost in delivering quality – thus, value for money (Porter, 1985). It is believed that construction workmanship quality falls under the visual aspect of landscape aesthetics and function (Baril and Gibson, 1987). This requires acknowledgement of ‘soft’ factors (Farjoun, 2002) or multi-layered understanding of human psychology (Singh et al, 2008), environmental diversity (Kalivoda et al, 2014) and applied geography context (Connolly, 2016). However, it can also be acknowledged as the overlapped elements of construct similarity in landscape construction project management which delivers quality construction works. This means, delivering desired landscape design necessitates quality construction workmanship at project basis on site, delivered by quality managers and designated construction trades with adequate quality plans (Griffith, 2011).

5. METHODOLOGY

A mix method approach was employed in this study, where the sequential mix method model was applied to analyse both qualitative and quantitative data obtained (Creswell, 2008). The model was applied to re-join the discussion on the construction workmanship quality under the backdrop of landscape physical quality definition and its constructed ambiguity.

5.1 Qualitative Methodology

First, Atlas.Ti Version 8 was used as instruments to collect the qualitative data obtained from journals, industry blueprints and industry reports on landscape physical quality and construction workmanship quality. The literatures were termed into quality in the construction industry, QLASSIC in measuring landscape construction quality, landscape physical quality and construction workmanship quality. The foundation spectrum of both construction workmanship quality and landscape physical quality was compared and discussed.

5.2 Quantitative Methodology

Second, quantitative data obtained from on-site QLASSIC measurement by certified third party assessors was approved by CIDB. A total of 522 public construction project data were collected but only 499 were valid due to missing contractor data. Ranging a nine (9) years periods from 2007 until 2015, these data were sieved, grouped and categorised and statistically assessed using the Statistical Package for Social Sciences (SPSS) version 21. These data were discussed in analysis subchapters under project year, contractor grades, building category, project value, states, and external work related to landscape construction quality.

6. ANALYSIS

6.1 Landscape Construction Workmanship Quality in QLASSIC

At least three (3) themes of landscape quality idea were found. Philosophically, landscape quality nature necessitates expansion in epistemology (Carlson and Berleant, 2004), significance, aesthetic experiences in physiology and psychology (Saito, 2007), personal and social aetiology and the role of aesthetics in behavioural changes (Meyer, 2008). Interdisciplinary thought could be learned among the prominent and practical landscape theories which can be separated into visual, cognitive and experiential aspects (Terkenli, 2001). In reality of construction industry, delivering construction quality is the appointment of quality managers at a directive level cascaded to workforce trades focusing on site construction work. This raises the involvement of project quality plans and implementation on site between all the construction elements (Arditi and Gunaydin, 1997). The result from Atlas.Ti was simplified in Figure 1 below.

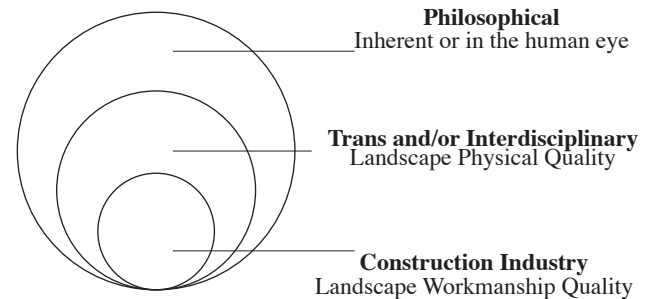


Figure 1: Landscape Quality in Landscape Architecture (Source: Author)

It was found that external works elements construction quality compliant are under-achieved wherein among them are related with landscape elements construction quality. Even though external work in QLASSIC only represent some of the landscape construction works elements, however, it can be benefited to gauge the construction workmanship in relation to landscape elements. The analysis result is varied, where the contractor performance is rather average, with the majority coming only from G7 contractors. The building types which acquired QLASSIC assessment are mostly type A (Landed Housing) and C (Public/ Commercial/Industrial without Cooling System), followed by B (Stratified House) and D (Public/Commercial/ Industrial Buildings with the Centralised Cooling System). Projects that cost more than RM 10 million has the highest quantity acquired QLASSIC in their projects. The lower project value, the less QLASSIC is used. Most projects are located in Selangor, thus QLASSIC assessment is highest in the state, followed by Johor, Federal Territory of Kuala Lumpur and Penang. Whereas the External Works 1 encompasses Link-Way/ Shelter, External Drain, Car park, Footpath and Turfing data fluctuated and showed inconsistency in data applicability, workmanship quality and file validity. The External Works 2 comprises Playground, Court, Fencing, Pool, and Electrical Substation also fluctuated with 3 out of 5 elements which is Not Applicable (NA), while demand for fencing for all types of projects have fluctuated along the years.

6.1.1 QLASSIC Performance by Year

Based on Figure 2.1 below, no project recorded achieving more than 70% QLASSIC score through from 2007 until 2015. It shows that there is a majority contractor score achieved by the contractor within the range of 61% to 70% and the highest was in 2007.

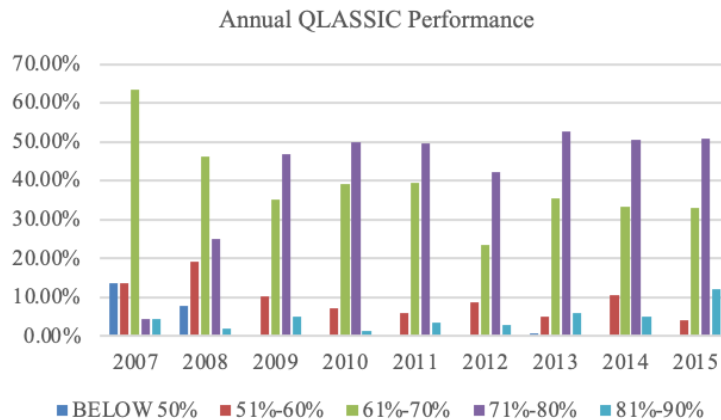


Figure 2.1: QCLASSIC Performance by Year

6.1.2 QCLASSIC Performance Based On Contractor Grade

From Figure 2.2 below, the performance pattern does not change over a year except for the increasing numbers of Contractor Grade 7 who obtained 76%-100% QCLASSIC score by 4%. Other contractors from Grade 6 and below performed below 20%, which is considered low.

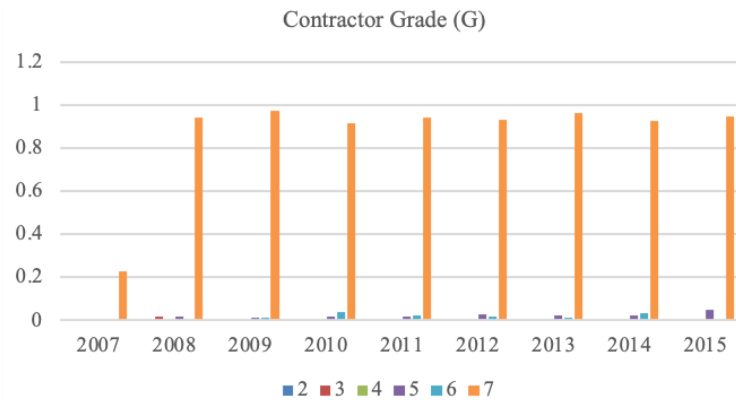


Figure 2.2: QCLASSIC Performance Based On Contractor Grade

6.1.3 QCLASSIC Performance Based On Building Category

Building category assessed by QCLASSIC is divided into four categories as A, B, C and D. Based on Figure 2.3 below, building category D was only recorded in 2012 and 2015. Projects with building type A are the most assessed projects by QCLASSIC and the score for that building type is on the average of 71%-80%, followed by building type C and B.

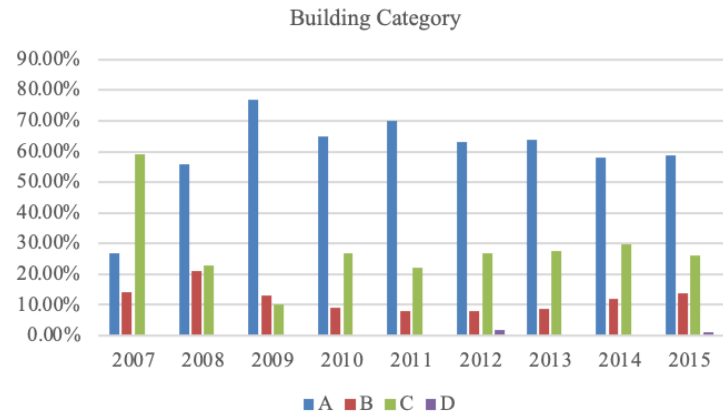


Figure 2.3: QCLASSIC Performance Based On Building Category

6.1.4 QCLASSIC Performance Based On Project Value

Project value assessed by QCLASSIC is divided into seven (7) project value category which are less than RM200,000, less than RM500,000, less than RM1,000,000, less than RM3,000,000, less than RM5,000,000, less than RM10,000,000 and more than RM10,000,000. As in Figure 2.4, it shows that every project value is achieving 61% - 70% of QCLASSIC score.

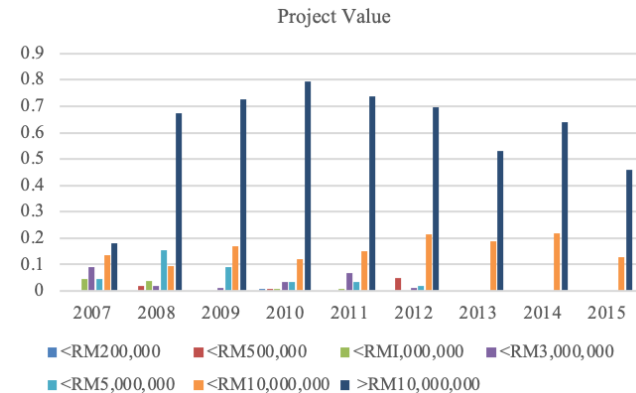


Figure 2.4: QCLASSIC Performance Based On Project Value

6.1.5 QCLASSIC External Work 1 Element Analysis

Figure 2.5 below shows the result for external work 1 and the sub-construct which consists link-way / shelter, external drain, roadwork/ car park and footpath from 2007 until 2015. The data link-way / shelter recorded the highest total not applicable (NA) within these three years compared to compliant and

non-compliance, while the external drain show less total valid files compared to others items. Finally, for the roadwork/car park and footpath, it states the increasing total compliant in 2009, but not in 2007 and 2008.

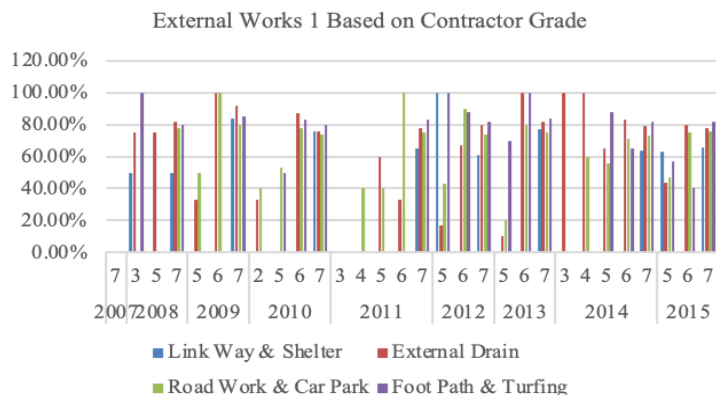


Figure 2.5: QLASSIC External work 1 Element Analysis (Link-Way/ Shelter, External Drain, Car park, Footpath and Turfing)

6.1.6 QLASSIC External Work 2 Element Analysis

Figure 2.6 below shows the result for external work 2 and the sub-construct which consists of playground, court, fencing, pool and electrical substation from 2007 until 2012. For playground, court and pool, the data recorded the highest total not applicable (NA) within the years compared to compliant and non-compliance, while for the electrical substation workmanship it is just average. Finally, fencing shows consistency of applicability to all project types although its quality had fluctuated along the years.

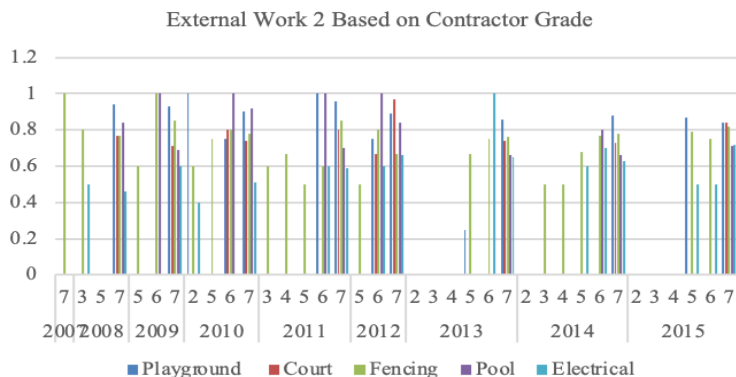


Figure 2.6: QLASSIC External Work 2 Elements Analysis (Playground, Court, Fencing, Pool, and Electrical Substation)

7. LANDSCAPE WORKMANSHIP QUALITY THROUGH QUALITY ASSESMENT SYSTEM: IS IT SO?

The analysis has laid the result of non-compliance elements in landscape works. The data reflected a worrying trend of QLASSIC practice which also pinpointed other issues such as the low awareness of other contractors than G7 contractors in acquiring QLASSIC and its relationship that lowers project values strongly related to landscape architecture. It is also crucial to acknowledge that these data only represent less than 0.1% of construction project contractors in Malaysia.

Furthermore, there are ‘soft’ elements missing for valuing landscape physical quality in the context of landscape architecture when comparing CIS 7: 2014. This might be argued in the context of assessment which was applied, but in the challenges of achieving environmental sustainability, one of the ways is to revisit landscape physical quality definition and theories which brought many landscape physical quality assessments come to the fore. Among the prominent theories learnt are from Lothian (1999), Gustafson, (2001), Terkenli (2001) and Jorgensen (2011) with their multi-layered research tradition. As data themed in critical review, it was found that there are various interpretations of landscape physical quality and its approaches, however mutually or exclusively they support each other. In this study, the closest construct of landscape physical quality was based from Baril and Gibson (1987). It is concluded that landscape physical quality originated from the understanding of landscape aesthetic. It is vital to understand the nuance between landscape quality which is defined by the principle of beauty, and construction quality which is defined by the workmanship concept that is highly influenced by business thinking. Therefore, there is a significant gap between landscape quality and construction workmanship quality. The oversimplification in landscape architecture at industry level in landscape quality is believed to be high. The absence of a recognised landscape physical quality reference framework in Malaysia had maintained the fact.

In contending these challenges of lethargy in delivering quality, it is observed that there is a dearth of study to critically understand what constitutes landscape physical quality, thus, landscape quality in both theory and practice. To start, opposing concept between construction workmanship qualities is instilled in neo-classical economic, perceiving quality by satisfying customers solely based on monetary as intrinsic value and good management. In contrast, landscape physical quality leads to landscape quality which is imbued in the

principle of aesthetics which is metaphysical and rather a civic question. This raises an ethical philosophy argument linking both concepts which establishes significant challenges. The ambiguity between the concepts requires deeper judgement on the threshold value of action at both sides. To summarize, the landscape physical quality definition had been oversimplified through the context of landscape construction workmanship quality in business thinking, which echoed significant gaps in understanding the landscape quality concept. This is one of the root causes of the lethargy in delivering the best environment quality in contemporary society. Hence, it needs a serious epistemological refinement of physical landscape as a way forward. Notwithstanding, within its context, QLASSIC does offer the best assessment system of workmanship quality which relates significantly to landscape construction workmanship elements.

8. CONCLUSION

An insight of landscape workmanship quality in the Malaysian construction industry through the QLASSIC assessment system was presented. It has discussed both theory and practice in delivering quality physical landscape through the construction workmanship quality. At the end, a recognised landscape workmanship assessment best practice and standard are suggested to circumvent this challenge as a way forward.

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