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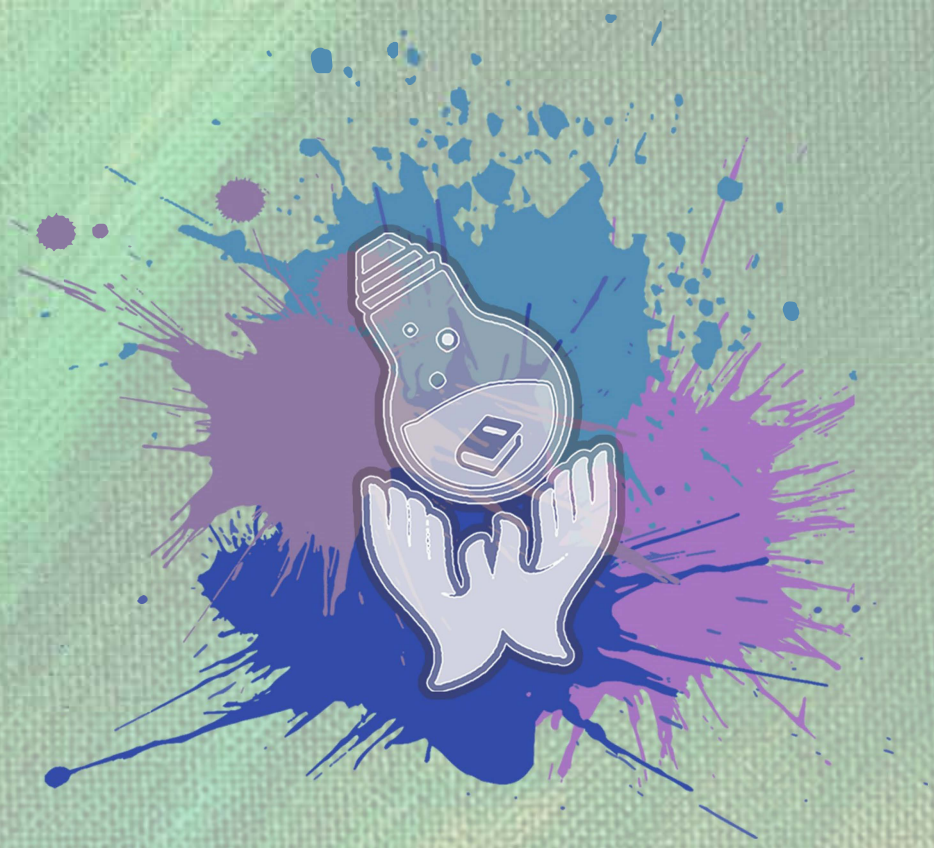

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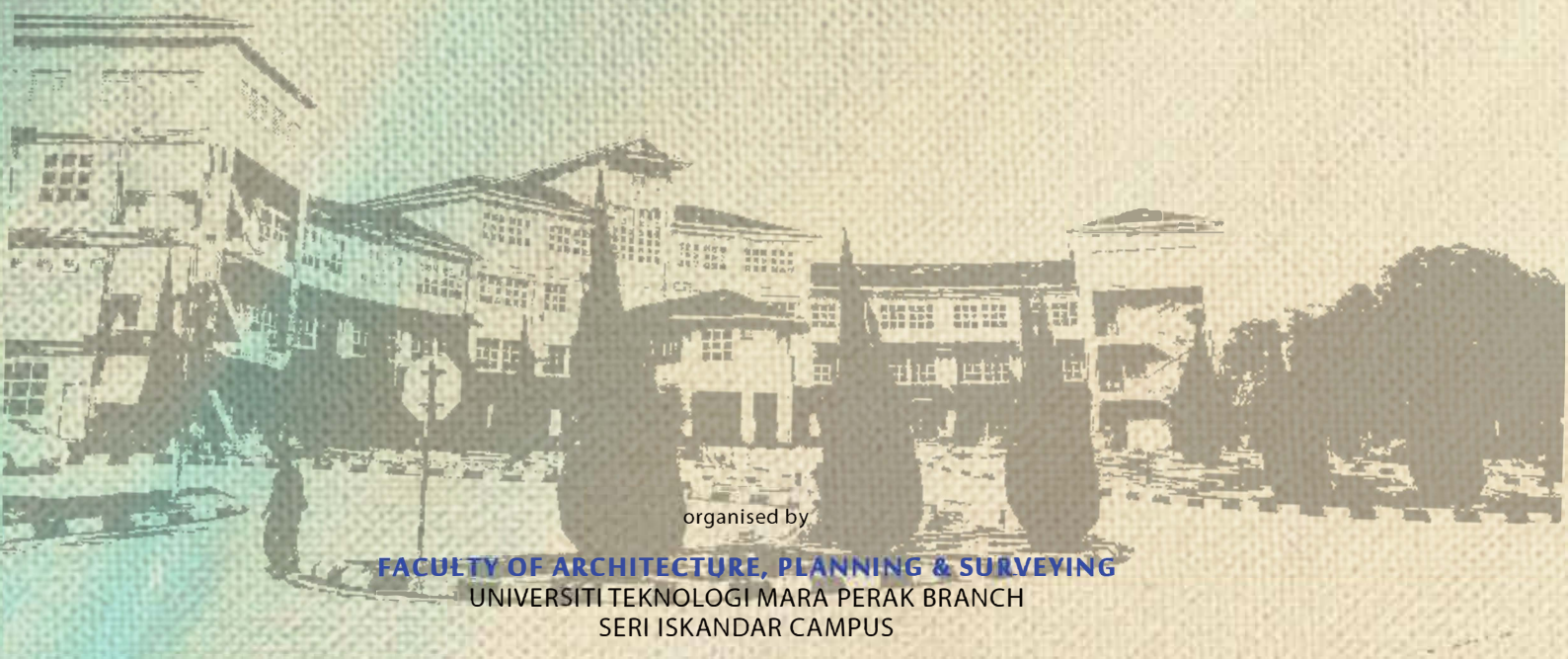

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SYSTEMATIC LITERATURE REVIEW ON THE BARRIERS AND BENEFITS OF MALAYSIAN GREEN RATING SYSTEM IMPLEMENTATION

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Abstract:
Malaysian construction industry is one of major industry contributing to the growth of economic. Unfortunately, as a lot of negative impacts on the environment from the construction industry have lead Malaysia to a growing realization that there is a need for more sustainable buildings. Malaysian green rating system being developed to progress and adapt itself to the tropical climate. Though, current sustainable development is facing challenges and barriers which give different perception to the players of the industry. The aim of this paper is to study the barriers and benefits of implementation of Malaysian green rating systems. Thus, this paper analyses the existing literature on the predictors on implementation barriers and benefits. A systematic review was applied to identify the findings and variables to suit the sustainable development in Malaysia context.

Keywords:
Green Rating System; Sustainable Barriers; Sustainable Benefits; Green Building

1.0 INTRODUCTION

In Malaysia, like other countries, construction industry is one of major industry contributing important the growth of economic. Unfortunately, as a lot of negative impacts on the environment from the construction industry have lead Malaysia to a growing realization that there is a need for more sustainable buildings. Green building is the basis of the sustainable construction development. Recently, Malaysia also experiences in increasing the rate of carbon emissions which is also the third highest in the world. (Klugman, 2011). This proves that Malaysia also affected due to climate change and global warming. According to Samari et al. (2013), the Malaysian construction industry recognized the need of green rating tool to progress and adapt itself to the tropical climate. Nevertheless, there are some issue arises on choosing the most effective and efficient instruments among the experts and researchers.

Green building ratings were developed to assist architects, designers, contractors, authorities, developers, building owners and other end users in considerate the impact of each design choice and resolution. Malaysia has developed its very own green building rating tools which established its capability in showing the sustainability level of a building. However, there are always barriers in promoting sustainable development in Malaysia. In other hand, sustainable development also brings many benefits to the industry.

2.0 LITERATURE REVIEW

A Systematic Literature Review (SLR) technique aims to evaluate the problems by identifying, critically evaluating and integrating the findings to achieve the objective of this paper. SLR also being used to collect and analyze data from the studies that are included in the review. SLR was applied to gain related literature on the barriers and benefits of implementation of Malaysian green rating systems. The reviewer used the SLR methodology to produce a suggested barriers and benefits by other researchers published. There are four phases in SLR method as in Figure 1.

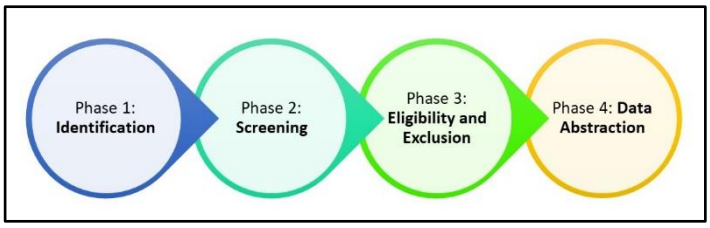

Figure 1: Phases Involved in SLR

2.1 Barriers of Implementation Green Rating System

The implementation of sustainable rating tools and construction in the built environment also has challenges and barriers. Many challenges and barriers has been portrayed in the literature because justifying them can encourage sustainable practices in the built environment.

2.2 Benefits of Implementation Green Rating System

There is almost an agreement in the literature that green buildings outperform conventional buildings in several performance areas. A numerous benefits illustrated by researchers in the literature associated with green development.

3.0 METHODOLOGY

This study has been undertaken a SLR method employing manual search of journals and proceedings papers since 2006 until 2019 related with the research title. In this case the goal of the review is to assess SLR and the steps that involved in the SLR involving four (4) phases as documented below.

3.1 Phase 1: Identification of Literature

First, a numerous search of related topics or terms related to Malaysian green rating system were identified. Justified by the large abstracts and citations databases of peer-reviewed publications, the reviewer used Google Scholar and UiTM Database. At this phase, related published papers were sought from two databases search engines. The search string is summarized as Table 1.

Table 1: SLR Search String

Database	Keywords
Google Scholar	"green buildings" OR "green rating systems" OR "sustainability development" OR "Malaysian construction industry" OR "sustainability barriers" OR "sustainability benefits"
UiTM Database	"green buildings" OR "green rating systems" OR "Malaysian green rating systems" OR "sustainability development" OR "Malaysian construction industry" OR "sustainability barriers" OR "sustainability benefits"

3.2 Phase 2: Screening of the Identified Literature

The identified literature was later screened to suit the context. Out of 109 literatures, 35 literature suited the topic of this paper, which are the barriers and benefits of green rating systems. The screened excluded any literature duplicates and non-English publications

3.3 Phase 3: Eligibility and Exclusion

At this phase, the remaining 35 literatures were reviewed thoroughly. After an extensive review, 10 literatures were removed. The literature did not have the information on the barriers and benefits of green rating systems and it were generally on green buildings development. At this stage, 11 literatures were used for barriers information while 9 literatures were used for benefits information in the SLR. The data were analyzed and abstracted. A systematic review was tabulated with Reference, Main Barrier/Benefits, Sub-barriers/benefits, Author(s) and Year.

Phase 4 will be explained in Analysis and Findings Section.

4.0 ANALYSIS AND FINDINGS

4.1 The Analysis of Predictors of Implementation Barriers

Based on the listed of sub-barriers, the listings were abstracted into six (6) categories namely Economic Barriers, Financial Barriers, Technology Barriers, Social Barriers, Political Barriers and Knowledge Barriers.

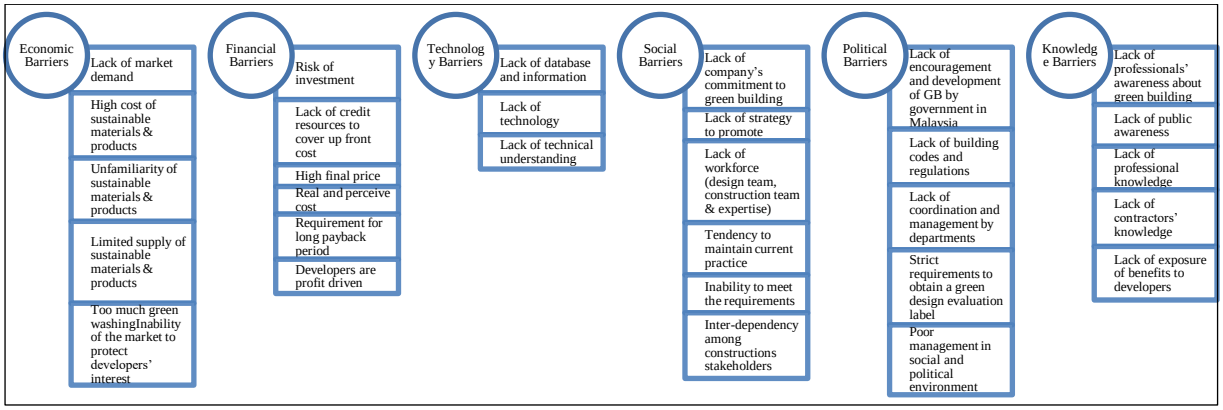

Figure 2: Predictors of Implementation Barriers

4.1 The Analysis of Predictors of Implementation Benefits

Based on the listed of sub-benefits, the listings were abstracted into three (3) categories namely Economic Benefits, Environmental Benefits and Social Benefits.

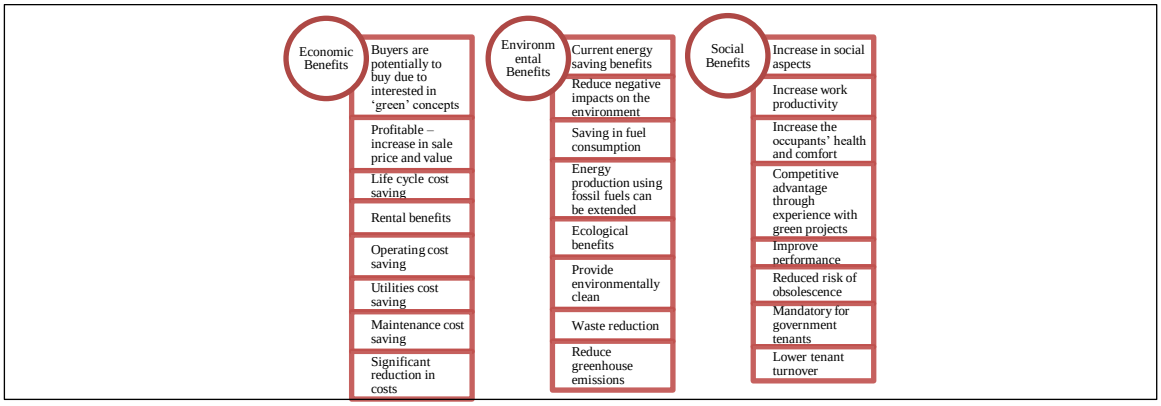

Figure 3: Predictors of Implementation Benefits

5.0 CONCLUSION

This systematic review highlights the barriers and benefits of the implementation Malaysian green rating system. It can be summarized that the barriers of implementation Malaysian green rating systems can be categorized as Economic, Financial, Technology, Social, Political and Knowledge Barriers while Economic, Environmental and Social are the main categories for the implementation benefits. These keys highlighted may be used to benchmark industry perceptions about Malaysian green rating system in the construction industry.

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