

AN INVESTIGATION ON SUSTAINABLE REFURBISHMENT PRACTICE OF BUILDING WORKS IN MALAYSIA

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ABSTRACT

Refurbishment is one of the solutions to address the environmental issues the construction industry faces. However, even though many existing buildings have gone through refurbishment, many buildings still lack consideration to incorporate sustainable elements. Realising that sustainable refurbishment is one of many ways to solve environmental problems, this research aims to address significant barriers faced by the construction players and develop strategies to improve the practice of sustainable refurbishment of existing buildings, specifically in the Malaysian context. The researchers conducted a semi-structured interview with six selected dependable practitioners to give their perspectives on this research area. The result of the analysis established that the need for clients' requirements and high upfront costs had been established as the main problems in implementing sustainable refurbishment in Malaysia. Apart from that, the interviewees agreed to the main strategies: strengthening the government's regulations, elevating the company's image, and reducing the operational cost of sustainable refurbishment works.

Keywords: Construction, Buildings, Sustainability, Refurbishment

1.0 INTRODUCTION

The United Nations (UN) Environment Programme (2009) has counselled the built environment to be responsible for a huge chunk of energy, estimated to be about 40 percent of global energy use, approximately 30 percent of greenhouse gas emissions, waste generation, and the use of natural resources. Buildings harm the environment such as land degradation, deforestation, waste generation, and greenhouse gas (GHG) emissions which are closely related to climate change (Hasim et al., 2020). To diminish these negative footprints on the current environment, implementing green design and technology in buildings has been the passage for future improvement in global sustainable development. Minimal carbon emissions can be achieved if the best sustainability practices can be reinforced to all key players in this industry (Ishak & Azizan, 2018).

Implementing green buildings in Malaysia focuses more on developing new buildings rather than refurbishing existing ones (Nasid Masrom et al., 2017). This is where the problem arises. If the Malaysian government targets to get close to cutting carbon by 80 percent by 2050 or decarbonising this sector, the main effort needs to come from existing buildings. Ishak et al. (2018) stress that sustainability can only be achieved by addressing the existing building stock, even if every new building is built sustainably. Traditional refurbishment efforts must be improved to minimise carbon footprint compared to the sustainable refurbishment approach. Despite refurbishment being undertaken, the majority of projects have been unsustainable and have no consideration for sustainability (Nasid Masrom et al., 2017).

The small number of refurbishment projects results from the barriers that hinder the key players from practising sustainable refurbishment in their projects (Nasid Masrom et al., 2017). Even with an

abundance of research that promotes the advantages of sustainable refurbishment, the barriers must also be the focal point of the discussion. Therefore, considering all the benefits sustainable refurbishment can offer in reducing the issue of high carbon emissions in the construction industry, this paper attempts to investigate the major barriers and key strategies in Malaysia's current practice of sustainable refurbishment. The objectives of this paper are as follows:

1. to determine the major barriers the key players face in practising sustainable refurbishment in Malaysia, and
2. to identify the key strategies to improve the practice of sustainable refurbishment.

2.0 LITERATURE REVIEW

2.1 Sustainable Refurbishment in Malaysia

Despite the approval of several demanding environmental tools in many countries, the world still faces many environmental barriers. Further degradation of the earth's capacity to generate resources and ongoing negative environmental footprints will likely collapse these critical ecosystems (Ewing et al., 2010). For existing non-green buildings, the negative effect is currently two-fold (Durmuspedini & Ashuri, 2010). Firstly, if they are replaced, the demolition waste would fill and pollute the landfills. Secondly, even if the buildings cannot be refurbished, their adverse environmental effects will continue because of a lack of sustainability considerations. At this point, adopting sustainable refurbishment principles from various perspectives in the building industry will create a stable environmental impact (Ishak et al., 2018). Refurbishment can offer an alternative solution for demolition to make existing buildings more sustainable for current and future use. The term refurbishment has often been misinterpreted with retrofitting and renovation. These terms can be confusing as both usually be defined similarly with refurbishment (Nasid Masrom et al., 2017). Although there is no specific definition for refurbishment principles (Ishak et al., 2018), several researchers offer a few definitions of refurbishment. The widely used definition is by Riley and Cotgrave (2011), which define it as extending the usefulness of existing buildings by adapting their basic forms in providing a new or updated version of the original structure. On the other hand, sustainable refurbishment is a work that incorporates sustainable factors, namely economic, social, and environmental (Nasid Masrom et al., 2017). Sustainable refurbishment considers all aspects of sustainable elements throughout the construction to achieve minimal environmental impact, improve the social lifestyle and enhance the economic structure. In Malaysia, refurbishment principles may be regarded as a new phenomenon in which fewer approaches are utilised (Ishak et al., 2018) the small number of refurbishments. The barriers that hinder the key players from practising sustainable refurbishment in their projects result in fewer projects. Even with much research promoting sustainable refurbishment's advantages, the barriers must also be the focal point of the discussion. Therefore, considering all the benefits sustainable refurbishment can offer towards reducing the issue of high carbon emissions in the construction industry, this research aims to investigate the major barriers to the current practice of sustainable refurbishment in Malaysia.

2.2 Barriers Faced by Construction Players in Practising Sustainable Refurbishment

Even with a high number of refurbishment projects undertaken in Malaysia, only a few projects employ sustainability in upgrading existing buildings. This resulted in several barriers that hindered the construction key players from implementing the elements of sustainability in their refurbishment projects (Nasid Masrom et al., 2017). Barriers here can be understood as factors that slow down the process of an organisation to success (Chin Yee et al., 2020). On that note, addressing sustainable

refurbishment barriers and proposing strategies to overcome them will enable key players to gain confidence in their continuous implementation of sustainable refurbishment (Agyekum et al., 2019).

2.2.1 High Upfront Cost to Implement Sustainable Refurbishment

Most investors fear higher investment costs of sustainable refurbishment and the risks of unforeseen expenses (Agyekum et al., 2019). It is believed that implementing sustainable refurbishment tends to incur higher initial costs, usually because of a lack of knowledge and inexperience on the project team, the application of measures for implementing environmental management, higher communication costs, and the increasing complexity of the business process (Pinkse & Dommissie, 2009; Chan et al., 2014; Leong et al., 2020). This has been refuted by the latest study from Weerasinghe and Ramachandra (2020), which stated that the studied projects recovered their cost incurred within a short payback period, within less than five years. Furthermore, the misleading perception that green buildings cost more than conventional buildings has made the discussion even more difficult (Zainul Abidin & Mokhtar Azizi, 2016). Zainul Abidin and Mokhtar Azizi (2016) also stated that adopting the sustainable concept ensures investors incur cost-saving benefits and higher investment returns. However, these benefits can only be realised over a long period.

2.2.2 Lack of Knowledge on Sustainable Refurbishment

Chin et al. (2020) and Chan et al. (2014) found that there are still developers and construction firms with a low level of knowledge regarding sustainable refurbishment in Malaysia. Also, societies need more awareness of the sustainable concept, especially in the housing sector. Other researchers agreed that most developers know the principles of sustainable refurbishment, but the implementation is still poor (Nasid Masrom et al., 2017; Zainul Abidin, 2010). Even knowing does not necessarily guarantee that it is being implemented, as the level of implementation in Malaysia is still considered low (Chan et al., 2014). Furthermore, the scenario might be different for small, medium and enterprises (SMEs), that lack the knowledge especially in best measures which presents a poor quality of work (Bhuiyan et al., 2015). SME companies still need to be ready for this paradigm to shift toward sustainable refurbishment (Goh et al., 2013). SME developers represent a large population of developers in Malaysia. Improving their knowledge and acceptance of sustainable practices would significantly impact the practice of sustainable refurbishment on a bigger scale (Zainul Abidin, 2010). The low implementation of sustainable refurbishment can reflect a lack of knowledge of sustainable refurbishment. Suppose the industry is not ready and capable with skills, knowledge, and experience in sustainable refurbishment. In that case, it will affect the overall implementation and result in fewer sustainable refurbishment projects.

2.2.3 Inadequate Expertise and Technology in the Industry

In this industry, there is still a lack of expertise in implementing sustainable refurbishment (Nasid Masrom et al., 2017). In major construction companies, the number of professionals who are experts in this concept still needs to be increased, which makes it difficult for the company to incorporate this concept into their project. The problems of a shortage of expertise and professional knowledge regarding sustainable refurbishment have prevented them from considering it (Bahaudin et al., 2017). Additionally, more expertise is needed for adequate tools and skills for sustainable practices (Momade & Hainin, 2018). The lack of technology in Malaysia is also a notable barrier when undertaking sustainable projects. Locally, the facilities needed for green construction sustainability are limited (Bahaudin et al., 2017).

2.2.4 Poor government Interventions and Organisation Participation

Many key players agreed that the government is still lacking in encouraging the concept of sustainability in refurbishment projects in Malaysia (Bhuiyan et al., 2015; Nasid Masrom et al., 2017). The available green schemes by the government have their problems in terms of needing more information and creating uncertainty about the building structure to be refurbished (Bhuiyan et al., 2015). Furthermore, the government only focuses on quick wins by lowering energy prices rather than wholeheartedly supporting them (Fletcher, 2015; Ogunmakinde et al., 2016). For that reason, many do not consider the tax exemption and incentives provided beneficial to them (Bahaudin et al., 2017). Likewise, refurbishment companies in Malaysia still refuse to adopt green practices as there is no strict enforcement from the government (Agyekum et al., 2019; Chin Yee et al., 2020). In addition, top-level management needs a higher level of commitment to take the lead about sustainability and a lack of support between departments and external organisations (Bhuiyan et al., 2015). The reason is that the companies are unwilling to change their policies, goals, and objectives (Goh et al., 2013).

2.2.5 Lack of Client's Requirements on Sustainability

Clients' attitudes influence the adoption of green technology in construction projects, especially in deciding on sustainable refurbishment (Chin et al., 2020). Currently, sustainable refurbishment is needed in Malaysia because sustainability is not at the top of clients' wish lists (Goh et al., 2013; Pinkse & Dommissie, 2009). In addition, commercial building owners tend to only respond to requirements from the tenants. Lastly, it is essential to note that sustainable refurbishment will not be adopted when the market demand is low for green buildings. Therefore, clients' attitudes are influencing the market whether to invest in green building development or not (Chin et al., 2020). Without a shift in clients' mentality to implement sustainable refurbishment, sustainability advancements in Malaysia will be an exceedingly difficult vision to achieve (Reza Esa et al., 2011).

2.2 Strategies to Improve The Practice of Sustainable Refurbishment

Besides barriers to adopting sustainable refurbishment, some practices are considered the key strategies. Many researchers have emerged to discuss the common themes for sustainable refurbishment strategies, which include reduced operation cost, enhanced skills, technology, government regulatory requirements, and enhanced company image.

2.2.1 Reducing the Operational Cost of Sustainable Refurbishment

Nasid Masrom et al. (2017) found that reducing operating costs will be a good driver for encouraging more sustainable refurbishment implementation. The operation cost includes electricity and water consumption. This is consistent with Darko et al., (2017), who stated that green building has a lower total life-cycle cost because of reduced utility bills due to green buildings' energy efficiency. However, as the high upfront payment is the main barrier to implementing sustainable refurbishment, it seems contradictory that cost saving is also a strategy (Zulu et al., 2022).

2.2.2 Strengthen the government's Current Regulatory and Policies

In short, a regulatory requirement in Malaysia is insufficient to be the strategy even though regulatory requirements can be significant for motivating more sustainable refurbishment (Nasid Masrom et al., 2017). Even with many programs and sustainability tools introduced by the government to encourage more private organisations to participate, the progress is still gradual (Bahaudin et al., 2017).

government should widen financial incentives and progressively make sustainability compulsory in construction (Leong et al., 2020; Nasid Masrom et al., 2017; Zainul Abidin, 2010). Policies and regulations may also promote sustainable refurbishment by fostering a culture of best practice sharing and setting a standard for future design and construction (Darko et al., 2017).

2.2.3 Enhance Skills of the Experts and Technology in Sustainable Refurbishment

The same approach as Agenda 21, governance-authorized bodies should provide a more profound and better understanding of the concept of sustainability through workshops or training to increase the skills and expertise of an individual (Agyekum et al., 2019; Leong et al., 2020; Momade & Hainin, 2018). Academically, researchers should assist in understanding sustainable refurbishment in the industry, especially in terms of guidelines and the concept of sustainable refurbishment (Bahaudin et al., 2017; Zainul Abidin, 2010). To increase technological advancement, authorities and private companies should collaborate on technology to transfer from developed neighbouring countries to adapt to Malaysia's sustainable refurbishment scenario. Invite experts from successful countries in sustainable refurbishment, which might introduce new concepts and ideas (Bahaudin et al., 2017). Chan (2014) also deduced that enhancement in new technology is needed for longer life spans with a lower degree of maintenance to reduce building inefficacy.

2.2.4 Elevating the Company's Image that Adopts Sustainable Refurbishment

Sustainable development has received broad concern, and ultimately, it will drive the company to adopt sustainable refurbishment to increase the company's marketability and corporate image (Darko et al., 2017; Durdyev et al., 2018; Nasid Masrom et al., 2017). Many steps could be taken to achieve this. For instance, performance-linked incentives should be provided (Agyekum et al., 2019). Zainul Abidin (2010) suggested that sustainability must be projected as a good business strategy with tangible and intangible benefits. Additionally, Munyasya & Chileshe (2018) suggested that close interaction and networking among involved stakeholders are essential to ensure that the sustainability needs of the projects are adequately communicated.

3.0 METHODOLOGY

There is a limited number of qualified practitioners to be part of the respondent for this research. This can be seen from the few studies discussing this research area. Previous researchers also agreed that there is still lacking reliable sustainable refurbishment experts in Malaysia (Nasid Masrom et al., 2017; Reza Esa et al., 2011). Furthermore, practitioners involved in constructing new green buildings are deemed unsuitable to be the respondent since sustainable refurbishment defers from new green construction. Hence, the qualitative method is adopted in this study to counter all the limitations found. A semi-structured interview is a qualitative method to gather information and opinions from the targeted respondents. Selecting suitable respondents was based on a set of criteria: they must have a few years of experience in the construction industry and experience handling or having the knowledge, expertise, or skills in sustainable refurbishment. Both open and close-ended questions were used for the interview questions. The researchers used open-ended questions to allow the respondents to elaborate on their thoughts and provide recommendations on the research topics. At the same time, close-ended questions using the Likert scale as a rating tool required respondents to rate a certain level of agreement. The combination of Likert-scale and open-ended questions gave an easier and faster way to answer the questionnaire. This combination would also assist the researcher in analysing the data collected and presented in a structured manner.

4.0 RESULTS AND DISCUSSION

4.1 Interviewees' Background

Table 1 below summarises the interviewees' backgrounds and their organisation's names. Two architects, two quantity surveyors, a civil engineer, and a Green Building Index (GBI) facilitator were interviewed. They came from different organisations - public or private companies, which is valuable for the research findings. The respondents also come from different years of experience in the construction industry and different involvement in previous and current sustainable refurbishment projects.

Table 1 Interviewees' organisational position and experience

ID	Organisation's Name	Position	Years of experience in refurbishment projects	Number of sustainable refurbishment projects involved
R1	RD QS Consult	Quantity Surveyor	More than ten years	7 to 10 projects
R2	Public Work Department (PWD)	Civil Engineer	More than ten years	4 to 6 projects
R3	Public Work Department (PWD)	Architect	More than ten years	More than ten projects
R4	Public Work Department (PWD)	Architect	7 to 10 years	1 to 3 projects
R5	O&Z Cost Consultancy	Quantity Surveyor	4 to 6 years	1 to 3 projects
R6	Greenscapes Sdn Bhd	GBI Facilitator / GreenRE Accredited Professional	7 to 10 years	4 to 6 projects

The nature of respondents can be seen from their various career backgrounds. R3 and R4 were from public sector organisations with the same position but had different experiences in the construction industry. Out of all respondents, only R5 was found to have the least experience, with around four to six years of experience in the construction industry, while the others have more than seven years of experience. As listed above, all respondents have at least one sustainable refurbishment project involvement. Variety types of projects are involved by all respondents, which include schools, government administrative buildings, private-owned buildings, and hospitals.

4.2 Identifying Major Barriers Faced by the Key Players

The interviewees were asked to rate their level of agreement on each barrier. Their level of agreement was based on the barriers' significant effects on the practice of sustainable refurbishment. From the score given, mean and standard deviation were calculated to identify the significant major barriers and rank them from the highest mean to the lowest. The high mean value with a low standard deviation level shows that the barrier has a high level of consensus among the respondents. Mean and standard deviation were calculated, and the results are tabulated below:

Table 2 Major barriers faced by the key players

Rank	Barriers	Level of Agreement	
		Mean	SD
1	Lack of client requirements on green buildings	4.17	0.75
2	The high upfront cost of implementing sustainable refurbishment	4.17	1.17
3	Inadequate expertise and technology	3.33	1.21
4	Poor government interventions and organisation participation	3.17	0.98
5	Lack of knowledge among key players and developers	3.00	1.26

The lack of client requirements for green buildings and the high upfront cost to implement shared the highest mean. However, a lack of client requirements has a lower standard deviation value than high upfront costs. This tells us that the lack of client’s requirements has a higher level of consensus which also means it is the most agreed barrier by the interviewees. However, many researchers might not suggest lack of client requirements is significant in hindering the implementation of sustainable refurbishment. The reason behind this is that there are no mandatory requirements for them to adopt sustainable refurbishment enforced by the government. Without this regulation, clients will most likely opt for cheaper, faster, and more accessible options; for them, sustainable refurbishment is not one of them.

The high upfront cost comes second on the ranking list with has the same mean level as the first barrier. More or less, this could aid in reducing the cost of sustainable refurbishment. R5 also believed that the government and many other financial institutions had joined together to provide financial assistance for those considering sustainable projects, including refurbishment. However, this had been argued by other respondents, which stated that the inclusivity of the financial aid is still unfavourable for most refurbishment projects. Many tax incentives have been provided but still cannot attract much consideration. Small amounts of tax incentives offered could not significantly reduce the operational cost as a whole, R1 added. The incentives only provide short-term assistance, which the clients must pay back in the future comings. For example, loans are given to the clients to purchase solar panels only as a short-term relief that the clients have to pay later every month with its interest. R2 suggested that the government should subsidise sustainable materials, equipment, and certain assets. This could attract more potential clients in sustainable refurbishment. All interviewees agree a long period of investment returns (ROI) has a different pace and different perceptions by different clients.

Both inadequate expertise and technology and poor government intervention had mixed responses from the interviewees. Some agreed with the barriers, as Malaysia still needs experts and new technological advancements in the concept of sustainable refurbishment. The suggestion to import foreign experts to provide training and sharing sessions would be a huge advantage to Malaysian experts. However, on different grounds, R5 believed that government had been and still is actively promoting sustainable refurbishment by providing intensive workshops and introducing policies for the industry to uptake. Even so, most interviewees agreed that the programs and policies were considered unsatisfying with the lack of enforcement by the government. This will lead to poor improvement in sustainable refurbishment in Malaysia. All interviewees agreed that the government

should have tightened the regulations by making sustainable refurbishment mandatory for specific project criteria. For example, the compulsory mandate was made for a government project over RM50 million to be assessed by the Malaysian Carbon Reduction and Environmental Sustainability Tool (MyCREST) that promotes sustainability criteria, systems and standards incorporated with a holistic view of built environment life cycle to achieve carbon reduction goals (<https://www.cidb.gov.my/eng/mycrest/>). Such tight regulations will force all clients to adopt sustainability in their refurbishment projects. Lack of knowledge among key players seems to be the least agreed barrier to having a significant impact on the practice of sustainable refurbishment. Many interviewees agreed that the majority of the key players in the industry now have acknowledged the importance of sustainability. Even so, the understanding might still need to reach an overall target, though the percentage is still satisfying. So, all interviewees counselled that the key players do not currently significantly face this barrier. The understanding and knowledge of key players are satisfying, and it did not affect the overall progress of sustainable refurbishment.

4.3 Identifying the Suitable Strategies to Overcome the Major Barriers

The discussion continues with studying the suitable strategies to improve the practice of sustainable refurbishment in Malaysia. It also perhaps can overcome the said barriers faced by the key players. The researcher ranks the strategy from the most agreed upon to the least agreed upon. Several researchers found to be discussing the strategy are also presented to correlate the current findings with previous research.

Table 3 Key strategies to overcome the barriers

Rank	Strategies	Level of Agreement	
		Mean	SD
1	Strengthen the government’s current regulations and policies	4.50	0.55
2	Elevate the company's image that is adopting sustainable refurbishment	4.17	0.41
3	Reducing the operational cost of sustainable refurbishment	4.00	0.63
4	Enhance skills of experts and technology in sustainable refurbishment	3.50	0.55

Strengthen the government’s current regulatory and policies strategy topped the rank with an impressive mean score and standard deviation. Apart from interviewees agreeing to the strategy, it is also the most popular strategy to be discussed by the past researchers, with eight kinds of research found. The researches have commented and urged the government to step into the scenario to encourage the practice of sustainable refurbishment in Malaysia (Nasid Masrom et al., 2017; Reza Esa et al., 2011; Bahaudin et al., 2017; Wong; 2019; Leong et al., 2020; Zainul Abidin, 2010; Darko et al., 2017; Zulu et al., 2022). Even though the government’s intervention was not seen as one of the most crucial barriers in previous findings, the interviewees still agreed that the government should tighten enforcing current regulations. Perhaps the government may enforce sustainable refurbishment to be mandatory for all government projects. This can set an example for others to follow and be a benchmark for future reference. R1 also criticised the government agencies that are still not practising sustainable refurbishment. If there are no mandatory regulations set by top management of the stakeholders, the level of practice of sustainable refurbishment will be stagnant in the future.

Next, elevating a company's image can be done in a different form of ways. R2 best believed that one of the ways is by the government could provide rewards in cash form for any refurbishment projects that implement sustainability. This cash reward can be given to any clients that pass the minimum requirements on the elements of sustainability. This will attract many clients to start implementing sustainable refurbishment and improve the quality of the sustainable refurbishment works. Tax exemptions given by the government can be diversified into more exciting and attractive conditions for the clients so that they can see the benefits of implementing sustainable refurbishment. Considering sustainable refurbishment takes plenty of effort and resources, this can be unfavourable for the clients to consider. Plus, providing benefits for contractors and clients for having their sustainable in-house team can motivate them to diversify their services. The company's image could be enhanced as they have its experts to advise on sustainable-related works, including refurbishment. The company can strengthen its capability in handling sustainable refurbishment works. All in all, the focus of elevating the company's image is to attract clients, consultants, and contractors interested in exploring and expanding the sustainable refurbishment practice. Reducing the operational cost of sustainable refurbishment is still considered significant. Interviewees still agreed that the government should give subsidies to reduce operational costs. This subsidy will not only attract many developers but also will ease the current practitioners to pass the assessment of rating tools. Agreed by the R4, even with tax incentives provided, most of it only fits new buildings with less focus on refurbishment works on existing buildings. Additionally, most of the sustainable materials were imported from overseas, which will significantly increase the cost of construction. The government could explore new possibilities to have our production of sustainable materials. For example, current solar panel production could be expanded, which could reduce costs.

As discussed before, our professionals already have the skill sets in sustainable refurbishment; this is why enhancing the skill of experts and technology is at the bottom of the ranking. Professionals might have the knowledge and skills, but the R4 still looks forward to more conferences and workshops to gain understanding and exchange their thoughts and expertise. Apart from that, there was still hope for Malaysia to collaborate with other countries to learn from their experts. Other countries might have more experience in sustainable refurbishment than the practice in Malaysia, so they have better knowledge that could guide our local experts. Therefore, although our local practitioners already have the skill sets needed for sustainable refurbishment, there will still be room for improvement to ensure a better quality of work.

5.0 CONCLUSION

The construction industry is already famous for its negative environmental impacts in carbon emissions and waste. Sustainability is known to be the key answer for all environmental issues through its implementation in every construction phase, including refurbishment. However, the efforts of greening the industry through sustainable refurbishment are stunted by the challenges faced by key players. This study is aware of the importance of addressing those issues, which ultimately drives the aim of this study to identify the major barriers and address suitable strategies to enhance the sustainable refurbishment practice. Through the semi-structured interview, this study found two major barriers and three significant strategies in the practice of sustainable refurbishment. The lack of clients' requirements for green buildings and the high upfront cost to implement sustainable refurbishment were the main barriers that significantly impacted the practice of sustainable refurbishment. Apart from that, strengthening the government's current regulations and policies, elevating the company's image that adopts sustainable refurbishment, and reducing the operational

cost of sustainable refurbishment are the main strategies to improve the current practice. All these factors are considered primary and significant because the mean score is all above 4.00, which is considered to have a high level of consensus by the interviewees. It is vital to address these barriers and strategies as it could be a benchmark for the relevant authorities to investigate and make further improvements for the future betterment of the practice of sustainable refurbishment in Malaysia.

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