SUSTAINABLE REHABILITATION STRATEGIES FOR ABANDONED HOUSING PROJECTS IN SELANGOR

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ABSTRACT

Abandoned Housing Projects (AHPs) remain a persistent structural challenge in Malaysia, particularly in Selangor, where development intensity and market pressures amplify project vulnerabilities. This study examines the key causes of project abandonment, the socio-economic and environmental impacts on stakeholders, and rehabilitation strategies from the perspective of property developers. A structured questionnaire survey distributed to developers in Shah Alam yielded 53 valid responses. Grounded in the Resource-Based View and Stakeholder Theory, this study analysed using mean scores, standard deviations, and the Relative Importance Index (RII). This study found that financial instability ranks as the most critical cause category (RII = 0.855), with governance failures ranking second (RII = 0.849), indicating that institutional integrity deficits are structurally comparable to financial fragility as drivers of abandonment. Household impacts, specifically the financial burden on purchasers servicing loans for incomplete units (RII = 0.912), register the highest severity across all impact dimensions. Rehabilitation strategies prioritise Build-Then-Sell reform, rigorous feasibility practices, and strengthened institutional oversight and anti-corruption governance. Findings contribute to evidence-based policy reform and practitioner intervention within Malaysia's affordable housing sector.

Keywords: Abandoned Housing Project, Rehabilitation, Relative Importance Index, Build-Then-Sell (BTS).

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1. INTRODUCTION

Rapid urbanisation and rising housing demand have intensified pressures on many developing cities, including those in Malaysia. A visible manifestation of these pressures is the growing number of Abandoned Housing Projects (AHP), which reflect deeper structural weaknesses in planning, governance, and project delivery. Such failures not only leave behind incomplete physical structures but also generate significant socio-economic and environmental consequences, including declining neighbourhood value, public safety risks, and long-term financial burdens on affected homebuyers (Obakin et al., 2024; Sirau et al., 2024). Addressing the persistence of AHP is, therefore, not merely a matter of increasing housing supply but a critical requirement for strengthening confidence, stability, and resilience within the national housing sector.

In Malaysia, AHP remain a long-standing challenge despite repeated policy and regulatory interventions. As one of the country's most active development regions, Selangor records some of the highest incidences of stalled and abandoned projects, driven by intense market competition, rapid urban expansion, and varied developer capacities (REHDA Institute, 2024). Prior studies identify financial instability, weak governance structures, inadequate regulatory enforcement, and shortcomings in feasibility assessment and project management as central contributors to abandonment (Sirau et al., 2024; Ibrahim & Kamarudin, 2016). Although government agencies have introduced mechanisms such as special taskforces, financial assistance schemes, and enhanced monitoring processes, many revived projects continue to face delays, cost overruns, and quality defects (CIDB, 2022). These recurring issues highlight significant gaps in the robustness, transparency, and consistency of current rehabilitation frameworks.

Given the importance of housing development to Malaysia's socio-economic growth, the recurring nature of abandoned projects poses substantial risks to buyers, developers, investors, and the credibility of the broader housing ecosystem. Financial burdens remain among the most severe impacts, as homebuyers must continue servicing housing loans for incomplete units while facing uncertainty over project revival. These challenges underscore the urgent need to better understand the root causes of abandonment and to strengthen policy, financial, and managerial approaches to prevent recurrence and enhance rehabilitation success (Khazanah Research Institute [KRI], 2020).

Against this backdrop, this study focuses on developers in Shah Alam a key urban hub in Selangor, to examine three core aspects: (1) the key causes contributing to project abandonment, (2) the socio-economic and environmental impacts on affected stakeholders, and (3) feasible strategies for improving the rehabilitation of abandoned housing developments. By analysing developer's perceptions through a descriptive quantitative approach, this study informs more structured, and effective mechanisms for addressing AHP in Malaysia.

2. LITERATURE REVIEW

The construction industry is central to Malaysia's economic growth, yet the recurring problem of AHP poses a serious national challenge. Typically defined as the suspension or non-completion of projects beyond stipulated timelines, abandonment is driven by financial instability, weak governance, and inadequate regulatory oversight (Ibrahim & Kamarudin, 2016). Its impacts are profound: homebuyers remain tied to loans for incomplete units, public confidence in the housing sector erodes, and investor trust weakens. In response, the government has introduced rehabilitation measures, most recently embedded in the Thirteenth Malaysia Plan (RMK-13), which targets one million affordable homes by 2035 and frames abandoned-project recovery as a national housing priority essential to protecting buyers and advancing urban sustainability (Ministry of Economy, 2025).

2.1 Overview of Abandoned Housing Project (AHP)

AHPs represent a long-standing challenge within Malaysia's housing and construction sector. Defined as residential developments that remain incomplete beyond statutory timelines with no credible indication of revival, AHPs disrupt market stability, threaten buyer protection, and reduce public confidence in the housing delivery system (MHLG, 2023; Hadi et al., 2015). Internationally, such projects are variously described as zombie properties or abandoned assets, with research consistently linking their presence to urban decline, reduced neighbourhood liveability, and systemic governance failures across institutional, financial, and regulatory dimensions (Ordway, 2018; UN-Habitat, 2015). Comparative experiences from Ireland, where ghost estates emerged following the 2008 financial crisis, demonstrate that large-scale abandonment is driven by property-led oversupply and weak regulation, requiring coordinated state intervention to resolve (Kitchin et al., 2012). In Malaysia, the issue is particularly pronounced due to the reliance on the sell-then-build (STB) system, which exposes buyers to financial risks when project delays escalate into abandonment (KRI, 2020). This structural reliance on progressive payments means that any disruption in the developer's cash flow directly impacts the project's viability and the buyer's financial security.

2.2 Cause of Abandonment

The abandonment of housing projects in Malaysia arises from a convergence of systemic and operational weaknesses spanning financial, governance, regulatory, market, and technical domains. Financial instability is frequently highlighted as the most critical driver of project failure. Ministry of Urban Wellbeing, Housing and Local Government (MHLG) (2023) notes that many developers operate with limited capital reserves and depend heavily on progressive payments, making them highly vulnerable to disruptions in cash flow . When unexpected cost escalations, interest rate fluctuations, or delays in purchaser payments occur, these developers face a heightened risk of insolvency, often culminating in project suspension. Governance-related shortcomings further intensify these financial pressures. Rahman et al. (2015) argues that weak feasibility studies, inadequate risk assessments, and ineffective managerial oversight contribute to unrealistic cost projections and poorly structured project scopes. Daud et al. (2017) add that inexperienced or under-resourced developers struggle to maintain project momentum, as poor management knowledge and inadequate funding undermine their capacity to sustain construction activity. These governance deficiencies reflect deeper organisational weaknesses that compromise decision-making and project delivery.

Regulatory and legal challenges significantly impact project outcomes. Issues such as land disputes, bureaucratic delays, and poor inter-agency coordination are frequent sources of project failure (KRI, 2020). Studies by Daud et al. (2017) and the Khazanah Research Institute (KRI) highlight that Malaysia’s complex regulatory environment and weak enforcement allow underqualified, financially unstable developers to operate. Specifically, the Sell-Then-Build (STB) model enables low-capital developers to rely on buyer cash flow, a loophole evidenced by 175 abandoned projects currently managed by unlicensed developers (KRI, 2020). These systemic vulnerabilities demonstrate how a fragmented regulatory framework exposes homebuyers to significant risks of project abandonment.

Market and economic conditions further compound the problem. KRI (2020) highlights that oversupply particularly in high-end segments combined with shifting demand toward more affordable housing, undermines sales performance and reduces project viability. Broader macroeconomic shocks, including recessionary cycles and the COVID-19 pandemic, have also disrupted financing channels, labour availability, and material supply chains, slowing construction progress and increasing the risk of abandonment (CIDB, 2022).

Technical and environmental factors add another layer of complexity. Rahman et al. (2015) demonstrate that inadequate site investigations can result in unforeseen geotechnical challenges such as unstable soil or high-water tables, which significantly elevate construction costs. Ariffin et al. (2018b) further note that material price volatility, contractor incapacity, and supply chain disruptions exacerbate

operational difficulties, particularly for small and mid-sized developers with limited buffer capacity. Ayudhya & Kunishima (2017) specifically highlight subcontractor-related risks as an underexamined driver of abandonment, noting that subcontractor insolvency or withdrawal can halt construction progress at critical project stages when main contractors lack the capacity to absorb the disruption.

These patterns are not confined to Malaysia. Olapade and Anthony (2012), examining abandoned building projects in Nigeria, identify similar convergences of developer insolvency, contractor incapacity, and regulatory enforcement gaps as structural drivers of project failure, suggesting that abandonment is a systemic challenge common to developing construction environments. Nana-Addy et al. (2022), in a study of abandoned completed market projects in Ghana, similarly find that inadequate design and planning, non-provision of auxiliary utilities, and weak end-user engagement drive abandonment. Taken together, the literature indicates that abandonment rarely stems from a single cause. Instead, it reflects the cumulative interaction of financial fragility, weak governance, regulatory gaps, market misalignment, and technical uncertainties. Table 1 summarises these factors by categorising them into systemic and operational dimensions, providing a clearer understanding of how these interrelated elements jointly contribute to project failure.

Table 1: Systemic and Operational Causes of AHPs

Category	Type	Key Causes	Details/Examples	References
Financial	**Systemic**	- Overreliance on progressive payments - Limited access to credit - Vulnerability to interest rate hikes	Structural financing model leaves projects exposed to insolvency	MHLG, 2023
	Operational	- Poor financial planning - Developer insolvency	Weak cash flow management and bankruptcy halt projects	MHLG, 2023
Governance & Regulatory	**Systemic**	- Weak enforcement of housing laws - Loopholes in approval/monitoring systems	Underqualified developers continue to operate; erosion of public confidence	KRI, 2020; Daud et al., 2017
	Operational	- Poor feasibility studies - Inadequate risk assessments - Ineffective contract management	Unrealistic cost estimates, scope misalignment, and mismanagement	KRI, 2020; Rahman et al., 2015; Daud et al., 2017
Market	**Systemic**	- Oversupply in high-end housing - Weak demand forecasting	Misalignment with buyer purchasing power; affordable housing unmet	KRI, 2020; REHDA, 2024
	Operational	- Speculative development without feasibility	Projects unsold, financially unsustainable	Rahman et al, 2015
Environmental	**Operational**	- Unstable soil, cavities, water table issues	Unexpected site conditions raise costs and delay construction	Rahman et al., 2015; Ariffin et al., 2018
Project Management	**Operational**	- Weak feasibility & market studies - Contractor incapacity	Delays, cost escalation, poor cash flow control	KRI, 2020; Kaur, 2018; Daud et al.,

		(technical, manpower, financial) - Supply chain disruptions - Material price volatility		2017; Rahman et al., 2015; Salam et al., 2020
External Shocks	**Systemic**	- Economic downturns - Global crises (e.g., COVID-19)	Housing demand reduction; financing restrictions; investor confidence loss	CIDB, 2022
	Operational	- Labour shortages - Construction material price surges	Delay in project delivery and increased costs	

2.3 Impact of Abandoned Housing Project (AHP)

The impacts of AHP extend far beyond incomplete physical structures, and the literature reflects a wide range of perspectives on their severity and long-term implications. Scholars consistently emphasise that abandonment imposes immediate burdens on homebuyers while also generating broader economic, environmental, and institutional consequences for the housing sector. This diversity of viewpoints highlights the complex and multidimensional nature of the issue.

At the household level, Sirau et al. (2024) highlight that purchasers often continue servicing loans for units they cannot occupy, a situation that leads to financial strain, emotional distress, and prolonged uncertainty. These challenges disrupt household stability and delay homeownership aspirations, particularly for middle- and lower-income buyers who may already be financially vulnerable. The problem is further compounded when revival timelines remain unclear or are repeatedly postponed.

Beyond individual households, neighbourhood-level effects have been widely documented. Hussin & Omran (2011) observe that abandoned sites frequently attract vandalism, theft, and other undesirable activities, contributing to declining property values and reduced perceptions of safety. Such physical deterioration gradually affects the social environment, weakening community cohesion, diminishing neighbourhood identity, and creating pockets of urban blight within otherwise stable residential areas.

At a broader economic scale, abandonment also affects the financial system. KRI (2020) observes that stalled developments contribute to rising non-performing loans and stranded capital, placing pressure on financial institutions and restricting the flow of credit to viable housing projects. Prolonged abandonment further weakens investor confidence, reducing the resilience of the national property market and dampening appetite for new housing investment. These systemic financial repercussions extend well beyond individual hardship, implicating the stability of the broader housing and credit ecosystem.

Environmental implications further widen the scope of impact. Ariffin et al. (2018a) and Rahman et al. (2015) highlight that long-neglected sites are prone to water stagnation, unmanaged vegetation, pest infestation, and inefficient land use. Such conditions pose health and safety risks while simultaneously creating long-term ecological burdens. These studies position abandoned projects not only as economic and social liabilities but also as environmental hazards that impede sustainable urban development.

Institutional credibility is also affected. KRI (2020) points out that recurrent cases of abandonment erode public confidence in both developers and regulatory bodies, signalling weaknesses in governance, monitoring, and enforcement. CIDB (2022), through its industry reporting, reinforces this concern by documenting persistent coordination gaps, enforcement inconsistencies, and capacity limitations across the construction sector. Although CIDB does not advance an academic argument, its reports underscore the systemic nature of the issue and the governance challenges that accompany project failure.

Overall, the literature portrays the impacts of AHPs as extensive and interconnected. These effects permeate households, communities, financial institutions, ecosystems, and governance systems. While scholars vary in the aspects they emphasise, the evidence collectively suggests that abandonment undermines urban liveability, weakens institutional trust, and threatens the long-term stability of Malaysia's housing ecosystem. Despite this growing body of research, few studies have explored these issues from the perspective of property developers, who play a pivotal role in both project delivery and rehabilitation. This gap underscores the relevance of the present study.

2.4 Rehabilitation Frameworks and Strategies

AHPs significantly undermine institutional trust and expose enduring weaknesses in regulatory enforcement, monitoring systems, and housing policy implementation. As repeated project failures accumulate, public confidence in the government's ability to safeguard homebuyers has diminished, a trend documented by KRI (2020) and further reflected in industry reports by CIDB (2022). The financial sector has also been affected, with rising non-performing loans and capital losses weakening investor sentiment and destabilising the broader housing market (KRI, 2020).

In response to these challenges, Malaysia has progressively developed a suite of rehabilitation frameworks that integrate regulatory intervention, financial restructuring, technical recovery strategies, and targeted legal reforms (MHLG, 2023; REHDA Institute, 2024). Government-led taskforces have been established to diagnose stalled projects, co-ordinate revival efforts, and facilitate inter-agency collaboration, while financial rescue schemes and public–private partnerships have been leveraged to mobilise capital for viable project recovery. Comparable government interventions in China have demonstrated that state-directed rehabilitation programmes are more effective when paired with transparent developer accountability mechanisms and structured financial resolution frameworks (Wu & Li, 2017).

Regulatory measures have also been strengthened through tighter enforcement mechanisms and the introduction of stricter penalties for non-compliance, as highlighted in CIDB's (2022) reporting. The experience of Singapore offers a useful regional benchmark, where consistent regulatory oversight and stringent developer licensing requirements have contributed to a more stable housing market with fewer instances of project abandonment (Li & Peng, 2024).

Financial instruments form a core component of the rehabilitation agenda. Measures such as bridging finance, escrow account management, and debt rescheduling are designed to protect buyer investments and stabilise developer liquidity, thereby reducing the likelihood of further project failures (REHDA Institute, 2024). Complementing these financial tools are technical strategies including independent project audits, phased completion models, and the appointment of replacement contractors to ensure that revived projects can proceed efficiently and safely (Ariffin et al., 2018a).

Parallel legal reforms have sought to enhance buyer protection and reduce the recurrence of abandonment. Amendments to the Housing Development Act and refinements to bankruptcy and insolvency procedures aim to streamline dispute resolution, safeguard purchasers' interests, and improve the overall accountability of developers (MHLG, 2023; Ariffin 2024). Dahlan (2011) further documents the legal complexities arising when developer companies enter liquidation, highlighting the procedural constraints that can delay rehabilitation and limit buyer recourse. Taken together, these measures represent a multidimensional effort to restore confidence, strengthen governance, and improve the resilience of Malaysia's housing delivery system.

2.5 Challenges and Research Gaps in Rehabilitation

The rehabilitation of AHPs is frequently hindered by a combination of financial, social, technical, and legal barriers. Cost escalation remains one of the most persistent challenges, as stalled projects often

require substantial remedial works to address structural defects, deterioration, or vandalism, while inflation and rising material prices further inflate revival costs. These pressures are exacerbated by weak financial planning, inadequate budgeting, and insufficient monitoring during the original project cycle, all of which undermine the viability of rehabilitation and reduce confidence in state-led interventions (Sirau et al., 2024).

Social and institutional factors also complicate recovery efforts. Homebuyers frequently express doubt over whether revived projects will meet promised quality standards, contributing to disputes, reluctance to resume payments, or instances of litigation. Financial institutions display similar reservations; REHDA Institute (2024) highlights that lenders often hesitate to extend credit to rescue projects without strong assurances of completion and accountability. Over time, repeated project failures erode public trust in both developers and regulatory authorities, making stakeholders increasingly sceptical of revival announcements and state assurances (KRI, 2020).

Technical and legal challenges continue to pose significant obstacles even after rehabilitation begins. The REHDA Institute (2024) highlights that accelerated revival timelines or the engagement of replacement contractors with limited familiarity of the project can result in construction defects, non-compliance issues, and substandard finishes. CIDB (2022) reported that revived projects often fail initial quality audits, leading to further delays, cost overruns, and disputes during handover. Legal complications magnify these difficulties: unresolved land ownership claims, outstanding mortgages or liens, and accumulated tax arrears frequently require lengthy processes before projects can be transferred to new developers or financiers (MHLG, 2023). Such delays heighten costs, weaken buyer confidence, and threaten the feasibility of rehabilitation.

Despite growing research interest, significant knowledge gaps persist. Much of the existing scholarship remains largely descriptive, offering limited evaluative or solution-oriented analysis to support evidence-based rehabilitation strategies (KRI, 2020; REHDA Institute, 2024). The potential for digital transformation such as the integration of Building Information Modelling (BIM), digital monitoring systems, and sustainability assessment tools has also received insufficient academic attention, even though these innovations could improve coordination, transparency, and long-term urban liveability (Rahman et al., 2015; MHLG, 2023). Furthermore, the lack of rigorous empirical methods, including multi-stakeholder comparative studies, longitudinal assessments, and robust quantitative modelling, limits the ability to identify which interventions most effectively support project completion, rebuild stakeholder trust, and enhance the sustainability of rehabilitation outcomes.

2.6 Theoretical Framework

This study is grounded in two complementary theoretical frameworks: Stakeholder Theory (Freeman, 1984) and the Resource-Based View (Barney, 1991). Together, these frameworks provide the conceptual architecture for understanding both why housing projects are abandoned and why rehabilitation efforts succeed or fail.

Stakeholder Theory posits that organisations operate within a web of interdependent relationships, and that decisions made by any one party generate consequences that extend across multiple stakeholder groups (Freeman, 1984). In the context of abandoned housing projects, this theoretical lens explains why abandonment cannot be understood as a developer-level failure alone. As the empirical findings of this study confirm, the consequences of abandonment cascade across homebuyers bearing ongoing loan obligations, financial institutions absorbing non-performing loans, regulatory bodies facing eroded public trust, and communities experiencing environmental degradation and social disorder. Effective rehabilitation, by extension, requires coordinated multi-stakeholder intervention rather than isolated technical or financial remedies. The framework thus informs the strategies dimension of this study, particularly the roles assigned to government agencies, local authorities, and financial institutions in supporting viable project recovery.

The Resource-Based View (RBV) provides the theoretical basis for understanding the internal conditions that precipitate project failure. Barney (1991) argues that sustained organisational performance is contingent on the possession and deployment of valuable, rare, and non-substitutable resources and capabilities. Applied to housing development, this framework positions developer financial reserves, project management competence, feasibility assessment capability, and governance integrity as the critical internal resources whose absence or inadequacy elevates abandonment risk.

Figure 1 presents the conceptual framework integrating both theoretical perspectives to evaluate the structural flow of project abandonment and subsequent recovery. Grounded in the Resource-Based View (Barney, 1991), the framework positions operational deficiencies such as financial crisis, poor cash flow, corruption, and inadequate project management feasibility as fundamental resource and capability failures that dictate the primary project outcome: project abandonment (AHP). Once abandonment occurs, Stakeholder Theory (Freeman, 1984) serves as the explanatory lens for the downstream process, mapping the cascading, multi-dimensional impacts felt by diverse entities across household, social, environmental, and economic-institutional dimensions. To address these widespread externalities, the bottom layer of the framework prescribes targeted rehabilitation strategies via focusing on feasibility, planning, BTS financial models, and governance reforms via MACC, CIDB, and MHLG oversight acting as structural interventions to correct the original root failures and protect the broader housing ecosystem.

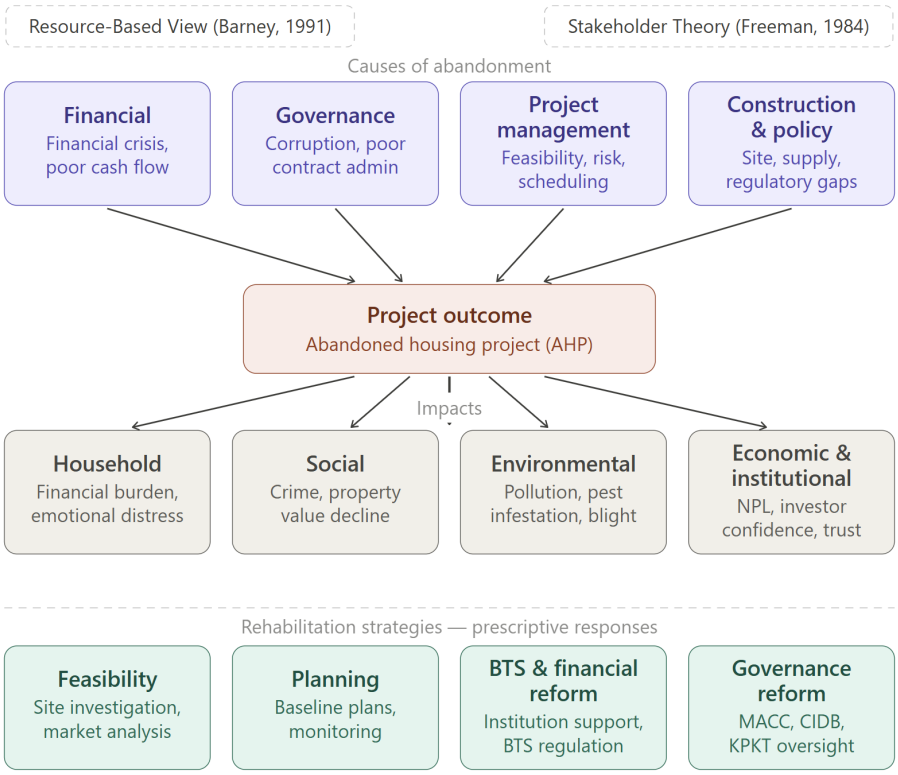

Figure 1: Conceptual Framework for this research

3. METHODOLOGY

This study adopted a quantitative research design using a structured questionnaire survey to examine the causes, impacts, and potential rehabilitation strategies for AHPs in Malaysia. The survey approach was selected to systematically capture developers' perceptions across multiple dimensions of

project abandonment, including financial, organisational, regulatory, environmental, and market-related factors.

The questionnaire was developed based on an extensive review of the literature on abandoned housing projects, construction project failure, housing policy, and project management. Items were adapted from established thematic factors identified in prior studies, including financial instability, governance weaknesses, feasibility assessment deficiencies, construction-related issues, regulatory gaps, macroeconomic conditions, and administrative shortcomings. Additional sections measured perceived impacts on homebuyers, communities, public safety, crime, environmental quality, and economic conditions, as well as strategies to minimise abandonment and strengthen rehabilitation outcomes.

The final instrument consisted of three main sections:

- Causes of abandonment (environmental, financial, organisational, construction, policy, economic, administrative, and project management factors);
- Impacts of abandonment (household, rehabilitation process, environmental, tourism, crime, social, and economic effects);
- Strategies for prevention and effective rehabilitation (feasibility studies, planning, developer capability, BTS implementation, and government roles).

All variables were measured using a three-point Likert scale (1 = Disagree, 2 = Fair, 3 = Agree). This streamlined scale was purposefully adopted to reduce cognitive load and respondent fatigue among property development practitioners, thereby ensuring a higher response rate and facilitating a clear, exploratory consensus on the critical drivers of project abandonment. Furthermore, the use of a 3-point scale is supported by methodological studies suggesting that it can be as effective as a 5-point scale in specific research contexts (Fang et al., 2011). While the study acknowledges the absence of a pilot test or formal reliability analysis as a methodological limitation, the instrument's validity was underpinned by adapting items from established thematic factors identified in the extensive literature on construction project failure and housing policy.

A purposive sampling strategy, incorporating elements of convenience sampling, was adopted to navigate time and access constraints inherent in reaching high-level industry practitioners. The target population specifically comprised property developers, as they possess direct professional experience in project initiation, financial planning, construction co-ordination, and rehabilitation decision-making. A total of 100 questionnaire forms were distributed to developers with experience in stalled or AHPs, resulting in 53 valid responses, representing a 53% response rate, which were subsequently analysed.

4. RESULTS AND DISCUSSION

4.1 Response rate and demographic

This study targeted property developers in Shah Alam, Selangor, as they play a central role in the initiation, management, and potential rehabilitation of AHPs. The target of 100 was determined through purposive convenience sampling, targeting property developers with direct experience in housing development and rehabilitation in Shah Alam, Selangor. Respondents were reached via email and direct industry contact. The 53 valid responses obtained represent a 53% response rate, which substantially exceeds the 20–30% response norm reported for construction industry surveys (Akintoye & Fitzgerald, 2000).

As illustrated in Table 2, respondent experience in the construction industry was well distributed across various seniority levels. Specifically, 26% of respondents possessed fewer than five years of

experience, 25% had between six and ten years, and 23% were seasoned practitioners with more than fifteen years in the industry. This balanced distribution indicates a representative mix of early-career and highly experienced professionals, ensuring that the findings reflect a holistic understanding of both current operational challenges and long-term systemic trends.

Furthermore, Table 3 demonstrates that 43% of respondents had direct professional experience in the rehabilitation of abandoned housing projects. The remaining 57%, while not directly involved in rehabilitation, possessed significant industry experience. This combination of "rehabilitation experts" and "general development practitioners" allowed the study to capture nuanced insights into the practical difficulties of project recovery, while simultaneously identifying the broader systemic issues that contribute to abandonment in the first place.

Table 2: Working Experience of Respondents in the Construction Industry

Working experience in construction industry	Number of respondents	Percentage
< 5 years	14	26%
6 - 10 years	13	25%
11 - 15 years	14	26%
>15 years	12	23%
Total	53	100%

Table 3: Respondent's Direct Involvement in Rehabilitation Projects

Involvement in rehabilitation abandoned housing project	Number of respondents	Percentage
Yes	23	43%
No	30	57%
Total	53	100%

To ensure an objective and systematic analysis of the data, the mean scores were interpreted using a mean class interval. Given that a three-point Likert scale was utilised (1 = Disagree, 2 = Fair, 3 = Agree), the interval was calculated by dividing the range of the scale by the number of desired levels (3 - 1 / 3 = 0.67). This calculation resulted in three distinct levels of agreement or significance, as shown in Table 4. These categories serve as the benchmark for analysing the factors contributing to abandonment, their impacts, and the effectiveness of proposed rehabilitation strategies.

Table 4: Interpretation of Mean Score Intervals

Mean Score Range	Level of Agreement / Significance
1.00 – 1.66	Low
1.67 – 2.33	Moderate
2.34 – 3.00	High

4.1.1 Causes of Abandoned Housing Projects

The analysis of the thematic causes of abandoned housing projects, as summarised in Table 5, indicates that financial, governance, and project management-related factors are perceived as the most influential drivers of project failure. To move beyond descriptive reporting, the Relative Importance Index (RII) is employed alongside mean scores and standard deviations (SD). RII is calculated as $\Sigma W / (A \times N)$, where W is the respondent weight (Agree = 3, Fair = 2, Disagree = 1), A is the maximum weight (3), and N is the total number of respondents (53). SD values indicate the degree of respondent consensus; lower SD reflects stronger agreement across the sample.

At the variable level, financial crisis (Mean = 2.64, SD = 0.587, RII = 0.880) and improper financial planning (Mean = 2.64, SD = 0.587, RII = 0.880) rank jointly highest, with low SD values confirming

strong consensus among respondents. These results corroborate Salam et al. (2023), who note that developers, particularly smaller firms, face severe liquidity constraints and heightened vulnerability during economic downturns, struggling to meet costs of materials and labour wages.

Notably, administration corruption (Mean = 2.60, SD = 0.654, RII = 0.868) ranks third overall above project scheduling, construction delays, and supply chain disruptions. Unlike the preceding financial causes, corruption is a behavioural and institutional failure rooted in weak governance, enforcement gaps, and the absence of accountability mechanisms within the housing development process. Daud et al. (2017) identify regulatory enforcement gaps as structural enablers of developer misconduct, while CIDB (2022) documents persistent coordination weaknesses across oversight agencies. The moderate SD for this variable (0.654) indicates that respondents held reasonably consistent views on its significance, lending further weight to this finding. Poor contract administration (RII = 0.830) reinforces this governance deficit signal, suggesting that institutional integrity failures operate alongside financial fragility as co-equal structural drivers of abandonment.

Project management weaknesses also feature prominently, with improper project scheduling and planning (RII = 0.837) and poor risk management (RII = 0.824) both rated High. These findings align with AlNasseri & Aulin (2016), who emphasise that inadequate preliminary assessments produce unrealistic cost forecasts and poorly defined project scopes, substantially elevating abandonment risk. Respondents also identified inherent limitations within the Sell-Then-Build system (RII = 0.818), unforeseen ground conditions (RII = 0.792), and broader macroeconomic pressures including raw material cost escalation (RII = 0.792) as contributing factors. Qualitative feedback further highlighted unstable financing arrangements, insufficient co-operation from authorities, and political interference as compounding constraints. Collectively, these findings confirm that AHPs in Malaysia arise from a complex, multi-dimensional intersection of financial fragility, institutional governance failures, and operational project management weaknesses. It is a pattern that demands correspondingly multi-pronged rehabilitation responses.

Table 5: Analysis of the Causes of Abandoned Housing Projects (AHPs)

Causes (variable)	Mean	SD	RII	Ranking	Level
1. Environmental					
Ground condition	2.38	0.758	0.792	1	High
2. Financial					
Financial crisis	2.64	0.587	0.88	1	High
Improper financial planning	2.64	0.587	0.88	2	High
Delay payment	2.51	0.662	0.836	3	High
Improper cashflow	2.47	0.689	0.824	4	High
3. Organisation and management factor					
Inappropriate feasibility studies	2.47	0.689	0.824	1	High
Lack of experience	2.42	0.738	0.805	2	High
4. Construction					
Delay of projects	2.51	0.717	0.837	1	High
Supply problem	2.49	0.690	0.83	2	High
Management on site	2.45	0.660	0.818	3	High
Shortage of equipment & material	2.43	0.658	0.811	4	High
Incompetent contractor	2.43	0.687	0.811	5	High
Incompetent subcontractor	2.4	0.709	0.799	6	High
5. Policy					
Sell-then-build system	2.45	0.688	0.818	1	High
Change in government policy	2.42	0.685	0.805	2	High
6. Economic					

The rising of raw materials cost	2.38	0.733	0.792	1	High
Unexpected bad economic conditions	2.31	0.721	0.771	2	Moderate
7. Administration					
Administration corruption	2.60	0.654	0.868	1	High
Poor contract administration	2.49	0.69	0.830	2	High
8. Project management					
Improper project scheduling and planning	2.51	0.717	0.837	1	High
Poor risk management	2.47	0.689	0.824	2	High
Inaccurate estimation for the project time and cost	2.45	0.688	0.818	3	High

4.2 The socio-economic and environmental impacts of AHPs on buyers, communities, and urban development

Table 6 illustrates the multidimensional consequences of project abandonment across four impact categories. All twelve variables are rated High (RII = 0.818–0.912), confirming that respondents perceive the consequences of abandonment as uniformly severe. The RII analysis reveals that household impacts register the strongest severity, followed by environmental, social, economic and institutional dimensions.

At the household level, financial burden on purchasers (Mean = 2.74, SD = 0.482, RII = 0.912) records both the highest RII and the lowest SD of any impact variable, reflecting near-unanimous consensus that buyers servicing loans for incomplete units represents the most critical consequence of abandonment. Sirau et al. (2024) argue that this condition creates a state of prolonged financial and mental uncertainty, a pattern reinforced here by psychological and emotional distress ranking second (Mean = 2.68, SD = 0.542, RII = 0.893). Hussin & Omran (2011) similarly characterise this as an inequitable burden, generating long-term debt exposure and heightened economic vulnerability. The progressively rising SD across the three household variables (0.482, 0.542, 0.587) suggests that while financial harm commands near-universal recognition, respondents show slightly greater variation in their assessment of longer-term psychological and aspirational consequences.

Environmental impacts rank second at the category level. Water stagnation and pest infestation (Mean = 2.62, SD = 0.558, RII = 0.874) is perceived as the most severe environmental consequence, corroborating Ariffin et al. (2018a) and Rahman et al. (2015), who document the ecological burdens of neglected construction sites. The higher SD values for aesthetic deterioration (SD = 0.660, RII = 0.849) and inefficient land use (SD = 0.662, RII = 0.830) relative to water stagnation suggest that respondents hold more varied views on visual and land-use impacts, likely reflecting differences in site context across respondents' professional experience.

Social and community impacts are rated consistently High, with hubs for criminal activities and vandalism recording the strongest RII in this category (Mean = 2.59, SD = 0.598, RII = 0.862). Hussin & Omran (2011) document this pattern extensively, noting that abandoned sites attract drug activity, theft, and vandalism, eroding neighbourhood safety and suppressing surrounding property values. The relatively uniform SD values across all three social variables (0.598–0.662) indicate broad respondent agreement on the social deterioration consequences of abandonment.

Economic and institutional impacts, while rated lowest among the four categories, remain firmly within the High band. Increase in non-performing loans (Mean = 2.51, SD = 0.662, RII = 0.837) and deterioration of investor confidence (Mean = 2.47, SD = 0.689, RII = 0.824) reflect systemic risks extending beyond individual buyers to the financial sector and national property market, consistent with KRI (2020). Erosion of public trust in regulatory bodies (Mean = 2.45, SD = 0.688, RII = 0.818), the lowest-ranked variable overall, should be read alongside the governance findings in Section 4.1.1, where administration corruption ranked third among all causes. The combination of governance failures as a

high-ranking cause and measurable erosion of regulatory trust as an impact suggests a self-reinforcing dynamic: weak institutional oversight enables abandonment, which deepens public scepticism toward the agencies responsible for prevention and rehabilitation. Collectively, these findings confirm that AHPs generate interconnected impacts spanning household welfare, environmental quality, community safety, and institutional credibility, underscoring the urgent need for multi-pronged and governance-sensitive intervention mechanisms.

Table 6: Analysis of the Multi-dimensional Impacts of Project Abandonment

Category / Variable	Mean	SD	RII	Rank	Level
1. Household Impacts					
Financial burden on purchasers (servicing loans)	2.74	0.482	0.912	1	High
Psychological and emotional distress	2.68	0.542	0.893	2	High
Delay in homeownership aspirations	2.64	0.587	0.880	3	High
2. Environmental Impacts					
Water stagnation and pest infestation	2.62	0.558	0.874	1	High
Aesthetic deterioration and urban blight	2.55	0.660	0.849	2	High
Inefficient land use	2.49	0.662	0.830	3	High
3. Social & Community Impacts					
Hubs for criminal activities and vandalism	2.59	0.598	0.862	1	High
Decline in surrounding property values	2.53	0.661	0.843	2	High
Reduced neighbourhood safety and security	2.51	0.662	0.837	3	High
4. Economic & Institutional Impacts					
Increase in non-performing loans	2.51	0.662	0.837	1	High
Deterioration of investor confidence	2.47	0.689	0.824	2	High
Erosion of public trust in regulatory bodies	2.45	0.688	0.818	3	High

4.3 Current Rehabilitation Frameworks and Propose Innovative Strategies

Table 7 summarises the strategies perceived by respondents as most effective in preventing abandonment and strengthening rehabilitation outcomes. All ten variables are rated High (RII = 0.798–0.874), indicating broad industry consensus on the relevance of the proposed measures. Three strategic themes emerge as priorities: financial system reform through the Build-Then-Sell framework, strengthened institutional oversight, and improved pre-construction planning.

The role of financial institutions in supporting BTS implementation records the highest RII overall (Mean = 2.62, SD = 0.558, RII = 0.874), with a low SD confirming strong respondent consensus. This finding reflects industry recognition that the structural vulnerability embedded in the Sell-Then-Build system, identified as a cause of abandonment in Section 4.1.1, requires systemic financial reform rather than project-level remedies alone. Shafiei et al. (2010) argue that developer willingness to adopt BTS is contingent on substantive financial institution support, including banking policies and loan frameworks specifically structured around the BTS model. Shah et al. (2022) similarly identify the role of financial institutions and funding as one of nine critical success factor groups governing the completion of affordable-housing projects across both lower-middle and high-income economies. Expediting BTS regulations (RII = 0.824) is rated as a complementary measure, though its higher SD (0.689) relative to the financial institution variable suggests greater respondent variation on the pace and feasibility of regulatory reform.

Identifying suitable rehabilitation parties ranks second overall (Mean = 2.59, SD = 0.598, RII = 0.862), underscoring the view that government and local authorities bear primary responsibility for coordinating project recovery. Rahman et al. (2015) and Yap et al. (2010) emphasise that timely identification of viable rescue developers, financiers, or landowner-led committees is a precondition for revival success. Monitoring work progress and enforcement (RII = 0.830) further reinforces the

expectation of active public sector oversight throughout the rehabilitation process.

Within pre-construction planning, create baseline management plans (Mean = 2.57, SD = 0.629, RII = 0.856) is the strongest-rated planning measure, reflecting an industry view that structured project workflows and transparent monitoring systems are essential to prevent operational drift toward abandonment. Detailed preliminary site investigation (RII = 0.843) and proper market analysis (RII = 0.837) both record identical SD values (0.632), indicating consistent respondent agreement that feasibility work is a foundational preventive measure directly addressing the finding that inappropriate feasibility studies rank among the most critical causes of failure.

Developer capability variables record the lowest RII values in the table, with maintain a good track record (RII = 0.798) and adoption of good construction practices (RII = 0.818) rated marginally below the other categories. The higher SD values for these variables (0.660–0.682) suggest greater respondent variability, likely reflecting differing views on whether developer capability is addressable through market mechanisms or requires regulatory enforcement.

A critical gap remains between the diagnostic findings and the prescriptive recommendations. Despite governance and administration ranking second among all cause categories in Section 4.1.1, and administration corruption ranking third among individual cause variables (RII = 0.868), none of the ten strategies addresses governance reform or anti-corruption mechanisms directly. Future rehabilitation frameworks should incorporate mandatory financial disclosure requirements for developers, independent auditing of project accounts, strengthened CIDB contractor grading enforcement, and coordinated oversight between MHLG, MACC, and local authorities. Addressing this gap would align the prescriptive recommendations with the full diagnostic picture presented in this study and substantially improve the actionability of Malaysia's rehabilitation policy architecture.

Table 7: Proposed Strategies for Prevention and Rehabilitation

Strategy / Variable	Mean	SD	RII	Ranking	Level
1. Rigorous Feasibility Studies					
Detailed preliminary site investigation	2.53	0.632	0.843	1	High
Proper market analysis	2.51	0.632	0.837	2	High
2. Strategic Planning and Procedures					
Create baseline management plans	2.57	0.629	0.856	1	High
Monitoring progress and making adjustments	2.43	0.658	0.811	2	High
3. Developer Capability and Standing					
Adoption of good construction practices	2.45	0.66	0.818	1	High
Maintain a good track record	2.39	0.682	0.798	2	High
4. Build-Then-Sell (BTS) Concept					
Role of financial institutions in supporting BTS	2.62	0.558	0.874	1	High
Expedite regulations for BTS implementation	2.47	0.689	0.824	2	High
5. Roles of Local Authorities and Government					
Identify suitable parties for rehabilitation	2.59	0.598	0.862	1	High
Monitoring work progress and enforcement	2.49	0.662	0.83	2	High

5. CONCLUSION

This study examined the causes, impacts, and rehabilitation strategies for AHPs in Selangor from the perspective of property developers, grounded in the Resource-Based View (Barney, 1991) and Stakeholder Theory (Freeman, 1984). Data from 53 respondents were analysed using mean scores, standard deviations, and the Relative Importance Index (RII) to provide inferential ranking beyond descriptive reporting. The findings reaffirm that abandonment arises from a complex, multi-dimensional intersection of weaknesses rather than a single point of failure. At the category level, financial instability

ranks as the most critical driver (RII = 0.855), followed closely by governance and administration failures (RII = 0.849) — a finding that positions institutional integrity deficits as structurally comparable to financial fragility in their contribution to project abandonment. Project management weaknesses, construction-related factors, and policy constraints complete the causal picture. These findings are consistent with the Resource-Based View, which identifies the absence of critical developer resources and capabilities, financial reserves, governance integrity, and project management competence as the fundamental conditions that elevate abandonment risk.

The impacts of abandonment extend far beyond delayed construction. Household impacts register the highest severity across all dimensions, with the financial burden on purchasers servicing loans for incomplete units recording the strongest consensus of any variable in the study (RII = 0.912, SD = 0.482). Environmental, social, and institutional impacts are uniformly rated High, confirming that abandoned projects generate cascading consequences across the full spectrum of stakeholders identified by Stakeholder Theory stretching from individual homebuyers and communities to financial institutions and regulatory bodies.

The strategies analysis highlights Build-Then-Sell (BTS) reform strengthened institutional oversight, and rigorous feasibility practices as the most strongly supported intervention measures. However, a critical gap was identified between the diagnostic and prescriptive dimensions of the study. Despite governance and administration ranking second among all cause categories, none of the ten strategies originally proposed addressed anti-corruption measures or governance reform directly. Future rehabilitation frameworks should incorporate mandatory financial disclosure requirements for developers, independent auditing of project accounts, and coordinated oversight between relevant housing, anti-corruption, and construction regulatory bodies. Addressing this gap would substantially improve the comprehensiveness and policy utility of Malaysia's rehabilitation architecture.

This study is not without limitations. The sample was restricted to property developers in Shah Alam through purposive convenience sampling without a formal population frame, which limits the generalisability of the findings. The three-point Likert scale, while appropriate for an exploratory study of this nature, precluded respondent-level regression analysis. The study also did not conduct a pilot test or formal reliability analysis prior to instrument deployment and did not capture the perspectives of other key stakeholders including homebuyers, financiers, and contractors.

Future research should incorporate multi-stakeholder perspectives from homebuyers, financiers, contractors, and regulatory bodies to build a more comprehensive evidence base. Analytical rigour could be strengthened through interval-scale instruments and inferential techniques such as structural equation modelling. Pilot testing and formal reliability analysis should precede instrument deployment in future studies. Geographically, expansion to multi-state comparative studies spanning regions such as Johor, Penang, and Sabah would improve generalisability. The integration of Building Information Modelling and real-time monitoring as governance tools also warrants further empirical investigation.

Overall, this study contributes empirical evidence to the ongoing discourse on AHP projects in Malaysia, demonstrating that effective rehabilitation requires responses that are simultaneously financial, technical, and institutional in scope. By addressing the systemic governance weaknesses identified alongside the more widely recognised financial drivers, Malaysia can advance a more resilient, accountable, and buyer-protective housing delivery system.

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