

Probing Contractors' Insights into Delay Mitigation Strategies for Private Housing Projects in Perak

Siti Nurhayati Hussin^{1*}, Mohd Zulhakim Yahdy Suhaimee Yahdy², Syarifah Nur Nazihah Syed Jamalulil³

^{1,3}Department of Built Environment Studies and Technology, Faculty of Built Environment, Universiti Teknologi MARA, Perak Branch, 32610 (Malaysia)

²Bluesky Resources Sdn Bhd, I-03-07, 3rd Floor, Conezion Commercial, Persiaran IRC 3, IOI Resort City, 62502 Putrajaya

***Corresponding Author**

DOI: <https://doi.org/10.47772/IJRISS.2026.100600009>

Received: 16 May 2026; Accepted: 21 May 2026; Published: 16 June 2026

ABSTRACT

The construction industry plays a significant role in driving economic growth and urban development in Malaysia. Nevertheless, delays in private housing projects continue to be a persistent issue leading to project delay, cost overruns, quality deterioration and strained relationships among project stakeholders. These delays are influenced by a combination of internal and external factors thereby highlighting the importance of implementing effective mitigation strategies to enhance project delivery performance. This study investigates mitigation strategies for delays in private housing projects from the perspective of G7 contractors in Perak, Malaysia. A quantitative research approach was adopted through the distribution of structured questionnaires to industry practitioners. Simple random sampling was employed to select respondents comprising experienced G7 contractors actively involved in private housing construction projects in Perak. The questionnaire utilised a five-point Likert scale to evaluate the significance of various mitigation strategies for addressing project delays. The collected data were analysed using the Statistical Package for the Social Sciences (SPSS) to identify and rank the most effective delay mitigation strategies. The findings reveal that several strategies are highly effective in mitigating project delays including clear project scope, effective project planning, training, strong consultation-contractor coordination and good monitoring and progress review. These strategies are considered essential in enhancing construction efficiency, reducing project disruptions, and improving overall project performance. This study provides valuable insights into delay mitigation practices within the private housing sector and offers practical recommendations for contractors, consultants, developers, and policymakers to minimise delays, improve project delivery, and achieve more sustainable and efficient construction project outcomes in Malaysia.

Keywords: Delays, Mitigation strategies, Housing projects, Malaysian construction industry

INTRODUCTION

The construction industry plays a crucial role in Malaysia's economic growth by driving infrastructure development, generating employment opportunities and stimulating related industries. The sector contributes significantly to the national gross domestic product (GDP) while supporting socio-economic development including private housing projects. According to the Department of Statistics Malaysia (2025) the value of construction work completed in the first quarter of 2025 was RM42.9 billion and the residential buildings accounted to RM9.9 billion or 23 percent of the total. Another strong growth rate was the residential subsector, which stood at 27 percent with civil engineering that was up by 3.7 percent (Malay Mail, 2025). These figures highlight the significant contribution of housing projects to the growth and sustainability of Malaysia's construction industry and overall economic development. However, despite these benefits and achievements the construction project delays have become a widespread regional issue and are extensively recognised as a major barrier to project success (Abdulridha & Gata, 2024). These delays are commonly attributed to poor planning,

financial difficulties, ineffective project management, labour shortages and disruptions within the supply chain (Ahmad et al., 2024). In addition, factors such as design modifications, contractor inefficiency, and inadequate project monitoring further contribute to project delays (Aldammak et al., 2025). Consequently, persistent delays have led to significant time and cost overruns, which continue to adversely affect stakeholders involved in housing projects across the country (Abonassrya et al., 2023). Prior to that, Perak has been recording the highest number of ailing housing projects in Malaysia (SME Bank, 2025). Therefore, this study aims to investigate contractors' insights into delay mitigation strategies for private housing projects in Malaysia focusing on Perak State.

LITERATURE REVIEW

Table 1 summarises the key mitigation measures frequently highlighted by past researchers, indicating the common approaches adopted to improve project performance, minimise delays and enhance overall construction management effectiveness. These strategies include aspects related to project planning, communication, procurement, labour management, technology adoption, risk management and stakeholder coordination.

Table 1: Potential strategies to mitigate delays in housing projects

Potential strategies to mitigate delays in housing projects	Yap et al. (2020)	Aziz et al. (2022)	Perez et al. (2024)	Munikanan et al. (2025)	Patel et al. (2025)	Aldammak et al. (2025)	Fashina et al. (2020)	Bhattarai (2023)	Mahamid (2021)	Ramli et al. (2019)
Effective Project Planning	✓	✓	✓	✓	✓	✓		✓	✓	✓
Strong Communication Channels		✓	✓		✓	✓	✓	✓	✓	✓
Timely Procurement & Material Management	✓	✓		✓	✓		✓			
Labour Management & Training		✓		✓	✓		✓	✓	✓	
Use of Modern Technology	✓	✓	✓				✓		✓	
Contractual Incentives & Penalties	✓							✓	✓	✓
Regular Monitoring & Progress Review		✓	✓	✓		✓	✓	✓	✓	
Risk Management	✓	✓			✓		✓	✓		
Clear Scope Definition & Avoiding Scope Creep	✓						✓	✓	✓	✓
Strengthen Consultant–Contractor Coordination	✓		✓	✓	✓	✓	✓	✓	✓	✓

The literature indicate that effective project planning is the most frequently highlighted strategy, as emphasised by Yap et al. (2020), Aziz et al. (2022), Perez et al. (2024), Mulikana et al. (2025), Patel et al. (2025), Aldammak et al. (2025), Bhattarai (2023), Mahamid (2021), and Ramli et al. (2019). This demonstrates that comprehensive planning at the early stage of a project is necessary to minimise uncertainties, improve scheduling, and ensure effective allocation of resources. In addition, strong communication channels were also identified as an important factor in reducing project delays. Several researchers highlighted that effective communication among project stakeholders enhances coordination, improves decision-making processes and reduces misunderstandings during project implementation. Likewise, timely procurement and material management were recognised as critical measures to avoid disruptions in construction activities caused by shortages or late delivery of materials. Furthermore, labour management and training emerged as another significant action identified in the literature. Proper workforce management, adequate supervision, and continuous training contribute to higher productivity

and reduce inefficiencies on site. In addition, the use of modern technology was recommended by several researchers to improve project monitoring, communication, scheduling, and overall project performance.

The table also indicates that contractual incentives and penalties can serve as mechanisms to encourage project participants to adhere to project schedules and contractual obligations. Furthermore, regular monitoring and progress review were consistently highlighted as important practices to identify potential issues at an early stage and enable corrective actions before delays become critical. Moreover, risk management and clear scope definition were also recognised as essential strategies in minimising delays. Effective risk management enables project teams to anticipate and mitigate potential uncertainties, while a clearly defined project scope helps to prevent scope creep, design changes, and contractual disputes. Lastly, strengthened consultant–contractor coordination was identified by many researchers as a critical factor in improving collaboration, reducing conflicts, and ensuring smooth project execution. Overall, the literature demonstrates that construction project delays are multidimensional issues that require integrated management strategies involving planning, communication, coordination, monitoring, resource management, and stakeholder collaboration.

RESEARCH METHODOLOGY

Research approach

This study adopts a quantitative research approach to investigate issues related to private housing project delays among G7 contractors in Malaysia. The quantitative method was selected because it enables the collection of structured data from huge number of respondents and facilitates statistical analysis to identify significant factors related to project delays and mitigation strategies.

Population and targeted respondents

The target respondents for this study consist of G7 contractors registered with the Construction Industry Development Board Malaysia (CIDB) and operating in the state of Perak. G7 contractors were selected due to their extensive involvement in large-scale construction projects and their substantial experience in project management and execution. The total population for this study comprises 329 G7 contractors registered with CIDB in Perak. Based on the Krejcie and Morgan sampling table, the required sample size for this population is 177 respondents. However, due to time constraints, limited accessibility to respondents, and a low response rate from contractors, only 74 responses were successfully collected. Therefore, this study achieved a final sample size of 74 contractors.

Sampling method

This study employed simple random sampling as the sampling technique to ensure that each contractor within the population had an equal chance of being selected. This method helps to minimise sampling bias and improve the representativeness and reliability of the findings.

Data collection

Data collection was conducted using a structured questionnaire survey developed based on previous literature related to construction project delays and mitigation strategies. The questionnaires were distributed electronically through email and WhatsApp to facilitate efficient and wider data collection from the targeted respondents.

Data analysis

The collected data were analysed using the Statistical Package for the Social Sciences (SPSS) software. Descriptive statistical analysis, including frequency, percentage, mean score, and ranking analysis, was used to analyse the respondents' feedback and determine the most significant factors and strategies associated with construction project delays. The use of SPSS provides a systematic and reliable approach for interpreting the research findings.

ANALYSIS & FINDINGS

The Analysis and Findings section presents the interpretation and discussion of the data collected in this study. The findings are analysed systematically to identify the most significant strategies for mitigating delays in housing construction projects based on the perspectives and evidence obtained from previous studies and respondents. The analysis also highlights the patterns, frequency and importance of each strategy in improving project delivery performance.

Table 2: Demographic Profile of Respondents and Project Background

Criteria	Category	Frequency (n)	Percentage (%)
<i>Working Experience</i>	Less than 5 years	23	31.1
	6 years to 10 years	21	28.4
	11 years to 15 years	12	16.2
	16 years to 20 years	14	18.9
	More than 20 years	4	5.4
	Total	74	100.0
<i>Number of Projects Delayed</i>	1 to 5 projects	32	43.2
	6 to 10 projects	22	29.7
	11 to 15 projects	17	23.0
	More than 15 projects	3	4.1
	Total	74	100.0
<i>Contract Value (RM)</i>	Under 10 Million	6	8.1
	10 Million to 20 Million	14	18.9
	21 Million to 50 Million	27	36.5
	51 Million to 100 Million	19	25.7
	More than 100 Million	8	10.8
	Total	74	100.0
<i>Types of Housing Projects</i>	Terrace	21	28.4
	Semi-Detached (Semi-D)	22	29.7
	Bungalow	22	29.7
	Condominium	5	6.8
	Apartment	4	5.4
	Total	74	100.0

Table 2 presents the demographic and project background profile of 74 respondents involved in delayed private housing projects in Perak. In terms of working experience, the sample is dominated by early to mid-career practitioners, with 31.1% (n = 23) having less than 5 years of experience and 28.4% (n = 21) with 6–10 years. Collectively, 59.5% of respondents fall within the ≤10-year experience bracket, indicating a strong representation of relatively less experienced professionals. Respondents with 11–15 years (16.2%, n = 12) and 16–20 years (18.9%, n = 14) form a moderate proportion, while only 5.4% (n = 4) exceed 20 years, suggesting limited senior-level representation.

Regarding exposure to delayed projects, 43.2% (n = 32) reported 1–5 cases, followed by 29.7% (n = 22) with 6–10 cases and 23.0% (n = 17) with 11–15 cases. Only 4.1% (n = 3) reported more than 15 delayed projects. Overall, 56.8% of respondents have experienced more than five delayed projects, indicating frequent exposure to delay occurrences within the sample.

For contract value, respondents were primarily engaged in medium-scale projects, with 36.5% (n = 27) in RM21–RM50 million and 25.7% (n = 19) in RM51–RM100 million, jointly accounting for 62.2%. Smaller shares were recorded for RM10–RM20 million (18.9%, n = 14), below RM10 million (8.1%, n = 6), and above RM100 million (10.8%, n = 8), indicating moderate representation of both low- and high-value projects.

In terms of project type, landed housing dominates, with Semi-Detached (29.7%, $n = 22$) and bungalow developments (29.7%, $n = 22$), followed by terrace houses (28.4%, $n = 21$), collectively representing 87.8% of respondents' involvement. High-rise projects remain marginal, with condominiums (6.8%, $n = 5$) and apartments (5.4%, $n = 4$). Overall, the profile indicates a sample concentrated in medium-scale, landed residential developments with frequent exposure to project delays, supporting the relevance of the dataset for analysing delay-related issues in private housing construction in Perak.

Table 3: Strategies to mitigate delays in private housing projects in Perak

Strategies to mitigate delays in private housing projects in Perak	Mean Score	Rank
Clear project scope	3.97	1
Effective project planning	3.92	2
Training	3.91	3
Strong consultant–contractor coordination	3.82	4
Monitoring and progress review	3.81	5
Incentives and penalties	3.76	6
Proper risk management	3.73	7
Building Information Modelling (BIM)	3.72	8
Strong communication	3.70	9
Material management	3.69	10

Table 3 presents the respondents' perceptions regarding the strategies to deal with delays in private housing projects in Perak. The findings indicate that all strategies achieved relatively high mean scores ranging from 3.69 to 3.97, demonstrating that the respondents generally agreed that these strategies are important in minimising project delays.

The highest-ranked strategy was clear project scope, with a mean score of 3.97. This finding suggests that respondents considered a well-defined project scope as the most critical strategy in reducing delays. A clear project scope helps minimise misunderstandings, design changes, and scope creep during project implementation, thereby improving project efficiency and reducing disputes among stakeholders.

The second highest-ranked strategy was effective project planning, which recorded a mean score of 3.92. This indicates that proper planning plays a significant role in ensuring smooth project execution. Effective planning enables better scheduling, allocation of resources, coordination of activities, and anticipation of potential project risks.

Training ranked third with a mean score of 3.91. This finding highlights the importance of enhancing the competency and skills of project personnel to improve productivity, efficiency, and decision-making during project implementation. Adequate training can also reduce construction errors and improve overall project performance.

Next, strong consultant–contractor coordination and monitoring and progress review were ranked fourth and fifth, with mean scores of 3.82 and 3.81, respectively. These findings demonstrate that collaboration and continuous monitoring are essential to ensure effective communication, timely problem identification, and corrective actions throughout the project lifecycle.

Incentives and penalties obtained a mean score of 3.76 and were ranked sixth. This suggests that contractual mechanisms can encourage stakeholders to complete project tasks according to the agreed schedule and performance requirements. Proper risk management was ranked seventh with a mean score of 3.73, indicating the importance of identifying and mitigating potential risks that may affect project progress.

Besides, Building Information Modelling (BIM) recorded a mean score of 3.72 and ranked eighth. The finding implies that technological applications such as BIM can improve project coordination, planning accuracy, and information management, thereby helping to minimise delays in construction projects.

Strong communication and material management were ranked ninth and tenth, with mean scores of 3.70 and 3.69, respectively. Although these strategies obtained slightly lower rankings, the respondents still acknowledged their importance in ensuring smooth project execution and reducing delays associated with miscommunication and material shortages.

Overall, the findings indicate that project management-related strategies, particularly clear project scope and effective planning, are perceived as the most important approaches in addressing delays in private housing construction projects in Perak. These findings provide useful insights for contractors, consultants, and project stakeholders in improving project delivery performance within the construction industry.

CONCLUSION

In conclusion, delays in private housing projects remain a major challenge that affects project cost, quality and completion time. Based on the literature reviewed and the findings obtained, several effective mitigation strategies have been identified including clear project scope, effective project planning, training, strong consultation-contractor coordination and good monitoring and progress review. The study highlights that successful project delivery requires strong coordination among all construction stakeholders, supported by efficient management practices and the adoption of modern technologies. Therefore, the implementation of these strategies is essential to minimise delays, improve project performance and ensure the successful completion of housing projects within the planned schedule and budget. It is recommended that further studies focus on evaluating the effectiveness of these mitigation strategies through real project case studies. Future researchers may also explore the impact of digital technologies such as Building Information Modelling (BIM) and project management software in reducing construction delays. In addition, broader studies involving different regions, project types and stakeholder perspectives could provide a more comprehensive understanding of delay mitigation practices within the construction industry.

REFERENCES

1. Abdulridha, N. A., & Gata, M. A. (2024). Delays factors for construction projects in south of Iraq. *Engineering and Technology Journal*, 09(09). <https://doi.org/10.47191/etj/v9i09.11>.
2. Abonassrya, M., Alam, M., & Saifullah, A. (2023). Analysis of categories that delay global construction projects. In *Lecture notes in civil engineering* (pp. 127–139). https://doi.org/10.1007/978-981-99-3330-3_15.
3. Ahmad, I., Saad, S., Shah, S. N., Bilal, M., Agha, F. F., & Obaid, S. (2024). Mitigating delay impacts in construction projects: An evaluation of causes and strategies. *INTI JOURNAL*, 2024(1).
4. Aldammak, M. M., Hamzah, N., & Khoiry, M. A. (2025). Causes For the Delay in Construction Offices Building: A Systematic review. *Jurnal Kejuruteraan*, 37(5), 2453–2467. [https://doi.org/10.17576/jkukm-2025-37\(5\)-33](https://doi.org/10.17576/jkukm-2025-37(5)-33).
5. Aziz, N. A., Rahim, F. a. M., & Aziz, N. M. (2022). Delay Mitigation Strategies and The Implication on The Construction Industry: A Systematic Literature Review. *Planning Malaysia*, 20. <https://doi.org/10.21837/pm.v20i24.1199>
6. Bhattarai, M. (2023). Causes of delay in construction projects in Nepal. *Saudi Journal of Engineering and Technology*, 8(06), 108–114. <https://doi.org/10.36348/sjet.2023.v08i06.001>
7. Department of Statistics Malaysia. (2025, March). Construction statistics, first quarter 2025. DOSM. https://www.dosm.gov.my/site/downloadrelease?id=constructionstatistics-first-quarter-2025&lang=English&admin_view
8. Fashina, A. A., Fakunle, F. F., & Omar, M. A. (2020). A Study on the Effects of Construction Project Delays in Somaliland Construction Industry. *Journal of Management, Economics, and Industrial Organization*, 89–102. <https://doi.org/10.31039/jomeino.2020.4.3.6>
9. Mahamid, I. (2021). Effects of design quality on delay in residential construction projects. *Journal of Sustainable Architecture and Civil Engineering*, 28(1), 118–129. <https://doi.org/10.5755/j01.sace.28.1.20531>
10. Malay Mail. (2025, May 9). Residential Construction in Malaysia jumps 32.5% in Q1 2025 as completions, new launches surge despite slower transactions. *Malay Mail*.

https://www.malaymail.com/news/malaysia/2025/05/09/residential_construction-in-malaysia-jumps-325pc-in-q1-2025-as-completions-new-launchessurge-despite-slower-transactions/176135.

11. Munikanan, V., Hamid, Z. A., Yusof, M. A., Yahya, M. A., & Ibrahim, A. (2025). Mitigation of Delay in Malaysian Armed Forces Construction Projects. *Jurnal Kejuruteraan*, 37(3), 1459–1466. [https://doi.org/10.17576/jkukm-2025-37\(3\)-29](https://doi.org/10.17576/jkukm-2025-37(3)-29)
12. Ramli, M. Z., Nordin, A., Roslin, N. T., Hamid, N. B., Azman, N. S., & Zahari, N. M. (2019). Causes of Construction Delay for Housing Projects in Malaysia. *AIP Conference Proceedings*, 2131, 020030. <https://doi.org/10.1063/1.5118038>
13. SME Bank. (2025, January). Thematic research on Perak. SME Bank. <https://www.smebank.com.my/documents/d/guest/thematic-research-on-perakjanuary-2025>
14. Patel, N. K. D. (2024). Mitigation Strategies for Overcoming Delays in High-Rise Construction Projects: A Comprehensive Literature review. *Tuijin Jishu/Journal of Propulsion Technology*, 45(04), 770–779. <https://doi.org/10.52783/tjjpt.v45.i04.8183>
15. Pérez, Y., Ávila, J., & Sánchez, O. (2024). Influence of BIM and Lean on Mitigating Delay Factors in Building Projects. *Results in Engineering*, 22, 102236. <https://doi.org/10.1016/j.rineng.2024.102236>
16. Yap, J. B. H., Goay, P. L., Woon, Y. B., & Skitmore, M. (2020). Revisiting critical delay factors for construction: Analysing projects in Malaysia. *Alexandria Engineering Journal*, 60(1), 1717–1729. <https://doi.org/10.1016/j.aej.2020.11.021>