



UNIVERSITI
TEKNOLOGI
MARA

Cawangan Perak

ISCU 2025

17TH RISM INTERNATIONAL SURVEYING CONFERENCE FOR UNDERGRADUATES

Embracing Construction Revolution 4.0 (CR4.0): Transforming Malaysia's Built Environment

16th - 17th May 2025 | Friday - Saturday

E-ISBN PROCEEDING VOLUME I



©Royal Institution of Surveyors Malaysia

Published by
Royal Institution of Surveyors Malaysia
3rd Floor, Bangunan Juurukur
64 & 66, Jalan 52/4
46200 Petaling Jaya
Selangor

E- PROCEEDING 17th RISM ISCU 2025 Volume 1

Editors: Lizawati Abdullah, Nor Suzila Lop, Nor Nazihah Chuweni, Suriani Ngah Abdul Wahab,
Hasnan Hashim

All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher, except in the case of brief quotations embodied in critical reviews and certain other non-commercial uses permitted by copyright law.

eISBN 978-629-94789-0-4



(online)

WELCOME SPEECH FROM THE CHAIRMAN

RISM 17th International Surveying Conference for Undergraduates (ISCU 2025)

بسم الله الرحمن الرحيم السلام

عليكم ورحمة الله وبركاته

Greetings to all,

It is with great pleasure that I welcome you to the 17th RISM International Surveying Conference for Undergraduates (ISCU 2025), themed “*Embracing Construction Revolution 4.0: Transforming Malaysia’s Built Environment.*” On behalf of the Royal Institution of Surveyors Malaysia (RISM), I also wish to express our sincere appreciation to Universiti Teknologi MARA (UiTM), Perak Campus, for graciously hosting this significant event.

As we navigate the era of the Fourth Industrial Revolution (IR4.0)—or in our context, Construction Revolution 4.0 (CR4.0)—we are witnessing transformative advancements across the global construction sector. Technologies such as Building Information Modelling (BIM), the Internet of Things (IoT), artificial intelligence (AI), robotics, big data analytics, and cloud computing are redefining the way we build, manage, and interact with our built environment. For Malaysia, embracing CR4.0 is a strategic imperative to achieve our socio-economic and environmental goals.

This conference serves as a vital platform to unite surveying undergraduates from various disciplines, fostering critical dialogue on industry challenges, enhancing professional networking, and preparing a new generation of talent for the rapidly evolving construction landscape. It is also an opportunity for employers to engage with and inspire our future professionals.

I would like to extend my heartfelt thanks to all industry speakers, paper presenters, judges, and participants for their time, contributions, and support in making ISCU 2025 a success. I also commend the organising committee for curating a meaningful and dynamic conference experience.

May the knowledge gained, connections formed, and ideas exchanged during this event inspire all participants to lead and innovate in their future endeavours.

Wishing everyone a productive and memorable conference.

Prof. Ts Sr Dr. Adi Irfan Bin Che Ani'

Chairman, Universities' Partnering Committee

RISM Session 2024/2025

May 2025

WELCOME SPEECH FROM CO-CHAIRMAN

RISM 17th International Surveying Conference for Undergraduates (ISCU 2025)

Bismillahirrahmanirrahim.

السلام عليكم ورحمة الله وبركاته and greetings to all.

It is my great pleasure to welcome everyone to the 17th International Surveyor Conference for Undergraduates (ISCU 2025), proudly hosted by Universiti Teknologi MARA (UiTM) Perak Branch in collaboration with the Royal Institution of Surveyors Malaysia (RISM). This event is a meaningful platform for students in the built environment to share ideas, showcase innovations, and build professional networks. We are honoured by your presence and enthusiastic participation, with 135 accepted papers and 78 poster presentations this year.

UiTM Perak, home to the College of Built Environment, has long been a hub for academic excellence in architecture, planning, and surveying. Our commitment remains strong in nurturing competent graduates who meet industry demands and contribute to nation-building.

While you're here, we invite you to experience the heritage and culture of Perak Tengah from the architectural richness of Rumah Kutai to the historical towns of Pasir Salak, Bota, and Kampung Gajah.

To all presenters and winners, congratulations on your achievements. Let your work today be a catalyst for future success and academic growth. We hope this conference will inspire you to explore new ideas, foster collaboration, and make lasting memories.

My deepest thanks to the Royal Institution of Surveyors Malaysia (RISM) and the organising committee for making this event a success.

We hope your experience here will be rewarding and unforgettable.

Thank you. Selamat datang dan selamat berjaya.

Associates Professor Dr. Nur Hisham Ibrahim, *PMP*

Co-Chairman, Universities' Partnering Committee

RISM Session 2024/2025

May 2025

WELCOME SPEECH FROM THE PROJECT DIRECTOR

RISM 17th International Surveying Conference for Undergraduates 2025

Alhamdulillah, all praise to Allah S.W.T. for His guidance and blessings in making the RISM 17th International Surveying Conference for Undergraduates (ISCU) 2025 a reality.

It is with great honour and gratitude that I welcome all participants, guests, academicians, and industry professionals to this prestigious event, proudly organized under the Royal Institution of Surveyors Malaysia (RISM). This 17th edition of ISCU stands as a proud testament to our collective dedication toward academic excellence, professional collaboration, and youth empowerment in the field of surveying.

I extend my heartfelt appreciation to RISM for its unwavering support, to the hardworking ISCU 2025 Organising Committee, and to all 16 partnering universities across Malaysia for their commitment and contributions. Your efforts have shaped this conference into a dynamic platform for knowledge exchange, innovation, and professional growth.

To the academicians and practitioners present, your insights are invaluable in bridging the gap between academic theory and real-world practice. To our undergraduate participants, your passion, curiosity, and commitment are the very foundation of our future. May this conference not only deepen your academic journey but also ignite a spirit of leadership, integrity, and sustainable thinking.

Let this gathering serve as more than an academic milestone. May it foster lifelong networks, inspire transformative ideas, and chart new directions in our shared professional journey.

Wishing everyone a rewarding and inspiring conference experience.

Sr Dr. Nurul Fadzila Zahari

Project Director

RISM 17th ISCU 2025

ANALYSING THE ISSUE OF COST OVERRUN IN MALAYSIAN INFRASTRUCTURE PROJECTS: CASE STUDY BASED ON LRT3

Jasmyn Devong Ting Chia Myn^{1*}, Nadzirah Binti Zainordin², Khoo Sui Lai³

¹School of Architecture and Built Environment, Faculty of Engineering, Technology and Built Environment, UCSI University, Kuala Lumpur 56000, MALAYSIA.

Email: jasmyndevongtcm@gmail.com

²School of Architecture and Built Environment, Faculty of Engineering, Technology and Built Environment, UCSI University, Kuala Lumpur 56000, MALAYSIA.

Email: nadzirah@ucsiuniversity.edu.my

³School of Architecture and Built Environment, Faculty of Engineering, Technology and Built Environment, UCSI University, Kuala Lumpur 56000, MALAYSIA.

Email: khoosl@ucsiuniversity.edu.my

*Corresponding Author

ABSTRACT

Despite the heightened occurrence of cost overruns in infrastructure projects, there exists a need for up-to-date insights into the matter of cost overrun. Therefore, this research study aims to analyse the issue of cost overrun in Malaysian infrastructure projects based on LRT3. The objectives of this research are to identify the causes of cost overrun in Malaysian infrastructure projects based on LRT3 and develop strategies to overcome cost overrun in Malaysian infrastructure projects based on LRT3. Thus, a comprehensive literature review has been undertaken in accordance with the specified objectives to attain them. Subsequently, this research intends to employ a qualitative method to identify the factors contributing to cost overruns and the strategies to overcome cost overruns in Malaysian infrastructure projects based on LRT3, with the targeted respondents being consultants involved in the project. Through a thorough exploration of the issue of cost overrun in Malaysian infrastructure projects based on LRT3, this study seeks not only to address the set aim and objectives but also to enrich and expand upon the existing knowledge base. Furthermore, by delving into the intricacies of the causes contributing to cost overruns, this study intends to offer a nuanced understanding that can contribute to the refinement of strategies in mitigating cost overruns in future infrastructure endeavours.

Keywords: Overrun, LRT3, Infrastructure project

I. INTRODUCTION

The construction industry plays a pivotal role in driving the economic advancement of a nation and has become a major global sector (Vaardini et al., 2016). Nonetheless, a significant hurdle in achieving the successful completion of many construction projects is cost overruns. A cost overrun, alternatively referred to as a cost escalation or budget overrun, occurs when unforeseen expenses surpass the initially estimated budget due to an underestimation of the actual costs during the budgeting process. It typically occurs during the early stages of design and planning, right up to the finalization of the design, primarily due to technical and administrative challenges. Given this, it is crucial for the project team to focus greater attention on addressing these pre-construction issues, especially those that can be prevented (Atapattu et al., 2023).

For a project to be deemed successful, Olawale and Sun (2010) asserted that it must attain the three components which are time, cost and quality. Cost overruns remain a persistent issue in the Malaysian construction sector. According to Memon et al., (2010); Omran et al., (2023), a staggering 89% of construction projects in Malaysia grapple with cost overrun issues, with cost overruns in the range of 5-10% being a frequent phenomenon. Delays further escalate project costs and thus, an essential starting point to control cost overrun issue requires understanding the factors that lead to cost overruns. Likewise, the success of an infrastructure project is contingent on its timely completion, adherence to the agreed contract budget and compliance with specified requirements (Belay et al., 2021). However, there is a notable dearth of research focused on the issue of cost overrun in infrastructure projects in Malaysia. Therefore, this study will delve into the analysis of factors contributing to cost overruns in Malaysian infrastructure projects and mitigation strategies, using a case study on LRT3.

The Light Rail Transit Line 3 (LRT3), also known as the LRT Shah Alam Line, is the third LRT line in Klang Valley, following the Ampang and Sri Petaling Line and the Kelana Jaya Line, and is nearing completion (Tan, 2023). It constitutes a 37.8-kilometer light rail transit system creating a connection between Bandar Utama in Petaling Jaya and Johan Setia in Klang while traversing essential locations such as Shah Alam and Klang. The LRT3 development will deliver substantial advantages to those who commute while enhancing the Klang Valley area as a whole in which it is expected to accommodate over 67,000 passengers daily. The infrastructure's efficient network will help reduce road users' travel times while alleviating traffic congestion throughout the Klang Valley region. Additionally, improved connectivity made possible through the LRT3 project enables public commuters to experience enhanced convenience and smoother transit (Visshan, 2025).

I. PROBLEM STATEMENT

Cost overruns are presented as a worldwide concern which appears throughout many countries (Andrić, 2019). For instance, according to Gao and Touran (2020), rail transit projects throughout the United States frequently face extensive cost overruns which occur persistently. In Germany, highway and road projects face cost overruns (Steininger et al., 2020). Besides, that, the execution phase of Italian public infrastructure projects results in major project cost overruns (Cavalieri et al., 2019). According to Mahmud et al. (2022), Nigeria encounters cost overruns in highway infrastructure projects. Likewise, similar to other countries, Malaysia also faces cost overrun issues.

As Malaysia's GDP heavily relies on the construction industry, understanding the causes of cost overruns in major projects is essential (Omran et al., 2023). According to Hussain et al., (2023), most rail infrastructure projects can be classified as major projects. They pose greater risks than regular construction projects due to their complexity, financial demands, and involvement with political, social, and economic stakeholders (Hussain et al., 2023). Studies show that 48% of Asian rail projects encounter cost overruns (Andrić, 2019). In Malaysia, the MRT project exceeded its budget by 15% (Ismail et al., 2024), while the Express Rail Link (ERL) extension incurred a RM29 million overrun (The Sun, 2016), and the Rapid Transit System (RTS) Link project saw a 29.9% cost increase due to expanded scope and land acquisition expenses (The Malaysian Reserve, 2024). Thus, from these cases, it is evident that the issue of cost overrun in Malaysian infrastructure projects is still not solved yet, and that the high costs associated with major projects require a detailed examination of potential challenges in rail development projects in order to fulfil successful completion and optimize spending (Locatelli et al., 2017, Ismail et al., 2024).

II. LITERATURE REVIEW

Excessive cost overruns have garnered attention on both national and global scales. It is a worldwide occurrence where projects are not completed within the allocated expenditure. Due to this, exercising causation is crucial when considering the budget for calculating the project overrun (Atapattu et al., 2023). Cost overrun is described as "the excess of actual costs over the approved budget" (Vu et al., 2002). Berihu et al. (2023) has mentioned that the causes of cost overruns in infrastructure projects can be categorized into owner or consultant related, contractor related, project related, design related, material related, equipment and labour related, and external factors. The extensive presence of cost overruns together with their major effects requires implementation of efficient approaches to manage this issue. Development of economic growth together with infrastructure becomes negatively impacted by the failure to manage cost overruns. Stakeholders who establish clear understanding of fundamental cost drivers that may originate from owners, consultants, contractors, project complexities or any external factors can develop proactive solutions to control costs.

Causes of Cost Overrun

According to a few recent studies, various causes of cost overrun are identified. Okezi and Kennedy (2025) mentioned that lack of adequate planning is presented as the primary reason behind the cause of cost overrun. This emphasizes the vital significance of project planning in which it must be done comprehensively as it ensures efficient resource allocation along with meeting project deadlines. Additionally, client-driven change orders also causes cost overrun. Thus, effective communication along with detailed project scope are required to manage client expectations and minimize project disruptions. According to Atapattu et al. (2023), project management issues represent the main reason behind project cost overruns. A project will fail and lead to cost overruns if there is no proper project management process. Proper action planning regarding identified risks is essential at the start of every project. The project requires consultant and contractor teams to implement competent risk management processes.

According to the research study conducted by Kamaruddeen et al. (2020), shortage of material presents as a significant cause of cost overrun. The study implies that the rising costs emerge from material shortages, resulting in temporal waste of time. The extension of completion time therefore leads to increased overhead. Another research conducted by Omran et al. (2023) stated that lack of experience of project and delays in issuing information to the contractor during construction contribute to cost overruns. Project management and planning deficiencies from inexperienced contractors result in cost overruns.

Furthermore, Asiedu and Adaku et al. (2020) had mentioned that poor contract planning and supervision, change orders, weak institutional and economic environment of projects, and lack of effective coordination among the contracting parties lead to cost overruns. Moreover, Annamalaisami and Kuppaswamy (2021) emphasized that the most critical factors of cost overruns are construction delays, design error, rework, inaccurate site investigation, awarding the contract to the lowest bidder, changes in the project's scope, contractor's poor site management, and increase in material price/wages. Álvarez-Pozo et al. (2024) investigated that internal administrative problems, delay of payments, delays in decision-making, variation orders and lack of project coordination are among the few causes of cost overrun.

In conclusion, cost overruns are caused by various factors, including lack of adequate planning, poor project management, material shortages, and client-driven changes. Research highlights that improper planning and risk assessment lead to inefficient resource allocation and extended project timelines. Additionally, a lack of experience among contractors and delays in issuing crucial information further contribute to budget escalations. Addressing these issues proactively will enhance project efficiency, minimize financial losses, and ensure successful project completion.

Table 1.0 Causes of Cost Overrun

No.	Author	Kamaruddeen et al. (2020)	Alloshah and Doh (2019)	Rahim et al. (2019)	Omran et al. (2023)	Molinar et al. (2025)	Alhammedi et al. (2024)	Álvarez-Pozo et al. (2024)	Amini et al. (2022)	Kavama et al. (2019)	Alhammedi and Munson (2020)	Herrera et al. (2020)	Atapattu et al. (2023)	Okezi and Kennedy (2025)	Lawrence et al. (2024)	Milne et al. (2021)	Times referred
	Causes																
1	Internal Administrative Problems	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	12
2	Delay of Payments	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	12
3	Delays in Decision-Making	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	13
4	Variation Orders	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	13
5	Lack of Project Coordination	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	14
6	Weather Conditions	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	9
7	Mistakes in Design	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	12
8	Market Conditions (Availability of Materials and Labour)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	9
9	Rework from Poor Materials Quality	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	4
10	Delays in sub-contractor's work	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	4
11	Price changes of material/labour during construction	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	13
12	Lack of experience of project	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	11
13	Deficiencies and inconsistencies in contractual documents	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	10
14	Project Size	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	5
15	Changes in laws or regulations by government	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	5

Strategies To Overcome Cost Overrun

Several recent studies have identified strategies to overcome cost overrun. Omran et al. (2023) had suggested that Building Information Modelling (BIM) technology should be developed to minimize cost overrun variables. A research study conducted by Alhammedi et al. (2024) shows that "Owners should ensure project funding is secured before awarding the contract" presents as the most significant strategy to overcome cost overrun, followed by "in

the bid evaluation process, owners should consider criteria that make it possible to select the most qualified contractors with solid financial background". The third strategy is "owners should hire consultants grounded on their track records and experience in similar construction projects". Subsequently, the fourth and fifth critical strategies are "construction projects should be awarded to contractors with the appropriate skills and experience in similar projects" and "owners should eliminate or reduce bottlenecks and unnecessary bureaucracy within the payment process".

According to Ahmed et al. (2023), reviewing budget and identifying areas to cut cost presents as one of the strategies to overcome cost overrun. This involves identifying items that are not necessary and determining if they can be removed or not without affecting the project. Negotiating with suppliers for better prices or delaying the purchase can also be considered. Another strategy to overcome cost overrun as mentioned by Ahmed et al. (2023) is communicating with stakeholders. The stakeholders which are involved in the project including the client and team members should be informed about any cost overruns occurring and the measures taken to address the issue. The project's essential tasks that contribute to the project's success shall be prioritised before addressing the non-essential tasks. Based on Dlamini and Cumberlege (2021)'s study, financial control, planning and control, application of project budget techniques, management of cashflow and strategic implementation are among the fundamental competencies to overcome cost overrun.

According to Ammar et al. (2022), the strategies to overcome cost overrun include "selecting appropriate consultants and designers to develop optimal specifications and design according to the project budget, considering the social and economic needs of the region's residents", "sufficient time is to be given for preparing the tender and formulating the quantities accurately to avoid an increase in quantity in the construction stages", "develop a technique for budget formulation at the appraisal stage by considering the inflation aspect before finalizing the budget estimate", "allow adequate time for consultants and designers to make any required modifications to the design or specifications during the appraisal phase and based on the owner's approval. This should align with the project budget to properly control project costs during the construction stage to avoid any technical causes for cost overrun, such as quantity changes, variation orders, specification changes, and changes in the scope of work", "cost estimation is preferred to be executed by a value estimator to obtain a more accurate budget", "submit a logical and applicable schedule" and "consider an appropriate contingency fund during the implementation stage to accommodate any case of cost overrun".

Afana et al. (2024) mentioned that the development of detailed budgets and the use of accurate cost estimation methods are key strategies to overcome cost overrun, in which these approaches ensure that all potential expenses are considered and accounted for right from the beginning. This involves regular progress monitoring and establishing change management processes to address any unforeseen changes and ensure that the project remain on schedule. Furthermore, Olupitan et al. (2021) suggested "the appointment of contractors should be in accordance with their capabilities and evidence of ability in knowledge and skills required to complete the project", "owners should prepare sufficient funds for the project and pay on time as shown in the contract agreement to the contractor", "the personnel performing estimating duties should be provided with the right training and information by stakeholders", "enough time should be allocated during tender planning for the proper development of the project programme" and "experienced personnel that have handled similar types of complexity in the past should be allocated to the project" as the strategies to overcome cost overrun.

Researchers have proposed numerous strategies to effectively handle cost overruns in recent studies. The implementation of BIM technology, ensuring project funding and hiring only qualified contractors with solid financial records constitute key measures. Additionally, maintaining financial control, optimizing project planning, and applying strategic budget techniques help mitigate risks associated with cost overruns. Regular monitoring, effective stakeholder communication, and incorporating accurate cost estimation methods ensure that all potential expenses are accounted for from the outset. By adopting these strategies, projects can enhance efficiency, minimize financial risks, and achieve successful project completion within budget constraints.

Table 2.0 Strategies to Overcome Cost Overrun

No.	Strategies	Author	Rahmat et al. (2019)	Adnan et al. (2024)	Mahy and Gadhafi (2021)	Alhammad et al. (2024)	Alhammad et al. (2023)	Solih et al. (2020)	Olani and Kennedy (2023)	Amur et al. (2022)	Soldoxy et al. (2019)	Dharmi and Cumberlege (2021)	Ramadhan (2018)	Asadi et al. (2017)	Ghaleb and Samad (2017)	Aspin et al. (2023)	Ahli et al. (2017)	Times referred
1	Application of good forecasting technique		/							/		/				/		4
2	Efficient project cost monitoring			/	/		/		/		/	/	/		/			8
3	Consider financial crisis faced by client					/		/						/			/	4
4	Consider the true market constraints							/										1
5	Reduced mistakes and faults in design and drawing			/				/						/			/	4
6	Accuracy of early cost estimates				/	/	/	/	/	/		/	/	/			/	10
7	Computer/Software implementation	/	/	/	/	/			/						/			7
8	Reduced change in project scope				/		/				/							3
9	Proper arrangements made after natural disaster			/				/										2
10	Proper planning for each project stage	/						/	/	/	/	/			/	/	/	9
11	Ensuring that there is no communication gap between the professionals, the contractors, the clients and the technicians	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	13
12	Selection of contractors should not only be based on lowest bid, but also on experience, financial capability and expertise	/		/	/						/			/			/	6
13	Prequalification of contractors	/			/		/							/	/		/	6
14	Risk and contingency planning		/	/	/		/	/	/	/		/	/	/	/	/	/	11
15	Good decision making by Project Manager						/					/						2

Research Aim

The aim of this research is to analyse the issue of cost overrun in Malaysian infrastructure projects based on LRT3 by systematically evaluating the root causes and formulating effective mitigation strategies.

Research Objectives

The objectives of the research are:

- To identify the causes of cost overrun in Malaysian infrastructure projects based on LRT3
- To develop strategies to overcome cost overrun in Malaysian infrastructure projects based on LRT3

Research Questions

The research questions for this research study are as follows:

- What are the causes of cost overrun in Malaysian infrastructure projects based on LRT3?
- What are the strategies to overcome cost overrun in Malaysian infrastructure projects based on LRT3?

Research Scope

The research scope of this study encompasses an analysis of the issue of cost overrun in Malaysian infrastructure projects based on LRT3. The study will involve an in-depth identification of the various causes contributing to cost overruns and the formulation of practical strategies to address and prevent these issues within the realm of infrastructure projects. Furthermore, this study will involve interviewing a total of 12 consultants encompassing quantity surveyors, engineers and architects that are involved in the LRT3 project.

III. RESEARCH METHODOLOGY

This research study is structured through the utilisation of a detailed research design flowchart as shown in Figure 1.0, which outlines the study's progression. The research design flowchart is divided into three key stages: the initial stage which lays the foundation of the research, the intermediate stage where data collection and analysis take place, and the final stage which discusses the findings and draws conclusion. The first step of the research design involves identifying a research topic, in which it functions as the study's framework and guides the literature review. The following step is identifying the research background to provide context and identify gaps in knowledge to validate the research purpose. Problem statement development represents the following step, which delivers a clear definition of the investigation's focus. The study's direction along with specific goals are then established through research aims and objectives. Research scope and limitations comes next, clarifying the study's focus and validate study constraints. A literature review is then conducted to study academic works and identify appropriate theoretical frameworks and relevant research methods. Then, the research methodology is developed, with this study employing a semi-structured interview qualitative approach to explore cost overruns in Malaysian infrastructure projects based on LRT3.

After the initial stage, the intermediate stage starts by developing interview questions for pilot study. Developing interview questions for a pilot study helps to improve the research instrument that will be used during the main study. Carrying out pilot study is the subsequent step, in which this study will involve one professional in the construction industry. After going through a pilot study with a construction industry professional and receiving positive feedback, the refined interview questions will be used to conduct interviews with 12 consultants encompassing quantity surveyors, architects and engineers involved in the LRT3 project. Here, a semi-structured interview method is selected, allowing for structured questions while also enabling deeper discussions based on the interviewees' responses. The collected data will then be analysed through Atlas.ti software to achieve credible qualitative interpretations. The final stage involves discussing on the findings, drawing conclusions and providing recommendation to minimize cost overruns in future infrastructure projects.

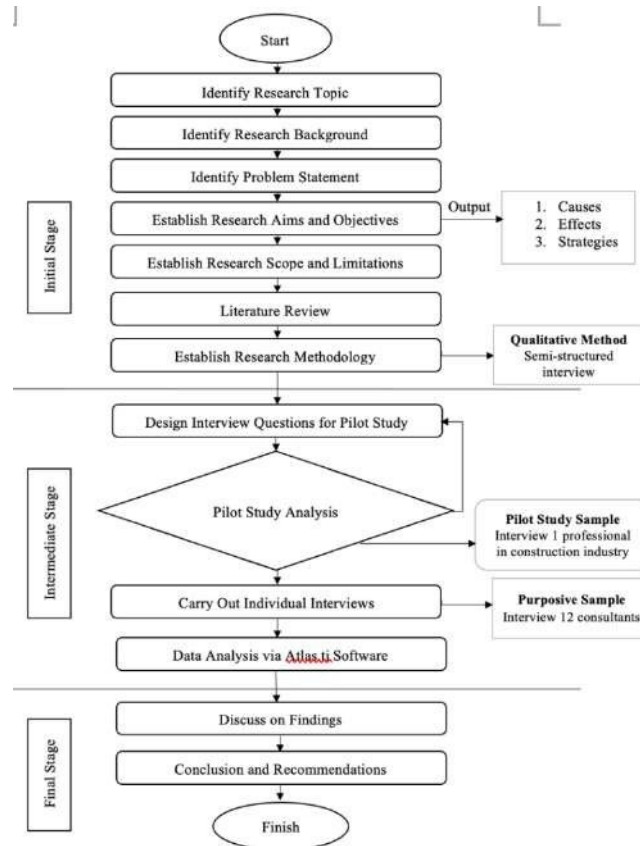


Figure 1.0 Research Design

IV. EXPECTED OUTCOME OF RESEARCH

This research is expected to yield valuable insights into the underlying causes of cost overruns in Malaysian infrastructure projects, with a focus on LRT3. Through qualitative analysis based on interviews with industry professionals, the study aims to uncover key cost overrun factors and propose effective mitigation strategies. The anticipated findings will not only enhance the understanding of cost management challenges in large-scale infrastructure projects but also provide practical recommendations for improving budgeting, planning, and execution processes. By addressing these issues, the research seeks to support industry stakeholders in minimizing financial risks and ensuring more efficient project delivery in the future. The findings can inform policy reforms and industry practices by providing evidence-based recommendations to improve cost control, enhance project planning, and strengthen governance in future infrastructure developments.

ACKNOWLEDGMENT

I would like to express my gratitude to the Quantity Surveying Department of UCSI University, especially the supervisor, for funding this publication.

REFERENCES

- Afana, O., Al Zubaidi, R., Abu Dabous, S., & Ibrahim, F. (2024). Categories and factors of cost overrun in construction projects: A systematic review. *Engineering, Technology & Applied Science Research*, 14(6), 18330-18347.
- Ahmed, S., Ahmed, S., & Bararo, A. U. (2023). Strategies and best practices for managing cost overruns in the construction industry of Pakistan. *Propel Journal of Academic Research*, 3(1), 28.

- Alhammadi, A. S. A. M., & Memon, A. H. (2020). Ranking of the factors causing cost overrun in infrastructural projects of UAE. *International Journal of Sustainable Construction Engineering and Technology*, 11(2), 204-211.
- Álvarez-Pozo, A. H., Parma-García, M. I., Ortiz-Marcos, I., Bautista, L. F., & Atanes-Sánchez, E. (2024). Analysis of causes of delays and cost overruns as well as mitigation measures to improve profitability and sustainability in turnkey industrial projects. *Sustainability*, 16(1449).
- Andrić, J. M., Mahamadu, A.-M., Wang, J., Zou, P. X. W., & Zhong, R. (2019). The cost performance and causes of overruns in infrastructure development projects in Asia. *Journal of Civil Engineering and Management*, 25(3), 203–214.
- Annamalaisami, C. D., & Kuppaswamy, A. (2021). Managing cost risks: Toward a taxonomy of cost overrun factors in building construction projects. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, 7(2).
- Asiedu, R. O., & Adaku, E. (2019). Cost overruns of public sector construction projects: A developing country perspective. *International Journal of Managing Projects in Business*.
- Atapattu, C., Domingo, N., & Sutrisna, M. (2022). Causes and effects of cost overruns in construction projects. *Proceedings of the 45th AUBE Conference, 23-25 Nov. 2022, Western Sydney University, Australia*.
- Belay, S., & Mengesha, W. J. (2021). Analysis of cost overrun and schedule delays of infrastructure projects in low-income economies: Case studies in Ethiopia. *Advances in Civil Engineering*, 2021, Article ID 4991204.
- Berihu, L. G., Grum, B., Tariku, Z., & Abebe, B. A. (2023). Causes, Effects, and Mitigation Measures of Time and Cost Overruns in Water Supply Projects: Case of Tigray Region, Northern Ethiopia. *Advances in Civil Engineering*, 2023, e7113730.
- Cavalieri, M., Cristaudo, R., & Guccio, C. (2019). On the magnitude of cost overruns throughout the project life-cycle: An assessment for the Italian transport infrastructure projects. *Transport Policy*, 79, 21-36.
- Dlamini, M., & Cumberlege, R. (2021). The impact of cost overruns and delays in the construction business. *IOP Conference Series: Earth and Environmental Science*, 654, 012029.
- Gao, L., & Touran, A. (2020). Cost overruns and formal risk assessment program in U.S. rail transit projects. *Journal of Construction Engineering and Management*, 146(5), 0502000.
- Ismail, M. Z., Ramly, Z. M., & Misnan, M. S. (2024). Analysing the significant influences of cost performance in Malaysian rail projects: Exploratory factor analysis. *Malaysian Journal of Sustainable Environment*, 11(1), 147-176.
- Kamaruddeen, A. M., Sung, C. F., & Wahi, W. (2020). A study on factors causing cost overrun of construction projects in Sarawak, Malaysia. *Civil Engineering and Architecture*, 8(3), 191-199.
- Locatelli, G., Mariani, G., Sainati, T., & Greco, M. (2017). Corruption in public projects and megaprojects: There is an elephant in the room. *International Journal of Project Management*, 35(3), 252-268.
- Okpaka, O., & Osakwe, K. (2025). Cost overrun crisis in construction contracts: A comparative study of Bahrain, Australia, and Malaysia. *International Journal of Science and Research (IJSR)*, 14(2).
- Olawale, Y. A., & Sun, M. (2010). Cost and time control of construction projects: Inhibiting factors and mitigating measures in practice. *Construction Management and Economics*, 28(5), 509-526.
- Olupitan, A. L., Ajator, U. O., & Nzeneri, O. P. (2021). The critical causes and effects of cost overruns in public sector construction projects in Port Harcourt, Nigeria. *International Journal of Scientific and Research Publications*, 11(10), 304.
- Omran, A., Saleh, M. S. H., & Gebril, A. O. (2023). Factors causing time and cost overruns of construction projects in Malaysia. *Design, Construction, Maintenance*, 3, 179–186.
- Quoc Vu, T., Pham, C. P., Nguyen, T. A., Nguyen, P. T., Phan, P. T., & Nguyen, Q. L. H. T. (2020, July 3). *Factors influencing cost overruns in construction projects of international contractors in Vietnam*. Munich Personal RePEc Archive (MPRA).
- Steininger, B. I. (2020). Cost overruns and delays in infrastructure projects: The case of Stuttgart 21. *Journal of Property Investment & Finance*, 39(3), 256-282.
- Vaardini, U. S., Karthiyayini, S., & Ezhilmathi, P. (2016). Study on cost overruns in construction projects – A review. *International Journal of Applied Engineering Research*, 11(3), 1175-1178.



UNIVERSITI
TEKNOLOGI
MARA

Cawangan Perak

eISBN 978-629-94789-0-4



9 786299 478904

(online)