



UNIVERSITI
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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

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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

ASSESSING THE COST OVERRUNS ISSUES IN SME CONSTRUCTION PROJECTS IN MALAYSIA

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ABSTRACT

Cost overruns remain a persistent challenge in the Malaysian construction industry, particularly among small and medium enterprises (SMEs). The construction industry plays a crucial role in socioeconomic development by providing essential infrastructure such as schools, hospitals, and roads. This study aim to assess strategies for enhancing construction project workflow efficiency by (1) identifying key factors contributing to cost overruns and (2) identifying their impacts on construction projects. A quantitative research approach was employed, utilizing questionnaire surveys distributed to CIDB contractors from Grades G1 to G5. Descriptive statistics, descriptive analysis are used to organise and summarise obtained data. The findings are expected to highlight the primary causes of cost overruns and their effects on project timelines and financial stability. The study's contribution is anticipated to offer practical recommendations for improving cost management and optimizing project performance in SME construction projects in Malaysia.

Keywords: Cost overruns, SME Projects, Construction cost, SME Contractors.

I. INTRODUCTION

The construction industry is a significant contributor to a country's socioeconomic development. Construction is a popular investment opportunity in any countries due to its ability to create opportunities and improve quality of life through basic facilities like schools, hospitals and roads. Poor cost management and project cost overruns are significant issues in both developed and developing countries (Abdul Azis et al., 2013). However, as a complex, fragmented and schedule-driven industry, it has always faced chronic challenges such as low quality and productivity, cost overrun, time overrun, construction waste and others.

Cost overruns are a worldwide issue in the construction industry, with very few projects completed within allocated cost. This issue has become a significant concern for investors, requiring urgent attention and thorough research to develop effective solutions for this issue. The key measure of project success is the ability to meet deadlines and stay within budget while maintaining the required quality standards. Despite Malaysia's substantial financial investments in the construction sector, the industry continues to face significant challenges, such as budget overruns, project delays, construction defects and a heavy reliance on foreign labour (Omran, Saleh and Gebril, 2023).

II. PROBLEM STATEMENT

Malaysia continues to struggle with cost overrun in construction projects. According to Memon et al., around 89% of Malaysian construction projects experience cost overruns. A successful project should be completed on time, within budget and meet technical standards (Omran, Saleh, & Gebril, 2023). One major factor contributing to cost overruns is inflation, which affects material prices, labor wages, and machinery hire rates (Musarat, Alaloul, & Liew, 2020). These fluctuations force budget revisions and increase financial strain on stakeholders. Additionally, construction delays also lead to higher costs. Frequent design changes, scope expansions, and errors in the original design require rework, delaying project completion (Memon et al., 2014). Approvals for modifications further extend timelines, adding to overall expenses (Love, Edwards, & Irani, 2008). This research was conducted because most research focused on large projects, leaving SME – specific issues unaddressed.

2.1 Issues related to cost overruns

Malaysia's economic success heavily depends on the construction sector, contributing 3% to 5% of the GDP (Omran, Saleh & Gebril, 2023). However, cost overruns and delays are persistent issues, with only 46.8% of public and 37.2% of private projects completing within budget. Globally, 9 out of 10 projects face cost overruns (Flyvbjerg, Holm & Buhl, 2002), and poor project management is a key factor, causing 36% of delays in Malaysia (Sambasivan & Soon, 2007). Inflation, supply chain disruptions, and rising material costs have worsened cost overruns, with global construction costs increasing by 5-7% in 2021 (Turner & Townsend, 2021). Economic instability, labor shortages, and energy crises have further driven up costs worldwide, with countries like the U.S., Europe, and Asia experiencing significant price hikes (PwC Middle East, 2021; BCI Asia, 2022). Studies from various regions, including Nigeria, Saudi Arabia, Jordan, and India, confirm that financial constraints, poor planning, contractor inefficiencies, and material shortages are common causes of delays and cost overruns in construction projects (Aibinu & Jagboro, 2002; Assaf & Al-Hejji, 2006; Sweis et al., 2008; Doloi et al., 2012). Addressing these issues through better planning, financial management, and stakeholder coordination is crucial to improving project success rates. The aim of this research is to assess strategies for enhancing workflow in Malaysian construction projects. The objectives are to determine the factors contributing to cost overruns in small and medium enterprise (SME) construction sites and to identify their impacts.

III. Literature Review

3.1 Introduction

This chapter defines cost overruns in small medium scaled construction companies, key factors, impacts and strategies of cost overruns. According to Flyvbjerg, Holm and Buhl (2003), cost overruns as the difference between the actual cost and the expected cost at project completion. Cost overruns occur when the final cost of a project exceeds the initial estimate due to a variety of contributing factors such as inaccurate estimations, inflation, poor project management and unforeseen changes (Ameh, O. J., Soyingbe, A. A., & Odusami, K. T. (2010). Based on Olawale and Sun (2010), cost overruns as the difference between actual project costs and initially budgeted costs. Furthermore, Love et al (2013) take a similar approach, defining cost overruns as the amount by which actual expenditure exceeds the planned budget as a result of estimation errors, project changes and other risk – related factors. Shane et al (2009) define cost overruns as when the final cost of a construction project exceeds the initial estimated cost.

3.2 Defining Small and Medium Enterprise

In construction industry classification, the term “medium construction company” frequently refers to companies that fall between small and large contractors in terms of project capacity and staff size. Project capacity refers to the number of projects that a medium – sized construction company can handle at the same time. Medium construction firms often work on medium – sized projects such as commercial buildings, residential complexes or small infrastructure projects (Olanrewaju and Abdul-Rashid Abdul-Aziz, 2014). Medium construction enterprises typically have 50 to 200 employees though this varies by industry and region (Wong, Cheung and Ho, 2005). Medium firms have teams with diverse functions such as engineers, project managers and support staff allowing them to handle more difficult tasks.

Small construction companies often operate with limited resources, focusing on smaller, less difficult projects like house renovations, small commercial buildings or subcontracting work within larger projects. Their limited resources frequently restrict them from bidding on or managing larger projects therefore focus on manageable projects that do not require considerable manpower or complex project management. Small construction firms frequently have a staff size of 10 – 50 employees. Due to this smaller teams, small firms may lack specialized professionals such as project managers or engineers, forcing them to outsource or have employees do numerous responsibilities. This limited staffing impacts their project capacity and may restrict them to simpler projects.

3.3 Current situations of the cost overruns in SME construction projects in Malaysia

Malaysia has over 134,755 registered contractors under the Construction Industry Development Board (CIDB), categorized by financial capacity and project scale. Small contractors fall under Grades G1 to G3, with tender limits ranging from RM 200,000 to RM 1 million. Medium contractors in Grades G4 to G6 handle larger projects, with tender limits up to RM 10 million. Small contractors often struggle with financial constraints, labour shortages, and reliance on subcontractors, leading to frequent cost overruns. Studies show that these overruns can

range from 10% to 30% beyond the initial budget (Memon et al., 2010). In Klang Valley, where urban development is rapid, 60% of small contractors face overruns due to poor planning, fluctuating material costs, and regulatory delays (Nik Fatma et al., 2018). These challenges highlight the need for better project management and financial planning to ensure successful project completion.

3.4 Key factors of cost overruns

Cost overruns in construction projects are a common challenge, often caused by multiple factors. One major issue is inefficient project planning and management, where poor scheduling, weak supervision, and inadequate forecasting lead to budget overruns (Ahadzie, 1995). Without proper monitoring and reporting, projects are more likely to face delays and increased costs (Asiedu & Adaku, 2019). Inflation and economic factors also play a significant role. Rising material prices, increased labor costs, and supply chain disruptions—especially after the COVID-19 pandemic—make it difficult to maintain accurate budgets (Muhammad Ali Musarat et al., 2020). Additionally, delays and poor scheduling extend project timelines, leading to higher labor and material expenses. Poor scheduling alone accounts for 36% of project delays in Malaysia (Sambasivan & Soon, 2007). Another critical factor is inaccurate cost estimation. Errors in budgeting, outdated cost data, and underestimating expenses result in financial shortfalls, causing delays or quality compromises (Enrica et al., 2021). Similarly, design changes and scope creep—whether due to client demands or regulatory updates often require additional materials, rework, and extended schedules, further inflating costs (Cheng, 2014). Material price escalation, driven by exchange rates, global demand, and inflation, also affects project budgets. Essential construction materials like steel, cement, and timber are particularly vulnerable to sudden price increases (Amini et al., 2022). Moreover, unforeseen site conditions, such as poor soil quality or hidden utilities, can force expensive adjustments and construction delays (Durdyev, 2020). Subcontractor issues contribute to cost overruns when delays, poor workmanship, or disputes require rework and additional expenses (Memon et al., 2010). Inadequate coordination can lead to inefficiencies, further impacting project costs and timelines. Similarly, poor risk management, such as failing to anticipate weather disruptions or labor shortages, can result in unexpected delays and expenses (Kamal, 2021). Finally, permit delays and regulatory compliance pose a major challenge. Complex approval processes, changing regulations, and bureaucratic hurdles can put projects on hold, increasing labor and equipment costs (Dinçer Aydın & Mihlayanlar, 2018). If new regulations emerge mid-project, redesigning or modifying construction methods can further drive-up costs (Nabilla et al., 2017).

3.5 Key impacts of cost overruns

Cost overruns in construction projects create significant challenges for stakeholders, including developers, stakeholders, contractors, and suppliers. One of the most immediate effects is financial strain, as exceeding budgets often forces stakeholders to provide additional funds, leading to cash flow issues and delayed returns (Mohd & Yee, 2021). Contractors, especially under fixed-price contracts, face difficulties in adjusting costs, impacting their profitability. Another major consequence is project delays, as budget overruns force stakeholders to reassess plans, causing disruptions to schedules and increasing overall costs (James et al., 2014). If delays extend beyond contractual deadlines, penalties may be imposed, further straining finances (Memon et al., 2014). To control costs, project teams may also reduce scope or quality, opting for cheaper materials or eliminating features, which can diminish the project's market value and appeal (Olsson, 2016). Cost overruns can also lead to disputes and legal issues, as stakeholders argue over who should cover the additional expenses. Contractual breaches often result in legal claims, diverting time and resources from project completion (Vo et al., 2020). Furthermore, frequent overruns can damage a company's reputation, making it difficult to secure future contracts or maintain client trust (Aziz & Abdullah, 2015). To cover unexpected costs, stakeholders may resort to increased borrowing, which adds financial pressure and limits future opportunities (Atapattu et al., 2023). In extreme cases, if overruns become unmanageable, projects may face abandonment, leading to wasted investments, legal disputes, and incomplete infrastructure that can negatively impact surrounding property values. For contractors, cost overruns often result in profit margin reduction, as they absorb additional expenses rather than passing them on to clients, affecting their financial stability and project quality (Shah et al., 2023). Additionally, overruns can cause loss of investor confidence, as clients and lenders may hesitate to work with firms that have a history of poor cost control. Ultimately, these issues lead to a reduced return on investment (ROI), as increased expenses cut into expected profits and limit future growth opportunities.

3.6 Strategies to overcome cost overruns

Cost overruns are a common challenge in construction projects, but they can be mitigated through effective planning and management strategies. One key approach is vendor and subcontractor management, ensuring that suppliers and subcontractors meet project requirements through regular communication, site visits, and progress monitoring (Balasubramaniam et al., 2024). Another important strategy is value engineering (VE), which

optimizes project design to achieve the best value without compromising quality. VE focuses on efficient resource use, waste reduction, and collaboration among stakeholders to implement cost-effective solutions (Mehta et al., 2020). Similarly, effective project scheduling helps coordinate tasks, allocate resources, and prevent delays. Using tools like Gantt charts, critical path analysis (CPA), and project management software improves scheduling efficiency (Trauner et al., 2009). Accurate cost estimation and budgeting play a crucial role in financial planning. Engaging expert estimators, utilizing software like CostX or BIM, and analyzing historical data help create reliable cost forecasts (Sofyan et al., 2024). Additionally, clear project scope and contract terms reduce misunderstandings and scope creep, ensuring all stakeholders understand their responsibilities and project requirements (Ahmed et al., 2023). To keep expenses under control, continuous cost monitoring and control is essential. Tracking spending in real-time allows for quick corrective actions when unexpected cost variations arise (Ahmed et al., 2023). Moreover, contingency planning ensures that unforeseen events, such as material price fluctuations or weather delays, do not derail the project by allocating a reserve budget (Ahmed et al., 2023). Effective communication among stakeholders is another critical factor in preventing cost overruns. Regular progress meetings and transparent discussions help address issues early and maintain project alignment (Ahmed et al., 2023). Additionally, implementing a risk management plan at the project's planning stage allows for early identification and mitigation of potential risks, minimizing disruptions and financial losses (Ahmed et al., 2023). Finally, conducting post-project evaluations helps assess project performance and identify lessons learned. These evaluations improve future cost estimation, scheduling, and overall project management strategies (He & Lei, 2020).

IV. RESEARCH METHODOLOGY

3.1 Research Strategy

This study follows a structured research plan to collect, analyse, and interpret data on cost overruns in construction projects. A quantitative approach is used, as it helps identify large-scale trends and patterns. Data will be collected through questionnaires distributed to construction professionals, specifically contractors from G1 to G5. The structured format allows for measurable data collection, which will be analysed statistically to identify key factors contributing to cost overruns. While qualitative methods provide deeper insights, they often involve fewer participants and are harder to compare across different settings. Therefore, this study focuses on a quantitative approach to ensure more reliable and generalizable findings.

3.2 Research target

This study focuses on Malaysian contractors classified as Grade G1 to G5 under CIDB (2018). These grades represent small to medium-sized construction firms, each with different levels of experience, capacity, and financial resources. G1 contractors typically handle small-scale projects and face challenges like limited resources and cash flow issues, while G2 to G5 contractors have a minimum capital of RM 25,000 to RM 250,000. The research will target contractors in Klang Valley, where the construction industry provides diverse case studies on cost overruns. By studying contractors at different levels, this research aims to understand the financial and operational challenges that contribute to cost overruns in Malaysia's construction sector.

3.3 Data collection

This study collects data using structured questionnaires distributed to G1 to G5 contractors to examine factors contributing to cost overruns in construction projects. The questionnaire includes closed-ended questions categorized into four sections: personal details, causes, impact, and strategies to mitigate cost overruns. A 5-point Likert scale is used to quantify responses for better analysis. Data analysis methods include descriptive analysis to identify patterns, mean ranking to prioritize key issues, Cronbach's Alpha to assess reliability, and descriptive statistics for data visualization. These methods ensure accurate and meaningful insights into cost overrun factors.

CONCLUSION

This study explores cost overruns in construction projects, focusing on their factors, impacts, and potential strategies to overcome it. By employing a structured approach, this study aims to provide valuable insights and recommendations to mitigate cost overruns in construction projects. The study's contribution is anticipated to offer practical recommendations for improving cost management and optimizing project performance in SME construction projects in Malaysia.

ACKNOWLEDGMENT

The author would like to express her gratitude to Energy, Geoscience, Infrastructure and Society Department of Heriot Watt University, Putrajaya, Malaysia, especially the supervisor for funding this publication. The main author would like to express grateful appreciation to the research supervisor, Dr Azreen Ariff Bin Zulkeflee for his invaluable guidance and advice.

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eISBN 978-629-94789-0-4



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