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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

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## WELCOME SPEECH FROM THE CHAIRMAN

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

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ السَّلَام

عَلَيْكُمْ وَرَحْمَةُ اللَّهِ وَبَرَكَاتُهُ

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*

# ALLEVIATING INFLATION IN PRIVATE CONSTRUCTION PROJECTS FOR ECONOMIC STABILITY AND STRATEGIC GROWTH

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## ABSTRACT

Malaysia's construction industry has been a significant driver of economic growth, strengthened 5.0% to the total GDP in 2024 as compared to 2.9% in 2023. However, due to the economic multiplier effects and time lag between project beginning and completion, construction projects are highly susceptible to economic fluctuations like inflation. The viability and successibility of any particular projects very much depends on the accuracy of project budget. When inflation rates diverge from these projections, the cost of critical resources such as materials and labour tend to rise, resulting in cost overruns and potential stakeholder's disputes, requiring practitioners to adjust budgets and estimates. There are approximately 55% of construction projects experienced cost overruns, with public sector projects outperforming private sector. Nevertheless, current research are focusing on typical cost control measures or public-sector projects. This leads to a significant research gap in addressing inflation-specific strategies for private construction projects. From the aforementioned issues, this study aims to determine the impacts of inflation on private construction project cost management and to identify the strategies that construction industry adopted to reduce the impacts of inflation. To accomplish this study, a qualitative research approach will be carried out through semi-structured interview employing thematic analysis to determine the effects of inflation on construction project costs and mitigation strategies on different private construction projects like residential, commercial, industrial and infrastructure. The interview will target Quantity Surveyors in registered G7 contractor firm, developer and consultant firm in Johor to ascertain factors influencing inflation and strategies to mitigate the issues. The expected research outcome will be useful for private project development through enhanced project cost management especially in mitigating cost overruns and budget inaccuracies which is one of the key concerns among industry stakeholders.

Keywords: Inflation, Management Strategies, Private Construction Industry, Cost Overruns, Cost Planning and Control

## I. INTRODUCTION

### *Research Background*

As of October 2024, the overall Consumer Price Index in Malaysia showed a year-on-year growth of 1.9% indicating increased in inflation for consumer's items (Department of Statistics Malaysia., 2024). While high inflation increases production costs, low inflation can slow economic growth, potentially causing recession and higher unemployment (Syuaib Samsir et al., 2023) which is careful mitigation strategies required to reduce the impacts. Inflation can directly impact national development because as a developing country, Malaysia's construction industry plays a significant role in fostering economic growth and improving the quality of life for its residents by providing homes, jobs, and infrastructure for productive activities known as economic multiplier effect (Syuaib Samsir et al., 2023; Roslan et al., 2021). The construction industry and economic activity are closely linked together, which is why any disruptions to the links will affect both sectors. Consequently, these factors significantly influence private construction projects, as developers, contractors, and consultants such as Quantity Surveyors (QS) play a vital role in mitigating financial risks through detailed cost planning and control frameworks, technological integration, and contractual provisions. The viability of the project budget is a prerequisite for project success. Therefore, it is essential to manage the budget accurately (Musarat et al., 2021). Current research focusses on typical cost control

measures or public-sector projects, leaving a significant research gap in addressing inflation-specific strategies for private construction projects.

**Problem Statements**

The construction industry, with its long project durations and significant economic multiplier effects, is highly vulnerable to inflation, which disrupts cost planning and control. Inflation leads to rising material and labour costs, resulting in cost overruns, mid-project budget adjustments, and potential disputes among stakeholders (Roslan et al., 2021; Singh, 2024). In Malaysia, 89% of construction projects experience cost overruns, often ranging between 5% to 10%, with inflation being a primary contributor (Memon et al.; Omran et al., 2023). Hence, it is a major issue which requires adequate mitigating strategies to efficiently manage its impacts. Despite its impact, inflation is frequently overlooked in early project stages, as frameworks like the RIBA Plan of Work 2020 fail to adequately incorporate inflationary factors (RIBA, 2020). The oversight, along with volatile global commodity prices and fluctuating construction tender prices, increases financial risks. Current practices, such as subjective contingency allowances and outdated cost estimation techniques, further compound the problem, leaving stakeholders to address budget deviations and financial losses during project execution (Musarat et al., 2024). Addressing these challenges requires integrating inflation-sensitive cost management strategies across all project phases to ensure realistic budgeting and financial stability.

**Research Objectives**

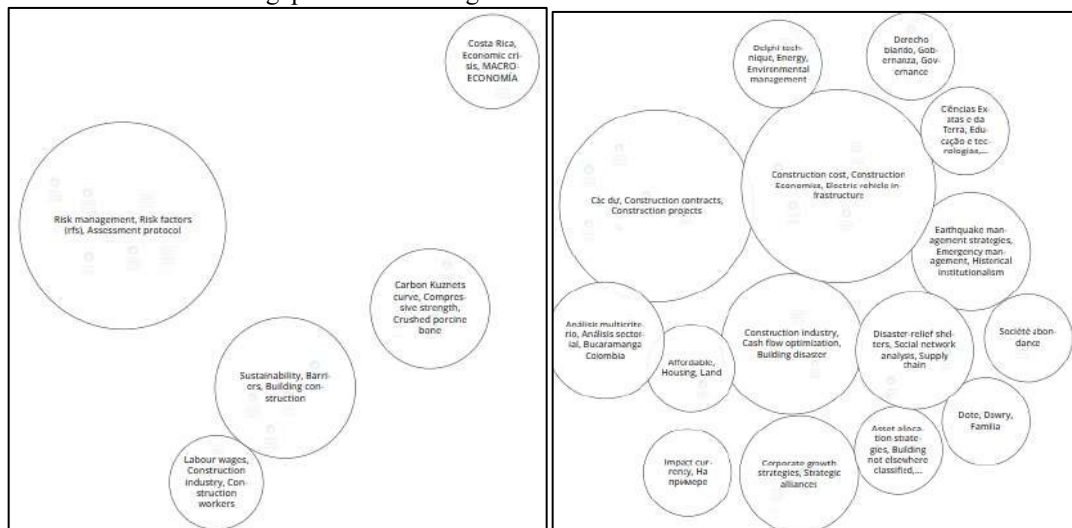
Based on the aforementioned issues, the following research objectives have been set out:

- 4) To determine the impacts of inflation on private construction project cost management.
- 5) To identify the strategies that construction industry adopted to reduce the impacts of inflation.

**II. DETAILED METHODOLOGY**

This study adopts a systematic literature review methodology to identify and synthesize existing research. The search strategy involved using databases such as Scopus, Google Scholar, ScienceDirect, and ResearchGate, employing keywords such as “inflation”, “impacts”, “mitigation”, “management”, “construction industry”, and “cost management”. The review included studies published between 2020 and 2024, focusing on the impacts of inflation or mitigation strategies in private construction.

The inclusion criteria were: (1) studies related to inflation impacts on cost management in construction; (2) studies related to inflation mitigation strategies; (3) focus on private sector projects. Studies centered on public sector projects or those lacking inflation focus were excluded. A total of 40 studies were initially retrieved, which were narrowed down to 9 after applying the screening criteria. The analysis uncovers a significant research gap: while public sector projects often benefit from formalized inflation mitigation frameworks and government policies, private sector initiatives remain reactive and fragmented. This lack of standardized approaches results in inconsistent applications of inflation strategies across private projects, underscoring the need for more comprehensive, inflation-specific cost management frameworks tailored to the private sector. Therefore, future research should focus on refining these frameworks and encouraging their adoption through policy incentives and industry guidelines. The figure below shows the research gaps across existing studies.



**Figure 1.0** Knowledge Map of Current Studies in Impacts of Inflation in Construction Industry and Inflation

## Management Strategies in Construction Industry

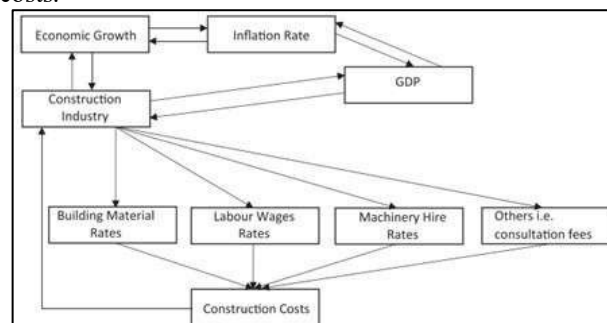
### III. FINDINGS

#### *Inflation*

Inflation, a critical economic indicator reflecting the rise in prices of goods and services over time, diminishes purchasing power and has dual effects on economic development (Syuaib Samsir et al., 2023). While moderate inflation can stimulate growth by increasing profit margins and reducing unemployment, excessive inflation undermines economic stability by raising production costs, reducing consumer purchasing power, and decreasing GDP (Abbachh Uddin et al., 2020; Impin & Kok, 2021). Inflation is influenced by factors such as demand-pull and cost-push pressures, money supply, exchange rates, GDP, and unemployment (Musarat et al., 2021). For instance, exchange rate depreciation can sustain growth, while economic deceleration may increase unemployment and inflation (Zabri et al., 2022; Yusof et al., 2021). High inflation creates uncertainty, reduces global competitiveness, and strains fiscal management through inflated government spending (Yusof et al., 2021). Therefore, maintaining inflation within a manageable threshold requires effective monetary and fiscal policies to balance its benefits and mitigate adverse impacts.

#### *Impacts of Inflation on Construction Industry*

Inflation significantly impacts the construction industry by driving up the costs of building materials, labour, and supply chain operations. The prices of essential materials such as steel, cement, and timber often rise due to inflation, exacerbated by supply chain pressures, transportation costs, and exchange rate fluctuations (Musarat et al., 2021; Syuaib Samsir et al., 2023). These increases create financial burdens for contractors, who must adjust budgets to accommodate unpredictable cost escalations. Similarly, inflation affects labour wages, leading to higher labour costs, reduced profit margins, and potential labour shortages as workers seek better-paying opportunities, ultimately disrupting project timelines and quality (Musarat et al., 2021). Furthermore, inflation disrupts the supply chain by increasing raw material and transportation costs, causing delays in material procurement and distribution, particularly for imported goods (Syuaib Samsir et al., 2023). The figure below illustrates the relationship between inflation rate and construction costs.



**Figure 2.0** Relationship of Inflation and Construction Costs (Musarat et al., 2021)

#### *Cost Management in Construction Industry Practice*

Effective cost management practices in pre-contract stage, such as quota design, value engineering, and cost forecasting, are essential for optimizing resource allocation, minimizing waste, and ensuring financial control (Chen et al., 2021; Oyegoke et al., 2022). The RIBA Plan of Work 2020 outlines structured stages where cost management techniques like cost-benefit analysis, resource planning, and budgeting are applied to align project objectives with financial constraints (RIBA, 2020; Wang, 2022). Advanced tools such as BIM technology enhance accuracy in quota design and cost estimation, while value engineering helps identify and eliminate unnecessary costs without compromising quality (Elserougy et al., 2024; Wang, 2022). Additionally, unit costing and activity-based costing provide standardized frameworks for estimating and monitoring expenses, ensuring that budgets remain aligned with project goals (Elserougy et al., 2024).

In post-contract stage, techniques such as variance analysis and earned value analysis are employed to compare actual costs against budgets, track progress, and forecast completion timelines (Elserougy et al., 2024; Oyegoke et al., 2022). Cash flow forecasting and monitoring are critical for aligning expenditures with income, ensuring financial stability throughout the project lifecycle (Elserougy et al., 2024). Material and resource management are emphasized to control costs related to labour, equipment, and materials, while change management addresses variations in project scope due to unforeseen factors (Wang, 2022; Oyegoke et al., 2022). Interim valuations and cost reporting provide regular updates on project progress and financial performance, enabling stakeholders to make

informed decisions (Elserougy et al., 2024). Additionally, post-project reviews and site meetings facilitate communication, review project success, and offer insights for future cost management (Oyegoke et al., 2022). Techniques like cost value reconciliation, budget monitoring, and record-keeping further enhance cost control by ensuring alignment with planned budgets and leveraging historical data for informed decision-making (Elserougy et al., 2024).

*Impacts of Inflation on Cost Management of Private Construction Project*

Several research have delved into the issues on the impacts of inflation in the private construction project, particularly in pre-and post-contract stage. Table 1.0 below summarises the impacts of inflation on the private construction industry's cost management in both project stages from various studies.

**Table 1.0** Impacts of Inflation on Construction Industry's Cost Management

<i>Project Stage</i>	<i>Impacts</i>	<i>Draleti et al. (2024)</i>	<i>Musarat et al. (2021)</i>	<i>Ariyawansh a &amp; Francis (2022)</i>	<i>Ebekozien et al. (2024)</i>	<i>Ekung et al. (2021)</i>	<i>Dandan et al. (2020)</i>
<i>Pre-contract</i>	Inaccurate cost estimation	✓	✓	✓	✓	✓	✓
	Uncertainty in cost plan					✓	✓
	Less reliable cost data		✓			✓	✓
	Fluctuate resource cost	✓	✓	✓	✓	✓	✓
	High contingency cost	✓	✓	✓	✓	✓	✓
	Inaccurate tender pricing	✓	✓	✓	✓	✓	✓
<i>Post-contract</i>	Initial and actual cost deviation	✓	✓		✓	✓	✓
	Additional cost by delay	✓	✓			✓	
	Payment adjustment in contract	✓	✓				
	Contingency cost adjustment		✓			✓	
	Instability cash flow management	✓	✓			✓	✓
	Resources reallocation	✓	✓				

*Inflation Management Strategies in Construction Industry*

Past research has identified various inflation management strategies adopted by public and private construction industry throughout the project life cycle. In essence, these strategies can be categorized into financial, technology, contractual and procurement aspects. Based on the studies, the financial strategies are further delineated into two stages, which are pre-contract and post-contract stages as shown in Table 2.0.

**Table 2.0** Summary of Inflation Management Strategies in Construction Industry

<i>Aspects</i>	<i>Strategies</i>	<i>Public</i>	<i>Private</i>
<i>Financial (Pre-contract Stage)</i>	Benchmarking price performance	Tembo et al. (2023)	-
	Establishing technical and financial controls	Tembo et al. (2023)	-
	Accurate cost estimation and budgeting	Hadi et al. (2022)	Shah et al. (2023); Ebekozien et al. (2024)
	Securing sufficient funds	Hadi et al. (2022)	-
	Contingency cost	Musarat et al. (2024)	
	Reviewing project budgets based on the current market pricing	-	Syuaib Samsir et al. (2023)

	Comprehensive scope management	-	Shah et al. (2023)
	Proper project planning and scheduling	-	Shah et al. (2023)
	Reviewing site crew structure	-	Syuaib Samsir et al. (2023)
<b>Financial (Post-contract stage)</b>	Real-time cost monitoring and control	Hadi et al. (2022)	Shah et al. (2023)
	Optimizing resources management	-	Syuaib Samsir et al. (2023)
	Tracking expenses and performing variance analysis	-	Shah et al. (2023)
	Timely payment processes	Hadi et al. (2022)	-
<b>Technology</b>	BIM	Tembo et al. (2023)	Syuaib Samsir et al. (2023)
	CAD software	-	Syuaib Samsir et al. (2023)
	VR and AR	-	Syuaib Samsir et al. (2023)
	Collaborative integrated technological models	-	Ebekozien et al. (2024)
	Project monitoring and control system	-	Shah et al. (2023)
	Risk assessment tools	-	Shah et al. (2023)
<b>Contractual</b>	Legislating subcontracting policies and joint venture agreements	Tembo et al. (2023)	-
	Legislating procurement controls	Tembo et al. (2023)	-
	Risk allocation	Hadi et al. (2022)	-
	Flexible clauses and provisions to allow adjustments for inflation	Hadi et al. (2022)	Shah et al. (2023)
	Change management provisions	Tembo et al. (2023)	Shah et al. (2023); Syuaib Samsir et al. (2023)
<b>Procurement</b>	Periodic audits of procurement processes	-	Shah et al. (2023)
	Standardizing procurement timeframes	Tembo et al. (2023)	-
	Bulk procurement	Hadi et al. (2022)	Shah et al. (2023); Syuaib Samsir et al. (2023)
	Pre-purchase agreements	-	Shah et al. (2023)
	Choosing reliable suppliers with stable pricing policies	-	Shah et al. (2023)
	Maintaining good relationships with suppliers	Hadi et al. (2022)	-
	Embracing lean construction	-	Syuaib Samsir et al. (2023)
	Prefabrication	-	Syuaib Samsir et al. (2023)
	Adopting sustainable construction practices	-	Syuaib Samsir et al. (2023)

### *Inflation Management Strategies in Private Construction Industry*

Current research mostly focuses on public projects, leaving a gap in understanding the challenges of private ones. Hence, various inflation management strategies in private construction industry in a few research studies had been summarised and tabulated into financial, technological, contractual and procurement aspects.

**Table 3.0** Inflation Management Strategies in Private Construction Industry

<i>Aspects</i>	<i>Strategies</i>	<i>Ebekozien et al. (2024)</i>	<i>Musarat et al. (2024)</i>	<i>Shah et al. (2023)</i>	<i>Syuaib Samsir et al. (2023)</i>
<b>Financial (Pre-</b>	Accurate cost estimation and budgeting	✓		✓	
	Contingency cost		✓		

<b>contract Stage)</b>	Reviewing project budgets based on the current market pricing				✓
	Comprehensive scope management			✓	
	Proper project planning and scheduling			✓	
	Reviewing site crew structure				✓
<b>Financial (Post-contract stage)</b>	Real-time cost monitoring and control			✓	
	Optimizing resources management				✓
	Tracking expenses and performing variance analysis			✓	
	Proper change orders management				✓
<b>Technology</b>	BIM				✓
	CAD software				✓
	VR and AR				✓
	Collaborative integrated technological models	✓			
	Project monitoring and control system			✓	
	Risk assessment tools			✓	
<b>Contractual</b>	Flexible clauses and provisions to allow adjustments for inflation			✓	
	Change management provisions			✓	
<b>Procurement</b>	Periodic audits of procurement processes			✓	
	Bulk procurement			✓	✓
	Pre-purchase agreements			✓	
	Choosing reliable suppliers with stable pricing policies			✓	
	Embracing lean construction				✓
	Prefabrication				✓
	Adopting sustainable construction practices				✓

#### IV. RESEARCH METHODOLOGY

In this research, the qualitative method is chosen as detailed insights from participants are involved. Current similar research employed quantitative methods, while qualitative approach able to fill the gap by providing actionable insights for industry practice, complementing prior statistical findings. The study will be conducted on different types of private construction projects like residential, commercial, industrial and infrastructure as these project types have significant work value and characteristics in private sector (*Department of Statistics Malaysia, 2024*).

Semi-structured interviews with the selected interviewees will be conducted to fulfil both research objectives as it allows researchers to gain detailed insights from participants that numerical data alone cannot express (Mashuri et al., 2022). It provides flexibility to adapt questions during the interview and maintains focus while exploring new themes and balance structure and openness to encourage dynamic responses.

Furthermore, purposive sampling ensures the selection of interviewees based on their ability to in cost planning and control as well as contribute specialized knowledge and experience of cost management in private construction projects. In alignment with the research objectives, the selected population consists of Quantity Surveyors (QS) in contractors firm registered with Construction Industry Development Board (CIDB) Grade 7 (G7), QS in developer and Professional Quantity Surveyors (PQS) or Consultant Quantity Surveyors (CQS) in Quantity Surveying consultant firm in Johor, Malaysia.

The data collected will be interpreted using content analysis for both research objectives. Content analysis is a research method for subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns (Mezmir, 2020).

#### CONCLUSION

In conclusion, this research provides insights into the impacts of inflation on private construction project cost management, a key concern for industry stakeholders. It examines how inflation affects cost management and overall project economics to highlight the potential risks of cost overruns and inaccuracies which can jeopardise project viability. By understanding these problems, it helps construction professionals, particularly QS, to adopt more efficient inflation management strategies in managing project's financial and contractual matters with utilization of technology and proper procurement methods.

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## REFERENCES

- Abbachh Uddin, M., Solaiman, M., Raju, V., & Ibrahim Alasan, I. (2020). *A Study on the Factors of Inflation Based in Malaysia* (Vol. 1).
- Alaloul, W. S., Musarat, M. A., Liew, M. S., Qureshi, A. H., & Maqsoom, A. (2021). Investigating the impact of inflation on labour wages in Construction Industry of Malaysia. *Ain Shams Engineering Journal*, 12(2), 1575–1582.
- Ariyawansa, C., & Francis, M. (2022). COST OVERRUN FACTORS IN PRE-CONTRACT AND POST-CONTRACT STAGES: A CRITICAL ANALYSIS. *World Construction Symposium*, 262–274.
- Chen, P., Shi, C., & Ren, X. (2021). A Whole Process Cost Control Strategy of Construction Engineering Based on BIM. *Proceedings - 2021 6th International Conference on Smart Grid and Electrical Automation, ICSGEA 2021*, 555–559.
- Dandan, T. H., Sweis, G., Sukkari, L. S., & Sweis, R. J. (2020). Factors affecting the accuracy of cost estimate during various design stages. *Journal of Engineering, Design and Technology*, 18(4), 787–819.
- Department of Statistics Malaysia. (n.d.). Retrieved November 29, 2024, from
- Draleti, G., Sengonzi, R., & Kakitahi, J. (2024). Improvement of Risk Management in Cost Estimation in the Building Construction Industry in Uganda. *Journal of Construction in Developing Countries*, 29(1), 111–138.
- Ebekozien, A., Aigbavboa, C. O., Thwala, W. D., Hafez, M. A., & Samsurijan, M. S. (2024). Sustainable development goals under threat: the impact of inflation on construction projects. *Engineering, Construction and Architectural Management*, 31(13), 323–341.
- Ekung, S., Lashinde, A., & Adu, E. (2021). Critical Risks to Construction Cost Estimation. *Journal of Engineering, Project, and Production Management*, 11(1), 19–29.
- Elserougy, M., Khodeir, L. M., & Fathy, F. (2024). Practices and techniques for construction projects cost control—a critical review. *HBRC Journal*, 20(1), 525–552.
- Hadi, A. A. A., Ismail, S., Rani, N. I. A., & Bakar, N. F. S. A. (2022). *Critical Success Factors of Contractors in Affordable High-rise Public Housing in Malaysia* (pp. 179–194).
- Impin, P. D. A., & Kok, S. C. (2021). *The Effect Of Inflation Rate, Interest Rate And Unemployment Rate On The Economic Growth Of Malaysia*.
- 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.
- Lee, J. G., Jeong, S., & Choi, J. (2024). Time lag analysis of real estate supply policies for housing construction projects. *Journal of Asian Architecture and Building Engineering*.
- Mashuri, S., Sarib, M., Rasak, A., & Alhabsyi, F. (2022). *Semi-structured Interview: A Methodological Reflection on the Development of a Qualitative Research Instrument in Educational Studies Ruslin*. 12(1), 22–29.
- Mezmir, E. A. (2020). Qualitative Data Analysis: An Overview of Data Reduction, Data Display and Interpretation. *Research on Humanities and Social Sciences*.
- Mohamed, E., Mohamed, E. B. E., & Mahmoud, S. Y. M. (2020). An assessment of the impact of inflation on the prices of selected construction materials in Sudan. In *International Journal of Multidisciplinary Research and Publications (IJMRAP)* (Vol. 2, Issue 12).
- Musarat, M. A., Alaloul, W. S., & Liew, M. S. (2021a). Construction machinery hire rates deviation in Malaysia: an inflation rate effect analysis. *Revista de La Construcción*, 20(1), 91–105.
- Musarat, M. A., Alaloul, W. S., & Liew, M. S. (2021b). Impact of inflation rate on construction projects budget: A review. *Ain Shams Engineering Journal*, 12(1), 407–414.
- Musarat, M. A., Alaloul, W. S., & Liew, M. S. (2024). Incorporating inflation rate in construction projects cost: Forecasting model. *Heliyon*, 10(4).

- Musarat, M. A., Alaloul, W. S., Liew, M. S., Maqsoom, A., & Qureshi, A. H. (2021). The effect of inflation rate on CO2 emission: A framework for Malaysian construction industry. *Sustainability (Switzerland)*, 13(3), 1–16.
- Okereke, R. A., Zakariyau, M., & Eze, E. C. (2022). The Role of Construction Cost Management Practices on Construction Organisations' Strategic Performance. *Journal of Project Management and Practice* (Vol. 2, Issue 1).
- 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.
- Oyegoke, A. S., Powell, R., Ajayi, S., Godawatte, G. A. G. R., & Akenroye, T. (2022). Factors affecting the selection of effective cost control techniques in the UK construction industry. *Journal of Financial Management of Property and Construction*, 27(2), 141–160.
- RIBA. (2020). *RIBA Plan of Work 2020 Overview RIBA Plan of Work*.
- Roslan, A. F., & Baslan, N. (2021). *Construction 4.0 to Transform the Malaysian Construction Industry*.
- Scholar Sujata Janardan Pawar, Mt., Trupti Kulkarni, A., & Janardan Pawar, D. (2022). Budgeting and Cost Control in a Construction Project Management. In *International Journal of Scientific Research & Engineering Trends* (Vol. 8).
- Shah, F. H., Bhatti, O. S., & Ahmed, S. (2023). A Review of the Effects of Project Management Practices on Cost Overrun in Construction Projects. *Engineering Proceedings*, 44(1).
- Syuaib Samsir, M., Khalid, Z., Attan, N., Kai Chen, G., & Shafii, H. (2023). *A Study on Inflation: Reason Behind Rising Price of Construction Materials in Johor Bahru*. 4(1), 1203–1220.
- Tembo, M., Mwanaumo, E. M., & Kahanji, C. (2023). Improving Procurement Selection Criteria for Managing Construction Tender-Price Volatility on Public Projects. *European Journal of Logistics, Purchasing and Supply Chain Management*, 11(1), 1–25.
- Wang, S. (2022). Problems in the Whole Process of Management and Control of Construction Cost and Cost Management Strategies. In *Highlights in Science, Engineering and Technology AGECT* (Vol. 2022).
- Yusof, N., Nin, L. F., Md Kamal, H. K., Ahmad Taslim, J. R., & Zainoddin, A. I. (2021). Factors that Influence the Inflation Rate in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 11(9).
- Zabri, A., Sufian, A., & Bakar, A. (2022). *The Relationship Among Gdp, Inflation, Unemployment And Exchange Rate In Malaysia: A Vector Error Correction Model (VECM) Approach*.  
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