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CRITICAL FACTOR OF COST OVERRUN IN MALAYSIAN CONSTRUCTION PROJECT

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Abstract: *Cost overruns remain a persistent challenge in the Malaysian construction project, threatening project viability and economic efficiency. This study investigates the critical factors contributing to cost overruns in construction projects and proposes effective mitigation strategies. The research employed a quantitative methodology, involving a questionnaire survey distributed to 317 respondents from Contractor G7 in Kuala Lumpur. Results show that project scope changes, delays, and insufficient planning are major contributors to overruns. Financial strain, quality compromises, and stakeholder disputes are among the key negative outcomes. This research concludes that effective cost management in construction projects requires a comprehensive understanding of the factors contributing to cost overruns. The determine solutions include implementing performance-based contracts, conducting regular supplier evaluations and ensuring early involvement of suppliers and subcontractors in the project planning process. These findings offer practical insights for project managers and policymakers to enhance cost control in the construction sector.*

Keywords: *Cost overruns, over budget, construction project, Malaysia*

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Introduction

The construction project plays a critical role in national economic development, particularly in developing countries such as Malaysia. In recent decades, rapid urbanization and infrastructure development have increased the demand for large-scale construction projects. However, in this era globalization, most of construction projects in Malaysia are often late and they can take up to twice as long as long as they were supposed to. (Kamaruddeen et al., 2020). Besides that, the success of these projects is often compromised by cost overruns, which are prevalent in both public and private sector projects. Almost always, costs rise by more than expected on nine of ten projects. (Asiedu & Adaku, 2020). These overruns not only affect project delivery but also erode trust among stakeholders and impact the overall economic outlook.

According to Olajide (2016), Cost overruns occur when actual expenditures exceed the original estimated budget. According to bent (2018) cost overrun is the amount by which actual cost exceeds estimated cost, with cost measured in the local currency, constant prices, and against a consistent baseline. This phenomenon is not new, but its persistence in the Malaysian construction sector calls for a deeper understanding of its causes and consequences. Identifying these factors and implementing effective control mechanisms is crucial to enhancing the efficiency and reliability of construction projects. Despite prior studies on construction cost management, limited empirical research has focused on Malaysian G7 contractors.

Literature Review

Definition of Cost Overrun In Construction Project

According Subramani (2014), cost overrun is defined as the difference between the actual and estimated costs as a percentage of the estimated cost, with all costs calculated in constant prices, cost overrun in a construction project is when the real costs incurred during the project's execution are more than what was originally planned or estimated. It happens when there is a difference between what was planned for the budget and what was actually spent to finish the job. Besides that, Derakhshanalavijeh (2017) defined project cost overrun as the amount by which the actual cost at project completion exceeds the initially agreed project budget estimate. They can be caused by a different factors, like poor planning, wrong cost predictions, scope changes, poor control by the management and it can be slightly different between countries (Edyta, 2020). Accoding to Edyta (2020) cost overrun in construction projects are common, occurring under various market and legal conditions, unfortunately, often negatively influencing the achievement of project goals. Many research findings highlight the extent of this issues.

Factors of Cost Overrun

Cost overruns have been widely studied across various global contexts. Cost overruns happen when the real expenses of a project exceed the initial budget estimates, resulting in various negative outcomes, such as delayed project completion and reduced quality (Sambasivan, 2007). According to Amini (2022) in the construction industry, ineffective communication is one of the primary factors that contribute to cost overrun. It may manifest in a variety of ways, such as a halt in the flow of information, the transmission of communications to the incorrect individual or location, or a lack of clear communication that results in misunderstandings or incorrect interpretations. Besides that, a study conducted by Xie (2022) changes in the prices of raw materials, labor, and equipment will have an effect on the total cost of the project if procurement activities are carried out at this time.

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Table 1: Factors of cost overrun in construction project

NO	FACTORS OF COST OVERRUN	(amini,2022)	(Xie,2022)	(adaku,,2019)	(abdullah aljohani,2017)	(asiedu, 2019)	(Chandragiri,2021)	(Zidane,2017)
1	Poor site management and supervision	/				/		
2	Ineffective communication	/						/
3	Changes in the price of raw materials, labor and equipment	/	/			/	/	
4	Change order			/				
5	Payment delay from client				/			
6	Slow quality inspection process							/
7	Lack of experience	/						
8	Financial difficulties faced by contractor							
9	Schedule delay						/	
10	Inadequate time and cost estimate							
11	Shortage workers		/		/		/	
12	Inaccurate time and cost estimate			/				/
13	Poor project management	/	/			/		
14	Labor productivity							
15	Changes in the scope of the project	/	/	/	/			/

Table 1, are the summary of various factors of cost overrun and also an author that already mentioned on the factors of cost overrun in construction project. There are many factor contribute to cost overrun in construction project like poor site management and supervision, ineffective communication, changes in the price of raw materials, labor and equipment, change order, payment delay from client, slow quality inspection process, lack of experience, financial difficulties faced by contractor, schedule delay, inadequate time and cost estimate, shortage workers, inaccurate time and cost estimate, poor project management, labor productivity and changes in the scope of the project.

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Impact of Cost Overrun

According to Muhammad Ilyas, (2020) finance burden one of impact cost overruns can cause project owners to lose a lot of money. When building costs go over the budget, the owner of the project has to find more money to cover the difference. This can put a strain on the finances, lower the profits, or even cause to lose money. Project delays can lead to extra expenses due to prolonged labor, extended contract durations, and rising overhead costs. These factors can further escalate the overall project cost. Additionally, such delays may cause a ripple effect, disrupting not only the ongoing construction project but also other projects that rely on its timely completion. (Marsha Enrica, 2021)

Global Challenges of Cost Overruns in Development Projects

Cost overruns—defined as actual spending exceeding the initially planned or budgeted expenditures—are a common issue affecting both developed and developing countries. Globally, nations are grappling with challenges posed by these overruns, particularly in large-scale development and construction projects. Countries such as Afghanistan, Jordan, Nigeria, Vietnam, and Pakistan frequently encounter factors contributing to overruns, including limited budgets, poor project implementation, funding constraints, inconsistent cash flow, excessive material quantities, inaccurate material estimations, and declining productivity. These issues often lead to significant financial burdens and delays in completing major infrastructure projects. Importantly, such challenges are not region-specific but are prevalent across the globe, underlining the urgent need for robust and efficient cost management systems to ensure project success within allocated budgets (William, 2023).

Case Study: China

China has been experiencing substantial cost overruns in its construction sector. These arise from factors that are either difficult to control or manage effectively. Key issues include inaccuracies in initial cost estimates, stringent governmental regulations, construction delays, frequent design modifications, and labor inefficiencies. The primary contributors to cost escalation in China include increasing material costs, high machinery expenses, insufficient cash flow, and poor financial management. These challenges not only highlight a lack of efficiency in the workforce but also reflect systemic weaknesses in financial planning and resource allocation (William, 2023). To address cost overruns effectively, it is essential to improve labor productivity, refine cost estimation techniques, and strengthen financial oversight.

Case Study: India (Bhopal)

India, particularly in cities like Bhopal, has seen an increase in public building projects, many of which suffer from cost overruns. According to Patel (2016), one major factor is a lack of awareness about fluctuations in exchange rates. Projects involving multi-currency transactions are highly vulnerable to exchange rate changes. For example, if the local currency depreciates after the budget is set, procurement costs can significantly increase. Furthermore, poor consideration of safety and environmental aspects during planning stages can result in accidents, project delays, legal consequences, and additional financial burdens.

To reduce such risks, Patel (2016) suggests coordinated solutions from all stakeholders. Consultants should maintain continuous coordination and direct communication to eliminate design errors and contract inconsistencies. Simplified and practical design approaches should be prioritized over excessively complex or stylistic ones. From the contractor's perspective, employing experienced senior managers and accurately estimating costs before contract signing

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is critical. Projects must be planned in line with a company's financial capacity, as insufficient funding can cause major delays and additional costs.

Case Study: Tanzania

In East Africa, Tanzania has also reported significant cost overruns and delays in construction projects. As Tesha (2018) notes, poor economic conditions are a major contributor. Economic instability often leads to inflation, supply chain disruptions, skilled labor shortages, and currency devaluation—each of which drives up the cost of materials, labor, and equipment. These unanticipated escalations strain project budgets, particularly if such variables are not adequately accounted for during the planning phase.

Another important factor in Tanzania is the volatility of material prices. Fluctuations in the costs of key construction materials—such as steel, cement, timber, and petroleum-based products—can severely affect the financial planning of projects. These fluctuations may be caused by shifts in global demand, geopolitical uncertainty, or supply chain issues. Without mechanisms like long-term contracts or cost buffers to stabilize prices, project budgets are vulnerable to overrun (Tesha, 2018).

To mitigate these risks, Tesha (2018) recommends the implementation of effective cost monitoring and control systems. Regularly comparing actual costs with budgeted figures, analyzing discrepancies, and responding proactively are crucial steps. The use of performance indicators such as cost-to-complete, cost fluctuation, and the cost performance index can help project managers track and improve cost performance.

Cost overruns remain a major challenge in the global construction industry. While the causes vary—from financial mismanagement in China and exchange rate oversight in India to economic instability in Tanzania—they share a common theme: the need for improved planning, forecasting, and financial controls. Mitigating these challenges requires a multi-stakeholder approach involving better coordination, experienced management, and advanced monitoring systems. By prioritizing these areas, countries can reduce cost overruns and improve the efficiency and success of their infrastructure projects.

Methodology

This study adopts a quantitative research methodology to analyze the prevalence and underlying causes of cost overruns in Malaysian construction projects. The primary data was collected using a structured questionnaire distributed to 317 contractors classified as G7 under the Construction Industry Development Board (CIDB) registry. G7 contractors are significant players in the industry, eligible to undertake projects with unlimited contract values.

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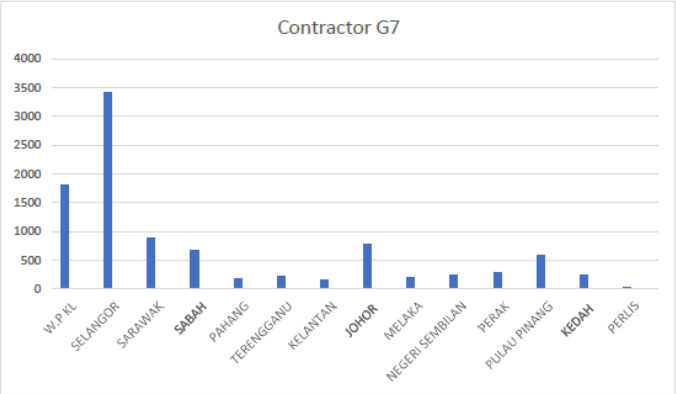

Figure 1: Contractor G7 registered with CIDB
Source: Construction Industry Development Board (CIDB) Malaysia

According this chart, it's stated that the number of Contractors G7 is the highest number of companies actively registered under the board. Table 2 shown the numbers of construction professionals' practice that have skill and experience in construction industry in Kuala Lumpur are the second highest across the country. It is suitable to get enough data and information for this research in Kuala Lumpur. The minimal sample size for these studies, under the provided criteria, is 317 respondents out of 1811 Kuala Lumpur respondents based on Krejci and Morgan, 1970 , Determination of sampling size.

Table 2: Contractor G7 in Kuala Lumpur

Construction personnel	State	Number of firms
Contractor G7	Kuala Lumpur	1811
Total		1811

The questionnaire was designed to assess respondents' experiences with cost overruns, including factors contributing to them, impacts on project performance, and strategies implemented to mitigate them. The questionnaire used in this study was developed based on an extensive review of previous literature relevant to cost overrun in construction project. Key constructs and measurement items were adapted from validated instruments employed in past studies, ensuring content relevance and theoretical alignment. The items were reworded to suit the context of Kuala Lumpur and for contractor Grade 7. A preliminary draft of the questionnaire was reviewed by academician and industry practitioners to ensure face validity.

This study complied with all relevant ethical guidelines for research involving human participants. Ethical approval was obtained from Quantity Surveying department, UiTM Seri Iskandar, Perak, and all respondents were informed of the purpose of the study before participating. Participation was voluntary, and informed consent was obtained from each participant. Confidentiality and anonymity were strictly maintained throughout the data collection and analysis process. No personal identifying information was collected, and data were used solely for academic research purposes.

The responses were analyzed using the Statistical Package for Social Sciences (SPSS), employing descriptive statistics such as frequency distributions, mean scores, and standard deviations. Cronbach's alpha was used to test reliability, with values above 0.7 indicating acceptable internal consistency. All of the data results and findings were then discussed

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according to the aim and objectives of the research that has been set in the preliminary stage. (Zain, F. M. Y et al, 2023)

This study was conducted over a period of 18 months, beginning in January 2024 and concluding in July 2025. The timeline included stages of literature review, questionnaire development, data collection, data analysis, and report writing.

Findings and Discussion

The survey results reveal several recurring themes among respondents. The most cited cause of cost overrun was changes in project scope. These changes often stem from client-driven modifications or unforeseen site conditions that necessitate redesign or additional work. Delayed project completion was the second most frequent factor, usually a result of poor scheduling, inadequate coordination, or resource constraints.

Insufficient planning, including unrealistic budgeting and poor forecasting, was also identified as a major contributor. Many contractors reported challenges with inaccurate initial cost estimates, leading to budgeting shortfalls as the project progressed. Other notable factors include fluctuations in the price of raw materials and labor, ineffective communication among stakeholders, labor shortages due to lack of skilled workers and delays in payment by clients, causing cash flow issues. Table 3 shows five factors contribute to cost overrun in construction project and the most critical factors.

Table 3: Critical factor contribute to cost overrun in construction project

Description	Rank	Perception level	Mean
Changes in project scope	1	Strongly agree	4.77
Delays in material delivery	2	Strongly agree	4.70
Inadequate risk management	3	Strongly agree	4.67
Design changes	4	Strongly agree	4.65
Inflation and market conditions	5	Strongly agree	4.66

The analysis highlighted key factors contributing to cost overruns, ranked by their perceived impact. The primary factors include changes in project scope (mean = 4.77), means strongly agreed by Asiedu (2020) which the total difference in costs for Malaysian construction projects and have long been considered one of the primary reasons why project costs tend to increase.

Adequate planning and resources before initiating a project are also essential to avoid or minimize the negative impacts of change orders delays in material delivery and supported by Kamaruden (2020) whereby change orders delays in building projects lead to cost overruns and inadequate risk management was mentioned by shah (2023) risk management minimize the impacts of risks on project costs and reduces the likehood of overruns. which not recognizing and addressing any risks, such as fluctuations in material costs, scarcity of labour or alterations in regulations can result in substantial budget overruns and financial losses for the project. Moreover, inflation and market conditions as Xie (2022) whereby design changes inflation the material will have a major effect on the total of the project.

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Conclusion

Cost overruns are a complex but manageable challenge in Malaysian construction projects. This study highlights key contributing factors such as scope changes, delays, poor planning, poor management and market. The findings emphasize the importance of proactive planning, stakeholder engagement, and communication. By implementing the proposed strategies, construction firms can not only reduce the frequency and impact of cost overruns but also enhance their overall project delivery and competitiveness.

a) Early Involvement of Stakeholders - Engaging clients, contractors, and consultants during the early planning phase fosters clearer communication, more accurate cost estimation, and better alignment of expectations.
b) Improve Cost Estimation Accuracy - Using historical data, expert judgment, and software-based modeling can help generate more realistic budgets.
c) Regular Supplier/Subcontractor Evaluation - Evaluating supplier and subcontractor performance ensures that only qualified partners are engaged, reducing the risk of delays and rework.
d) Enhance Communication and Collaboration - Establishing integrated project delivery systems and frequent coordination meetings can help align all project participants.

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