

MITIGATING MEASURES FOR THE ESCALATION OF BUILDING PROJECT COSTS AMID SRI LANKA'S ECONOMIC CRISIS

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Abstract: The construction sector in Sri Lanka faces formidable challenges due to economic fluctuations that escalate building project costs. Economic downturns adversely impact the industry, leading to rising materials, labour, equipment, and financing expenses. This research aims to investigate how to manage the escalation of building project costs amid Sri Lanka's economic crisis. A mixed-method approach is employed, integrating both qualitative and quantitative research techniques. Surveys and interviews with industry experts, along with detailed data analysis, assess the adaptability of significant measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka. Moreover, the study identified barriers to implementing these measures and strategies to overcome them. Among the most viable mitigation measures are, using proper reusing and recycling procedures followed by encouraging specialization and training to close the skills gap and labour shortage and make use of technical advancements. This research offers actionable insights to stakeholders—industry professionals, policymakers, and investors—within Sri Lanka's construction sector to better manage financial pressures during economic downturns. By contributing valuable knowledge on managing building project costs amid economic instability, this study aspires to support the development of a more resilient and adaptable construction industry in Sri Lanka, fostering long-term industry stability in the wake of recent economic challenges.

Keywords: *Building Project Cost; Economic Crisis; Mitigation Measures; Sri Lanka*

1. Introduction

The construction industry is integral to a nation's economy, significantly contributing to global economic growth and infrastructure development. This sector not only generates employment but also influences the trade of building materials and the construction of essential infrastructure and buildings, which are vital for both social and economic development (Thilakshan et al., 2023). In Sri Lanka, the construction industry has emerged as a pivotal economic sector, contributing approximately 6% to the nation's Gross Domestic Product (GDP). However, recently many construction projects have failed to meet key performance metrics such as time, cost, and quality. An analysis of these project failures reveals that the recent economic crisis has had a substantial impact on the construction sector, resulting in delays, project abandonments, job losses, and reduced investments (De Silva et al., 2023). The economic crisis in Sri Lanka, exacerbated by the COVID-19 pandemic, has inflicted severe hardship on the population (George et al., 2022). The crisis is marked by high inflation and unemployment rates, acute shortages of fuel and electricity, and sporadic protests. Contributing factors include high levels of foreign debt, dwindling foreign exchange reserves, currency devaluation, and a series of lockdowns. Additionally, the crisis has been aggravated by the mismanagement of public finances and poorly timed tax cuts, which, combined with the effects of the pandemic, have severely hampered economic progress.

The Sri Lankan crisis, characterized by high external debt, rising inflation, shortages of basic goods, a decline in foreign exchange reserves, currency depreciation, and multiple lockdowns during the pandemic, has significantly hindered the nation's economic progress (Tripathi et al., 2022). Inflation, defined as a sustained increase in the general price level of goods and services over time, directly affects individuals who, through their daily consumption and purchases, experience these price changes (Höflmayr, 2022). The construction industry, in particular, has faced significant challenges due to high inflation and intermittent protests, both of which must be addressed to ensure the continued growth and success of the sector (Abeyrathne and Pavithra, 2020). Construction projects are crucial for societal and economic development; however, they frequently encounter cost overruns, with nine out of ten projects affected by this issue (Akanni et al., 2014). Fluctuations in the costs of materials, labor, and equipment—exacerbated by the crisis—have impacted investments and budgets, often leading projects to exceed their initial cost estimates and worsen the general cost overruns (Musarat et al., 2020).

The ongoing economic crisis has profound implications for all stakeholders involved in construction projects. For

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instance, in scenarios where a country's economic downturn leads to rising material costs, contractors are compelled to expend additional effort and resources to procure these increasingly expensive materials. Consequently, businesses often find themselves exceeding their initial budget allocations (Oghenekevwe et al., 2014). As the production costs for suppliers increase, so too do the prices of materials, further exacerbating financial pressures on construction projects. The unpredictability of inflation adds another layer of complexity, making it difficult to forecast future costs with accuracy. This uncertainty can result in extended project timelines, increased construction costs, and diminished profit margins. During the economic crisis, construction companies must develop long-term survival strategies. Contractors should implement these strategies promptly to adapt to the evolving economic landscape, as failure to do so could jeopardize both operational stability and financial viability. The primary factors contributing to project failures during economically unstable periods include contract claims, cash flow challenges, legal disputes, low-profit margins, and marketing difficulties. Contractual disputes and disagreements, particularly during economic downturns, can exacerbate cash flow issues, making it essential for contractors to carefully choose strategies that protect their financial health and ensure the continuity of their operations (Danso & Obeng-Ahenkora, 2018).

Pathirana (2022) noted that a majority of construction projects active between 2019 and 2022 experienced suspension, as domestic clients and contractors grappled with cash flow shortages, exposing them to heightened risk and diminishing their competitive edge. Despite these financial strains, the construction sector's GDP increased from USD 3,138 million in 2020 to USD 3,545 million in 2021 (Weerakoon et al., 2023). By late 2022, however, the National Construction Association of Sri Lanka (NCASL) indicated a near-collapse of the industry, with 90% of projects stalled due to critical shortages of raw materials such as cement and iron, foretelling a potential 75% workforce reduction. While construction activities remained stable before January 2022, the economic and political crises that emerged early that year significantly undermined the industry's GDP contributions which reflects the effect of the economic crisis on the construction industry. Even though some prior studies have identified mitigating measures aimed at reducing the impact of the economic crisis on building project costs, existing measures have proven insufficient in addressing the rapid economic fluctuations currently experienced in Sri Lanka. Consequently, a significant gap persists in research focused on identifying and evaluating effective mitigation measures and their adaptability in the context of the ongoing economic crisis. Therefore, this study seeks to fill this gap by investigating how to manage the escalation of building project costs amid Sri Lanka's economic crisis. Accordingly, the research objectives were listed as; 1) to identify the adaptive measures to mitigate the impact of the economic crisis on building project costs, 2) to assess the adaptability of mitigation measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka, 3) to identify barriers to implementing the proposed mitigation measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka and 4) to propose strategies for implementing the proposed mitigation measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka.

2. Literature Review

2.1. ECONOMIC CRISIS

A crisis is defined as a period in a system's dynamics marked by various challenges, such as tensions or conflicts, that disrupt normal operations and exert significant pressure on the system to adapt or transform (Mahdi & Muhsin, 2023). During a crisis, potential threats evolve into actual dangers, forming the basis for assessing the level of insecurity within any system. An economic crisis, in particular, occurs when a nation's economy experiences a sudden and severe contraction, often precipitated by an avoidable financial crisis. Manifestations of such an economic downturn may include recession, stagflation, or depression (Regasa et al., 2023). The economic crisis in Sri Lanka is unprecedented in the island nation's history. This crisis has been characterized by soaring inflation, severe shortages of fuel and electricity, high levels of foreign debt, declining foreign exchange reserves, currency devaluation, and a series of lockdowns that have stifled economic growth. Poorly managed public finances and ill-timed tax cuts, compounded by the impact of the COVID-19 pandemic, have been identified as the primary causes of this crisis (Sharma & Anawade, 2022). To effectively address the situation, Sri Lanka received financial assistance from the International Monetary Fund (IMF).

Key factors contributing to the economic crisis include high inflation rates, substantial foreign debt, declining foreign exchange reserves, and currency devaluation (Stiglitz, 2010). High inflation rates weaken purchasing power, reduce consumer demand, and destabilize markets, potentially triggering economic crisis. The resulting decline in consumer spending adversely impacts businesses, often leading to reduced investment or layoffs (Dornbusch et al., 2013). As companies struggle with fluctuating costs, uncertainty arises, disrupting long-term planning and economic stability. Fixed-income earners are particularly strained by inflationary pressures, which exacerbate economic inequality (Zuo et al., 2015). An economic crisis can also be precipitated by a significant amount of foreign debt, as it heightens a country's vulnerability to external shocks such as changes in interest rates, currency values, and global economic downturns (George et al., 2022). Declining foreign exchange reserves further exacerbate an economic crisis by making it more challenging for a country to service external debt, stabilize its currency, and import essential goods. This loss of economic confidence can lead to higher borrowing costs, inflation, and currency devaluation (Tripathi et al., 2022). Currency devaluation, in turn, worsens an economic crisis by reducing domestic purchasing power and increasing debt burdens for import-dependent nations. The higher cost of imports may lead to inflation, while businesses face challenges that can result in lower investments and job losses. Additionally, capital flight and declining foreign investor interest may occur as confidence in the currency diminishes.

The government's ability to effectively intervene during a crisis is further compromised by the loss of reserves due to currency devaluation, which prolongs and intensifies the crisis's effects.

2.2. THE SRI LANKAN ECONOMIC CRISIS AND ITS IMPACT ON THE CONSTRUCTION INDUSTRY

The economic crisis that began three years ago has inflicted severe hardship on the people of Sri Lanka and posed significant challenges for the government (George et al., 2022). The crisis has been attributed to both internal mismanagement and external factors beyond the country's control, leading to prolonged periods of instability. The core issue lies in the imbalance between Sri Lanka's imports and exports, exacerbated by higher expenses than revenues and a debt-to-GDP ratio currently at 111%, indicating that the nation is borrowing more than it produces (Tripathi et al., 2022).

This economic downturn has further impacted the construction industry which was already worsened by the COVID-19 pandemic, with restrictions on supply and demand leading to a significant decline in construction activities. In 2022, the construction sector experienced a 20.9% loss in value-added compared to a 4.4% increase in 2021 (Central Bank, 2022). This downturn is largely due to the country's dwindling foreign exchange reserves, rising debt, and political and economic uncertainty. Import restrictions, particularly on essential materials like cement, have hindered local production, leading to severe shortages in raw materials. As a result, most construction projects that were active between 2019 and 2021 have been halted or delayed, leaving domestic clients and contractors with insufficient money reserves and at a competitive disadvantage (Pathirana, 2022). Despite a brief recovery in the construction sector's GDP in 2021, the industry has since collapsed, with 90% of work coming to a standstill by late September 2022, primarily due to shortages of critical materials such as cement and iron. The National Construction Association of Sri Lanka (NCASL) predicts that this collapse could lead to the loss of 75% of the industry's workforce (Weerakoon et al., 2023).

2.3. ADAPTIVE MEASURES TO MITIGATE THE IMPACT OF THE ECONOMIC CRISIS ON BUILDING PROJECT COST

Engineering and construction project teams encounter higher levels of risk and uncertainty compared to most other project teams, with the likelihood of failure increasing alongside the project's scale and complexity. To achieve optimal project and financial outcomes, all stakeholders must work towards minimizing risks and maximizing benefits. Few previous researchers have identified some adaptive measures to mitigate the impact of economic crisis on building project costs in different contexts. It has been determined that implementing these measures can effectively reduce the increase in building project costs during crisis. Table 1 presents the adaptive strategies designed to mitigate the impact of the economic crisis on building project costs.

Table 13: Adaptive Measures to Mitigate the Impact of the Economic Crisis on Building Project Costs

No	Adaptive Measures	References
1	reducing material waste	(Al-Tobi, 2019) (De Silva et al., 2023)
2	using proper reusing and recycling procedures	(Al-Tobi, 2019) (De Silva et al., 2023)
3	focusing on non-profit cash flow management	(Al-Tobi, 2019) (De Silva et al., 2023)
4	setting up financial reserves for economic downturns	(Rhodes et al., 2022)
5	delaying payment of bills for crucial operations	(Ibrahim et al., 2022)
6	making use of technical advancements	(Al-Tobi, 2019) (De Silva et al., 2023)
7	introducing stricter procurement guidelines	(Al-Tobi, 2019) (De Silva et al., 2023)
8	collecting payments quickly and requesting quicker payments	(Aconex, 2011) (Thilakshan et al., 2023)
9	adjusting employee salary structure to reflect market prices	(Zuo et al., 2015) (Weerakoon et al., 2023)
10	preserving enduring connections with clients	(Tummalapudi et al., 2021)
11	staying updated on economic developments	(Tummalapudi et al., 2021)
12	project establishment at points of low risk during a crisis	(Zuo et al., 2015) (Weerakoon et al., 2023)
13	utilizing government-sponsored stimulus packages, tax reductions, and loan assistance programs	(Tummalapudi et al., 2021)
14	encouraging specialization and training to close the skills gap	(Aconex, 2011) (Thilakshan et al., 2023)
15	promoting economic growth and investment through grants, subsidies, and streamlined regulations	(Rhodes et al., 2022)

3. Research Methodology

A research philosophy encompasses the principles guiding the collection, interpretation, and application of data, with realism, positivism, pragmatism, and interpretivism being the four primary subfields (Adedoyin, 2012). This study adopts a pragmatist approach, integrating both qualitative and quantitative methods. Therefore, this study used the mixed research approach. Research indicates that combining these methodologies can effectively leverage the strengths of each, addressing their respective limitations. This integration facilitates the collection of data in both numerical and descriptive forms, enhancing the robustness of the findings. Accordingly, questionnaire surveys and semi-structured interviews have been used as primary data collection methods and Relative Importance Index (RII) analysis and content analysis have been used as data analysis methods. Data was collected sequentially, with quantitative data gathered first through a questionnaire survey, followed by qualitative data from semi-structured interviews.

3.1. DATA COLLECTION METHODS

3.1.1 Questionnaire Survey

The objective of the questionnaire was to explore the adaptability of above identified adaptive measures to mitigate the impact of the economic crisis on building project costs in the Sri Lankan construction industry. The adaptive measures were derived from existing literature in the literature survey and the questionnaire was designed to gather data on the most effective mitigation measures to reduce the effect of building project cost amid the Sri Lankan economic crisis. According to Fellows & Liu (2015), questionnaire surveys enable researchers to gather data from a large and geographically dispersed sample within a relatively short period which involves multiple stakeholders across various locations. Accordingly, the questionnaire included sections on respondents' demographic information, such as their job titles, areas of expertise, and experience within the Sri Lankan construction industry and it featured closed-ended questions utilizing a five-point Likert scale, ranging from 1 (not adaptable) to 5 (highly adaptable), to assess the adaptability of various mitigation measures. Furthermore, it includes an open-ended question to identify additional mitigation measures for mitigating the impact of the economic crisis on building project costs in Sri Lanka, beyond the list provided by the literature review. The survey instrument was distributed among project managers, engineers, architects, and quantity surveyors across contractor, consultant, and client organizations through online mode.

3.1.2 Semi-Structured Interviews

Expert interviews were conducted to achieve the research objectives using semi-structured interviews. According to Fellows & Liu (2015), semi-structured interviews allow researchers to explore topics in-depth, providing flexibility to probe further based on participants' responses. Therefore, a sample of ten industry professionals employed by consulting and contracting organizations was selected and interviewed. The interviews were formally scheduled and conducted in person and took place in the subjects' offices. During the interviews, the interviewer recorded additional notes and responses as necessary. The interview environment was cordial and focused, with minimal outside distractions. Overall, the interviewees made a concerted effort to understand and respond to each question, and the interviewer provided clarifications when any uncertainties or misunderstandings arose. Each interview lasted approximately 30-45 minutes. These interviews mainly addressed the barriers to implementing the mitigation measures to reduce the high building project cost caused by the economic crisis, as well as strategies to overcome these barriers.

3.2. DATA ANALYSIS METHODS

3.2.1 Relative Importance Index (RII) Analysis

The collected data from questionnaire survey respondents were analyzed using the Relative Importance Index (RII) analysis. RII was calculated for fifteen mitigation measures which were identified above and ranked accordingly to identify the most effective mitigation measures to reduce the effect of building project cost amid the Sri Lankan economic crisis based on their relative importance. The following Formula represents the way of calculation of RII.

$$RII = \frac{\sum_{i=1}^5 w_i x_i}{A * \sum_{i=1}^5 x_i}$$

w_i = Weight allocated for the ith factor;
 x_i = Number of respondents in each factor;
 A= Highest weight allocated (i.e. - 5 in this)

3.2.2 Content Analysis

The manual content analysis technique, commonly applied in qualitative data, was utilized in this study. This was used in this research to analyse and identify the additional mitigation measures proposed by the survey respondents and to analyse the data from the semi-structured interviews. The interview data was analysed to identify the barriers to implementing the mitigation measures to reduce the high building project cost caused by the economic crisis, as well as strategies to overcome these barriers. Table 2 represents the summary of data collection and analysis methods along with the sampling techniques.

Table 2: Summary of Data Collection and Analysis Methods

No	Research Objectives	Data Collection Method	Data Analysis Method	Sample and Sampling Technique
1	To identify the adaptive measures to mitigate the impact of the economic crisis on building project cost	Literature Survey	Literature Analysis	-
2	To assess the adaptability of mitigation measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka	Questionnaire Survey	RII Analysis and Content Analysis	simple random sampling (53)
3	To identify barriers to implementing the proposed mitigation measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka	Semi-Structured Interviews	Content Analysis	purposive sampling (10)

4	To propose strategies for implementing the proposed mitigation measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka	Semi-Structured Interviews	Content Analysis	purposive sampling (10)
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4. Research Findings and Discussion

4.1. RESPONDENT PROFILE

A total of 80 questionnaires were distributed among the Quantity Surveyors, Engineers, Architects, Project Managers, and Lecturers, with 53 responses received, yielding a response rate of 66.3%, which is considered satisfactory. The general demographic data of the respondents based on their stakeholder type, profession, and years of experience are summarized in Table 3.

Table 3: Respondent Profile of Questionnaire Survey

Respondent Profile based on Stakeholder Type	Respondent Profile based on Profession	Respondent Profile based on Years of Experience
62% - Contractor 27% - Consultant 11% - Client	43% - Quantity Surveyor 21% - Project Manager 17% - Engineer 17% - Architect 2% - Lecturer	28% - Less than 3 years 43% - 3-5 years 25% - 5-10 years 4% - More than 10 years

According to Table 3, the majority of the respondents were quantity surveyors, accounting for 43% of the total, while lecturers constituted the smallest group, representing only 2%. Additionally, most of the respondents, 62%, were employed in contractor establishments, whereas only 11% worked in client organizations. Furthermore, 43% of the respondents had 3-5 years of professional experience, while just 4% reported having over 10 years of experience. Further 10 semi-structured interviews were conducted to achieve objectives 3 and 4. Interviewee demographic information is provided in Table 4.

Table 4: Interviewee Demographic Information

No	Profession	Years of Experience
1	Quantity Surveyor	15 years
2	Contract Specialist	12 years
3	Quantity Surveyor	18 years
4	Quantity Surveyor	11 years
5	Project Manager	14 years
6	Contract Specialist	25 years
7	Contract Specialist	15 years
8	Quantity Surveyor	20 years
9	Project Manager	11 years
10	Economist	29 years

4.2. ADAPTABILITY OF MITIGATION MEASURES TO MITIGATE THE IMPACT OF THE ECONOMIC CRISIS ON BUILDING PROJECT COSTS IN SRI LANKA

The questionnaire assessed the adaptability of mitigation measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka. The mitigation measures identified through the literature review were ranked using the relative importance index and Table 5 represents the mitigation measures with their RIIs and ranks.

Table 54: RIIs and Rankings of Mitigation Measures

No	Mitigation Measures	RII	Rank
2	use proper reusing and recycling procedures	0.872	1
14	encouraging specialization and training to close the skills gap and labour shortage	0.868	2
6	make use of technical advancements	0.857	3
15	promoting economic growth and investment by providing grants, subsidies, and streamlined regulations for the post-crisis construction development	0.857	3
1	reducing the material waste	0.853	5
11	staying updated on the economy's current and potential future developments	0.842	6
7	introduce stricter procurement guidelines	0.739	7
4	setting up some financial reserves for use during economic downturns	0.717	8
3	to focus on non-profit cash flow management	0.709	9
9	adjust the employee salary structure to reflect market prices	0.694	10
12	project establishment at the point of low risk in a crisis situation	0.694	10
10	preserve enduring connections. long-term profitability will result from relationships with current clients	0.691	12

13	through government-sponsored stimulus packages, tax reductions, and loan assistance programs for firms and employees	0.638	13
8	collect payments as quickly and request quicker payments from clients	0.596	14
5	delay paying bills as long as you can to preserve cash flow for the most crucial operations	0.475	15

The most adaptable mitigation measure is using proper reusing and recycling procedures with a 0.872 RII value, followed by encouraging specialization and training to close the skills gap and labour shortage and make use of technical advancements with 0.868 and 0.857 RII values respectively. In contrast, the least adaptable mitigation measure is delaying paying bills as long as you can to preserve cash flow for the most crucial operations with an RII of 0.475. The second and third least adaptable mitigation measures are collecting payments as quickly and requesting quicker payments from clients and, through government-sponsored stimulus packages, tax reductions, and loan assistance programs for firms and employees with RII values of 0.596 and 0.638.

In addition to the above-identified mitigation measures, a few measures were suggested by respondents based on their expertise through open-ended questions we posed in the questionnaire. Firstly, value engineering emerged as a vital approach that evaluates the cost and functionality of products and services to enhance value while reducing production costs, making it particularly effective during recessions. Promoting the circular economy was also highlighted as a crucial mitigation measure that focuses on maximizing product utility, reducing waste, and utilizing resources regeneratively. Diversification of tasks and products is proposed as a third mitigation measure. By expanding their range of services and products, businesses can reduce dependence on any single offering, thereby minimizing the impact of economic fluctuations. Further, proper risk management & contingency planning and innovation have been proposed as crucial mitigation measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka.

4.3. BARRIERS AND OVERCOMING STRATEGIES TO IMPLEMENT THE PROPOSED MITIGATION MEASURES TO MITIGATE THE IMPACT OF THE ECONOMIC CRISIS ON BUILDING PROJECT COSTS IN SRI LANKA

After analysing the semi-structured interview data, Table 6 represents the mitigation measures and their barriers and overcoming strategies to implement the proposed mitigation measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka.

Table 6: Mitigation Measures and their Barriers and Overcoming Strategies

Mitigation Measure	Barriers	Strategies
use proper reusing and recycling procedures reducing the material waste	<ul style="list-style-type: none"> high initial investment cost. lack of government incentives for eco-friendly practices. supply chain disruptions. economic constraints on market demand. 	<ul style="list-style-type: none"> implement government incentives for recycling materials. public-private partnerships. raising awareness and education. alliances with waste management experts.
encouraging specialization and training to close the skills gap and labour shortage	<ul style="list-style-type: none"> limited financial resources for training. lack of existing training infrastructure. reluctance to invest in training during economic uncertainty. brain drain and migration. mismatch between skills and industry needs. 	<ul style="list-style-type: none"> government-private sector collaboration. development of vocational training centers. short-term, industry-specific training programs. subsidies and incentives for training. retention programs to reduce brain drain. incorporation of technology in training. promote apprenticeship programs.
make use of technical advancements	<ul style="list-style-type: none"> high costs of implementation. lack of skilled workforce. regulatory and administrative barriers. infrastructure limitations. resistance to change. 	<ul style="list-style-type: none"> financial support for technology adoption. addressing skills gaps.
promoting economic growth and investment by providing grants, subsidies, and streamlined regulations for the post-crisis construction development	<ul style="list-style-type: none"> rising inflation. depreciating currency. external debt pressures. government financial limitations due to high debt and budget deficits. 	<ul style="list-style-type: none"> streamlining administrative procedures for transparent and efficient distribution of funds. implementing strict oversight procedures, including audits and regular monitoring, to ensure effective fund allocation.

<p>through government-sponsored stimulus packages, tax reductions, and loan assistance programs for firms and employees</p>	<ul style="list-style-type: none"> • potential increase in borrowing rates or inflation from significant tax reductions or stimulus packages. • the construction industry’s reliance on imports, leads to higher costs of machinery and raw materials due to currency depreciation. • stimulus packages not addressing long-term structural issues. • regulatory barriers and administrative inefficiencies delaying loan disbursement. • insufficient oversight reducing the effectiveness of stimulus plans. • need for rigorous targeting and monitoring to prevent financial exploitation or diversion. 	<ul style="list-style-type: none"> • develop effective communication strategies to inform and engage construction organizations and workers. • implementing flexible policies that can adapt to changing economic conditions. • promoting ethical administration, transparency, and stakeholder engagement. • commitment to fighting corruption to ensure successful program implementation.
<p>staying updated on the economy’s current and potential future developments</p>	<ul style="list-style-type: none"> • rapid fluctuations in exchange rates. • unpredictable trade regulations and global economic patterns. • volatile political climate and political unrest. • challenges in adapting to new technologies and rapid technological developments. • difficulties in accessing accurate economic data. 	<ul style="list-style-type: none"> • establish collaborations with regional economic research centers to obtain timely and accurate economic data. • work with economists and financial specialists to enhance understanding of market trends and risks, enabling proactive adjustments to project schedules. • develop contingency plans. • provide ongoing education and training.
<p>introduce stricter procurement guidelines</p>	<ul style="list-style-type: none"> • reluctance due to higher costs. • incompatibility with local economic conditions. • doubts about feasibility. 	<ul style="list-style-type: none"> • reduce resistance to change. • focus on short-term profit. • enhance trust and highlight corruption concerns.
<p>setting up some financial reserves for use during economic downturns</p>	<ul style="list-style-type: none"> • reliance on project-based revenue and short-term contracts. • cash flow problems due to payment delays. • low-profit margins and competitive environment. • lack of risk management and financial literacy. • difficulty in forecasting and planning. 	<ul style="list-style-type: none"> • foster collaboration among parties. • implement regulatory support. • adopt policy measures. • establish government initiatives. • provide incentives and develop systems.
<p>to focus on non-profit cash flow management</p>	<ul style="list-style-type: none"> • limited financial reserves. • delayed payments from clients. • lack of financial management expertise. 	<ul style="list-style-type: none"> • diversify funding sources. • improve payment agreements. • training in financial management. • establish emergency reserves. • develop cash flow forecasting tools. • collaborate with financial institutions.
<p>adjust the employee salary structure to reflect market prices</p>	<ul style="list-style-type: none"> • failure to adhere to Sri Lanka’s employment regulations, including minimum wage requirements, equality, and fair treatment. • failure to comply with salary adjustment and legal frameworks. • bias in salary decisions, adjustments are not based on objective performance indicators but on personal characteristics (e.g., race, gender, religion). • not considering socioeconomic factors, such as inflation and cost of living, when making compensation adjustments. • not gaining a thorough understanding of Sri Lanka’s economic environment 	<ul style="list-style-type: none"> • ensuring fairness, transparency, and justice in compensation. • respecting collective bargaining agreements and upholding the principle of equal pay for equal work. • provide transparent reasoning behind pay adjustments to build trust. • maintaining transparency and equity in salary adjustments. • balancing fairness by considering performance, experience, and skill levels. • communicating salary adjustments clearly to prevent disputes. • involve stakeholders in discussions and soliciting their

	to align compensation adjustments with economic realities.	input to address ethical concerns and promote inclusivity.
project establishment at the point of low risk in a crisis situation	<ul style="list-style-type: none"> • high economic volatility including shifting market demands, fluctuating currency values, and rising inflation rates. • inconsistent regulatory frameworks. • supply chain interruptions. • challenges in evaluating consumer behavior and market demand. 	<ul style="list-style-type: none"> • conduct in-depth market research and scenario analysis. • explore novel financing strategies. • provide incentives and simplify legal frameworks. • establish robust regulatory frameworks.
preserve enduring connections. long-term profitability will result from relationships with current clients	<ul style="list-style-type: none"> • delayed payments and financial constraints. • uncertainty and market instability. • shifts in client priorities. • competition and price pressure. 	<ul style="list-style-type: none"> • maintain open communication. • offer flexible payment plans. • provide value-added services. • prioritize client retention over short-term profits. • strengthen client loyalty programs. • engage in post-project follow-ups. • adapt to changing client needs. • collaborate on cost-saving initiatives.
collect payments as quickly and request quicker payments from clients	<ul style="list-style-type: none"> • lack of transparency or commitment in contracts. • corporate procedures and cultural values. • administrative barriers in payment approval processes. • customer financial constraints and economic uncertainty. • legal complications and dispute resolution. 	<ul style="list-style-type: none"> • simplify administrative processes. • enhance communication. • clear and detailed contracts. • flexible payment options.
delay paying bills as long as you can to preserve cash flow for the most crucial operations	<ul style="list-style-type: none"> • deterioration of vendor relationships. • increased costs due to penalties. • disruption in the supply chain. • reputational damage. • legal and contractual issues. • reduced bargaining power. • impact on credit rating. 	<ul style="list-style-type: none"> • negotiate extended payment terms. • prioritize payments based on urgency. • communicate proactively with vendors. • implement cash flow forecasting. • establish payment schedules. • seek temporary financing solutions. • build financial reserves.
Using more value engineering practices	<ul style="list-style-type: none"> • lack of expertise in value engineering. • resistance to change. • time constraints. • limited awareness of the value engineering concept. 	<ul style="list-style-type: none"> • implement training and capacity-building programs. • launch awareness campaigns. • provide incentives and support. • incorporate innovation into project planning. • establish collaboration with industry experts. • initiate pilot projects.
Promoting circular economy practices	<ul style="list-style-type: none"> • limited awareness and knowledge of the circular economy. • high initial investment in training or awareness programmes. • regulatory constraints. • supply chain challenges. • resistance to change. 	<ul style="list-style-type: none"> • implement education and training programs. • advocate for government incentives and supportive policies. • foster public-private partnerships. • promote the development of circular supply chains. • launch pilot projects and demonstrations.
Diversifying tasks and products	<ul style="list-style-type: none"> • limited skill sets • increased management complexity • resource constraints • uncertainty on market demand • financial constraints 	<ul style="list-style-type: none"> • prioritize training and upskilling. • adopt modular project management approaches. • secure government and industry support. • conduct market research and feasibility studies. • pursue financial incentives.

<p>Implementing proper risk management and contingency planning</p>	<ul style="list-style-type: none"> • lack of expertise in risk management • resource constraints • limited data availability • resistance to formal processes 	<ul style="list-style-type: none"> • focus on capacity building and training. • allocate dedicated resources. • leverage risk management software. • foster a risk-aware culture. • implement scenario planning and maintain flexibility. • ensure regular monitoring and review.
<p>Encouraging greater innovation</p>	<ul style="list-style-type: none"> • conservative industry culture • limited R&D investment • skill gaps • risk aversion • regulatory and policy constraints 	<ul style="list-style-type: none"> • promote an innovation-friendly culture • increase R&D funding and support • provide training and upskilling programs • pilot testing and risk mitigation • advocate for policy reforms • encourage collaboration and knowledge sharing

5. Conclusion and Recommendations

The study identified adaptive measures to mitigate the impact of the economic crisis on building project costs and assessed their adaptability to mitigate the impact of the economic crisis on building project costs in Sri Lanka. Finally, the study has identified barriers and overcoming strategies to implement the proposed mitigation measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka. This study has utilized a questionnaire survey and semi-structured interviews as primary data collection methods and RII analysis and content analysis as data analysis methods. The mitigation measures were ranked according to their RII values and barriers, and their overcoming strategies were identified to implement proposed mitigation measures to mitigate the impact of the economic crisis on building project costs in Sri Lanka. However, experts identified the Sri Lankan construction industry as being in a critical state, with recovery potentially taking several years. They emphasized the importance of a collaborative approach throughout all project phases, from initiation to operation, and recommended the use of local materials over imported materials to reduce the cost escalation of construction projects and ensure the timely completion of these projects. The professionals stressed the need for distinct short-term and long-term strategies to successfully implement the identified mitigation measures.

The study suggested several recommendations for addressing the rising costs of building projects due to the economic crisis in Sri Lanka. These include enhancing public-private partnerships (PPPs) to share financial risks and foster innovation, promoting sustainable practices such as using local materials and energy-efficient designs, and developing risk management protocols to address potential financial challenges. The integration of Building Information Modelling (BIM) technology is recommended to improve cost estimation and project planning while diversifying suppliers and supply chains can help manage price fluctuations and supply interruptions. Continual professional development is advised to equip construction managers with skills for effective cost management and adaptation. Improving project management strategies through better planning and resource allocation is also emphasized to ensure more resilient and cost-effective project execution. This research focuses on building projects within Sri Lanka's construction industry, but the findings apply not only to building projects but also to other construction projects in Sri Lanka. The interviews predominantly involved government sector professionals, making their insights more relevant to government-related projects. Future research could explore long-term effects on building project costs and the sector's resilience to economic downturns, conduct comparative analyses of mitigation measures in regions with similar economic challenges, and investigate how integrating advanced technologies into project management might alleviate financial pressures during recessions.

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