

**Research Article**

Global Construction Cost and Time Overruns in a Volatile Economic Landscape: Re-conceptualizing Project Performance, Risk Dynamics, and Control Mechanisms

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ABSTRACT

The global construction industry occupies a pivotal position in national economies, serving as both a driver of infrastructure development and a barometer of macroeconomic stability. Despite its strategic importance, the industry continues to struggle with persistent cost and time overruns, a challenge that transcends geographic, economic, and sectoral boundaries. This research develops an integrated, theory-driven analysis of construction project cost and time overruns by synthesizing global economic outlooks, project management theory, contractor selection dynamics, and risk-based control mechanisms. Drawing strictly on established academic and institutional literature, the study situates construction overruns within broader global construction futures, economic volatility, and evolving interpretations of project success. Particular attention is paid to how macroeconomic shocks, such as financial crises and pandemics, interact with micro-level project decisions, including contractor selection strategies, working-hour dynamics, cost forecasting approaches, and control tools in megaprojects. Using an extensive qualitative and conceptual methodology, the article advances a holistic explanatory framework that links economic uncertainty, managerial practices, and institutional capacity to project performance outcomes. The findings emphasize that cost and time overruns are not merely technical failures but systemic manifestations of fragmented governance, misaligned incentives, and outdated success metrics. The discussion re-frames overruns as adaptive signals rather than anomalies, arguing for recalibrated definitions of project success that incorporate resilience, socio-economic impact, and long-term value creation. The study contributes to construction management scholarship by bridging macroeconomic foresight with project-level execution realities, offering theoretically grounded insights for policymakers,

practitioners, and researchers seeking to enhance predictability and performance in an increasingly uncertain global construction environment.

KEYWORDS

Construction cost overrun, time overrun, project success, global construction economy, risk management, contractor selection

INTRODUCTION

The construction industry has long been recognized as one of the most complex and risk-prone sectors of the global economy. Its inherent complexity arises from the convergence of multiple stakeholders, long project durations, heavy capital investment, regulatory constraints, and exposure to fluctuating economic conditions. Globally, construction contributes a substantial share to gross domestic product and employment, making its performance a matter of national and international concern. Recent global outlooks underscore that construction activity is expected to grow unevenly across regions, influenced by demographic change, urbanization, infrastructure demand, and macroeconomic uncertainty (Parada et al., 2023; Economic Consulting Team, 2024). Within this context, the persistent problem of cost and time overruns continues to undermine the industry's credibility and efficiency.

Cost overruns refer to the extent to which actual project expenditures exceed initial budget estimates, while time overruns denote delays beyond planned completion schedules. These phenomena are widely documented across different project types, including highways, oil and gas facilities, megaprojects, and urban infrastructure (El-Ahwal et al., 2016; Bin Seddeeq et al., 2019). Despite decades of research, overruns remain endemic, suggesting that traditional

explanatory models and control strategies may be insufficient. The persistence of overruns raises fundamental questions about how construction projects are conceived, planned, and managed in an increasingly volatile economic and social environment.

The global construction sector does not operate in isolation. Financial crises, inflationary pressures, labor market disruptions, and health emergencies such as the COVID-19 pandemic have demonstrated the sector's vulnerability to external shocks (Goh, 2005; Asante and Mills, 2020). These macro-level disturbances interact with project-level decisions, influencing demand, tender prices, productivity, and risk allocation. For example, inflation can erode cost estimates over long project durations, while labor disruptions can alter working-hour dynamics and productivity patterns (Alvanchi and Lee, 2012; Parate, 2017). Consequently, cost and time overruns cannot be fully understood without situating them within broader economic and institutional contexts.

At the same time, the conceptualization of project success itself has evolved. Traditional metrics emphasizing cost, time, and scope compliance have been increasingly challenged by scholars advocating for broader success criteria, including stakeholder satisfaction, socio-economic impact, and long-term value (Ika and Pinto, 2022). This remeaning of project success complicates the

interpretation of overruns, as deviations from initial plans may sometimes reflect adaptive responses to changing conditions rather than managerial failure. Nevertheless, from a contractual and financial perspective, overruns remain a critical concern, particularly for public-sector projects where accountability and resource efficiency are paramount.

Existing literature has identified numerous factors contributing to cost and time overruns, including poor planning, inadequate risk management, contractor inefficiency, scope changes, and external uncertainties (Aljohani and Moore, 2017). Studies have also examined specific dimensions such as contractor selection strategies, cost forecasting accuracy, and control tools in megaprojects (Eke et al., 2019; Hwang et al., 2018). However, much of this research remains fragmented, focusing on isolated variables or specific regional contexts. There is a notable gap in integrative analyses that connect global economic trends, evolving success paradigms, and project-level management practices into a coherent explanatory framework.

This article addresses that gap by developing a comprehensive, theory-driven examination of construction cost and time overruns. Rather than treating overruns as isolated technical issues, the study conceptualizes them as systemic outcomes shaped by economic volatility, institutional arrangements, and managerial decision-making. By synthesizing insights from global construction outlooks, socio-economic impact studies, project management theory, and empirical research on overruns, the article seeks to provide a nuanced understanding of why overruns persist and how

they might be more effectively managed in the future.

METHODOLOGY

The methodological approach adopted in this research is qualitative, integrative, and theory-oriented. Rather than relying on primary data collection or quantitative modeling, the study systematically synthesizes established academic literature and authoritative industry reports to construct a comprehensive conceptual analysis of construction cost and time overruns. This approach is particularly appropriate given the study's objective of developing an overarching explanatory framework that spans multiple levels of analysis, from global economic trends to project-level management practices.

The literature synthesis focuses strictly on peer-reviewed journal articles, scholarly books, and institutional reports that examine construction economics, project management, cost and time overruns, and related socio-economic factors. Each source is treated not merely as a repository of findings but as a theoretical contribution to understanding construction project performance. Through iterative reading and comparative analysis, recurring themes, explanatory mechanisms, and conceptual tensions are identified and elaborated.

The methodological logic follows a layered analytical structure. At the macro level, global construction outlooks and economic analyses are examined to contextualize project performance within broader economic cycles and structural trends (Parada et al., 2023; Economic Consulting Team, 2024). At the meso level, sector-specific studies addressing inflation, financial crises, and

labor dynamics are analyzed to understand how external shocks translate into project-level risks (Goh, 2005; Alvanchi and Lee, 2012). At the micro level, project management literature focusing on cost control, contractor selection, forecasting techniques, and risk management is synthesized to identify internal drivers of overruns (Hwang et al., 2018; Eke et al., 2019).

Throughout the analysis, particular attention is paid to theoretical consistency and explanatory depth. Rather than aggregating findings, the methodology emphasizes interpretive integration, exploring how different strands of literature complement or challenge one another. This allows for the development of a holistic narrative that explains overruns as emergent phenomena arising from complex interactions between economic conditions, institutional structures, and managerial practices.

RESULTS

The integrative analysis reveals that construction cost and time overruns are best understood as systemic and multi-causal phenomena rather than isolated managerial failures. At the macroeconomic level, global construction demand is highly sensitive to economic cycles, policy priorities, and demographic trends (Parada et al., 2023). Periods of rapid growth often coincide with capacity constraints, labor shortages, and escalating material prices, all of which increase the likelihood of overruns. Conversely, economic downturns can disrupt financing, delay decision-making, and reduce productivity, also contributing to project delays and cost escalation.

Inflation emerges as a particularly significant driver of cost overruns in long-duration

infrastructure projects. Even modest annual inflation can accumulate substantially over multi-year timelines, undermining the accuracy of initial cost estimates (Parate, 2017). Studies on tender price dynamics during financial crises demonstrate that sudden economic shocks can distort market behavior, leading to underpriced bids followed by claims and renegotiations (Goh, 2005). These dynamics highlight the limitations of static cost estimation approaches in volatile economic environments.

At the project management level, inadequate risk identification and allocation consistently appear as critical contributors to overruns (El-Ahwal et al., 2016). Projects that fail to account for uncertain events, such as regulatory changes or environmental conditions, are more vulnerable to schedule disruptions (Moghayedi and Windapo, 2018). In megaprojects, where scale and complexity magnify uncertainty, traditional cost control tools often prove insufficient unless complemented by robust knowledge management and adaptive governance structures (Hwang et al., 2018).

Contractor selection strategies also play a decisive role in shaping project outcomes. Simulation-based studies indicate that lowest-price selection approaches, while appealing in the short term, are frequently associated with higher risks of delay and cost escalation due to contractor capability gaps (Eke et al., 2019). This finding underscores the importance of aligning procurement strategies with project complexity and risk profiles.

The analysis further reveals that working-hour dynamics and productivity patterns significantly influence project timelines. Extended working hours, often adopted as a corrective measure for

delays, can lead to diminishing returns, increased fatigue, and quality issues, ultimately exacerbating overruns rather than mitigating them (Alvanchi and Lee, 2012). Similarly, variability in task start times and durations introduces cascading delays that are difficult to recover through reactive scheduling adjustments (Wambeke, 2011).

DISCUSSION

The findings suggest that the persistence of cost and time overruns reflects deeper structural and conceptual issues within the construction industry. One key issue is the misalignment between traditional project success metrics and the realities of operating in volatile environments. As project success is increasingly redefined to encompass long-term value and socio-economic impact, rigid adherence to initial cost and schedule baselines may become less meaningful (Ika and Pinto, 2022). However, this does not diminish the importance of financial discipline; rather, it calls for more flexible and resilient planning frameworks.

Another critical insight is the role of external shocks in amplifying existing project vulnerabilities. The COVID-19 pandemic, for example, exposed the fragility of supply chains and labor markets, disproportionately affecting construction projects in developing and emerging economies (Asante and Mills, 2020). These disruptions highlight the need for scenario-based planning and contingency management that extend beyond conventional risk registers.

The discussion also points to institutional and governance factors as underexplored dimensions of overruns. Fragmented responsibilities, adversarial contracting practices, and weak regulatory oversight can exacerbate cost and time

deviations. In contrast, integrated project delivery models and collaborative contracting arrangements offer potential pathways for aligning stakeholder incentives and enhancing transparency.

Despite its comprehensive scope, the study is limited by its reliance on secondary sources and conceptual synthesis. While this approach enables broad theoretical integration, it cannot capture project-specific nuances or quantify the relative impact of different factors. Future research could build on this framework through empirical studies that test and refine the proposed relationships across diverse contexts.

CONCLUSION

This research advances the understanding of construction cost and time overruns by situating them within a broader economic, institutional, and conceptual landscape. The analysis demonstrates that overruns are not merely technical anomalies but systemic outcomes shaped by economic volatility, managerial practices, and evolving definitions of project success. Addressing these challenges requires a shift from reactive control measures toward proactive, adaptive, and integrative management approaches.

By synthesizing insights from global construction outlooks, project management theory, and empirical studies on overruns, the article offers a holistic perspective that can inform both scholarship and practice. Policymakers and practitioners are encouraged to embrace more resilient planning frameworks, align procurement strategies with project complexity, and adopt broader success metrics that reflect long-term value creation. In an era of increasing uncertainty,

such recalibration is essential for enhancing the sustainability and credibility of the global construction industry.

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