Fast Track Construction: A Review of Potential Risks and Strategies in Project Management

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ABSTRACT

Construction Industry globally is one of the vital drivers to the economic growth and development of the nation in a country. However, today's fast-paced world, there is an increasing pressure to complete projects within shorter timelines, and this is no exception in the construction sectors across the globe, including in Malaysia. To ensure that the construction industry in our country continues to be success and relevance, many construction projects that were previously executed through conventional methods are now adopting to a more modern approaches, with the latest technology and sustainable construction project management through a technique called fast- track construction. The high demand within the construction sectors shows that conventional method is increasingly difficult for the project management to manage through conventional ways and to make sure the projects to meet tight deadlines and adhere to the contractual agreements, regardless of the degree of complexity of the construction project. Fast – Tracking, a unique project management technique due to it overlapping activities and managing associated risks characteristics, that has significant tied each other in which might offers benefits to the owner but also introduces higher risks to contractors, if any delay occurs during the period of construction phases. This paper explores potential risks assessment and strategies of fast–tracking project management by studying literature review from previous research papers. It aims to identify and compile these risks, as well as exploring the strategies of fast – track mode of construction. There are four types of assessments where potential risks are identified: contractual and legal risks, increased design and construction errors, rework and quality risks, changes of orders, material and equipment. Additionally, this paper aims to offer in-depth insights and summarize possible practical strategies related to fast-tracking project management through the delay management, resources allocation management, and technology management to make certain that projects are completed as planned, within cost constraints, and without detrimental the quality.

Keywords: Fast-track, Project Management, Construction Project, Potential Risks

INTRODUCTION

Construction often deals with high risks and high complexity of works and project management, and this is also known as one of the main characteristics of construction industry. However, due to full filled the demand in the global market, the construction industry players need to adopt from the conventional methods to the modern method which is called fast-tracking construction project management. Fast-tracking is a project management strategy defined as the practice of overlapping project activities that are normally performed sequentially to reduce the overall project schedule.

According to Al-Qershi & Kishore (2018), the construction industry in India has become the largest sectors and given a huge impact on the overall of the economic growth for the nation. This shows that construction industry takes a big role in development of any nation and play a significant responsibility in the social and economic development as it provide from residential to commercial development. The construction industry encompasses both the development of new structures and the renovation of existing ones (Lamptey-Puddicombe & Emmanuel,

2018). Throughout the construction process, risks are identified and managed using risks management methods, which contribute to the successful completion of projects.

However, there is always a risks and challenges identified by the project management team. Mukilan et al., (2019) noted that construction projects involve individuals with diverse roles and responsibilities, along with various stakeholders whose differing perspectives create a complex and challenging process. Giving ideas and opinions among stakeholders can hinder progress and lead to delays in the project timeline. Similarly, Khekale and Futane (2013) emphasized that the simultaneous involvement of multiple subcontractors, each with varying levels of information, capabilities, and workforce, significantly impacts the construction industry. To address these challenges, Yusuwan and Adnan (2013) suggested that main contractors should establish clear project management plans and job descriptions for subcontractors before commencing the project to ensure its smooth execution.

Many elements of risks assessment can appear in fast-tracking a construction project. Therefore, this paper will study the potential risks of fast-tracking, as well as discuss the strategies mode of fast-tracking project management that has been used in the construction industry.

Project Management And Project Manager Roles

Project management is an essential discipline that enables organizations to plan, execute, and oversee specific tasks or activities within a structured framework to achieve well-defined objectives. It involves coordinating various interrelated components such as people, time, resources, and budget to deliver desired outcomes within predetermined constraints. According to Gutterman (2023), project management is vital in creating a temporary management structure that operates alongside an organization's standard workflows, to ensure the strategic initiatives or unique projects are executed effectively without disrupting normal operations.

Project manager is essential to steer the projects to successful completion while balancing constraints such as time, budget, and quality. Their roles encompass a broad spectrum of responsibilities, including project planning, budget allocation, risk management, team leadership, and communication with stakeholders (Nuraqilah et al., 2025). Effective project managers ensure the integration and synchronization of project elements by applying technical skills, leadership qualities, and project management tools to meet stakeholders' expectations. They play a crucial role in navigating political and cultural challenges, fostering collaboration, and maintaining accountability throughout the project's lifecycle (Gasemagha & Kowang, 2021). According to the PMBOK® Guide – Seventh Edition (PMI, 2021), project managers act as the key integrators, guiding the project team in achieving its objectives through oversight, coordination, stakeholder engagement, and risk management. They facilitate planning, execution, and monitoring of project activities while maintaining alignment with organizational goals and value delivery.

Fast – Track Construction

Dealing with different types and identity of construction projects, giving several experts and researchers space and opportunities to examine the potentials risk and the strategies mode based on their fast-track project management knowledge. This paper deals with their findings of the two parts, the potentials risks and the strategies mode of fast-track construction.

Fast Track Definitions

Vivek and Rajendra (2015) said that the conventional methods, while cost-effective and familiar, often fail to meet modern requirements for speed, efficiency, and scalability, especially in large-scale or high-rise projects. Fast-tracking, with its focus on parallel work processes and mechanization, enables accelerated project completion, making it especially relevant in contexts requiring rapid infrastructure expansion, such as urban housing and disaster response. On the other hand, Ballesteros-Perez (2017) defined that fast-tracking is a project management technique which is overlapped the original sequences of activities of upstream and downstream.

Delaney (2016) identified the most effective way to shorten the duration of a project is by using Fast tracking

which allowing original activities schedule in sequences, as design and construction to be overlap. Fast-tracking project management can give significant impact on the cost savings as well. Fast tracking is a schedule compression technique where activities or tasks typically performed sequentially are executed in parallel, at least for part of their duration. This approach often involves using leads and lags along the project network path. A lead refers to the acceleration of a successor activity, allowing it to begin before its predecessor activity is fully completed, based on the Project Management Institute [PMI], PMBOK® Guide 7th ed. (PMI, 2021).

Fast-track is a construction method which project management designed to squeeze project timelines by implementing project phases concurrently rather than sequentially. This approach emerged in response to growing demands for efficient project delivery in industries like housing and infrastructure development. Fast-track techniques integrate advanced construction technologies, such as monolithic and precast methods, with improved planning and resource allocation to address limitations of conventional construction methods (Barve & Ingalkar, 2021).

Another researcher, Anjali Das (2018) defined a fast-track construction project refers to a project where the owner's urgent need to utilize the structure which leads to the compression of the default design and the construction processes and timeframes to meet their schedule. In this kind of project, time becomes the most critical factor, requiring time-sensitive decisions to take priority over considerations that would typically hold greater importance in a conventional design and construction sequence. Figure 1 shows the differences between conventional construction with fast-track construction project stages.

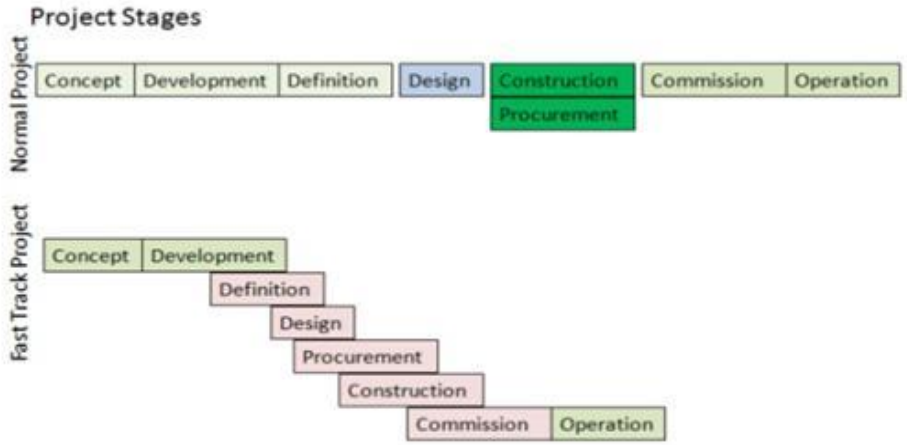


Figure 1 : Traditional Project compare with Fast- Track Project by Anjali Das (2018).

Based on all the definitions listed above, fast-tracking definitions can be summarized as a technique of compressing and overlapping the project schedule which executing original activities into sequences, comprises of design and construction phases, to meet the tight deadlines. This fast-track strategies can be use at the earlier stages of the project management process during the design phase or can also be applied during the construction phase even on a delayed project. At the same thought, this method of project management can save time and cost together as this two are the main factor for project completion.

However, without proper planning of this concept can lead to a higher risk and effect the overall consultant team, contractors and owner especially. Overall, the project consultant team member, consultant team, contractors, stakeholders and owner should have real understanding, well experience and knowledge to determine of fast-track project. The following section will discuss and explain the potential risks and the strategies of the project management toward fast-track project. It is also important to discuss on the outcome of the mitigation strategies for this fast-track mode of construction.

Potential Risks In Fast Track Construction

Since fast-track is regarding to reduce and overlaps the schedule of works, it is necessary to understand the potentials risks that involved in the practice at the very beginning such as in design phase, coordination and

information on site and the project management team involve. According Baba (2019), risk is defined as an event that influences objectives and can have either positive or negative effects. It is an unforeseen occurrence that, if realized, could negatively affect a project's progress and objectives. Positive risks contribute beneficial outcomes to a project, while negative risks have adverse impacts. Consequently, it is crucial to distinguish between positive and negative risks, with the latter usually necessitating significant mitigation and management. Addressing negative risks primarily aims to minimize their detrimental effects, ensuring that project goals are achieved without delays or cost overruns. While some risks can be anticipated and planned for in advance, others remain unpredictable, requiring project and risk managers to stay alert to mitigate risks or their consequences.

While it significantly reduces time and cost, the overlapping of activities inherent in this method introduces unique risks, including coordination issues, quality concerns, and increased likelihood of rework (Martins et al., 2023). As the construction industry continues to evolve, understanding and addressing these risks is vital for leveraging the full potential of fast-tracking to achieve sustainable and timely project outcomes (Barve & Ingalkar, 2021; Martins et al., 2023).

Contractual and Legal Risk

Garrido Martins (2019), classified four categories of risk accounted for 80% of the total potentials risks in fast-track construction projects. The impact of these risks was found to affect project costs more significantly than project timelines. However, by selecting a contract type that aligns with the characteristics of fast-tracking project management, legal issues can be prevent. Another study highlighted that implementing cost-free risk mitigation strategies could substantially lower the overall project risk. According to Afify, Khorshid and Radwan (2024) in his journal, other author classified that the key contractual risks in project management for fast-track construction are the inaccuracies of cost estimation and overrun project cost, the responsibility of the design error, changes of materials, construction reworks and modifications, overlook work or grey area working without specific party or subcontractors assigned. (Moazzami, Dehghan, & Ruwanpura, 2011).

In terms of every project, there are cost and contractual involve as one of the guides in a written form which both parties between clients and contractors have signed the agreement during the tender process (Norhernani and Mohd Saidin, 2024). Also, the type of tender varies depending on the type of project to be constructed and client’s preferences. However, there are factors that will influence the accuracy of tendering which later leads to the overall process of project development. The factors that can be categorized into 2 types of factors, internal factors (size of buildings, location, complexity of design, types of structures and techniques, project duration, facilities) and external factors (material cost, labour costs,infration rates, market stability, number of bidders, construction competition) as described by Youssef et al., (2024).

Amir, Khodeir & Khaled (2023) observed that Fast-track projects are now experiencing shortages and challenges related to contractual clauses in standard contract forms that aim to fairly distribute risks among the involved parties. Inequitable risk allocation, often caused by limited contractual provisions and the use of unsuitable contract types, is a leading source of legal risks. Few studies have examined the contractual challenges associated with fast-tracking techniques, particularly the issues that give rise to conflicts, claims, and legal disputes in such projects (Moazzami, Dehghan & Ruwanpura, 2011).

Increased Design and Construction Errors

There is always have an impact on the design and coordination risks when it comes to the fast-tracking project management at construction. Identified by Egbelakin, Ogunmakinde, Teshich & Omotayo (2021), there are five issues of risks that can be group under design and coordination risks which area insufficient information, poor communication between the subcontractors of different packages, or poor coordination from consultant and contractors, poor decision makers and problem during design review process. In fast-track projects, normally during design phase the consultant, especially the architect and engineer will produce the conceptual design and drawings together with the information of specification of materials based on owner’s budget. This sequence will concurrently start together with construction phases. However, this can lead to the variation order, RFI’s and changes of drawings if any insufficient information appears.

Other researchers mentioned by Egbelakin, Ogunmakinde, Teshich & Omotayo (2021), named as Blacud et al., (2009) observed that the percentage of overlapping between the design and construction phases is depends on the availability of information and the quality of communication among project teams. In fast-track projects management, many activities in both phases begin with incomplete or non-finalized information due to the accelerated approach.

Rework & Quality Risks

Rework in construction industry represent as a process of revise the process due to changes in the work or repairing the mistakes of the works which is not complied to the standard or as per approved by owner and consultant. Rework demands both time and financial resources, arising from factors such as improper work sequencing, omitted activities, or insufficient coordination among various specialties. It requires the repetition of tasks, leading to a significant increase in labor, material, and equipment costs, often doubling the original expense. Additionally, it delays dependent activities, which may also be affected by procurement schedules, payment terms, or milestone agreements. Rework is often associated with fast-track construction and inadequate coordination between tasks on site. It is directly linked to overlap of activities and can significantly hinder project completion, especially if required in later stages (Martins, Bogus, & Valentin, 2023).

Change Orders, Material & Equipment Risks

This part explains the consequences of risks in fast-tracking construction project management, which often occurs due to the changes of design and reworks, the changes of materials specification and material ordering risks. Fast-track projects are prone to scope changes, often driven by client modifications, which can lead to significant disruptions, cost overruns, and project delays due to the compressed schedule.

Case Study Of Fast-Track Construction

Based on the case study in Islamabad by Nida Javed, Bushra Ata, Shoaib M. and Imran Khan (2022), a fast-track project of Islamabad to New Airport Metro Bus, the track distance about 25.6km with the project duration of 8 month initiated in January 2017 to completion of August 2017. This project was conducted with interview session involving the project managers, construction teams and consultants, which resulting the unavailability of funds, the design errors, political issues are the most critical risks involved.

Another researcher in Qatar, Egbelakin et al., (2021), in his case study project located at shopping plaza in Doha, Qatar. The project consists of three floor level with 13,800m2 of multitype department store, observed that the key risks and challenges include are the coordination of the design changes, adjustment to scope of works, material procurement. Strategies for overcoming these barriers include robust change control systems and early involvement of operational teams.

Fast-track construction plays a crucial role in achieving specific objectives, as demonstrated by the case of a construction project in Qatar for the FIFA World Cup 2022. This $11 million fast-track fit-out project highlighted the challenges of delivering and managing fast-track construction. Adhere to the stringent timeline, the design and construction phases overlapped by three months. Based on the Naji, Gunduz, & Adalbi (2023), through a questionnaire distributed to industry professionals, the study identified 27 barriers to managing fast-track projects, with the most significant challenges being design errors and omissions, insufficient information, and poor coordination between work packages.

In the Ain Sokhna – Galala Plateau project, the area of the construction site is 105,000 m2 consists of six buildings combining of various of commercial and entertainment buildings. During the design stages, in October 2018 the aim of this project is to compress the timeline maximum to two years of completion. The design was studied however incomplete which resulting the delay of delivery the drawings to construction site, variation order occurs, miscommunication conflict and poor coordination between the clients and consultant which finally results in the project delayed. The lack of coordination and changes of information such as drawings, changes of orders and reworks which turn the actual overall cost higher the planned cost**.** (Afify, Khorshid and Radwan, 2024).

Strategies Of Fast Track Construction

Fast-tracking strategies is a method that project management use to make sure the construction project complete within the duration of contract deadlines, with minimum of defects and burst of budget cost. In this section, we will observe three main strategies mode for fast-track project management which are Delay management, Resources allocation management and Technology management. This to ensure that the fast-track construction project, complete on time without detrimental the project quality.

Delay Management

Construction delays refer to the time that pass beyond the original contract completion date. These delays are common issue in construction projects, usually due to the complexity and unique circumstances of each project. According to Das (2018), The need for extensive coordination among stakeholders, permissions, materials, and resources, coupled with inherent uncertainties, contribute to this problem. Construction project delays result in cost and time overruns, exceeding the agreed delivery dates outlined in the contract. These delays are common issue in both government and private projects and are often associated with inadequate planning and poor communication with stakeholders and the management team on site. Efforts by project management team to strengthen planning and improve stakeholder communication can help reduce these delays (Vijayan & Johny, 2019).

Resources Allocation Management

The construction industry often experiences significant potential risks in executing projects of high complexity while adhering to tight schedules, operating within budget, and achieving reasonable profit margins. This process requires careful planning and control, especially in resource management, which is essential for the successful execution of construction projects. Resource management in project management is defined as the process of planning, allocating, and utilizing the resources required to effectively meet project objectives and meet customer needs (Das, 2018).

These resources typically include labour, materials, equipment, and finance, all of which must be managed efficiently to ensure the success of a project. Proper resource allocation in project management ensures that these resources are supplied in sufficient and timely manner, thereby minimizing delays and maximizing their utilization across multiple projects. Without experienced project management team members to manage this, projects risk falling behind schedule, over budget, or even becoming unprofitable. Effective resource allocation not only aligns resources with the project timeline but also optimizes their utilization, enabling better coordination and reducing waste. This approach is essential to maintaining profitability and ensuring customer satisfaction in the competitive construction industry.

Technology Management

The selection of construction methods and technology in this fast-track project management, is crucial to the successful of a project, as these decisions highly impact costs, timelines, and the organization's capacity to leverage technological advancements during fast-track construction phases. For instance, choices like pumping versus transporting concrete in buckets can significantly influence task efficiency. Das. (2018). On the other hand, Vijayan and Johny (2019) observed that choosing appropriate technology and construction methods is crucial for project success, enabling the evaluation of cost, time, and quality impacts. Advanced technologies help save resources and enhance project quality.

One of the technology project management that can adopt, is the of modern formwork systems and other innovative construction techniques can enhance productivity and reduce project timelines (Chavan, 2016). Vivek & Rajendra (2015), also agreed and classified that there are two strategic modification on-site which is monolithic (cast in-situ) and precast construction. Monolithic is an improvisation from the conventional method which aimed to reduce the use of timber formwork, plastering and the brickwall to the prefabricated fiberglass as for part of the construction technology. Hence, this method has proved in project management as cost effect and recommended to be use in the construction which involve repetitive usage to reduce the wastage and time. With meticulous planning, it is possible to achieve faster construction, greater precision, reduced costs, and

enhanced productivity and durability in prefabricated construction (Vivek and Rajendra, 2015; Oluseye et al., 2018).

METHODOLOGY

In this section, the research methodology is focus on the three types of data collection. Starting with the literature review which was conducted to explore the understanding of fast-tracking construction project management and to classify the potential risks affecting fast track project management and also to identify the understanding gaps. Next, this paper is to focus on the most affecting potential risks that contributes to the fast-track construction project management by compiling data from the previous journals and articles citation. The paper gathered and compiled also examines the strategies which are the most effective for the fast-track project construction. By searching using the key words of the related title to the journals and article, over hundreds of articles discussed about the fast-track construction project management. A questionnaire was created to identify and articulate the potential risks assessment of fast-track construction, focusing to understand the actual risks project management team while actively involving with those responsible for their design, management, and implementation.

However, from this, we selected 39 studies related to the matter, identified and grouping the potential risks and strategies mode, then compile to provide a summary for fast-track construction project management. The aim is to understand the conceptual of fast-track construction, to analyse the potential risks of fast-track construction projects and mitigate the strategies to minimize and acknowledge the project management team. The method used to ensure the data collection, analysis and validation of strategies were presented.

Data Analysis

From more than 50 causes of potential risks classified in more than 39 studies, the top potential risks area narrows down into 4 categories of main risks based on the relationship. We also notice that most of the authors consistently group the categories of potential risks. Over The most important in defining the potential risks is identification of the risks management. Table 1 provides twenty-five list of potential risks in project management that compiles through the sources in literature review.

Table 1 – Showing Potential Risks of Fast Track Construction Project Management

Main Risk Category	Potential Risks in Fast-Track	Researchers / Resources in Literature Review
Contractual and Legal Risks	Contractor's financial capacity	Bagaya and Song (2016), Alsuliman (2019); Bekr (2015)
	Capacity underperforming contractors,	Bagaya and Song (2016), Alsuliman (2019); Bekr (2015)
	Bad performance by subcontractors.	Bagaya and Song (2016), Alsuliman (2019); Bekr (2015)
	Financial analysis and awarding project to the lowest bidders,	Bagaya and Song (2016), Alsuliman (2019); Bekr (2015)
	Emphasis on assigning project to contractor beyond their financial and technical capabilities	Bagaya and Song (2016), Alsuliman (2019); Bekr (2015)
	Limited financial and technical capacity of certain contractors	Alsuliman (2019);
	Absence of contractual risk liability	Austin et. Al (2016);

	Owners' limited experience in construction projects	Bagaya and Song (2016), Alsuliman (2019); Bekr (2015)
	Owner's Financial challenges	Bagaya and Song (2016), Alsuliman (2019); Bekr (2015)
	Delayed payments for completed works.	Bekr (2015); Fancois berthaut (2014);
Increased Design and Construction Errors	Insufficient scheduling	Ahmed et al., (2003); Bagaya and Song (2016), Alsuliman (2019); Bekr (2015); Garrido Martins, C.; Bogus,S.M. (2023);
	Adverse weather conditions;	Ahmed et al., (2003); Bagaya and Song (2016), Alsuliman (2019); Bekr (2015); Garrido Martins, C.; Bogus,S.M. (2023);
	Design errors	Ballesteros-perez(2017; Austin et al.(2016);pawar et al.(2014);Francois berthaut (2014)
	Inadequate qualifications of the consultant on site	Ahmed et al., (2003); Bagaya and Song (2016), Alsuliman (2019); Bekr (2015); Garrido Martins, C.; Bogus,S.M. (2023);
	Inspection delay	Ahmed et al., (2003); Bagaya and Song (2016), Alsuliman (2019); Bekr (2015); Garrido Martins, C.; Bogus,S.M. (2023);
	Insufficient coordination between the owner and contractors.	Ahmed et al., (2003); Bagaya and Song (2016), Alsuliman (2019); Bekr (2015); Garrido Martins, C.; Bogus,S.M. (2023);
	Design modifications initiated by the owner	Garrido Martins, C.; Bogus,S.M. (2023); Ahmed et al., (2003) ; Bagaya and Song (2016) , Alsuliman (2019) ; Bekr (2015)
	Construction error & sequences	Garrido Martins, C.; Bogus,S.M. (2023);
Rework and Quality Risks	Poor construction activity	Garrido Martins, C.; Bogus,S.M. (2023);
	Incomplete documentation's	Ahmed et al., (2003); Bagaya and Song (2016), Alsuliman (2019); Bekr (2015);
	Design changes by the owner	Ahmed et al., (2003); Bagaya and Song (2016), Alsuliman (2019); Bekr (2015); Garrido Martins, C.; Bogus,S.M. (2023);
	Alterations to specifications	Ahmed et al., (2003); Bagaya and Song (2016), Alsuliman (2019); Bekr (2015); Williams (2017);
	Damage by others	Garrido Martins, C.; Bogus, S.M. (2023);
Changes of Orders,	Equipment availability	Ahmed et al., (2003); Bagaya and Song (2016), Alsuliman (2019); Bekr (2015);

Material and Equipments	Modification to orders	Ahmed et al., (2003); Bagaya and Song (2016), Alsuliman (2019); Bekr (2015)

The categories of potential risk to fast-track project management are divided into four categories, i.e contractual and legal risks, increased design and construction errors, rework and quality risks, changes of orders, material and equipment. We compile all this twenty-five as the top potential risks occurs from more than 50 potential risks, group under categories. On the highest side of it, the contractual and legal risks which consists of 10 potential risks, 8 identified under increased design and construction errors, 5 sub-risks in rework and quality risks, and 2 in changes of orders, material and equipment.

The Most Rank of Potential Risks from Previous Study Collection of Data

The RII was calculated by using the formula as below:

RII= Σ W/A*N

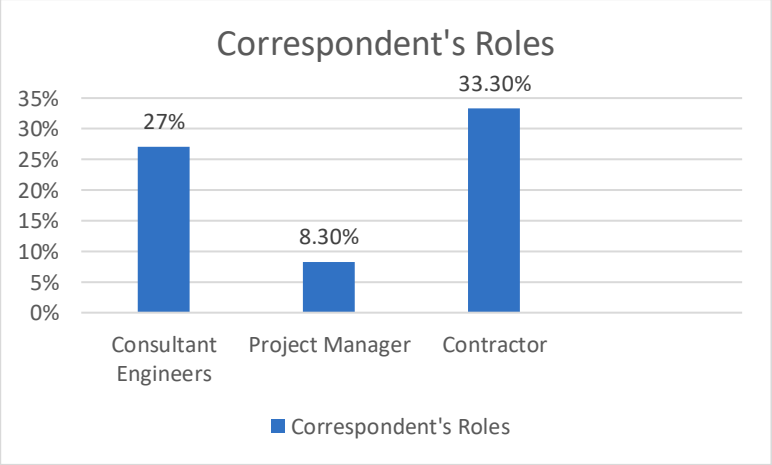
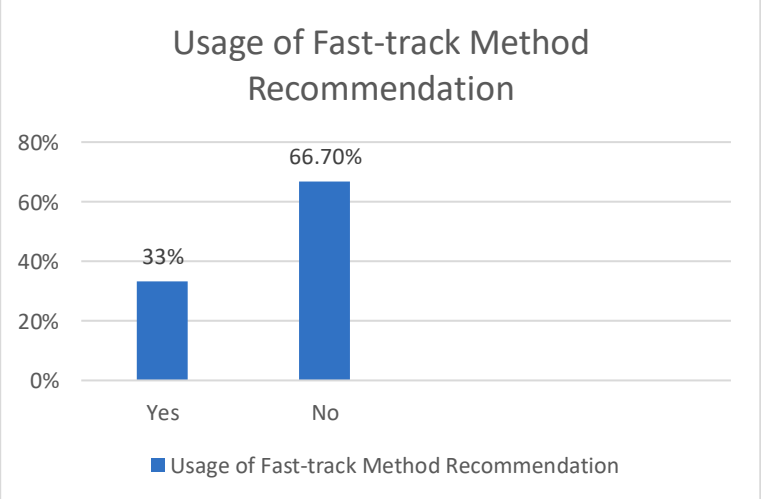
Where, w = weight of scale;

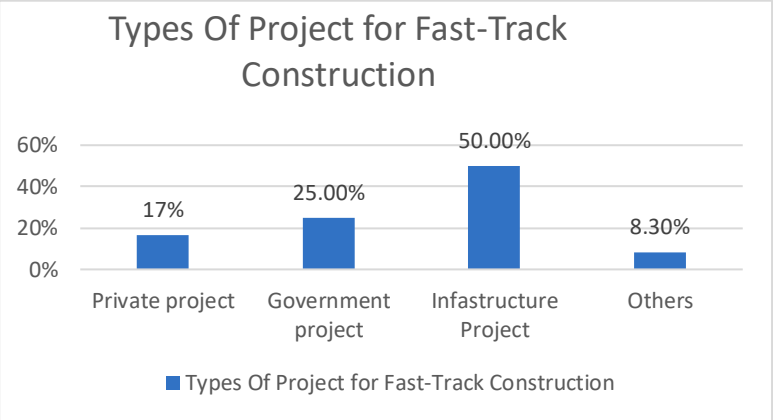
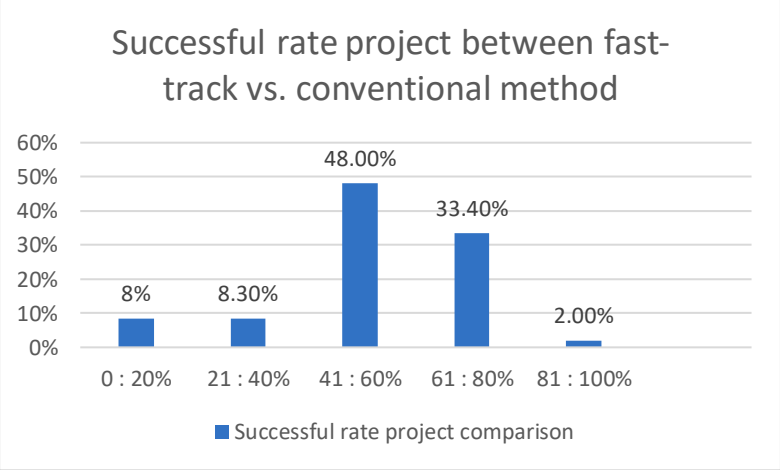
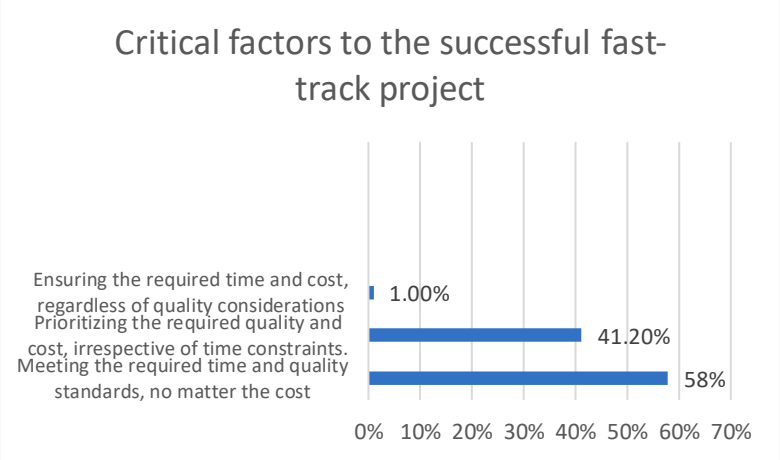
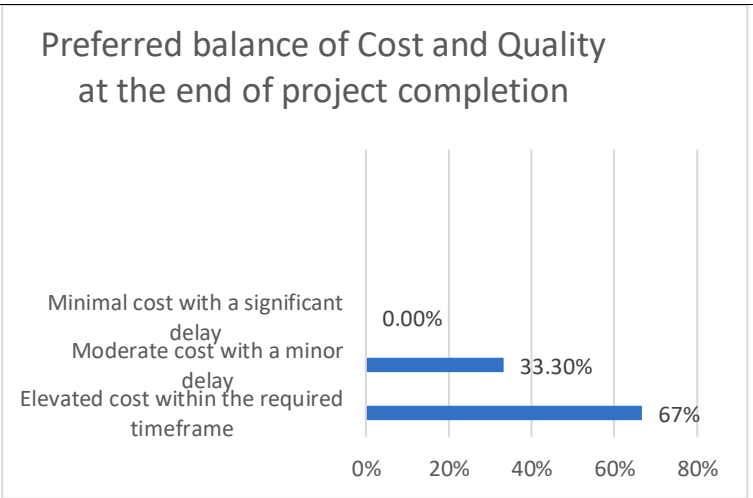
A = highest weight (‘5’ in this case);

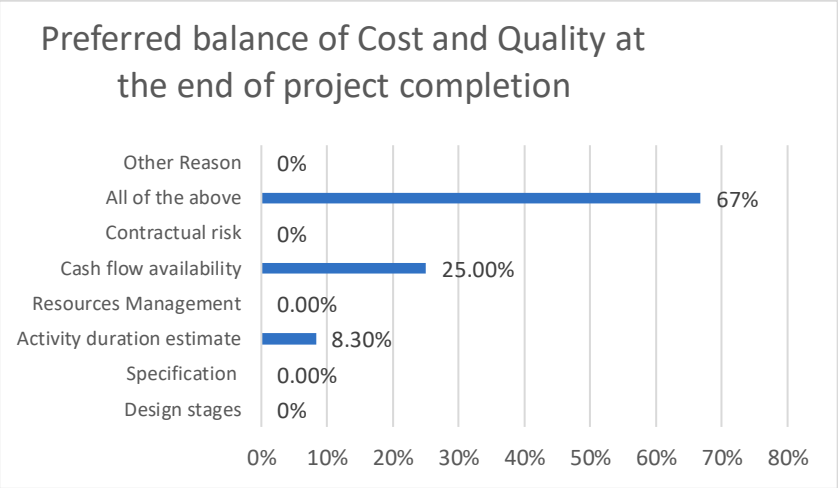
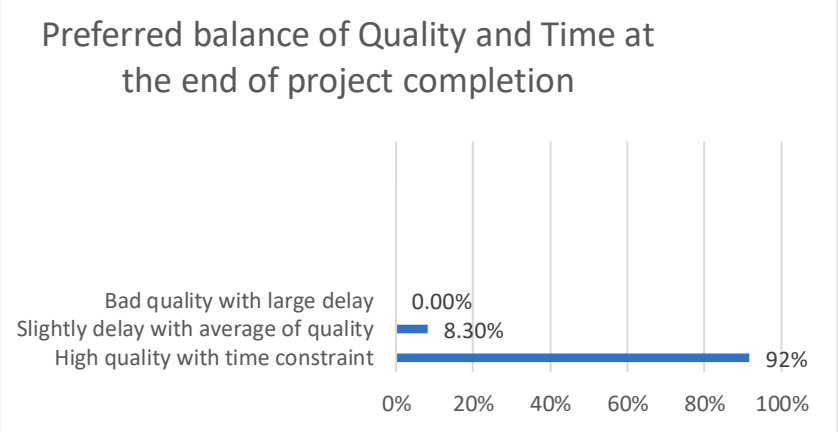
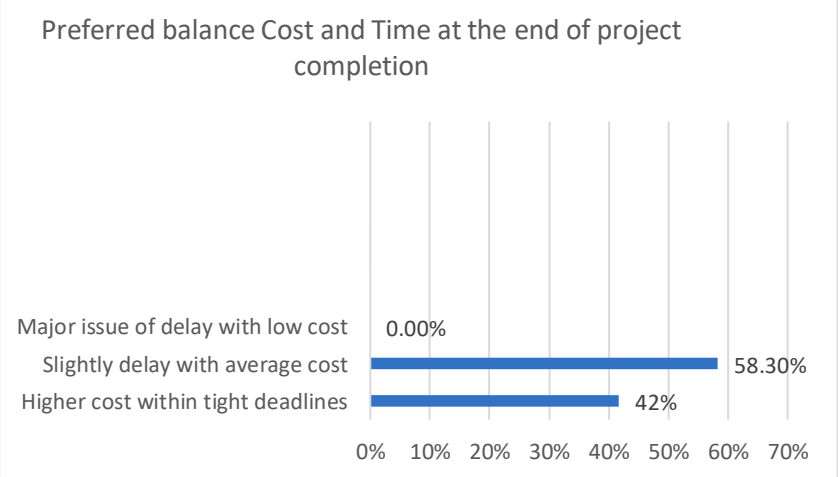
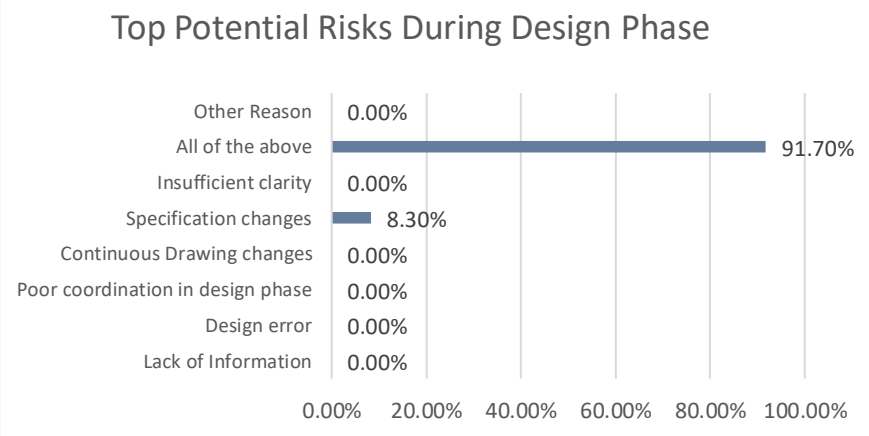
N = total number of respondent.

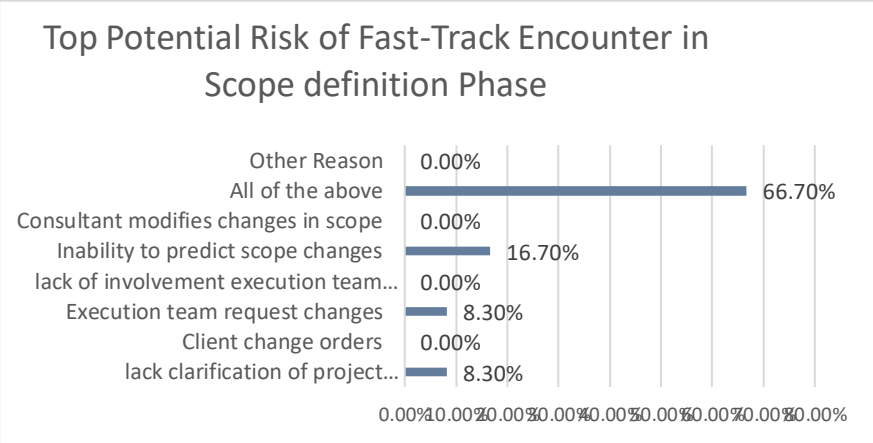
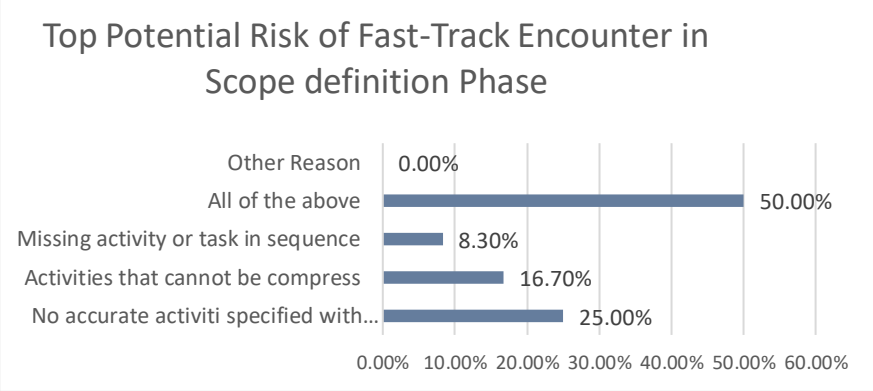
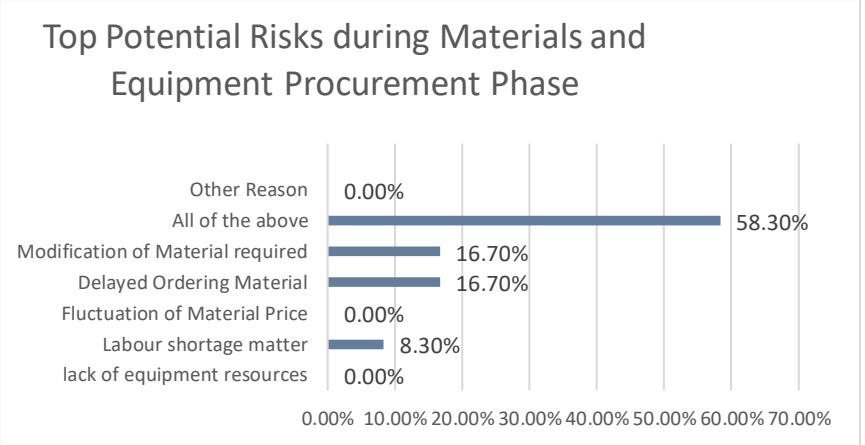
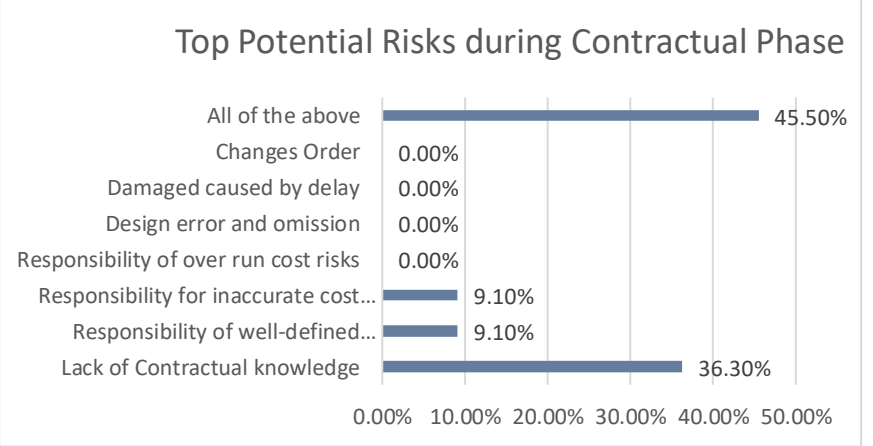
The result of data collection through RII method carried by previous study is compile into the most potential ratings and the average of value is calculated to obtain the responses from the survey as show in Table 2.

Table 2: Top Potential Risks related to Fast-Track Construction

1. Correspondent’s Position / Specific Roles	
2.Recommendation usage of the Fast-track method for projects.	

3.Type of project that needs the application of fast-track project management implementation.	
4.Successful rate of fast-tracking project management on site compare to conventional method of management.	
5.Most Influences factors that leads to the successful of fast-track project	
6.Preferred balance of Cost and Quality at the end of project completion.	

7.Most Potential Risks in Fast-Tracking Project Management	
8. Approach for Fast-track mode in terms of Quality and Time.	
9. Approach for Fast-track mode in terms of Cost and Time.	
10. Top Potential Risk during Design Phase of Fast-Track Project Management	

11. Top Potential Risks of Fast-Track Scope Definition Phase	
12. Top Potential Risks During Estimation Phase	
13. Top Potential Risks during Materials and Equipment Procurement Phase	
14. Top Potential Risks during Contractual Phase	

From the Table 2, the questionnaire were equally group into two main group which are from the questionnaire item number one to number eight, which referring to the nature of various experiences in the construction field and different perspective related to the conceptual of fast-track construction project management. The other

group, which item number nine to fourteen, discussed the top potential risks that are commonly encountered in the construction project.

Based on the questionnaires, over 50% of respondents were construction engineers, project managers, and contractors, indicating that these professionals are heavily impacted by project acceleration pressures. However, 67% of respondents expressed reservations about adopting fast-track methods unconditionally, while 33% were in favour. The preference for fast-track mechanisms was more pronounced for national and infrastructure projects, while private projects were deemed less suitable without specific considerations.

Another key finding from the above questionnaire is the success factors are to achieve the timeframe and deliver the good quality as the most critical success factors, even if the cost highly increases, meanwhile sacrificing quality for shorter project durations was seen as detrimental, leading to post-completion defects and increased maintenance costs. By using this method, identification of risks also can be emphasized which are design errors due to speed, inadequate scope definition and coordination, poor estimation of durations and costs, material, labour shortages and inadequate scope definition and coordination and contractual inadequacies.

The case study of the Galala Resort commercial and entertainment center in Ain Sokhna, Egypt, revealed significant challenges in fast-tracking a project comprising six buildings over 105,000m² with a budget of 6.3 billion EGP. Initially planned for two years of construction, however the project was delayed by eight months due to incomplete designs, especially for electromechanical works, and coordination issues between architectural and structural elements, leading to excavation conflicts and infrastructure clashes. During execution, frequent requests for information, stoppages, scope changes, and rework caused material waste and timeline disruptions, escalating costs by 12.5% (800 million EGP). To control expenses, two hotel buildings were removed, and finishing standards were then reduced. The risks encountered were categorized into five groups: design and coordination errors, unclear scope and frequent change orders, inaccurate duration and cost estimates, labor and material shortages, and a lack of contract frameworks tailored for fast-track projects.

In conclusion, the questionnaire and case study underline that fast-tracking construction requires careful planning from project managers and stakeholder coordination to avoid cost overruns, delays, and quality issues. Establishing a scientific mechanism to manage and mitigate these risks across all stages of fast-track projects is critical for successful implementation

Table 3 from previous study about the main risks and the sub-risk in fast-tracking project management. Each risk being group according to the main characteristics according to the various of conceptual study, research example and survey instrument conducted.

Table 3: The guide to potential risk predictions

Main risks	Sub- risks
Risks related to design and coordination	Lack of information
	Errors resulting from the required design speed.
	Lack of design review.
	Continuous development of the design beyond a certain stage.
	Changing project requirements after starting the design.
	Insufficient coordination between project teams.
Risks related to scope and predicting the course of the project	Lack of clarity in project scope.
	Change orders from the client.
	Change orders from the execution team.
	Inability of the execution team to participate in scope determination.
	Inability to predict scope developments.
	Modifications by consultants after scope determination.
Risks related to estimates of durations and costs of project activities	Improper breakdown of work for accurate estimation of durations and costs
	Activities that cannot be compressed
	Activities that are not included in the project scope from the beginning
Risks related to materials and equipment	Shortage of required labor for the project
	Lack of equipment availability
	Delay in purchasing materials beyond the required stage
	Modifications to materials during execution stages by any project party
Risks related to contractual risks	Lack of a specific contractual framework for accelerated projects
	Responsibility for inaccurate cost estimation
	Responsibility for design errors and omissions
	Responsibility for delays and change orders
	Responsibility for rework and modifications
	Responsibility for overlooked work-related risks

(Sources : Afify, A. M., Khorshid, K. M., & Radwan, A. A., 2024)

Strategies for Fast-Track Construction

The study focused on three primary strategies influencing fast-track construction: delay management, resource allocation management, and technology management. A questionnaire survey was conducted across various districts in Kerala, targeting forty project managers from construction firms. The survey, which utilized Likert scales, helped identify the key factors associated with these strategies.

There are 5 ranking of factor correlated with all the three main strategies as per list in the Table 4, Table 5 and Table 6.

Table 4: Ranking Factors of Delay Management

Rank	Factors related to Delay Management	RII
1	Finance	.818
2	Material Management	.810
3	Malpractices in the Authority	.742
4	Environmental Factors	.742
5	Working Space Problems	.732

Table 5: Ranking Factors of Resources Allocation Management

Rank	Factors related to Resource Allocation Management	RII
1	Quality Material Shortage	.842
2	Lack of Skilled Workers	.811
3	Working Environment and Culture	.801
4	Rules and Regulations of Government Agencies	.791
5	Strike related to the shortage of resources	.782

Table 6: Ranking Factors of Resources Allocation Management

Rank	Factors related to Technology Management	RII
1	Transformation from Conventional Method to Modern Construction Technology	.889
2	Latest Technology in market	.785
3	Skilled workers for latest technology	.742
4	Quality Control	.719
5	Environmental Factor	.710

From this we understand that the total cost for the fast-track work is increased by 26.38% which is less than 30% it is acceptable value in the construction industry.

Risks Mitigation Strategies Recommendation for Fast-Tracking Construction Project Management

Key Recommendations for Risk Mitigation in Construction Projects:

Proper project management and planning

Conduct a detailed project study and establish an effective project management structure.

Utilize advanced scheduling techniques, including advance plans and resource planning.

Regularly review progress through frequent meetings and discussion.

Technology and Equipment

Employ modern construction technologies like BIM for clash detection and virtual layovers.

Use up-to-date construction equipment to enhance productivity.

Financial and Resource Management

Implement proper financial management practices.

Ensure on-time procurement of materials and effective allocation of resources.

Coordination and Communication

Facilitate clear communication among all stakeholders, including design teams, contractors, project site teams and inspectors.

Strong Coordinate schedules and activities to avoid conflicts and ensure smooth workflow.

Quality Control and Supervision

Conduct pre-inspections, inspections, and regular quality checks and assurance.

Increase work supervision and involve experienced teams to maintain high standards

Training and Safety

Provide comprehensive training to workers to improve competence and minimize risks.

Enforce safety measures, including proper equipment, protective gear, and job site cleanliness.

Flexibility and Risk Management

Recognize and address the need of changes promptly with owner involvement.

Transfer specific risks to subcontractors and to keep maintain proper oversight.

Stakeholder Engagement

Involve owners, architects, engineers, and project managers in decision-making to align goals.

Keep the owner informed about potential cost and time impacts.

Productivity Enhancement

Increase the workforce, use multiple crews, and schedule different shifts to boost productivity.

Site Organization

Stage and sequence work to maximize efficiency and minimize conflicts in physical areas.

These recommendations area able to ensure streamlined operations, mitigate risks, and promote successful project completion.

CONCLUSION

Fast-track construction project management presents a unique set of risks due to the overlapping phases of design, procurement, and construction, leading to increased complexity and interdependent risk dynamics. These risks, such as design errors, rework, resource allocation conflicts, and schedule delays, can significantly give an impact increasing in cost, quality, and time if not managed effectively. Effective risk management in fast-track project management requires early identification of risks, thorough classification, and the application of proactive mitigation strategies tailored to project-specific needs.

This dynamic nature in potentials risks of fast-track construction demands a strategic and integrated approach to risk identification, assessment, and mitigation plan. Incorporating advanced methodologies and fostering collaboration among stakeholders and project management team are pivotal to enhancing resilience and achieving successful project outcomes in fast-track construction environments. Eventhough, previous research has explored certain aspects of fast-tracking or overlapping, and it is widely acknowledged that the fast-track approach entails higher risks, theres are still have a gap exists in the risk assessment of fast-track projects.

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