



Evaluating Key Factors Affecting Tender Process in Fast Track Construction Projects in Egypt: A Literature Review

¹Noha H. Youssef, ²Laila Khodeir, ³Nouran El Abd

¹Master's Candidate, ²Professor, ³Doctor

¹Department of Architecture,

¹Ain Shams University, Cairo, Egypt

Abstract : Tendering is the process of inviting bids for construction work packages. Accurate estimates during tendering are crucial for project success. However, estimating costs in advance is challenging, particularly in fast-track projects. Contractors' lack of knowledge in addressing tendering mistakes often leads to cost and time overruns in such projects. This paper aims to Evaluate Key Factors Affecting Tender Process in Fast Track Construction Projects in Egypt. In this paper 53 journal articles published from 1992 to 2022 were reviewed that covered a wide range of topics related to tendering and cost estimation in construction projects and fast track projects. In addition, it identifies the research gaps and potential upcoming research guidance. Moreover, it examined factors that affect tender costs. It was found that there are 29 factors that were identified as influential in determining tender prices and after analyzing and studying these factors it was found that these actors can be related and divided into 6 categories (Internal factors, stakeholders' factors, project phase factors, external factors, and market conditions). In this study all these factors were defined and studied to be able to identify the impact of each factor on cost estimation. This paper should assist researchers by providing information on how to address the challenge of tendering in fast-track construction projects.

Key Words: Tender, Cost Estimation, Construction projects in Egypt, Fast Track projects, Cost Overruns, Tender evaluation.

I. INTRODUCTION

In the past decades the construction industry became a dynamic and complex sector that contributes significantly to a country's economic performance sectors [21]. Nevertheless, it is always reduced by ineffective or poor leadership, negative attitudes to change, poor vision and strategy, inefficient resource allocation systems, low productivity, poor decision-making and flexible working and organizational culture and quality of work.[25]. The use of fast-track construction as a method of performing projects is very popular nowadays in the construction industry. This approach involves maximizing simultaneous project activities. However, even minor obstacles in accessing information can lead to work stoppages, resulting in cost and time overruns [12]. The exact definition of fast-track construction is still evolving. Generally, it is the coincidence of function with development stage (functional overlap), with the observed result of minimized project-completion times.[48].

In the past years Egypt has witnessed planned and un-awarded construction projects in Egypt with a value of \$186bn, due to the high population growth rate in the country[52]. Such an ever-increasing population reflects an economy that requires significant growth to meet the ever-increasing demand. Thus, such investments highlight the expected role of the construction industry and the importance of controlling the expenditure on these projects, given the short duration in which these projects are undertaken. Therefore, this presents new and great challenges in fast-track projects in tender stage that warrant empirical investigation and expected to uncover new knowledge. Therefore, this paper aims to Evaluate Key Factors Affecting Tender Process in Fast Track Construction Projects in Egypt.

II. METHODOLOGY

This paper collected primary studies, extracted, and analyzed data about the factors that affect tender cost in fast-track construction projects in Egypt. This was done by using "Scopus" as a guide to help in finding relevant papers published on such topic. The main key word that the authors started with was "Tendering", and then, enlarged the scope to include "Construction projects" and "fast track projects" as well. 53 research were published between the years 1992–2022, are considered relevant and reviewed. Then these papers were classified into 4 categories to ease reviewing and synthesizing. The 4 packages were "Factors affecting tender cost", "The effect on complex projects in tender stage", "Contractor's mistakes during tender & Tendering in construction projects", and "Fast Track projects" as illustrated in Figure 1. below.

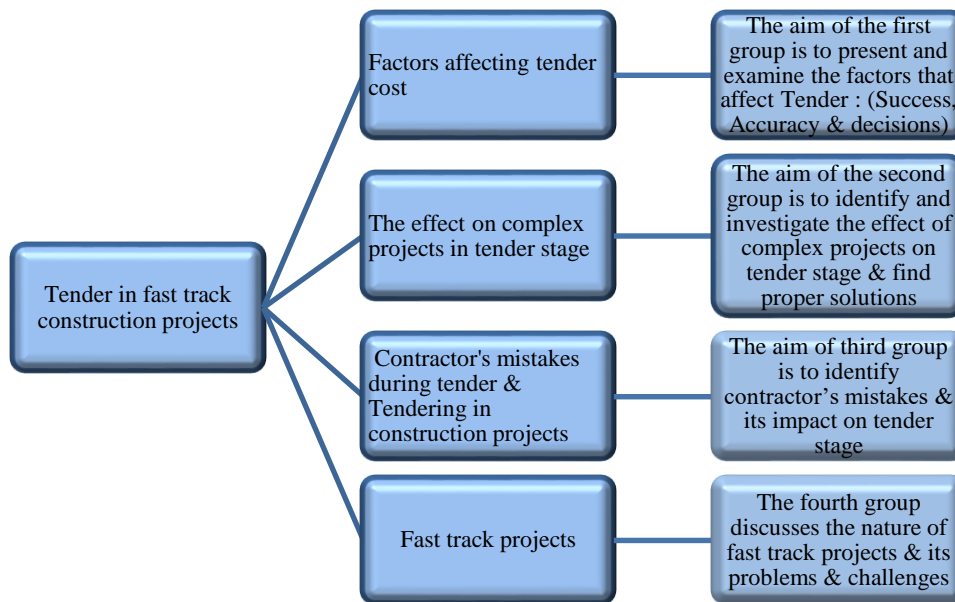


Figure 1- Classification of research papers.

III. LITERATURE REVIEW

This part of the paper discusses all the topics that were discussed by the authors in the research papers. These topics are reviewed and analyzed in this part of the paper.

3.1. Construction Industry in Egypt

In terms of ongoing projects, Egypt has over \$190 billion in construction, with an additional \$30 billion in the design and tender phases. The construction sector represents most of these active projects, encompassing real estate and leisure developments. The construction sector accounts for over \$215 billion, which is 51 percent of the active project market. Power infrastructure and transport infrastructure follow closely, each representing 15 percent of the active projects market, with a value exceeding \$120 billion. The provided figure reveals the distribution of current and upcoming schemes in Egypt. As the figure illustrates, Egypt has made the construction industry as the strongest potential source of economic growth during the near future. This is due to several major accounts, with millions of inhabitants and a substantial growth rate.

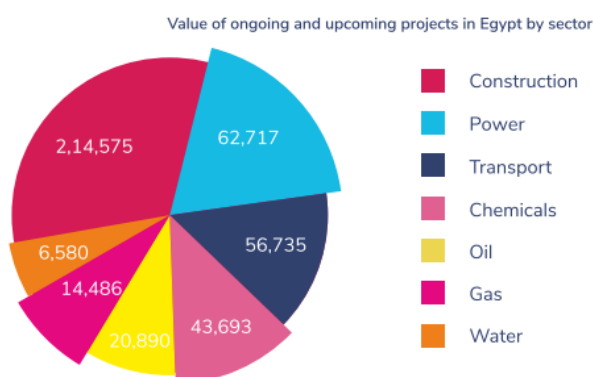


Figure 2 Construction Projects in Egypt [52]

3.2. Tendering in Construction Industry

The tender stage holds significant importance as it precedes the initiation of a project. It is during this stage that the client receives the project budget. Various authors have provided different definitions of tender based on their perspectives, but ultimately, the application remains consistent across projects. The type of tender can vary depending on the project type and the preferences of the client and their consultant. Additionally, the tender process itself is typically lengthy, and numerous factors influence the tender price and cost estimation. In this section, a detailed discussion will be presented, covering all the aspects related to the tender stage. After reviewing and analyzing all the factors that affects tender, this paper highlights three aspects, first one is selection of tendering contractors, accuracy of tendering and decision to tender. This will be demonstrated in the next part of the paper.

3.2.1- Definition of tender

Some definitions agrees that tender is a process that includes inviting or requesting other parties to submit an offer. However, some author's definition focused more on tendering on construction industry. In addition, most of the authors agreed that both includes two parties, and the offer is submitted according to agreement of work.

3.2.2- Main Types of Tendering Procedures

According to [41], There are three main types of tendering methods used in construction, and tendering methods are selected based on the requirements of the construction contracts. The three types are:

- **Single-stage tendering:** This is the most common type of tendering strategy where invitation to tender documents is issued to multiple competing contractors who bid for the entire construction works based on identical tender documentation. There is a specific period within which all the contractors are to submit their tenders. After making a comparison between the tenders in perspective to the construction quality and cost involved, one tender is deemed to be the lowest tendered and as such the contractor is assigned a building contract with the client.
- **Two-stage tendering:** This strategy is used when time is constrained or when the design process can benefit from the technical input of a contractor in later design stages. In the first stage, tender enquiry documentation is issued to bidding contractors at an early design stage. The preferred contractor is chosen based on the quality of their bid, team, and preliminary price. The preferred contractor then joins the design team on a consultancy basis to complete the design. At a later stage, they submit a bid for the construction works.
- **Negotiated tender:** In this type of tender, a single contractor is invited by the buyer to submit prices for a project. it is often employed for specialized work requiring special or dedicated equipment or for follow-up work under the same contract. Negotiated tenders may also be used in urgent or emergency situations. In this case, negotiations take place between the buyer and the contractor, thus compromising the very objective behind a formal public bidding procedure. However, it allows for quicker price determination. It should be noted that some public bodies and government departments do not allow the use of negotiated tendering, except in rare circumstances. 164 (Johnson E 2022) defines the term, negotiated tendering, as one in which: 'A buyer invites a contractor or supplier of his/her choice to price a project. The process is often used for specialist or urgent work and may include one or three contractors/suppliers.

3.2.3 Factors influencing accuracy of tendering.

Accuracy in tendering plays a significant role in project success. However, there are many challenges to achieve it because of several factors that have a great impact on it. Therefore, this section of the paper aims to analyze and explore the key factors that influence accuracy in tendering. After reviewing and analyzing all the factors, they were divided into two categories, "Internal factors and External factors.

Internal Factors:

- size of the building
- project location
- buildability and complexity of the design
- type of structure and construction techniques
- duration
- access to the construction site and storage facilities

External factors:

- construction competition
- Material costs
- Labor costs
- inflation rates
- market stability
- Number of bidders
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3.2.4- Nature of tendering process in Fast Track projects

In recent years, the construction industry has increasingly adopted the practice of fast-track construction, aiming to maximize project activity and reduce overall time while increasing productivity. However, [13] point out that limited access to information can lead to work stoppages, resulting in cost and time overruns.

Fast-tracking involves overlapping and compressing different activities in the conceptual design, procurement, and construction phases to expedite project completion in a cost-effective manner. Similarly, [48] and [2] agree that fast-track construction entails overlapping functions and development stages to minimize the project duration. This approach allows construction to commence earlier and proceed at an accelerated pace, deviating from the typical sequential process of concept, schematic design, design development, construction documents, and construction administration.

In summary, fast-tracking in project delivery is driven by business considerations such as the need to bring the product to market within a specific timeframe, gaining a competitive advantage, and leveraging the opportunity to overlap design, construction, and procurement processes.

3.2.5- factors Affecting Fast track Projects

Indeed, fast-track project delivery is not without its challenges and risks. Overlapping activities with inadequate scope definition can lead to a range of issues and implications. Some of the factors and implications identified by various researchers include: [17]

- Design Coordination
- Scope or change orders
- Material & Equipment
- Contractual

IV. CONCLUSION

The literature review discussed several topics related to tendering in construction projects. Various factors influencing tender costs were discussed, including the experience of pricing construction projects, clear and detailed drawings and specifications, material availability, project complexity, a clear scope definition, and equipment factors. These factors were found to have a significant impact on tender pricing decisions. In addition, fast-track construction, characterized by overlapping activities and compressed timelines, was examined as a method to expedite project delivery. While it offers benefits such as reduced construction duration and market advantage, it also poses complexities and risks such as cost overruns, reworks, change orders, and contract issues.

To sum it up, the findings relate to many aspects of tendering, including what affects the costs of tender, who submits tenders, and the risks surrounding fast-track construction, as well as giving more context to construction in Egypt as an industry. Therefore, these findings can be used by contractors and project managers to help them in making decisions before submitting tenders. This will also help to mitigate any risks that may be there to jeopardize the project before it ends.

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