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Investigating the Quality of Conflict Management on the Performance of the North Tehran Freeway Project with the Mediating Role of Flexibility

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Abstract

The purpose of this study is to investigate the effect of conflict management quality on the performance of the North Tehran Freeway Project, with flexibility as a mediating variable. The study population is managers and experts of the North Tehran Freeway Project. Given that the statistical population in this study is 280 people and that, according to the Cochran formula, the required sample size is 162. In this study, a standard questionnaire was used to collect data. The questionnaires were distributed and collected using a random-access method. To analyze the data, structural equation modeling with partial least squares was used in SMART-PLS, along with descriptive statistics. The test results at the 95% confidence level showed that the quality of conflict management, with flexibility as a mediating variable, positively affects project performance ($p < 0.05$). The quality of conflict management positively affects project performance. The quality of conflict management positively impacts flexibility. Flexibility has a positive impact on project performance. Therefore, project managers with the appropriate conflict management style and flexibility can partially mitigate the potential consequences of destructive conflict, including increased costs, reduced communication between individuals and groups, resistance to change, increased tension and stress, failure to deliver projects on time, poor performance, and unhealthy business relationships.

Keywords: Conflict management quality, Project performance, North Tehran Freeway, Flexibility.

1 | Introduction

Today, road construction projects are implemented with limited, predefined time frames and resources in a rapidly changing, turbulent environment and amid intense market competition. However, growing demand,

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complexity, and unplanned pressures exist in these projects and are intensifying every day [1]. Due to the unique nature of the road construction industry, conflicts are common in large projects. Conflicts always cause stress for managers and workers and raise employee safety concerns [2]. At a higher level, they may even lead to the loss of all or part of the capital, which seriously threatens the project's performance. Conflict management in this context is a key component of project management, as stakeholders and project managers with diverse expertise work together on projects, thereby increasing the likelihood of conflict [3].

In addition, flexibility can reduce conflicts and improve performance [4]. Since road construction projects are usually large, costing billions of toman, and highly complex, with diverse characteristics and methods, they pose significant challenges for project management. Since road construction projects are usually large, billion-dollar projects, their high complexity — due to diverse characteristics and methods — creates significant challenges for managing them. Senior management of these projects inevitably requires drafting contracts between the project owner and one or more specialized contractors. In such circumstances, contracts play an essential role in macro-project management. These contracts have significant impacts on the economic success of the contracting parties. Due to the inherent nature of large project contracts, they are usually long-term, incomplete, and complex, which may lead to disputes or conflicts between the contracting parties [5].

Similarly, contracts can lead to increased project time and cost if there is no mechanism for resolving conflicts. Large projects often experience 50% or more cost overruns relative to anticipated costs, which may result from project inflexibility. Therefore, the changing and complex environmental conditions associated with large projects require flexibility to address uncertainties in project predictability. Flexibility helps to achieve greater efficiency, lower costs, and minimize project risk. Project flexibility enables effective responses to ever-changing conditions by implementing flexible approaches [6].

The Tehran-North Freeway Project is a road construction project that has progressed about 50 percent physically. Due to its physical characteristics, the Tehran-North Freeway Project is not just a road construction project, but a special and complex project that includes the country's longest freeway tunnel, the Alborz Tunnel, which is 6,400 meters long. Lack of access to the financial resources we need, due to the increase in the exchange rate and the much higher inflation, has led to a lack of flexibility and increased conflicts between project managers, which may severely affect project performance. As noted above, the main issue in the present study is that poor conflict management in road construction projects may severely undermine project performance.

The lack of a conflict management assessment makes it difficult for project managers to evaluate conflict management strategies and processes, leading to insufficient feedback and inadequate adjustments to ongoing programs, which may result in project inefficiency, increased costs, and delays in timely project delivery. Therefore, the central question of the present study is: what effect does the quality of conflict management, with flexibility as a mediating variable, have on the performance of the North Tehran Freeway project?

2 | Project Flexibility and Performance

Various researchers have analyzed the relationship between flexibility and performance from the perspectives of supply chain, team, and contract flexibility. She introduced the concept of supply chain flexibility and noted that if the entire supply chain is composed of flexible components, its performance can be improved. Later, researchers also confirmed the relationship between flexibility and team performance: high-quality, flexible team members improve team performance, and flexibility, as a strategy, can enhance team cohesion and efficiency in the face of environmental complexity and uncertainty. However, in a diverse and complex environment, a rigid strategy undermines team performance and cohesion.

Contract flexibility, as an essential mechanism for managing risks and uncertainties, can guide contracting parties to adjust their behavior in response to dynamic changes in the external environment, thereby improving service levels and satisfaction. The flexibility literature specifically analyzed how to integrate flexibility into the contract management process and clearly shows that contract flexibility improves project

management performance and can help companies enhance contract management capabilities and adapt to changes in the external environment. Of course, there are results on the relationship between project flexibility and project success or performance. Zaman et al. [7] point out that project flexibility serves as a risk-reduction strategy to protect the project from the impact of an uncertain environment, thereby reducing project failure.

Incorporating flexibility into most projects is vital for their success. Project flexibility has been proven to improve project performance. In summary, many studies have examined the relationship between resilience and performance, but a unified understanding has not been achieved. This also shows that, across different environments, the composition and elements of resilience differ and have significant impacts. Therefore, defining the concept and indicators for measuring the flexibility of construction projects remains the first task. Although the overall impact of flexibility on performance is theoretically positive, the role of flexibility needs to be confirmed [7].

3 | Flexibility in the Supply Chain

The need for supply chain flexibility must be better understood, and its dimensions defined. The components of manufacturing flexibility play an important role in supply chain flexibility. But as the supply chain expands beyond the institution, supply chain flexibility must also extend beyond a company's boundaries. A limited number of authors have dealt with flexibility from a supply chain perspective. Researchers emphasize the importance of combining lean concepts focused on waste elimination with agile concepts focused on exploiting opportunities in volatile markets. Their definition is to create a supply chain that can respond to an unpredictable market, with a point of experience along the chain where the product becomes unique. Before decomposition, pure concepts are applied, and the product is built as predicted. After this stage, customer orders will drive supply chain processes [8]. Based on the organizational literature, researchers have defined five supply chain flexibilities. Supply chain flexibilities (should be considered from an integrated, customer-centric perspective). Flexibilities directly affect a company's customers and are responsible for two or more internal and external functions.

These five defined flexibilities are:

- I. Product flexibility, or the ability to customize the product to meet specific customer demand.
- II. Volume flexibility, or the ability to adjust capacity to meet changes in customer quantities.
- III. New product flexibility or the ability to introduce new or modified products.
- IV. Distribution flexibility or the ability to provide widespread access to products.
- V. Responsiveness or the ability to respond to the needs of the target market [9].

A complete definition of supply chain flexibility components includes the dimensions of flexibility required for all supply chain participants to meet customer demand successfully. Using previous definitions of supply chain management, these activities include the delivery of a product from raw materials to the customer, including sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory routing, order entry and order management, distribution across all channels, customer delivery, and the information systems necessary to monitor all of these activities. Flexibility in the supply chain requires flexibility within and between supply chain partners, including departments within the organization as well as external partners such as suppliers, shippers, third-party companies, and information system providers. This includes flexibility in gathering information about market demand and exchanging information between organizations [9].

4 | Flexibility in Construction Project Contracts

Flexible contracts have been widely used for commercial projects in markets with environmental uncertainties and cultural differences. Typically, East Asian countries such as Korea, Japan, and China have more frequent communication exchanges than Western countries [10]. For example, the relationship-oriented culture in

China often leads companies to view the contract as a starting point for ongoing negotiation and collaboration, rather than treating it as just a deal.

Therefore, keeping contracts open to align the parties' interests in a dynamic, uncertain environment in the long term is crucial to commercial success in construction projects. The issue of flexibility is relatively well-defined, and its potential value is greater in a cross-cultural context [11]. Contract flexibility refers to the extent to which a contract addresses unforeseen contingencies and provides clear instructions for handling them. Contract flexibility assumes that contracts are imperfect and cannot specify all possible contingencies that may arise in the future [12].

Flexible contracts can realign investments and restore efficiency when unforeseen environmental disruptions occur. However, flexible contracts not only help both parties to cope with potential uncertainties, but may also lead to shadowing behavior by one party. Shadowing refers to a retaliatory behavior that involves the cessation of cooperation, active cessation, and reciprocal action by one party [13]. Therefore, companies face the challenge of contract flexibility in operating in today's markets. Managing this challenge is critical to ensuring the success of inter-firm collaboration. Contractual flexibility may be viewed as a dual function: coordination and control to align inter-firm expectations, reduce the risks of opportunism, and control the behaviors of trading parties. These insights reveal economic approaches to persuade compliance and reduce project-related costs.

5 | Conclusion

The project environment, especially the North Tehran Freeway project, has become very dynamic and complex today due to high levels of uncertainty in local and international market forces, including the global economic crisis, political tensions between Iran and the US, and international sanctions. Amidst these challenges, it is essential to achieve performance and productivity. Studies have shown that project team management is one of the biggest challenges facing projects. Teamwork helps achieve a project's goals and objectives. When a project is assigned to individuals with diverse perspectives, skills, and experience, teamwork and collaboration can lead to greater flexibility and enhance project performance.

However, within the project team, there may be conflicts, contradictions, and disagreements, and it is the manager or team leader's responsibility to manage them. A project manager can be defined as someone who influences others and has managerial authority in the workplace. A team functions cohesively as a single unit when it is well coordinated and aimed at solving a specific problem or achieving a specific goal in the project. These individual strengths and competencies align project members to achieve common team goals. Although much research has shown that conflict is not necessarily a bad thing, the form of conflict determines whether it is constructive or detrimental to project performance.

Therefore, conflict can be classified as constructive or destructive. Constructive conflicts emphasize reaching a reasonable and acceptable solution for the involved parties. Destructive conflicts, on the other hand, involve contested and personal conflicts. Conflict management is essential to maximize project effectiveness and increase project team member satisfaction. Unresolved conflicts have hindered the flexibility and proper performance of the North Tehran Freeway project. This has led to team members constantly disagreeing on criteria, strategies, tactics, and solutions. If conflicts are not resolved, this harms communication, coordination, and control across the team, resulting in lower project performance, lower final product quality, missed project delivery deadlines, and higher project costs.

Therefore, as a general conclusion, it can be stated that project managers with an appropriate conflict management style and creating flexibility can partially reduce the possible consequences of destructive conflict, including increased costs, severe reduction in communication between individuals and groups, resistance to change, increased tension and stress, failure to deliver the project on time, poor performance, and unhealthy business relationships.

Author Contributions

Sadaf Mehdipour Parizad developed the research concept, designed the methodological framework, collected the data through field surveys, and conducted the statistical analysis and interpretation of results. Habibeh Karimi assisted in refining the theoretical framework, reviewing related literature, and contributed to revising and editing the final manuscript. Both authors reviewed and approved the final version of the paper for submission.

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Data Availability

The data used in this research were obtained through structured questionnaires distributed among project experts. Due to confidentiality considerations, raw datasets are not publicly available; however, the corresponding author may provide anonymized and processed data upon reasonable request.

Conflicts of Interest

The authors declare that there is no conflict of interest related to the conduct or publication of this research.

References