



Strategic SWOT Insights for Effective Project Management in India's Steel Sector

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Abstract: The increasing complexity of the large scale industrial project undertakings in the Indian steel industry has revealed the limitations of the traditional project management practices that primarily focus on the level of operational control but not strategic alignment. This study satisfies this gap by transforming the SWOT analysis into a strategic decision making model of enhancing the effectiveness of project management. The mixed-method research design will be employed, which includes both qualitative data available in the form of literature and industry case studies with quantitative validation based on 412 survey responses of employees in the Indian steel sector. The analysis indicates that it has effective internal strengths such as technical expertise (mean = 4.21) and skilled workforce (mean = 3.86), and critical weaknesses which are poor planning (mean = 4.28) and poor risk management practices (mean = 4.17). The opportunity analysis indicates that there are high opportunities (mean = 4.35) as a result of the digital transformation and the governmental initiatives and the major threats are regulatory uncertainties (mean = 4.31) and the volatility of the raw material prices (mean = 4.24). The key contribution of the research is that the interpretation of strategy based on the SWOT outcome is the use of the matrix analysis method that leads to the creation of strength-based, weakness-driven, opportunity-driven, and threat-reducing strategies. With these insights, a Strategic SWOT-to-Execution Framework is created to fill this gap between analysis and implementation by combining internal capabilities with external conditions. The results highlight that to manage the steel industry, it is necessary to transition to more integrated, data-driven, and strategically oriented practices and rely on digital technologies like analytics and artificial intelligence. The study has some practical implications to project managers, organizations, and policymakers by offering an organized roadmap to improve the performance of projects and complexity in large-scale industrial settings.

Keywords: Strategic Project Management, SWOT Analysis, Steel Industry (India), Project Management Strategy, Digital Transformation, Artificial Intelligence in Project Management, Strategic Decision-Making, Industrial Project Management, Infrastructure Projects, SWOT-to-Execution Framework

1. Introduction

The steel industry in India is also in the process of rapid development due to infrastructure development, industry development and more and more adoption of new state-of-the-art technologies. The success of a project has become a crucial factor as projects are larger, capital-intensive, and technologically complex. Even with the presence of technical knowhow and well-developed organizational structures, steel projects still have to contend with time delays, cost escalations, coordination, and regulatory limitations (Locatelli et al., 2023). These issues suggest that in addition to the efficiency of operations, there is an increased necessity to be rather strategic in project management, i.e. to not only identify problems, but also be able to convert knowledge into actionable decision-making models.

1.1 Background of the Indian Steel Sector

The steel industry is a basic pillar to the economic and industrial growth of India, as it is one of the main inputs to infrastructure, construction, transportation, energy and manufacturing sectors. The steel industry in India has experienced significant growth in the last 20 years due to high urbanization rates, mass infrastructural development and government measures to promote domestic manufacturing (Tahmasebi et al., 2025). The



development of highways, railways, smart cities, renewable energy infrastructure, and industrial corridors have greatly boosted the need of steel and this has made the sector a major contributor to national development.

Indian steel projects are generally big, capital intensive, and take long to implement. Such projects are usually characterized by complicated engineering infrastructures, multi-phase operations and integration of various stakeholders such as governmental agencies, engineers, contractors, suppliers, and financial institutions (Saha & Mandal, 2025). Mechanical, electrical, chemical and environmental systems integration adds even more complexity to the project execution.

Besides technical factors, steel industry faces dynamic external environment characterized by unstable prices of raw materials, changes in regulatory systems, acquisition of land, and demand in the marketplace. These are major determining factors in project schedules, expenses and project feasibility (Leong et al., 2023). Consequently, the steel industry needs efficient project management not only in terms of operational control, but also in terms of the strategic alignment with the external environment and long-term tendencies in the industry.

1.2 Need for Strategic Project Management

The conventional project management practices in the large industrial sectors have been mainly concerned with the planning, execution, monitoring and control of the project activities. Although these methods are fundamental to the efficiency of operations, they tend to be insufficient when it comes to dealing with the strategic issues that are involved with a large-scale industrial project (Omol, 2024). In the steel industry, where technical, organizational and environmental aspects interplay to affect a project, a shift is necessary towards more integrated and strategic approach to management.

Not only operational inefficiencies but also lack of strategic alignment of project goals, organizational capabilities and external environmental conditions can be cited as a cause of many project failures in the steel sector. The problems like impractical planning assumptions, ineffective information systems, poor coordination among the stakeholders, and slow decision making process are indicative of the weaknesses of conventional project management systems (Taboada et al., 2023). These problems tend to be interrelated and need to be approached holistically in which the interactions between the various aspects of project execution are taken into consideration.

Strategic project management puts a strong emphasis on alignment of project objectives to organizational strategy, external uncertainties, and internal strengths to meet sustainable results. It entails application of analytical tools and frameworks that have the capability of facilitating informed decision making, resource allocation, and adaptability in dynamic systems (Rodriguez-Garcia et al., 2023). The steel industry is among the industries that require an approach of strategy to cope with complexity, mitigate risks, and enhance the performance of projects.

1.3 Research Overview and Objectives

In spite of the extensive studies undertaken on the project management practices and challenges of industrial sectors, most of the available literature is dedicated to defining the problems of cost overruns, delays and coordination problems. Although these studies are useful in understanding the operational side of project management, they tend to look at these issues separately and fail to present in detail how the issues can be converted into strategic initiatives.

SWOT analysis has been used in academic studies and in practice in the industry as a tool of determining internal strengths and weaknesses and external opportunities and threats. But in most instances, SWOT analysis is not analytical and does not serve as an effective foundation of strategic decision making. Structured strategies that transform SWOT results into action plans that may be used to facilitate planning and execution of projects in complicated industrial settings are lacking.



This paper fills this gap by changing the perspective of simply identifying the problems in project management to the strategic explanation of SWOT results. It aims at establishing a model that links the SWOT analysis and decision making activities so that organizations can draw inferences and make specific interventions.

The principal objectives of the study are:

To analyse the opportunities, threats, weaknesses and strengths that influence the project management practices in the Indian steel industry.

- To be able to analyze the SWOT results strategically and derive the insights on what could be done to make the project work more effectively.
- To develop a strategic framework in order to tie the SWOT analysis with project management decision-making.
- To examine how digital technologies and integrated systems can make a contribution to strategic project management.

In achieving these objectives, the research will support the requirements of the academic and industry practice by providing a methodological approach of transforming analytical knowledge into strategic behaviors to possess an effective project management in the steel industry.

2. Literature Review

The increasing complexity of large scale industrial projects has led to an increase in scholarly and practical interest in the nature of how strategic approaches can be employed to contribute to effective project management. The traditional models of operations are often not sufficient in industries such as steel where the projects involve the capital investment of huge sums, integration of technology, regulatory obligations and a range of stakeholders. Consequently, scholars and practitioners have been examining different models and instruments to fill the void between analysis and decision making (Ćirić Lalić et al., 2022). These include SWOT analysis, strategic decision making models and digital transformation models, each of which has become prominent. This section is a review of the existing literature on these themes and the limitations that lead to a more integrated and strategy oriented approach.

2.1 SWOT as a Strategic Management Tool

SWOT analysis is one of the most common tools of strategic management that has been used to analyze the internal and external factors affecting the performance of an organization. It offers a systematic way of finding strengths and weaknesses of an organization, as well as opportunities and threats of the external environment (Atli & Krystallis, 2025). SWOT is widely employed in the planning phase of an industrial setting to determine feasibility, risks and decision-making.

Nevertheless, in most cases, SWOT analysis is a fixed and qualitative endeavor. Organizations usually point out factors in each category, yet they do not translate them into a strategy that can be put into place. This is a kind of weakness that makes SWOT less practical in complicated project situations where making decisions involves dynamic and integrated processes (Gao et al., 2026).

2.2 Project Management in Large Industrial Projects

The large industrial sectors like steel manufacturing have complex project management because of scale, interdependence and technical sophistication of projects. These projects are usually separated into several stages such as feasibility analysis, design, procurement, construction and commissioning, all of which involve coordination across functional and organizational borders (North & Winch, 2002).



In this field of study, it has been noted that the problems that keep reoccurring are delays in schedules, cost overruns, lack of efficiency in procurement and the inability to coordinate the activities of the stakeholders. Such difficulties can be usually explained by poor planning, discontinuous communication channels, and lack of integration among various project phases (Abbasnejad et al., 2026). This is further complicated by the fact that several other parties have different objectives, contractual agreements, and processes of decision making.

Although conventional project management models provide a focus on planning, execution, monitoring, and control, they tend to be constrained in terms of scope of their operation. The more complex the projects are, the more complex approaches that combine strategic considerations and operational processes are required to improve the overall project performance (Arsawan et al., 2025).

2.3 Strategic Decision-Making in Project Management

Strategic decision-making in project management deals with aligning the project goals to the overall organizational goals and external environmental factors. It also involves the capacity to predict uncertainties, distribute resources efficiently, and be responsive to new conditions during the project life cycle (Brunet et al., 2026).

In industrial projects, strategic decisions are not just restricted to the preliminary planning but also run through all stages of implementation. Technology adoption, choice of vendors, risk management, and stakeholder interaction are decisions that have long term effects on the outcomes of a project (Sari et al., 2023). Strategic decision-making is also effective in making organizations proactive to challenges instead of responding to issues as they occur.

Although its significance cannot be overemphasized, strategic decision-making is usually deemphasized in the conventional project management practice. Most organizations are concerned with the efficiency of their operations without taking into proper consideration the degree to which strategic alignment can bring about the success of projects (Gao et al., 2026). This disconnect explains why frameworks that would combine analytical tools like SWOT and strategic decision-making processes are necessary.

2.4 Digital Transformation in Project Strategy

The advent of digital technologies has had a great impact on project management practices in the industrial sectors. Data analytics, artificial intelligence, cloud computing, and built-in information systems technologies have allowed companies to improve the accuracy of their planning, real-time monitoring, and make decisions based on the data (Leong et al., 2023).

Digital transformation in project management does not only entail the use of new tools but it is a transition towards integrated and smart systems that interlink different functions in a project. These systems enable enhanced coordination of the stakeholders, enhance transparency, and detect risks and deviations early on (Brunet et al., 2026).

The digital technologies in the framework of the steel industry have significant potential to resolve the old problems associated with the process of planning, procurement, and implementation. Nevertheless, there is usually an unequal adoption of these technologies, and most organizations use a piecemeal system that restricts the efficacy of digital programs (Atli & Krystallis, 2025). This poses a disconnect between the possible advantages of digital transformation and its realization in project management practice.

2.5 Limitations of Existing Research

Even though the literature on the topic offers some useful information on the issue of managing projects and using analytical tools like SWOT, there are a number of limitations. First, there are numerous studies aimed at finding the problems, but not examining the ways how the results can be worked into the strategy. This leads to a lack of integration between analysis and implementation (Omol, 2024).



Second, SWOT analysis is not frequently used as a source of strategic interventions development; it is usually performed as a descriptive identification of factors. The lack of systematic approaches to transforming SWOT knowledge into action plans makes it less effective in the complicated project context (Sari et al., 2023).

Third, integration between old-style project management and new digital transformation strategies is low. Although the potential of digital tools is acknowledged, they are not well-researched in terms of their use to inform strategic decision-making (Locatelli et al., 2023).

These constraints underscore the fact that a more integrated strategy that integrates SWOT analysis, strategic decision-making, and digital transformation is necessary in order to improve the effectiveness of project management. This research will fill these gaps by forming a framework whereby the SWOT results can be translated to strategic information and interventions that could be implemented in the Indian steel industry (Abbasnejad et al., 2026).

3. Research Methodology

The paper has employed an integrated approach to research to implement the study and review the project management practices in the Indian steel industry and redefine the SWOT results in a strategic approach. Industrial projects are multidimensional and complicated and therefore mixed-method approach is employed to enable depth and reliability of analysis. The method combines a qualitative discovery and a quantitative validation and takes the study further than the descriptive findings to actionable strategic findings. Contrary to the traditional methods which emphasize on identification of an issue, this study especially values the strategic relevance of the proven results in decision making.

3.1 Research Design

The proposed study is based on the mixed method design where the qualitative and quantitative designs are employed in a linear manner. The qualitative phase is used in defining and conceptualizing the key dimensions which influence project management and the quantitative phase tries and prioritizes the results using empirical data.

The qualitative part will involve a systematic review and analysis of sector specific case studies to identify the primary strengths, weaknesses and opportunities and threats of project management in the steel industry. It is on these that an analytical framework may be formulated.

The quantitative section is based on the structured questionnaires that are directed at the reflection of the impressions of the professionals who work on the project in the steel industry. The answers provided in the surveys can be quantified to provide statistical information that can be used to confirm the factors identified. Such qualitative and quantitative amalgamation will ensure that the perception of the project management practices and their strategic implication is realized comprehensively.

3.2 Data Sources and Sample Description

The study uses primary and secondary data to ensure that the analysis is valid and thorough.

Structured survey tools are used to collect primary data and will be distributed among professionals involved in project management processes in the Indian steel industry. The sample will be composed of project managers, engineers, functional managers and senior executives who will represent the public sector organizations, private companies, and multinational firms. The end dataset has 412 valid responses that represents a diverse and representative sample of industry views.



Along with the survey data, the qualitative input is also obtained referring to the interaction with the experts including the interviews and discussions with the experienced professionals in the steel industry. These inputs provide some background information and can be used to interpret the quantitative findings.

The secondary data is derived using the literature based information, industry reports and case studies of big steel organizations. This information helps to define significant tendencies and organizational peculiarities of project management activities within the sphere.

3.3 SWOT Development Process

To attain reliability and relevance, the SWOT framework is created in a systematically and multi-stage manner.

The initial step is a qualitative gathering of facts via literature review and case analysis to identify the potential strengths, weakness, opportunities and threats that affect project management in the steel industry. This is further polished by the professional confirmation so that they become feasible.

In the second stage, SWOT elements identified are incorporated into structured survey instruments. These factors are measured using the standardized rating scales and this aspect allows a respondent to determine the significance of these factors in a quantitative manner.

The final SWOT analysis is thus created as a synthesis of both qualitative and quantitative identification and validation, to ensure that it is an amalgamation of theoretical and real industry experience.

3.4 Analytical Approach for Strategic Interpretation

The objective of this study analytical approach is to move to an analytical level of study beyond descriptive analysis and strategic interpretation of findings. The methodology is concerned with the way in which the validated SWOT factors can be transformed into actionable insights which could be utilized by the project management in decision making.

The analysis will be carried out in three stages. The importance of the single SWOT factors is initially summarized with the help of descriptive statistics according to the answers of the survey. Second, the comparative analysis is made to identify the links and gaps between internal capabilities and external conditions. Third, the interpretations are made to convert the observations into strategic insights through interpretation analysis.

The primary analytical instrument is a SWOT matrix in a structured form, which allows tracing the interconnection between the strengths, weaknesses, opportunities, and threats. This matrix allows the development of strategic types such as strength based strategies, weakness based improvement, opportunity exploitation strategies and threat reduction measures.

These findings also form part of a theoretical knowledge in the paper which relates the SWOT analysis to project management activities. This will enable the findings not to be limited to theoretical observations but will be useful in real decision-making in complex industrial project environments.

The method will unite the empirical data and its strategic interpretation in such a way that it will provide a full-fledged foundation of coming up with actionable recommendations that will serve to enhance the performance of project management in the Indian steel industry.

4. Consolidated SWOT Analysis

The section is an evidence based and systematic discussion of strengths, weakness, opportunities and threats that influence the project management practices in the Indian steel industry. The analysis is empirically based and contextualized, using the existing survey data that is proved and supported with the help of qualitative data (North and Winch, 2002). In contrast to a purely descriptive SWOT presentation, this section is a combination of



quantitative evaluation and comparative interpretation to highlight the important patterns, imbalances, and strategic gaps. The intention is to establish a coherent conceptualization of analytics base that supports creation of strategic knowledge in subsequent segments.

4.1 Overview of SWOT Framework

SWOT framework involves internal and external factors that define the success of project management in steel industry. Internal dimensions are based on organizational capabilities, technical skills, workforce skills, and operations (Rodriguez-Garcia et al., 2023). An external dimension involves the regulatory environment, market forces, technological, and environmental limitations.

All of the SWOT factors are measured with standardized indicators, such as mean rating, variability, and frequency of mention, which enables them to compare them systematically across the categories. The integrated analysis indicates that it is not the single factors but the combination of internal capabilities and external conditions that determines project management performance (Ćirić Lalić et al., 2022).

4.2 Strengths in Project Management

The analysis establishes some internal strengths that propose project implementation in the steel industry. These advantages are mainly associated with technical capacity, human resource and experience within the organization.

Table 4.1: Strengths in Project Management

Strength Factor	Mean	SD	Frequency (%)
Technical expertise and knowledge	4.21	0.68	87.3
Availability of skilled workforce	3.86	0.79	76.2
Established organizational processes	3.72	0.91	73.5
Adaptability to changing conditions	3.65	0.88	69.4
Cost competitiveness	3.58	0.92	64.8
Experience with complex projects	3.53	0.85	61.2
Strong vendor ecosystem	3.41	1.02	58.7
Leadership commitment	3.37	1.12	55.3

The result shows that the strength that dominates is technical, which shows the ability of the industry to handle complex engineering systems. The availability of trained workforce and the existence of well-established processes contribute to the capacity of execution even more. Nevertheless, comparatively low scores in leadership commitment and vendor ecosystem indicate that internal strengths can be further enhanced.

4.3 Weaknesses in Project Management

Despite the fact that the company possesses good internal strengths, the analysis reveals that the company has several weaknesses that hinder the performance of its projects particularly in the field of planning, coordination and decision making.

Table 4.2: Weaknesses in Project Management

Weakness Factor	Mean	SD	Frequency (%)
Inadequate project planning	4.28	0.72	89.6
Poor risk management practices	4.17	0.68	85.2
Weak contract management	4.05	0.81	82.8
Ineffective communication	3.92	0.77	79.1
Siloed organizational structure	3.88	0.83	77.4
Resistance to new technologies	3.81	0.91	74.5
Insufficient stakeholder engagement	3.79	0.86	71.8
Bureaucratic decision-making	3.72	1.04	68.7

The worst weakness is poor planning and right behind it, there is poor risk management practices. These issues are indications of an inefficient system that affects different stages of the project life cycle. Organizational silos and bureaucracy also do not allow organizations to coordinate and make decisions promptly.

4.4 Opportunities in Project Management

The external environment has significant opportunities that could be exploited to enhance project management particularly with the assistance of technology and policies.

Table 4.3: Opportunities in Project Management

Opportunity Factor	Mean	SD	Frequency (%)
Digital transformation (Industry 4.0)	4.35	0.64	91.7
Government infrastructure initiatives	4.18	0.73	85.4
Knowledge exchange with global players	4.07	0.69	82.0
Growth in domestic demand	3.94	0.82	78.9
Standardization of practices	3.85	0.78	76.2
Green technology integration	3.79	0.87	72.8
Public-private partnerships	3.65	0.92	67.5



Capacity building initiatives	3.51	0.88	63.1
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The most salient opportunity that emerges is digital transformation, which implies that the industry is much ready to adopt advanced technologies. There is also a good atmosphere of growth and modernization due to government programs and increasing demand.

4.5 Threats in Project Management

Another manner in which the analysis reveals is the different external threats which are also a challenge to the project implementation particularly on the uncertainties on regulations and market.

Table 4.4: Threats in Project Management

Threat Factor	Mean	SD	Frequency (%)
Regulatory uncertainties	4.31	0.67	88.3
Raw material price volatility	4.24	0.72	86.7
Market demand fluctuations	4.12	0.75	83.5
Land acquisition challenges	4.03	0.86	81.1
Environmental compliance issues	3.95	0.79	77.7
Skill shortages	3.86	0.84	74.3
Global competition	3.72	0.93	68.9
Technological disruptions	3.58	0.97	64.6

Regulatory uncertainty and price volatility are the most threatening. These concerns play a powerful role in the timing of the project, cost structures, and the decision stability.

4.6 Cross-Dimensional SWOT Analysis

A cross-dimensional analysis is conducted to identify the strategic interconnection between the internal and external factors to overcome the single interpretation.

Table 4.5: Cross-Dimensional SWOT Insights

Dimension	Observation	Strategic Implication
Strength vs Weakness	Strong IT but fragmented systems	Integration needed
Strength vs Opportunity	Skilled workforce + digital push	AI adoption
Weakness vs Threat	Poor planning + regulation	High risk
Opportunity vs Capability	Tech available but low adoption	Capability gap



According to this discussion, there are considerable capability-execution discrepancies. Though the industry has good technical and human resources, integration, planning and adoption has loopholes that limits overall effectiveness. At the same time, external opportunities such as digital transformation can be utilized only when inner weaknesses are addressed.

Section Summary

The synthesized SWOT analysis shows that the effectiveness of project management within the Indian steel industry is a complex interplay between the strengths and weaknesses of the organizations and external opportunities and threats. Although the industry has good technical capacities and growth potentials, it is faced with systemic weaknesses and environmental uncertainties that pose major challenges (Taboada et al., 2023). The cross-dimensional analysis also tells about the strategic gaps that need to be filled to enhance project performance. These revelations are used to create strategic recommendations and structures in the following section.

5. Strategic SWOT Insights

In this section, the main analytical contribution of the research is observed because it will turn the consolidated SWOT results into strategic suggestions to be made. In contrast to conventional methods that consider SWOT as a descriptive model, this part views the interdependences of both internal and external variables to come up with strategies that can increase the effectiveness of project management (Saha & Mandal, 2025). It uses a strategic matrix approach to organize the analysis, which allows building four types of strategies: strength-based (SO), weakness-driven (WO), opportunity-leveraging (ST) and threat-mitigation (WT). The goal is to transform analytical observations into decision-oriented interventions which may be implemented in the massive projects in the steel sector (Tahmasebi et al., 2025).

5.1 Strength-Based Strategies (SO Strategies)

The approach of strength-based strategies aims to take advantage of the internal strengths and capitalize on the external opportunities. The steel industry evidences a high level of technical competence, well-qualified human resources, and well-developed procedures that can be strategically aligned with the new opportunities like digital transformation and modernization of the industry (Arsawan et al., 2025).

Among the fundamental strategic lessons, the fact that robust IT capabilities and the opportunity of Industry 4.0 technologies can be aligned is one of the most important. By using their current digital infrastructure, organizations can create integrated project management systems that will allow them to monitor in real time, predictive analytics and make decisions based on data (Arsawan et al., 2025).

Equally, access to skilled workforce is a good basis to embrace modern project management practices. Organizing the capabilities of the workforce in line with digital tools and analytical systems will help organizations become more efficient and responsive throughout the project phases (Saha & Mandal, 2025).

The other critical strategy is to apply experience of working on complex projects to standardize best practices and create structured knowledge systems. This has the potential to enhance uniformity within project implementation and minimize variation within results (Taboada et al., 2023).

In general, strength-based approaches underline the importance of enhancing the current resources to speed up the process of technological implementation and enhance strategic alignment within the project management (North & Winch, 2002).

5.2 Weakness-Driven Strategies (WO Strategies)

Strategies that are focused on weaknesses seek to deal with the internal constraints by taking advantage of external opportunities. This analysis defines some of the key areas of weakness such as poor planning, risk management



and fragmentation of organizational structures which can be addressed using strategic interventions (Leong et al., 2023).

The greatest weakness, which is poor project planning, can be eliminated by embracing systematic planning methodologies aided by computer-based tools. More sophisticated analytics and simulation methods can enhance the accuracy of the estimation and allow planning the scenario (Gao et al., 2026).

Disparate information systems and organizational structures exemplify that there should be integrated platforms to facilitate networking of various project functions. Introducing the unified digital systems will help to promote the coordination, increase the flow of information and contribute to the quicker decision-making (Ćirić Lalić et al., 2022).

The opposition to technological change may be resolved with the help of specialized training and development programs. By matching the skills of labor force with the emerging technologies, it will be possible to make the process of adoption smoother and realize the full potential of digital transformation (Brunet et al., 2026).

The strategies are aimed at converting the weaknesses into chances to work better using technology and institutional development.

5.3 Opportunity Leveraging Strategies (ST Strategies)

Opportunity leveraging strategies are based upon the ability to counter external threats with internal strengths. The steel industry is one that is facing high levels of regulatory uncertainty, market volatility and rising competition. The key to effectively dealing with these risks is to have strategic alignment of internal capabilities and external challenges (Omol, 2024).

Technical genius and well-established procedures could be employed in creating strong risk management frameworks that can look ahead and react to external uncertainties. As an illustration, predictive analytics can be applied to predict the market trends and modify project plans.

Supply chain resilience can be maintained by the fact that a strong vendor ecosystem can assist organizations in coping with changes in the availability and price of raw materials. Aggression of suppliers may also be employed to contribute to the stability and minimization of procurement risks.

The adaptability can also help organizations to adapt to regulatory changes by creating compliance oriented planning systems. This allows proactive control of approvals and minimizes the effects of policy changes on project schedules.

These are approaches that highlight the importance of internal strengths in resilience against external threats.

5.4 Threat Mitigation Strategies (WT Strategies)

The threat mitigation strategies are aimed at reducing the overall effect of internal weaknesses and external threats. These are important strategies in high risk situations where planning, coordination, and governance weaknesses interplay with external uncertainties.

Such risks to project execution are created due to poor planning and uncertainty in regulations. To handle this, organizations need to introduce systematic governance structures that incorporate regulatory aspects in early planning.

Equally, the relationship between the poor risk management and volatility in the market is that it requires the implementation of dynamic risk assessment frameworks. These models are expected to include real-time information and be capable of continuously tracking project risks.



Critical actions can be slowed down by bureaucratic decision-making processes, environmental and compliance issues. Delays can be minimized and responsiveness can be enhanced by streamlining decision structures and adopting digital approval systems (Atli & Krystallis, 2025).

The threat mitigation strategies emphasize the need to deal with systemic vulnerabilities to minimize exposure to external risks.

5.5 Cross-Strategic Insights and Strategic Matrix

In order to combine the above strategies, the SWOT strategy matrix is created as a comprehensive strategy to show the interplay of both the internal and external factors.

Table 5.1: Strategic SWOT Matrix

Strategy Type	Internal Factor	External Factor	Strategic Direction
SO Strategy	Strengths	Opportunities	Leverage capabilities
WO Strategy	Weaknesses	Opportunities	Overcome limitations
ST Strategy	Strengths	Threats	Mitigate risks
WT Strategy	Weaknesses	Threats	Minimize vulnerabilities

The cross-strategic analysis shows that the best strategies are those that combine various dimensions as opposed to trying to solve problems separately. One case in point is the digital transformation that can be seen as a key theme in all types of strategies, both as an amplifier of competences and as a remedy to weaknesses and threats.

The other important lesson is the need of congruency between the organizational capabilities and external situations. The successful management of project tasks is strategic, and relies on the capability of aligning internal resources to external opportunities in the same breath as addressing risks.

Section Summary

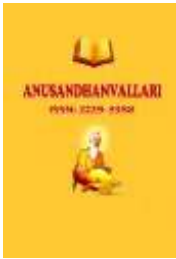
This part converts the integrated SWOT results into an organized set of strategic implications that can inform the project management practice in the Indian steel industry. Through a matrix-based analysis method, the study comes up with actionable strategies in four major dimensions. The analysis brings out the significance of the integration of strengths, weaknesses, opportunities, and threats in an integrated way. These observations form the basis of creating a strategy framework that connects the analysis to the implementation, which is discussed in the following section.

6. Development of Strategic Framework

This part constructs a systematic model that transforms insights gained in the SWOT to the project management action points. Based on the strategic insights established above, the framework offers a stepwise approach to analysis to implementation. This is aimed at making sure that strengths are capitalized, weaknesses are managed, opportunities are exploited and threats are averted by the use of coordinated and actionable interventions.

This framework does not present a separate conceptual model but rather operationalizes the strategic rationale based on the SWOT analysis into a real-world implementation framework. It combines both the internal capabilities and external conditions and aligns them with the functions of project management to enhance its overall effectiveness (Rodriguez-Garcia et al., 2023).

6.1 Conceptual Foundation of the Framework



This framework is based on the fact that successful project management should involve the match-up of internal organizational capabilities and external environmental conditions. These factors are identified through SWOT analysis and strategic interpretation determines the way of action.

It is based on three major concepts:

- Combination of Analysis and Action: Results of Analysis should be directly associated with implementation plans as opposed to being descriptive.
- Dynamic Alignment: Internal opportunities and threats should be constantly synchronized with both the external opportunities and threats.
- Systemic Perspective: The issues facing project management are caused by interdependence of factors, hence solutions have to deal with several dimensions at the same time.

This will see to it that the framework is not restricted to theory representation but it can be used as an operational tool to aid in decision making in the tricky industrial project.

6.2 Structure of the Strategic SWOT-to-Execution Framework

The suggested model is organized into four interrelated layers that depict a step in the process of turning the analytical insights into the actionable results.

Layer 1: Input Layer (SWOT Factors)

This layer consists of the identified strengths, weaknesses, opportunities and threats that have been verified in the course of research. These are the components that make up the inputs that make up the project management environment.

Layer 2: Interpretation Layer (Strategic Insights)

This layer assesses SWOT factors in order to generate strategic insights. Cross-relationships of internal and external dimensions are examined to identify leverage sources, areas of improvement and risk.

Layer 3: Execution Layer (Strategic Actions)

This level is applied to convert strategic knowledge to practical action in the project management spheres. These activities are aligned to the key dimensions such as planning, risk management, procurement, coordination and governance.

Layer 4: Digital Enablement Layer

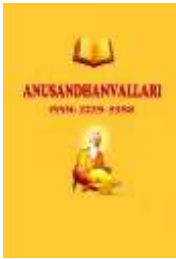
The final step is implementation with the assistance of digital technologies. This is comprised of embedded information systems, analytics and decision-support systems that enhance efficiency and transparency.

This stratified nature offers a logical flow of analysis to execution and enables organizations to implement strategic interventions in a logical way.

6.3 Integration with Project Management Dimensions

The framework can be combined with three basic dimensions of project management to ensure that it can be practically applied:

- People Dimension: Focuses on the skills, leadership, and teamwork and decision-making skills.
- Process Dimension: This involves process planning, process execution, monitoring and control.
- Business Environment Dimension: This entails the market forces, legal framework and external limitations.



These dimensions are integrated so as to ensure that strategies are not put in place in isolation. For example:

- Strength-based strategies promote the People dimension by strengthening people via development of capabilities.
- Weakness-driven strategies enhance Process dimension by structured approaches.
- Opportunity and threat-based strategies fit the Business Environment dimension to the external conditions.

This combined practice would make the development balanced in every aspect of project management.

6.4 Application of the Framework in Steel Sector Projects

The framework can be applied in practice by a step-by-step process that organizations can embrace to enhance the effectiveness of project management.

Step 1: SWOT Assessment

Organizations recognize and analyze internal and external factors which influence project performance.

Step 2: Strategic Interpretation

Findings of SWOT are evaluated to identify strategic priorities that are important such as where strengths can be leveraged, weaknesses can be worked on, opportunities can be used and threats can be reduced.

Step 3: Action Mapping

These strategic insights are translated into specific actions depending on the functions of project management such as planning, procurement, risk management and coordination.

Step 4: Digital Integration

This is done through the application of integrated digital systems, which assist in real-time monitoring, data analysis, and decision support.

Step 5: Ongoing Feedback and Adaptation.

The project performance is constantly under control and the strategies are adapted to the evolving circumstances and feedbacks.

Such an application process ensures that the framework is dynamic and flexible, so that the organizations could be able to react to dynamic project environments.

Section Summary

Strategic SWOT-to-Execution Framework is a framework of action in transforming the analytical ideas into practical action in project management. The framework assists in bridging the gap between implementation and strategy through the integration of SWOT analysis and implementation mechanisms, and digital enablement. It also emphasizes how alignment, integration and adaptability are important to manage complex industrial projects (Sari et al., 2023). This framework is a foundation of enhancing project performance and it assists in constructing better strategies like digital transformation strategies incorporated in the next section.

7. Role of Digital Transformation in Strategy

Digital transformation has become a key facilitator of strategic project management in the large-scale industrial sector. Applying to the steel industry, where projects are complex to coordinate, have extended timeframes and are highly uncertain, digital technologies offer the opportunity to increase visibility, enhance decision-making, and provide an opportunity to act proactively (Tahmasebi et al., 2025). This part looks at how the digital



transformation will complement the strategic framework created in the previous part and how it can be used to respond to major project management issues.

Instead of viewing digital tools as standalone solutions, this section places digital transformation as a co-located strategic level linking analysis, implementation, and ongoing enhancement. The emphasis is placed on the way in which technology is able to match internal strengths with external circumstances and help the successful execution of strategic interventions.

7.1 Digital Transformation as a Strategic Enabler

The digital transformation of project management is not based on the utilization of particular tools and systems. It represents a shift towards a more integrated, data-driven, and intelligent management practice to enhance the coordination and responsiveness across the project lifecycle (Locatelli et al., 2023).

One of the most valuable strategic benefits of digital transformation is the possibility to centralize the information about the project. The integrated platforms enable real-time access to information on schedules, costs, resources, and risks, thus reducing information asymmetry and increasing transparency.

Digital systems also ease the decision making process, by providing analytical insight, based on large quantities of project information. The predictive analytics will have the ability to identify the likely delays, cost overruns and risks beforehand and the managers are able to counter them before they arise.

In addition, digital transformation enables better coordination of parties as it enables an easy flow of communication and exchange of information. This is particularly necessary in steel projects where different groups, contractors, and suppliers must toil and coordinate their activities.

Digital transformation is an enabler strategy because it enables real-time monitoring, predictive analysis, and improved coordination, which improves the implementation of project management strategies.

7.2 AI-Driven Project Management Systems

Artificial intelligence is another huge improvement in the field of digital project management as it provides the ability to analyse, automate, and support decisions. The AI-based systems have the ability to handle vast amounts of data, extract patterns, and make insights that are hard to obtain using conventional means (Abbasnejad et al., 2026).

The use of AI-based project management systems can be implemented in various spheres of project implementation:

- Planning and Scheduling: Predictive models have the potential to enhance the estimation of the timeline by utilizing historical data and determining possible bottlenecks.
- Cost Management: The machine learning can be used to improve the accuracy of cost estimates and to identify the deviations in real time.
- Risk Management: AI is able to detect patterns of risk and come up with early warning signals, which can be mitigated ahead of time.
- Procurement and Supply Chain: Intelligent analytics will be able to track vendor performance and anticipate delays in receiving materials.

The use of AI in the project management systems also aids in the automation of routine tasks, which saves manual efforts and errors to a minimum. The automation of reporting and progress validation will enhance efficiency and enable project managers to concentrate on strategic decisions.



Notably, AI-based systems are very consistent with the strategic framework that was presented in the preceding section. They are the technological foundation that is needed to establish strength-based, weakness-driven, and risk mitigation strategies.

7.3 Digital Integration Across the Project Lifecycle

Digital transformation is effective when the technologies are integrated throughout the project lifecycle. Disjointed systems restrict the possible advantages of digital tools, whereas integrated platforms allow a smooth information flow and coordination.

The mapping of digital integration can take the following forms:

- Initialization and Designing: Data-driven models assist in data analysis, resource allocation, and scheduling with the help of digital tools.
- Execution: The real-time monitoring systems keep track of progress, identify deviations and impose compliance.
- Control and Monitoring: Through the provision of real-time monitoring of performance indicators, using integrated dashboards, timely interventions can be performed.
- Closure and Learning: The project data and lessons learned are stored in digital repositories and this assists in enhancing the future projects.

As the stages are integrated by ensuring that there are systems in place, organizations can be consistent, transparent and efficient in the lifecycle of the project. It is also this integration that facilitates feedback loop which will facilitate the refinement of strategies in a continuous basis basing on real-time information.

Section Summary

The digital transformation has emerged as a major factor that has made strategic project management in the steel industry easier. The digital technologies make the planning more accurate, improve coordination, and proactive decision-making, combining the data, analytics, and intelligent systems. The AI-based systems enhance these capabilities, providing predictive intelligence and automation. The digital integration in the project lifecycle is an assurance that the SWOT analysis-based strategies would be executed with success and be refined continuously. This renders digital transformation a significant enabler of sustainable improvement of the project management efficiency.

8. Managerial Implications

The managerial implications of the strategic insights in the light of the SWOT analysis and the formulation of the framework that ensues is colossal to the managerial practice in the Indian steel industry. As industrial projects are demanding and expansive in nature, the project managers and organizational leaders are required to extend the control to strategic alignment and integrated decision-making. This section explains some of the key implications to practitioners across different levels in relation to how strategic insights can be converted into the management practices.

8.1 Implications for Project Managers

Project managers are at the intermediate phase of transforming the strategic knowledge to the daily project implementation. The outcome of this research suggests that project managers need to be more data centric and proactive in managing projects.

Some of the major implications include the need to strengthen planning practices. Planning techniques are more formalized and ought to be adopted by project managers through analytical tools in order to improve accuracy in



timing and resource distribution. Scenario-based planning and decision-making, which is informed by risk, can help to anticipate the potential challenges and reduce uncertainties.

Another important implication is the emphasis on coordination and communication. As the steel projects are multi-stakeholder, project managers must ensure that information flows between teams and departments is effective. Integrated digital platforms can be used to enable real-time communication and reduce delays that are experienced when using fragmented systems.

Project managers should also consider continuous monitoring and flexibility of decision making. Instead of periodic reviews, they should use real-time data and analytics to track progress and identify deviations in time. This enables the corrective actions to be taken at the appropriate time and improves the performance of the project.

Additionally, project managers are also becoming more and more obliged to learn the digital tools and data analytics. As project settings are turning out to be technology-oriented, data interpretation abilities and the ability to exploit digital systems in effective management are essential.

8.2 Organizational Strategy Implications

At the level of organization, it has been shown that a refocusing of project management practice to bigger strategic interests is necessary. Organizations must be redirected to integrated processes and systems that help in coordination, transparency and efficiency.

Some of the implications include the need to invest in the digital structure and integrated project management structures. Organizations should focus on developing unified structures that connect planning, execution and monitoring functions. This reduces information silos and enhances decision making capability.

Another essential implication is of a collaborative organizational culture. Lateral and decentralized organization and fragmented communication lines must be replaced with trans-functional teams and unified work processes. This includes changes in organizational design, as well as leadership resolve to facilitate collaboration.

The other strategic capabilities that organizations should focus on are risk management, contract management and stakeholder engagement. Such skills are necessary to cope with the complexity of large-scale projects and to adjust them to the external conditions.

In addition, the findings show the relevance of institutionalization of learning mechanisms. The organizations have to gain some lessons of the projects done and reflect them on their future planning. This is the process of never ending learning which enhances the performance in the long-term, and reduces the possibilities of reoccurrence of issues.

8.3 Capability Development and Governance

Strategic project management requires the highest capabilities and governance structures in order to be implemented effectively. This includes the human resource growth and institutional structures that enhance responsibility and performance.

The capability should be developed to address the internal weaknesses that have been discussed in the SWOT analysis. The organizations are encouraged to invest in the training programs with the basis on enhancement of technical skills, project management and digital literacy. This is to ensure that the employees are equipped to work in more technical and sophisticated conditions.

Leadership development is another factor to consider. This requires the leadership to be competent to spearhead the strategic efforts, change management and introduce congruence at different levels of the organization. With information and strategic insights, leaders ought to make sound decisions.



The system of governance should be improved in order to support quality decision making and accountability. This involves role and responsibility definition, streamlined approval systems and performance control systems. Minimization of delays, improvement of compliance and an overall control of the project can be done through clear governance processes.

In addition, the organizations should also have performance measuring systems that are strategic aligned. KPI must not be restricted to cost and time; it must also take into consideration other aspects such as risk management, stakeholder satisfaction, and process efficiency.

Section Summary

The management implications of this study reveal that there is need to change the traditional approaches to project management towards a more strategic and integrated project management approach. Project managers need to be proactive and data-driven but organizations need to integrate their structures, processes and capabilities with their strategic objectives. Effective implementation of strategies is based on the capability development and good governance. Together, these implications provide a viable path towards achieving the effectiveness of project management in the Indian steel industry.

9. Policy Implications

The results of this paper also have significant policy implications and institutional support systems of the Indian steel industry. Due to the magnitude, complexity and national importance of steel projects, government policies and regulatory frameworks are essential in influencing the outcome of the projects. Uncertainties may be minimized by effective policy interventions, coordination improved and enabling environment provided towards strategic project management. In this section, major policy implications based on the strategic SWOT insights are outlined and where institutional support can go a long way to enhance the performance of the project.

9.1 Regulatory and Institutional Recommendations

The analysis determines the complexity of the regulations and delays in the process as the key external limitations of the project execution. Several levels of approval, ambiguity of schedules, and continuous changes in policies lead to uncertainty and distort project schedules. To solve these problems, simplified and open regulatory procedures are required.

The simplification of approval procedures by single-window clearance systems is one of the recommendations. Such systems can do away with the cumbersome administration and timely approvals of projects. Predictability and reduction of delays can also be achieved through established deadlines and unified processes.

The other notable area is the coordination of regulations by different agencies. The duplication of roles and uneven needs coupled with lack of clarity are likely to bring about confusion and inefficiencies. Regular regulations can improve the level of transparency and facilitate the implementation of the projects.

Digital platforms of regulation procedures can also be created to enhance transparency and efficiency. Submission, tracking and approval systems through the internet reduce the human element and in addition, there is the real time monitoring of application status. This coincides with the general goal of embracing digital technologies in the project management practices.

In addition, the policy frameworks should support early stage planning by providing clear guidelines on land purchase, environmental compliance and stakeholder involvement. This could help organizations to anticipate challenges and look into regulatory requirements of projects early.

9.2 Government Support for Digital Transformation



Digital transformation has been established to be one of the facilitators of strategic project management. However, it must be implemented with favourable policies and institutional processes that would favour investment and innovation.

Government initiatives can also play a critical role in promoting the adoption of new technologies such as data analytics, artificial intelligence and integrated information systems. Financial incentives, tax benefits and funding programs can encourage organizations to invest in digital infrastructure.

The digitization of standards and interoperability frameworks are also critical aspects. Standardization will also ensure that different systems are able to communicate effectively and therefore easy integration of project functions and organizations.

Capacity-building programs are not an exception since they are required to help in digital transformation. The necessary skills of the working force can be achieved through the training programs, skill development schemes, sharing knowledge platforms among others. Industry, academia and government institutions can further enhance learning and innovation.

Data governance and data security should also be prioritized in policies in the context of ensuring safe and reliable application of digital systems. There should be clear guidelines on data management, privacy, and cybersecurity to create trust and make it widely adopted.

9.3 Industry–Policy Alignment

The steel industry needs to bring the practice in the industry and the policy frameworks into harmony in order to manage projects effectively. The inefficiencies and delays may be caused by misalignment between organizational strategies and regulatory requirements.

The first implication is the fact that there should always be a dialogue between stakeholders in the industry and the policymakers. Consistent consultations can assist in recognizing viable challenges facing organizations and make sure that policies are sensitive to the needs of the industries.

Public- private partnerships may be an effective tool of matching the goals and sharing resources. Large-scale projects can be aided by collaborative efforts and contribute to the exchange of knowledge among the stakeholders.

Long-term planning should also be promoted by the policy frameworks through ensuring stability and consistency. When there are frequent changes in regulations, it brings in uncertainty and makes it difficult to make strategic decisions. Consistent policy regimes facilitate the planning and implementation of projects by organizations with more confidence.

There should also be feedback and evaluation mechanisms in place to determine how effective the policies are and also areas to improve. Constant control and adjustment make sure that policy interventions will be relevant within a changing industrial context.

Section Summary

The policy implication of this research is that the government and institutional structures play very significant roles in ensuring successful management of projects in the steel industry. Improving regulatory procedures, supporting the digital transformation, and ensuring that regulatory industry and policy are in balance will be essential in order to improve the results of the project. By creating a transparent, efficient and supportive policy environment, the stakeholders can reinforce the strategic management of the complex industrial projects and attain sustainable development of the sector.



10. Conclusion

The purpose of this paper was to transcend the traditional problem-oriented approach to project management in the Indian steel sector and develop a perspective of the strategy grounded on empirical investigation. The study provides an analyzing systematic study of the forces influencing the performance of the project through the synthesized SWOT framework analysis of internal strengths and external factors. Better still, it increases the application of SWOT as a descriptive tool to a strategic process that can be applied to take action.

The findings have shown that the steel industry possesses good internal resources, particularly the technical know-how, quality human resources and experience in executing large projects. However, these strengths have been undermined by certain weaknesses which are as follows; poor planning, poor organizational structure and poor system integration. At the same time, the external environment offers a tremendous opportunity in the digital transformation, policy support, and market expansion and a tremendous threat in the regulatory complexity, market instability, and resource scarcity.

One of the key contributions of this study is the conversion of SWOT findings to formalized strategic knowledge. The paper determines four categories of strategies using a matrix approach to analysis, which can be leveraging strengths, addressing weaknesses, capitalizing on opportunities, and alleviating threats. The strategies emphasize the importance of integration, alignment and flexibility in management of complex industrial projects.

This contribution is also reinforced by the creation of the Strategic SWOT-to-Execution Framework that provides a feasible channel within which such insights can be enforced. The framework bridges the gap between analysis and action because it links SWOT factors and execution mechanisms and digital enablement. It highlights the importance of the coordination of interventions between people, processes and the external environment, which is facilitated by integrated digital systems.

Another aspect that is brought out in the research is that digital transformation is one of the main factors that enable strategic project management. The technologies that will allow planning more accurately, improve the real-time monitoring, and offer proactive decision-making are data analytics and artificial intelligence. Such technologies can result in introducing much efficiency and reducing uncertainty in case properly integrated in the project lifecycle.

On the management front, the study also underscores the need to change towards a data intensive, proactive project management practice that is strategically aligned. Governance mechanisms, organizational capabilities, and organization structures have to be redesigned to be accommodative of integration and responsiveness. At the policy level, facilitating the regulatory process, helping with the digital transformation, and aligning industry and government are vital to the development of an enabling environment.

10.1 Summary of Strategic Insights

The study suggests that significant strategic lessons are involved which are critical in making project management effective within the steel industry:

- Organized exploitation of internal strengths that will facilitate in technological adoption and innovation should occur.
- Weaknesses in planning, coordination and risk management require well coordinated and integrated interventions.
- External opportunities such as policy support and digital transformation can be leveraged to the best to enhance performance of the project.
- External threats necessitate proactive risk management and alignment to regulatory and market situations.



- Combined structures and systems of digitalization are required to address the gap between strategy and implementation.

All these arguments bring out the necessity to be comprehensive and strategic in project management.

10.2 Future Scope and Research Directions

Despite the fact that the present-day study provides an in-depth model of the strategic project management, there are several gaps in research which may be filled in the future.

The suggested framework can be utilized in other industrial sectors of the future to assess its overall applicability and flexibility. The strategic needs and challenges related to the industry can be better understood with the help of the comparative analysis of the sectors.

The inclusion of new technologies and methods of analysis in project management can be another area of further research. Real-time data analytics, simulation and intelligent systems can be used to enhance predictive and adaptive capabilities of project management structure.

Another potential area of research is the longitudinal evaluation of strategic interventions. The effects of strategies adopted in the long run on the performance of the project may provide some insightful information on the effectiveness and sustainability of the strategies adopted.

In future research, it is also possible to investigate the influence of organizational culture, leadership and stakeholder dynamics on the success of strategic project management initiatives.

Final Remark

In conclusion, this paper has revealed that effective project management in the Indian steel industry must not be reactive in solving problems, but it should be strategic plans. Through the assistance of transforming analytic knowledge into action plans and integrating them with the digital capabilities, the organizations will be able to enhance the performance of the projects and provide sustainable outcomes in a more dynamic and intricate environment.

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