



Research on the Influence Mechanism of Project Manager's Decision on Project Success

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Abstract: This study focuses on the impact mechanism of project managers' decisions on project success, and builds a comprehensive analysis framework based on existing theories and literature. Through in-depth discussion of the key factors in the decision-making process of project managers (such as information collection, risk preference and team collaboration), this paper analyzes how they affect project success through three dimensions: cost, time and quality. The research points out that the rationality of project managers' decisions not only depends on their professional knowledge and experience, but also is significantly affected by organizational culture and external environment. Through theoretical analysis, this study reveals the internal relationship between project managers' decisions and project success, provides theoretical guidance for project management practice, and lays a foundation for subsequent empirical research.

Keywords: project manager decision-making; project success; influence mechanism; theoretical analysis

1. Introduction

In today's complex and changeable project management environment, the decision-making quality of project managers has become a key factor affecting the success or failure of projects. Project managers need to make wise decisions within limited time and resources to ensure that the project achieves the expected goals in terms of cost, time and quality. However, although the decision-making process has been extensively studied in the field of project management, theoretical discussions on how project manager decisions affect project success through specific mechanisms are still relatively insufficient. Existing research shows that project managers' decisions are not only influenced by personal experience, professional knowledge and risk appetite, but also closely related to organizational culture, team collaboration and external environment[1-2]. However, how these factors work together to influence project success through dimensions such as cost control, time management and quality assurance still needs further theoretical explanation. The purpose of this study is to construct a comprehensive framework through theoretical analysis to explore the impact mechanism of project managers' decisions on project success. Through in-depth analysis of the key elements in the decision-making process and their action paths, this study not only provides a new perspective for understanding the decision-making behavior in project management, but also provides theoretical guidance for project management practice, helping project managers better cope with the complex and changeable project environment and improve the quality of decision-making. To help project managers better cope with the complex and changeable project environment, improve the quality of decision-making, and achieve project success.

2. The impact of project Iron triangle on project success

In the field of project management, project iron triangle, as a classic theoretical framework, has become the core standard to measure the success of a project. The three elements of cost, time and quality are interwoven and mutually restricted, which jointly shape the overall performance of the project. A large number of studies have confirmed that there is a complex dynamic relationship among these three elements, which is usually represented by a balance of "one up and the other up" [3]. Specifically, the relationship between cost and time is particularly significant. Shortening project time often requires increasing resource input, which will undoubtedly push up project cost; On the contrary, if the cost is cut, the project schedule may be delayed due to lack of resources. In terms of cost and quality, improving project quality usually means higher resource consumption, including high-quality materials, advanced technology and professional participation, which will naturally increase the cost burden. However, although lowering the quality standard can save costs, it may cause irreversible damage to the long-term benefits of the project. A similar game exists between time and quality. Speeding up a project may result in lower quality due to streamlined processes or lack of quality control; And the pursuit of high quality tends to lengthen the project cycle. This mutually restrictive relationship puts forward extremely high requirements for

project managers. In the decision-making process, they must accurately weigh the relationship among cost, time and quality, and seek the best balance point to ensure that the project can achieve the predetermined goal under the condition of limited resources, and finally achieve the successful delivery of the project.

The decision of project manager is the key to balance the iron triangle of project (cost, time and quality). By making clear decision objectives, optimizing resource allocation, managing risks, flexibly adjusting strategies, and using technical tools, project managers can achieve the optimal balance of projects in complex project environments, thus improving the success rate of projects. This balance requires not only the expertise and experience of the project manager, but also a high degree of adaptability and communication ability to cope with the changing project requirements and external environment. The positive impact of project decisions on project success will be analyzed from the following three points.

The first point is to set priorities for project goals. In project management, the setting of decision goals is the basis for balancing cost, time and quality. Project managers need to set clear priorities according to the nature and objectives of the project. For example, in emergency relief projects, time is the most important factor, and project managers must complete tasks within a limited time frame, even if it means increasing costs or simplifying certain quality control links. In contrast, in high-tech product R&D projects, where quality is the core goal, managers may need to invest more time and resources to ensure high performance of the product. This priority setting directly affects the trade-off between cost, time and quality of project managers, and determines the allocation and management strategy of project resources.

The second point is to optimize the allocation of resources, input efficiency and cost control. In recent years, many projects have successfully achieved the goals of cost control and time reduction by optimizing processes, introducing new technologies and improving team efficiency. Taking the construction industry as an example, the introduction of building information modeling (BIM) technology provides a powerful tool for project managers. In the design phase, BIM technology can achieve accurate simulation and analysis of the Whole Life-Cycle (WLC) of the project, helping managers to predict the potential cost overruns and time delay risks in advance, so as to carry out accurate resource planning and allocation at the beginning of the project. In addition, reasonable quality control measures can not only ensure the quality of the project, but also effectively reduce costs. For example, Value Engineering analysis (VE) identifies unnecessary functions and costs in a project through systematic functional analysis, so as to optimize the allocation of resources without reducing the quality of the project. This approach not only reduces waste, but also improves the overall efficiency of the project, ensuring that the project is delivered on time and within budget, while meeting quality standards.

Thirdly, project managers are required to accurately identify and properly manage the risks that are closely related to cost, time and quality in the decision-making process. The importance of planning and dealing with potential risks in advance is self-evident. For example, building a risk early warning mechanism enables project managers to detect risks that may cause time delays in advance and take measures to deal with them quickly, effectively avoiding additional costs caused by delays. Similarly, implementing quality control measures can significantly reduce rework and additional costs caused by quality problems. In construction projects, regular quality inspection and testing can detect and correct problems in time to ensure that the quality of the project is up to standard. However, the above measures mostly focus on the avoidance of explicit risks. For emerging industries, the analysis of hidden risks is as critical as the response, which often requires the support of more empirical research to deeply analyze the potential uncertainties and their impact on the project.

3. The direction of empirical research based on the Iron triangle of projects

Based on the theoretical analysis of the influence mechanism of project manager's decision on project success, this study proposes three key paths that project manager's decision affects project success through setting project goal priority, optimizing resource allocation, and accurately identifying and managing risks. However, these theoretical inferences need to be verified by empirical studies. The following is a discussion of the empirical research directions for these three critical paths, aiming to provide clear directions and methods for subsequent research.

In the empirical research direction of setting project goal priority, the research question focuses on how project managers set priorities for cost, time and quality according to the project nature and objectives, and the extent to which such priority setting affects project success. To this end, the research methods will cover questionnaires and interviews, case studies and statistical analysis. Specifically, design for the project managers of the questionnaire, collect the set goals in different project type priority decision basis and actual operation situation, combined with in-depth interviews at the same time, insight into the project managers in setting priorities facing the challenges and the key factors in the process of decision-making. In addition, typical projects in different industries, such as emergency relief projects and high-tech product research and development projects, were selected to verify the direct impact of priority setting on project success by comparing the project implementation process and final results under different priority setting through case analysis. On this basis, quantitative data

of several projects are collected, including project target priority setting, project cost, time schedule and quality indicators, etc. Statistical methods such as multiple regression analysis are used to quantify the relationship between priority setting and project success, in order to provide more targeted decision-making reference for project management practice.

However, in the empirical research direction of optimizing resource allocation, the research question focuses on how project managers achieve cost control, time reduction and quality improvement through optimizing resource allocation, and the degree of impact of this optimization on project success. To this end, the research methods include technical tool application analysis, value engineering analysis (VE) empirical research and multi-case study. Specifically, taking building information modeling (BIM) technology as an example, through questionnaire survey and field research, the change of resource allocation of project managers before and after the application of BIM technology, as well as the specific impact on project cost, time and quality were collected. At the same time, an experimental or quasi-experimental study is designed, and a number of projects are selected for comparative analysis. Some projects apply VE method to optimize resources, while the other part maintains the traditional allocation method. The cost, time and quality indicators of the two groups of projects are compared to verify the effectiveness of VE method. In addition, a number of projects in different industries (such as construction, software development, manufacturing, etc.) were selected to analyze the differences in resource allocation strategies of project managers and their different impacts on project success through multi-case study method, and then the resource allocation optimization mode suitable for different industries was summarized.

In the empirical research direction of accurately identifying and managing risks, the research question focuses on how project managers identify risks closely related to cost, time and quality, and improve the success rate of projects through effective measures. The research methods include: first, the empirical research on the risk early warning mechanism, collecting the practice of project managers in the construction of early warning mechanism through questionnaire survey, including the indicator setting, the timeliness of risk identification and the effectiveness of countermeasures, and using statistical analysis to verify its preventive effect on project delay and cost overruns; The second is industry-specific risk analysis. Taking emerging industries (such as artificial intelligence and new energy) as examples, the hidden risk factors are sorted out through literature review and expert interviews, and the decision-making process and effect of managers' response to hidden risks are analyzed based on actual cases. The third is the comparative study of risk management strategies. A number of projects are selected to compare the performance of active and passive risk management strategies in terms of cost, time and quality, and quantify their contribution to the success of the project.

4. Concluding Remarks

Through theoretical analysis, this study explores the mechanism of project manager's decision to influence project success, and points out that it affects project cost, time and quality through three critical paths: setting goal priority, optimizing resource allocation and accurately managing risk. This study emphasizes that project managers' decisions not only depend on professional knowledge and experience, but also are significantly affected by organizational culture, team collaboration and external environment. Future research can further deepen the empirical research by combining the characteristics of the industry, the application of emerging technologies and the influence of organizational culture, and provide more targeted guidance for project management practice. It is hoped that this study can provide useful reference for the theory and practice of project management, help project managers improve the quality of decision-making, and promote the sustainable development of project management field.

References

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