

The study on the impact of informatization management in engineering cost on corporate cost control

Danfan Ye*

Nanchang County Urban Public Utility Construction Investment Co., Ltd., Nanchang, 330200, China

*Corresponding author: 13755796348@163.com

Abstract: With the rapid development of the global economy and intensified market competition, informatization management in engineering cost plays an increasingly important role in corporate cost control. This paper aims to explore the impact of informatization management on corporate cost control by analyzing its theoretical foundations, development process, and main technologies and tools, and to clarify how informatization management improves the efficiency and effectiveness of cost control. The study shows that informatization management, through real-time data updates, dynamic monitoring, and cross-departmental collaboration, can significantly enhance the transparency and scientific nature of project management, providing strong support for enterprises to maintain a competitive advantage in a fiercely competitive market environment. Enterprises based on informatization management demonstrate greater flexibility and accuracy in cost forecasting, budgeting, and monitoring and evaluation, laying a solid foundation for achieving sustainable development.

Keywords: Engineering cost informatization management, corporate cost control, information technology, data analysis, sustainable development

Introduction

In the context of deepening economic globalization and informatization, enterprises face increasingly complex market environments and competitive pressures. Traditional cost control methods are no longer sufficient to meet the demand for efficient management. Therefore, studying the relevant aspects of engineering cost informatization management has significant practical and theoretical value. This study aims to explore the application of informatization management in cost control and analyze its important role in improving management efficiency, reducing costs, and optimizing resource allocation. By discussing the practical application of informatization management in enterprises, this research seeks to provide theoretical support for promoting the scientification and systematization of engineering cost management, and to offer a reference for enterprises in achieving sustainable development amid growing market competition.

1. The Theoretical Foundation of Engineering Cost Informatization Management

1.1 Definition and Connotation of Engineering Cost Informatization Management

Engineering cost informatization management refers to the comprehensive and systematic management and control of engineering costs using information technology throughout the entire lifecycle of a construction project. This management model not only covers the forecasting, preparation, and control of project costs but also involves the collection, analysis, and application of cost information. Its purpose is to improve the economic benefits and decision-making quality of engineering projects through efficient information processing and management. The core of informatization management lies in enhancing management efficiency and accuracy, which in turn promotes the realization of scientific and rational decision-making. The application of information technology enables real-time data updates and dynamic monitoring, allowing project managers to respond quickly in a rapidly changing market environment, reducing decision risks caused by information delays, and ensuring the controllability and transparency of project costs.

Furthermore, engineering cost informatization management emphasizes monitoring and evaluating

the entire cost process, covering cost factors in all stages such as design, construction, and project acceptance. This comprehensive monitoring system ensures meticulous management at each stage, effectively identifying and preventing potential cost risks. By establishing standardized data collection and analysis processes, informatization management promotes cross-departmental collaboration and information sharing, enhancing the integration and utilization of cost information. In conclusion, engineering cost informatization management is not only an upgrade of traditional management methods but also an inevitable choice to cope with complex market environments and industry competition, driving sustainable development in the construction industry^[1].

1.2 Development History of Engineering Cost Informatization Management

The development of engineering cost informatization management can be divided into several important stages. Initially, cost management mainly relied on manual records and simple calculation tools. This traditional approach was not only inefficient but also prone to human error, leading to inaccurate cost estimation and control. With the rapid development of computer technology, from the late 1980s to the early 1990s, engineering cost management gradually introduced information technology tools such as spreadsheets and databases. This shift significantly improved the speed and accuracy of information processing, facilitating the transition of cost management from manual operations to computer-aided management.

Entering the 21st century, with the rapid spread of internet technology, engineering cost informatization management entered a new stage of development. Modern informatization management not only realizes real-time information sharing but also promotes cross-departmental collaboration, further advancing intelligent decision-making. During this stage, the integration of informatization systems and data interoperability significantly improved, enabling project managers to coordinate resources more efficiently, enhancing the overall efficiency and accuracy of project management. In recent years, with the widespread application of emerging technologies such as big data, artificial intelligence, and cloud computing, engineering cost informatization management has undergone a comprehensive upgrade. The incorporation of these technologies has made the management model more scientific and systematic, providing strong technical support for improving decision-making capabilities in engineering cost management. At the same time, the enhanced data analysis capability allows enterprises to conduct in-depth cost analysis and forecasting based on massive data, thereby optimizing resource allocation, reducing operating costs, and further driving innovation in the industry^[2].

1.3 Main Technologies and Tools in Engineering Cost Informatization Management

The main technologies relied upon in engineering cost informatization management include Building Information Modeling (BIM), project management software, cloud computing platforms, and big data analysis tools. BIM technology integrates and coordinates information during the design, construction, and operation phases through three-dimensional digital modeling of buildings, significantly enhancing the accuracy and efficiency of cost management. This modeled management approach allows all participants to collaborate on the same platform, reducing errors and delays in information transfer. Additionally, project management software provides comprehensive functions for managing project schedules, costs, and quality, enabling managers to monitor all project stages in real time and effectively prevent and control cost risks.

The introduction of cloud computing platforms facilitates the storage, sharing, and backup of information, supporting remote collaboration and information exchange among team members, thus improving overall work efficiency. Meanwhile, big data analysis tools help managers identify potential risks in cost control through in-depth mining and analysis of large datasets, providing data-driven decision-making support. The integrated application of these technologies and tools not only achieves meticulous management of the entire engineering project process but also provides strong support for enterprise cost control, thus driving continuous development and innovation in a highly competitive environment. Through systematic informatization management, enterprises can maintain a competitive edge in a dynamically changing market and achieve sustainable development goals.

2. Current Status and Challenges of Corporate Cost Control

2.1 Basic Concept of Corporate Cost Control

Corporate cost control refers to the effective monitoring and regulation of various costs in the production and operation processes of a company through the application of scientific management methods and advanced technological means, with the goal of reducing costs and improving efficiency. This management process not only focuses on reducing direct costs, such as controlling raw material and labor costs, but also emphasizes the rational management of indirect costs, such as administrative expenses and operating costs, thereby ensuring the optimal allocation of resources. The core objective of cost control is to ensure that the company maintains a competitive edge in a highly competitive market and achieves sustainable development.

The effectiveness of cost control directly impacts the company's profitability and market competitiveness. Therefore, companies must establish a sound cost control system. This system should include budget management, cost accounting, performance evaluation, and feedback mechanisms to ensure the implementation and execution of cost control measures. Budget management sets reasonable cost standards for the company through scientific forecasting and planning; cost accounting provides detailed cost data to support the scientific and rational decision-making process; performance evaluation helps identify issues in cost control and provides a basis for improvement measures. Additionally, the successful implementation of cost control depends on real-time data analysis and decision support, ensuring that companies can flexibly adjust strategies in a complex and ever-changing market environment. This comprehensive management approach not only improves the company's operational efficiency but also enhances its ability to respond to market fluctuations, laying a solid foundation for the company's long-term development^[3].

2.2 Main Models of Corporate Cost Control

Currently, companies mainly adopt the following cost control models: the traditional cost control model, Activity-Based Costing (ABC), and target costing. The traditional cost control model typically relies on historical data and budget management. It achieves cost control by setting cost control indicators and monitoring the variance between actual expenses and budgeted costs. This model is effective in a stable economic environment but less adaptable in a rapidly changing market environment.

Activity-Based Costing (ABC) is a cost management method based on activities, which emphasizes the identification and analysis of various activities and the rational allocation of indirect costs, providing more accurate cost information. This method allows companies to better understand their cost structure, optimize resource allocation, and thus improve profitability.

Target costing, on the other hand, sets a target cost for products or services based on market competition and customer demand, then works backward to develop corresponding cost control measures. This model emphasizes the forward-looking and market-oriented nature of cost control and can effectively enhance a company's market adaptability. Combined with informatization management methods, these cost control models provide companies with diverse options in a dynamic environment, enabling them to adjust flexibly according to actual circumstances.

2.3 Challenges and Issues Faced by Enterprises in Cost Control

In the process of implementing cost control, companies face numerous challenges and issues. First, the rapid changes and uncertainties in the market environment make it more difficult to forecast and plan cost control. Companies often struggle to accurately grasp market trends, resulting in cost control strategies that lack relevance and effectiveness.

Second, traditional cost control methods rely heavily on experience and subjective judgment, leading to information asymmetry and decision-making errors. Additionally, the lack of efficient information systems and real-time data support makes it difficult for companies to make accurate decisions when facing complex cost structures.

Moreover, companies may also have deficiencies in organizational structure and management processes, lacking cross-departmental collaboration and information-sharing mechanisms, which leads to poor implementation of cost control measures. Furthermore, insufficient cost awareness and

participation among employees is another significant challenge faced by companies. Employees often lack initiative in cost control, which negatively impacts overall execution.

3. Application Path of Information Management in Cost Control

3.1 Mechanism for Improving Cost Control Efficiency through Information Management

3.1.1 Construction of Integrated Information Systems

Information management significantly enhances the efficiency and effectiveness of corporate cost control by integrating advanced technological methods and modern management concepts. The core mechanism lies in the construction of a comprehensive information system that integrates various data resources, enabling the rapid flow and sharing of information. This system fully utilizes information technologies such as big data analysis, cloud computing, and artificial intelligence to monitor and analyze cost data in real-time. This process not only accelerates data processing speed and improves data accuracy, but also provides management with scientific decision-making support in a rapidly changing market environment, significantly reducing decision-making risks and cost losses caused by information delays^[4].

3.1.2 Optimizing Processes and Reducing Human Impact

Information management reduces the impact of human factors on cost control by optimizing business processes and standardizing operations. The application of intelligent tools and software makes the cost control process more transparent, allowing relevant personnel to track and provide feedback on project cost statuses in real time, and to promptly identify and correct potential cost deviations. This real-time monitoring mechanism not only enhances response speed but also strengthens the company's overall control over the cost control process, ensuring the effective implementation of measures. Additionally, information management promotes data integration and cross-departmental collaboration, enabling different functional departments to communicate efficiently and work together, thereby achieving information sharing and resource optimization.

3.1.3 Establishment of Intelligent Decision Support Systems

Information management also drives companies toward intelligent data analysis and decision support by establishing intelligent decision support systems, making data-driven decision-making possible. This system integrates historical and real-time data, utilizing advanced analytical techniques and machine learning models to help management make more accurate cost forecasts and budget formulations. Meanwhile, the real-time monitoring and feedback mechanisms allow companies to dynamically adjust cost control strategies and quickly respond to market changes, adapting to the ever-changing economic environment^[5].

3.1.4 Visual Reporting and Comprehensive Cost Control

Moreover, information management provides companies with a comprehensive perspective on cost control by establishing visual reports and analytical dashboards, allowing managers at all levels to intuitively understand the cost structure and control outcomes, thus formulating more scientifically-based management strategies. This highly integrated information management model effectively enhances the company's cost management level and operational efficiency, enabling it to maintain a sustainable competitive advantage in a fiercely competitive market. Therefore, information management is not only an effective tool for cost control but also an important driver of innovation and development for enterprises.

3.2 Application of Information Management in Cost Forecasting and Budgeting

3.2.1 Scientific Decision-Making and Accurate Budgeting

In the field of cost forecasting and budgeting, information management has become a key tool for companies to achieve scientific decision-making and efficient resource allocation. By utilizing modern information technology, companies can deeply analyze historical cost data and apply advanced data mining and forecasting models to accurately identify future cost trends. This data-driven decision-making approach not only replaces traditional experiential forecasting but also significantly improves the scientificity and accuracy of budgeting, enabling companies to more effectively cope with market uncertainties and fluctuations.

3.2.2 Dynamic Monitoring and Cross-Departmental Collaboration

Information management integrates project management software to link budget preparation with project progress in real time, enhancing the flexibility of budget adjustment and optimization. Companies can dynamically compare budget data with actual expenditures, promptly identifying and adjusting project budgets to ensure effective cost control. This real-time monitoring mechanism enables managers to quickly respond to market changes, optimize cash flows, and improve resource utilization efficiency. Furthermore, the establishment of information platforms promotes cross-departmental collaboration, allowing departments to communicate and coordinate fully during budget preparation, leading to more comprehensive and accurate budget plans. This integrated management approach not only improves budget execution efficiency but also provides a clearer financial perspective for companies, realizing information transparency and sharing.

3.2.3 Data Visualization and Standardized Processes

By introducing data visualization tools, management can more intuitively analyze budget execution, identify key performance indicators (KPIs), and make timely strategic adjustments. These visualization tools help management quickly gain insights into financial conditions, identify potential financial risks, and provide important references for future financial planning. Meanwhile, information management drives the standardization of the budgeting process, reducing the possibility of human error and improving the compliance and accuracy of budget execution. Establishing a data-driven decision-making framework enables companies to steadily advance cost control and resource optimization in a rapidly changing market environment, achieving sustainable development goals. The innovative application of information management lays a solid foundation for the long-term development of companies, ensuring flexibility and adaptability amid economic fluctuations^[6].

3.3 Support of Information Management for Cost Monitoring and Evaluation

Information management provides strong support for cost monitoring and evaluation, establishing an efficient and accurate management system. By building a comprehensive cost management information system, companies can collect, organize, and analyze various cost data in real-time, forming a comprehensive cost monitoring framework. This system not only covers the monitoring of direct costs, such as tracking raw material and labor costs, but also includes the effective management of indirect costs, such as administrative expenses and operating expenditures, ensuring that cost control is conducted systematically at all levels of the company, thus improving the refinement of management processes.

In terms of cost evaluation, information management provides advanced data visualization tools that make cost reports and analysis results more intuitive and understandable, helping management quickly identify potential cost issues. This intuitive presentation of data makes complex information easier to comprehend, supporting quick responses from management. Companies can set reasonable cost evaluation indicators and regularly assess and provide feedback on cost control effectiveness, ensuring continuous optimization of management processes. This data-driven evaluation mechanism not only encourages companies to engage in deep reflection and improvement during cost control but also promotes the scientific and systematic nature of management decisions. Furthermore, the implementation of information management enables companies to adjust cost control strategies flexibly based on evaluation results, thus maintaining competitiveness and sustainable development in a dynamic market environment. By analyzing and applying real-time data, companies can more effectively predict future cost changes, optimize resource allocation, and ultimately achieve efficient cost control and financial stability.

Conclusion

The informatization management of engineering costs plays a key role in corporate cost control, significantly improving the efficiency and accuracy of cost management, and providing strong technical support for companies in complex and dynamic market environments. Through real-time data updates, dynamic monitoring, and cross-departmental collaboration, informatization management enables companies to operate efficiently in a rapidly changing market, reduce decision-making risks, and ensure the controllability and transparency of project costs. With the continuous advancement of emerging technologies such as big data, artificial intelligence, and cloud computing, informatization management of engineering costs will usher in deeper innovations. The integration of these

technologies not only enhances data processing capabilities but also enables companies to conduct more refined cost analysis and budget forecasting, driving the intelligence of management decisions.

Therefore, when implementing informatization management, companies should actively explore innovative management models, establish sound information-sharing mechanisms, and promote cross-departmental collaboration to maximize the potential of informatization management. Additionally, cultivating employees' cost awareness and involvement will help effectively implement cost control measures. Future research can further focus on the application differences and best practices of informatization management across different types of companies, providing more targeted solutions for the industry and promoting continuous innovation and progress in the field of engineering cost management. Through a comprehensive informatization management approach, companies can not only maintain an advantage in intense market competition but also lay a solid foundation for achieving sustainable development goals.

References

- [1] Feng, Y. Y. (2024). "The Application of Information Technology in Engineering Cost Management under the Background of 'Internet Plus'." *China Construction Informatization*, (12), 78-81.
- [2] Li, S. S. (2024). "Enhancing Cost Control and Integrating Informatization to Improve the Competitiveness of Power Construction Enterprises." *China Business World*, (10), 122-123.
- [3] Li, N. (2024). "Analysis of Full-Process Cost Control and Management in Construction Enterprises." *Township Enterprise Journal*, (07), 126-128.
- [4] Gong, W. S. (2023). "A Discussion on the Informatization of Engineering Cost Management." *Intelligent Buildings and Smart Cities*, (11), 96-98.
- [5] Wang, W. M. (2023). "A Brief Discussion on the Informatization of Engineering Cost Management." *Construction and Budget*, (02), 37-39.
- [6] Shi, W. W. (2021). "Informatization Construction of Engineering Cost Management." *Economic Research Guide*, (15), 78-80.