

Common Problems and Countermeasures in Intelligent Building Project Management

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Abstract: With The Deep Integration of Information Technology and Automation Technology, Intelligent building engineering project management has become the core driving force of the deep integration of informatization and automation in the modern building industry. In the actual project management process, intelligent construction project management are faced with difficulties in technology integration and integration application, and problems in system formulation and management. Through literature review, case analysis and expert interview, the key issues in the management of intelligent building projects are clarified. By optimizing the project management process, introducing advanced management mode and strengthening team cooperation, and building the corresponding management framework, the efficiency and quality of intelligent building projects can be significantly improved. This study is of great significance for the healthy development of intelligent building engineering projects and the promotion of the transformation and upgrading of the construction industry, and may have a far-reaching impact on the future intelligent building engineering management to achieve more refined project management and resource allocation, and the improvement of the efficiency and level of engineering management.

Keywords: Intelligent Building; Engineering Management; Big Data; Internet of Things; Standardized Management

1. Introduction

The construction industry faces more and more

challenges because of accelerated urbanization and increasing demands for the quality of life. According to a survey, foreign countries focus on energy conservation, environmental protection, and the integration of smart cities in smart building projects, while China has shown outstanding performance in market size and technological innovation speed, but lacks research in smart building project management [1]. The traditional building management mode has been unable to meet the needs of modern buildings, and as an emerging building management mode, the intelligent building engineering project has huge potential and obvious advantages [2,3]. Therefore, it has practical significance for the research of intelligent construction engineering projects, and also has a very important application value. The research will also put forward corresponding solutions to the problems existing in intelligent building engineering projects that aim to realize the efficient utilization and monitoring of building energy through intelligent management, and reduce energy consumption and operating costs [4]. To meet people's pursuit of a better life, to provide a more comfortable, convenient and safe living environment. Smart building engineering projects focusing on environmental protection and energy saving, using renewable energy and green building materials will contribute to the sustainable development of the construction industry [5,6].

2. Current Situation of Smart Construction Project Management

With the continuous progress of science and technology and the increasing demand for intelligence and information in the construction industry, intelligent construction project management has become an important

trend in the development of the industry. Since 2017, the contract share of domestic ordinary housing construction and municipal building design has been increasing year by year [7]. According to the national policy, the market size of smart buildings will continue to increase steadily with the growth of the number and scale of buildings. By 2021, the market size of smart building has increased from the original 109.49 billion yuan to 2.143 billion yuan, with a compound annual growth rate of 18.3% [8]. According to the survey, the domestic market size reached 278.14 billion yuan in 2023, and the global market reached 1.5 trillion US dollars. At home and abroad, consensus is reached on the development of smart buildings, and in-depth research on energy conservation, environmental protection, smart city integration, and user experience optimization to jointly promote green building and sustainable development. However, there are still many problems in the management of smart building projects. This paper will draw on the traditional project management methods to find the problems and solve the problems, and make clear the problems arising in improving the intelligent building engineering project management [9,10].

2.1 Technology Integration and Fusion Applications Are Difficult to Apply

Smart building project management integrates information technology, Internet of Things, big data, cloud computing and other advanced technologies, which themselves are highly professional and complex. To achieve the effective integration and fusion application of these technologies, an in-depth understanding of the principles, characteristics and application scenarios of each technology is needed. Smart building project management involves the knowledge of architecture, civil engineering, electronics, computer and other disciplines. There are differences in the knowledge system and thinking mode among different disciplines, which leads to the difficulty of interdisciplinary knowledge integration. It is mainly due to the technical diversity and complexity, interdisciplinary knowledge integration and other reasons. Therefore, when promoting the management of smart construction projects, it is necessary to fully consider these difficulties and challenges, and effective measures need to be taken to

solve them.

2.2 The Technical Level of Professional Managers is Not High

Intelligent construction project management of talent technical level put forward strict requirements, require employees should not only have deep knowledge of construction and project management, and to master information technology, do the intersection of knowledge and skills, not only to master information technology, and to have, however, the current ability on the market the lack of talent, industry growing demand is difficult to meet. In addition, the existing talent training and knowledge updating system is also challenged with the continuous innovation of technology and the rapid development of the industry. In the development of new technologies and new ideas, the traditional training content and training methods lack innovation and are difficult to adapt. At the same time, the speed of knowledge updating cannot simultaneously enhances the ability of talents, lagging behind the actual demand of the industry. Therefore, in the field of intelligent construction project management, how to cultivate and introduce high-quality talents with interdisciplinary knowledge and skills has become an urgent problem to be solved.

2.3 Insufficient Data Management and Application

The incompleteness of data collection in the current data management process leads to the lack of information, which is difficult to fully reflect the project status. The lack of data processing and analysis ability makes it difficult to fully explore the value of data, which restricts the accuracy of decision making. Data security risks occur frequently, and the risk of data leakage and tampering cannot be ignored, which not only affects the smooth progress of the project, but also the management personnel cannot achieve comprehensive monitoring of the project, and then cannot make scientific and accurate decisions, causing damage to the corporate reputation. These problems need to be solved urgently to improve the application value of data in smart building project management.

2.4 Problems Existing in the System

Formulation and Management

At present, the building intelligent enterprise is still the system is not perfect, the process is not standard, unclear responsibilities and other management system and process deficiencies. These problems to some extent caused the project management efficiency and engineering quality substandard. The establishment of a perfect management system and process is the cornerstone to ensure the smooth progress of the project in the field of intelligent construction project management. In the process of project management, there is often a lack of clear guidance and norms, because enterprises lack a comprehensive institutional framework, which makes it difficult for the project team to make decisions quickly in the face of various situations. It not only affects the progress of the project, but also increases the risk of the project failure. Among them, the project management efficiency is restricted by the irregular process and other important factors. Standardized process can ensure that the project is carried out in accordance with the established steps and timing, but some enterprises lack unified standards in process design, which is easy to cause confusion and deviation in the implementation process. This not only increases the difficulty of project management, but also reduces the overall quality of the project. However, the responsibility division of the enterprise is unclear, resulting in the project team members to shirk each other when facing problems, can not form an effective joint force, independent governance. It not only affects the progress of the project, but also weakens the team cohesion and combat effectiveness.

3. Countermeasures and Suggestions for Smart Construction Project Management

3.1 Deepening Technology Integration and Integration Application

Construction enterprises increase investment in technology research and development to meet the needs of current project management, and seize the opportunity in the competition. At the same time, we should actively introduce advanced intelligent construction project management technology at home and abroad to improve the ability of enterprises in technology integration and application. The

establishment of a unified technical standard and specification for intelligent building project management is the cornerstone of technology integration, which can ensure the compatibility and integration of different technologies and greatly reduce the difficulty of technology integration. This will help us to achieve technology integration more efficiently and improve the efficiency and quality of project management. However, relying on advanced technology alone is not enough to ensure the success of the project. Technical training and popularization are also crucial during the implementation of the project. Strengthening the technical training can improve the project management team's acceptance degree and the ability to use the application of new technologies, so as to effectively use the technical knowledge learned in the project management. In this way, more results can be achieved in the technical advantages of the project implementation process.

3.2 Strengthen the Construction and Training of Talent Team

Training and introduction of management talents for intelligent construction engineering is the key to the development of the industry, so adopting cooperation in various ways is the key element to achieve this goal. Specifically, it actively adopts the method of school-enterprise combination to provide all-round learning opportunities for project management teams and growth, so that they can have professional skills and knowledge recognized by the industry on the basis of the combination of theory and practice, and have stronger competitiveness in project management. In addition, the training and certification mechanism has also played a very good effect. It enables team members to learn from each other and solve problems together in communication and collaboration to ensure the smooth implementation of the project. In the personal growth and career planning to give them a broad space for self-mining and development. Finally, we will focus on stimulating their creativity and innovative spirit to improve the comprehensive quality of the whole team.

3.3 Optimize Data Management and Efficient Application

Provide solid data support for project management, establish a sound data collection and integration mechanism, give full play to the value of data, and ensure the accuracy and integrity of project data. Ensure that each data point is strictly reviewed and the data quality is ensured through a refined data acquisition process. On the basis of data acquisition, to further strengthen the construction of data processing and analysis ability, with the help of big data, artificial intelligence, fast and accurate processing and analysis of massive amounts of data, provide accurate decision support for project management, but also provides the project management accurate through data analysis, insight into every detail of the progress of the project, find potential problems and take corresponding measures, timely solve every detail in the progress of the project. These measures will provide more accurate and more comprehensive project data support for the project to achieve more efficient and accurate decision-making.

3.4 Standardized Management System and Process Specification

Establish the scientific and standardized management system and process. The responsibilities and rights of all parties in the project are clarified to ensure the orderly progress of all work, and provide a solid institutional guarantee for the project management. By improving the system, promote the scientific and standardized project management, aiming to create a fair, transparent and efficient project management environment. At the same time, the project management process is continuously optimized to realize the standardization and automation process. By streamlining the process, reducing redundant links, with the help of advanced information technology, reduce the risk and error of human operation, realize the automatic process management, so as to improve the efficiency of project management and reduce the waste of resources. Optimize, standardized process, make the project management more standardized, more efficient, more reliable. In the project supervision and assessment, through the establishment of a perfect supervision mechanism, to ensure that the project is promoted according to the plan,

the deviation is found and corrected in time, to ensure that the project quality and progress are both correct and promoted. At the same time, strengthen the assessment of the project, comprehensively and objectively evaluate the progress, effect and impact of the project, to provide scientific basis for decision-making, adjustment of the project, to good the project audit, audit. Through strengthening supervision and assessment, to ensure the successful completion of the expected goals, and to lay a solid foundation for the smooth implementation of the smart building project. Through the analysis of early found problems, using the method of literature analysis, interview, in intelligent building project need to clear project objectives, budget, form a project team composed of multidisciplinary experts, including architects, engineers, IT experts, etc., and identify potential risks, risk mitigation and response plan, establish a set of reasonable intelligent building project management framework (Figure 1.).

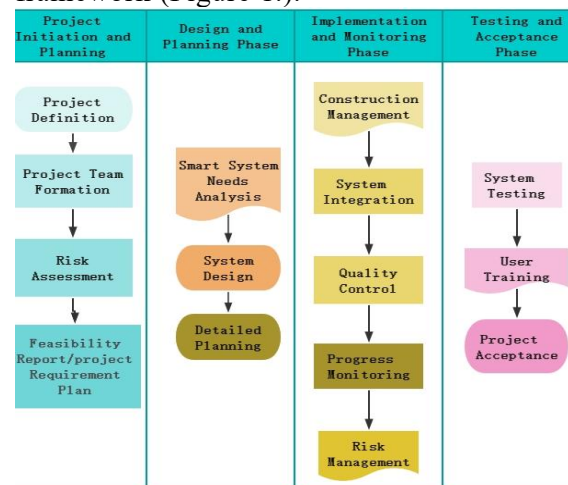


Figure 1. Smart Building Engineering Project Management Framework

4. Conclusion

After an in-depth discussion on the system improvement and standardization of intelligent building project management, this research has laid a solid foundation for the successful implementation of the project. Through the analysis of the current situation of intelligent building project management, a scientific and standardized management system and process are established, the responsibilities and rights of all parties in the project are defined, and the

project management process is optimized, so as to significantly improve the efficiency and quality of project implementation, and provide a key guarantee for the smooth implementation of intelligent construction project. There are also some shortcomings in this study. Despite emphasizing the importance of technology, data security and system specification, it may still face challenges such as rapid technology update and increasing data security threats in the specific implementation. The establishment of a standardized management system needs time and the investment of resources, which may be difficult for some projects with limited resources. Looking forward to the future, managers in intelligent building project management need to continuously pay attention to the development trend of technology, constantly update and improve the project management system, and ensure the advanced nature and applicability of technology. Promote the standardized management system and improve the efficiency and quality of project management. Strengthen the cooperation and exchanges between the industries, jointly promote the development of intelligent building project management, form industry standards and norms, and provide strong support for the healthy development of the industry.

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