

Discussion on the Innovation of Construction Engineering Management Skills

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Abstract: With the development of society, the level of construction engineering construction has been further improved, and in this process, the daily management of construction projects has become more and more important. In order to adapt to the characteristics and requirements of modern engineering project management, the engineering project management mode must be innovative, must expand their market share, seize every opportunity, must win the market by quality through technological innovation; to provide products and services to the owners, and constantly expand the market share, to obtain a healthy development.

Keywords: Construction engineering; Engineering management; Skill innovation

Introduction

Construction engineering management staff should pay attention to improve the management level, to constantly pursue innovation, realize innovation in order to promote development. For construction project management, good skill innovation requires managers to understand the current market situation, and combined with previous management experience and market development requirements for construction project management, good skill innovation. Construction project management skills innovation will encounter corresponding problems and obstacles, the relevant personnel must pay attention to, and constantly management practice.

1 The Importance of Construction Engineering Management Skills Innovation

Construction engineering management skills

innovation is of great significance for improving the development level of the construction industry and realizing sustainable development. The following will discuss the importance of construction project management skills innovation from the aspects of improving project quality, promoting construction efficiency, reducing costs and coping with market competition. Construction project management skills innovation can improve project quality. By introducing advanced management concepts and methods, such as lean construction and quality control, it can strengthen project quality management, reduce the occurrence of defects and accidents, and improve construction quality and reliability. Skill innovation can also promote the digitization and informatization of the construction process, realize the monitoring and management of the whole process, and improve the visualization and transparency of construction quality.



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Construction project management skills innovation can promote the improvement of construction efficiency. Through the introduction of advanced technology and management tools, such as BIM technology and agile management, the construction process can be optimized, the efficiency of resource allocation can be improved, and the duration and cost can be reduced. Innovative management methods and tools can help project teams work better together, accelerate decision-making speed and problem-solving ability, and improve construction efficiency. Construction project management skills innovation can reduce construction costs. Through refined management and optimal allocation of resources, waste and unnecessary expenses can be reduced, lowering construction costs. Skill innovation can also promote the optimization and integration of the supply chain, reducing material procurement costs and transportation costs. Through innovative management skills, companies can adapt to market changes more quickly, provide customized solutions that meet customer needs, and can better meet emerging requirements such as green and sustainable development to enhance their market competitiveness. It can improve project quality, promote construction efficiency, reduce costs, cope with market competition, and promote the development of the construction industry in the direction of sustainability, efficiency, and innovation. Therefore, all parties should strengthen skills training and knowledge updating, encourage innovative thinking and practice, and jointly promote the innovation and progress of construction project management skills.^[1]

2 Current Construction Project Management Skills

2.1 Project Management Skills

The current construction project management skills, project management ability is a crucial one. Project management skills cover all stages of planning, organizing, implementing and controlling a project to ensure that the project is completed on time, in quality and at cost. Before a project begins, a detailed project plan is required, including a time plan, a resource plan, and a cost plan. The project manager needs to have the ability to reasonably arrange and schedule all aspects of the project to ensure that the project schedule is reasonable and feasible. The project manager needs

to reasonably organize the project team according to the project characteristics and needs, and clarify the roles and responsibilities of the members. Good communication skills can facilitate the transfer and exchange of information, solve problems and conflicts, and ensure consensus and understanding of project goals. Construction projects are full of various potential risks, such as technical problems, supply chain delays, and natural disasters. Project managers need to have the ability to identify, assess and respond to risks and develop appropriate preventive and contingency measures to minimize the impact of risks on the project. The project manager needs to continuously track and evaluate the progress, quality, cost and resources of the project through effective monitoring and control means. Timely detection of problems and take appropriate corrective measures to ensure that the project is carried out according to plan and meets the expected goals. Project Managers need to have competencies in project planning, organization, communication, risk management, and monitoring and control to ensure the smooth running and successful delivery of projects. The enhancement of these competencies will further promote the improvement of construction project management and the sustainable development of the industry.

2.2 Leadership and Communication Skills

Leadership and communication skills are two crucial aspects of current construction project management skills. Leadership plays a key role in construction project management. Leaders need to have a clear vision and goals and be able to motivate and energize their team members. They should be able to develop and communicate a clear work plan that guides team members toward a common goal. Leaders also need to have the ability to make decisions, as well as the flexibility to respond to change and the skills to innovate and solve problems. Through effective leadership, construction projects can achieve efficient teamwork and improve overall performance. Communication skills are also essential in construction project management. Construction projects involve multiple participants, including owners, designers, and construction teams. In addition to communication with project participants, communication in construction project management also includes communication within the team. Project managers need to maintain

close contact with team members and communicate project progress and important information in a timely manner. They should be able to motivate team members, provide support and feedback, and help solve problems and obstacles. Effective intra-team communication enhances team cohesion and productivity. Leaders drive project success by leading their teams to achieve goals, make decisions, and respond to changes. At the same time, good communication skills help build good relationships with project participants and promote coordination and collaboration among teams. By continuously improving their leadership and communication skills, construction project managers can better meet challenges, drive projects forward and contribute to the sustainable development of the industry.

2.3 Technical Application Ability

In the current construction project management, technology application ability is a crucial one. With the continuous progress and innovation of science and technology, a variety of new technologies are widely used in construction project management, providing more efficient, accurate and reliable means for project planning, design, construction and monitoring. BIM technology can realize the integrated management of the whole building life cycle through digital modeling, collaborative design and information sharing. Project teams can collaborate with multiple parties in a virtual environment to optimize the design and construction process, improve resource utilization efficiency, and minimize errors and conflicts during the design and construction phases. Drones can perform overhead photography and surveying to quickly acquire images and data from project sites to support engineering planning, design and supervision. Drones can also conduct safety inspections to check construction quality and progress, and identify problems and risks in a timely manner to improve the safety and monitoring of the construction process. Through sensors and network connections, IoT can realize remote monitoring and management of building facilities and equipment, and improve equipment operation efficiency and energy conservation. IoT can also realize automated control of intelligent buildings, such as intelligent management of lighting, air conditioning, security and other systems. By collecting and analyzing a large amount of building data, it can provide forecasting and decision-

making support to optimize resource allocation and construction plans. Artificial intelligence technology can also be applied to quality control, safety monitoring and risk assessment to improve the accuracy and efficiency of project management. Construction professionals need to continuously learn and master emerging technologies, such as BIM, drones, IoT, big data analytics and AI, to better adapt and apply them in practice. Through the effective application of technology, construction project management can achieve more efficient, accurate and reliable project management and promote the sustainable development of the construction industry.^[2]

3 Suggestions for Promoting Innovation in Construction Engineering Management Skills

3.1 Participate in Professional Training and Learning

An important recommendation for promoting innovation in construction project management skills is to actively participate in professional training and learning. With the continuous development and changes in the construction industry, new technologies, new ideas and new methods are emerging. By participating in professional training and learning, construction project managers can continuously update their knowledge and skills and improve their competitiveness and adaptability. Construction project managers can participate in relevant training courses and seminars. These training courses are usually organized by professional institutes, universities or research institutes and cover various aspects of construction project management, such as project management, leadership, communication skills and so on. By attending these trainings, they can acquire the latest industry information and best practices, master advanced management tools and techniques, develop their mindset and enhance their work efficiency. Construction managers can participate in professional communities or industry organizations. These communities and organizations provide a platform for communication and learning for construction engineering managers. By participating in discussions and sharing experiences and ideas, they can learn from the practices of others and draw on their lessons learned. Participation in professional

communities can also expand networks and meet more industry professionals, fostering collaboration and mutual development. Construction engineering managers can also utilize online learning resources to enhance their skills. There are a large number of online learning platforms and educational websites on the Internet that offer a variety of courses and training related to construction project management, such as project management and BIM technology. Through flexible learning methods, you can study anytime and anywhere and make a learning plan according to your needs. Through continuous learning and updating, construction engineering management personnel can keep up with the development trend of the industry, master new technologies and methods, and improve their professionalism and competitiveness. This will enable them to better adapt to changes and promote the innovation and sustainable development of construction engineering management.^[3]

3.2 Promote the Application of Information Technology

An important suggestion to promote the innovation of construction engineering management skills is to promote the application of information technology. The rapid development of information technology provides many new opportunities and solutions for construction project management. It is recommended that construction project managers actively adopt Building Information Modeling (BIM) technology. BIM technology can integrate design, construction, and operational information of a building project in a digital environment and enable multi-party collaboration and information sharing. Through BIM technology, the design quality, construction efficiency and post-operation management of a project can be improved. Construction project managers should actively learn and master BIM technology, use its advantages to optimize the project management process, and communicate and collaborate effectively with relevant participants. Construction engineering managers promote the application of Internet of Things (IoT) technology. IoT technology can connect sensors, devices and systems to realize remote monitoring and management of building facilities and equipment. Through IoT technology, building project managers can monitor equipment operation, energy savings and safety risks in real time, improving equipment

operation efficiency and building sustainability. In addition, IoT technology can automate the control of smart buildings to provide a more comfortable, safe and sustainable indoor environment. Construction project managers focus on the application of big data analytics and artificial intelligence technologies. By collecting and analyzing large amounts of building data, valuable insights and predictions can be obtained to help decision makers make more accurate decisions. Meanwhile, AI technologies can be applied to automated and intelligent tasks such as quality control, safety monitoring and risk assessment. Construction project managers should learn and apply these technologies to improve efficiency and decision-making. By adopting BIM technology, promoting IoT applications and utilizing big data analysis and AI technology, construction project managers can improve the efficiency and quality of project management and achieve smarter, sustainable construction project management.

3.3 Enhance Collaboration and Teamwork Skills

A key recommendation for promoting innovation in construction project management skills is to strengthen collaboration and teamwork capabilities. In today's complex and ever-changing construction projects, effective collaboration and teamwork are key factors in achieving project success. Good communication is the foundation of collaboration and teamwork. Construction project managers should be able to express their ideas and intentions clearly, as well as listen well to the perspectives and needs of others. Through effective communication, misunderstandings and conflicts can be reduced and collaboration and teamwork can be facilitated. Team awareness refers to the realization that one is a member of a team and is willing to work hard for the team's common goals. Construction project managers should encourage team members to support and collaborate with each other to form an efficient working atmosphere. Through teamwork, the advantages of each team member can be brought into full play to achieve synergy and optimization of work. In the course of the project, it is inevitable to encounter various problems and conflicts. Construction project managers should have the ability to solve problems, analyze them, propose solutions and promote their implementation. In addition, they should have the skills to handle conflicts effectively,

including understanding the interests of all parties, seeking compromises and motivating team members. As team leaders, construction managers need to be able to motivate and coach team members to face challenges and achieve goals. Leadership skills include goal setting, decision making, team motivation and decision implementation, etc. By improving leadership skills, collaboration and teamwork can be better promoted.

3.4 Focus on the Cultivation of Innovative Thinking and Problem Solving Skills

An important suggestion for promoting innovation in construction project management skills is to focus on the cultivation of innovative thinking and problem solving ability. In the fast-changing construction industry, which faces a variety of complex problems and challenges, only construction engineering managers with innovative thinking and problem-solving skills can cope with and promote the development of the industry. Innovative thinking refers to the way of thinking that is not confined to traditional concepts and is willing to try new methods and new ideas. Construction engineering managers can cultivate their innovative thinking by reading more books, paying attention to industry trends and participating in innovative projects. In addition, actively thinking and suggesting improvements and encouraging team members to share and implement innovative ideas are also effective ways to develop innovative thinking. Problem solving ability refers to the ability to analyze problems, find solutions, and drive implementation. Construction engineering managers can learn problem-solving methods and tools, such as the fishbone diagram and the five whys. In addition, construction engineering managers are advised to develop critical thinking and initiative, the ability to look at problems from multiple perspectives, and the courage to face challenges and improve existing methods. By collaborating with people of different professional backgrounds and experiences, new ideas and perspectives can be gained to inspire innovation. Construction engineering managers can organize team discussions, conduct interdisciplinary seminars or

participate in activities such as industry associations to promote knowledge sharing and cross-boundary cooperation, and to promote innovation and problem-solving skills. The construction industry is constantly evolving and changing, and construction engineering managers need to stay on top of their studies and pay attention to new technologies, methods and ideas. By attending training courses, seminars and continuous learning opportunities, they can update their knowledge and skills and develop innovative thinking and problem solving skills.^[4]

Conclusion

Construction companies must improve their construction management skills in order to continue to develop in the competitive market. It is necessary to improve the level of training, combine the actual situation, put forward the construction engineering construction management innovation measures, strengthen the information management innovation ability and other project management skills, improve the competitiveness of the enterprise and the management level, maximize to meet the needs of the market economy, and create conditions for the long-term stable development of the construction industry.

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