Leveraging Information Technology for Effective Communication Engineering Supervision

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Abstract: ***At this stage, China's information technology has achieved very rapid development and progress, and it has been widely used in various industries. With the continuous improvement of the requirements for communication engineering supervision, the application of information technology in the process of communication engineering supervision can significantly improve the quality of supervision. This paper makes an in-depth analysis of the practical application of information technology in the process of communication engineering supervision.***

Keywords: Information technology; Communication engineering; Engineering supervision; Application.

1. INTRODUCTION

In the construction process of communications engineering, comprehensive considerations need to be taken in accordance with the conditions of the construction environment, the technical requirements of the project and the installation of equipment. In the communication engineering construction process, information transmission is the core content, and the focus is mainly on the distribution of information transmission lines and the connectivity of node equipment. In the process of implementing communication engineering construction work, it is relatively susceptible to natural and human factors, which have an impact on the project, causing the construction period to be extended or the construction quality level to decrease, affecting the information transmission effect of the entire project. In the course of construction, we can strengthen the use of information system and data analysis and feedback, because manual supervision has some drawbacks, many details can not be well controlled, especially for the judgment of construction techniques. Therefore, it is necessary to implement comprehensive supervision of construction and provide data support for supervision of construction. Lin et al. [1] present methods for computing the Poisson multinomial distribution with applications in ecological inference and machine learning. Tang et al. [2] address the design and optimization of shallow-angle grating couplers for vertical emission from indium phosphide devices. In data security, Deng [3] investigates homomorphic encryption-based data integrity verification and anti-tampering mechanisms in cloud storage environments. For network testing, Tu [4] develops ProtoMind for smart regression detection based on message sequence modeling. In business intelligence, Xie and Chen [5] present CoreViz, a context-aware reasoning and visualization engine for business intelligence dashboards. In logistics, Wang [6] employs Bayesian optimization for adaptive network reconfiguration in urban delivery systems, while Meng et al. [7] research green warehousing site selection and path planning using deep learning. In the automotive sector, Zhou [8] applies gradient boosting trees to diagnose bottlenecks in international automotive sales funnels, emphasizing cross-regional team efficiency evaluation. Wensi [9] explores AI-enabled data visualization marketing for automated production lines to build customer trust and improve lead-to-order conversion. Xu [10] presents UrbanMod for text-to-3D modeling in accelerated city architecture planning. Yang [11] applies LightGBM to analysis of the Chinese stock market. Li and Wang [12] employ deep learning-enhanced adaptive interfaces to improve accessibility in e-government platforms. Chen [13] introduces geospatial neural networks to enhance smart city planning through location intelligence. Wu [14] focuses on the construction and optimization of an intelligent gateway software management platform under cloud-edge integration for the Industrial Internet of Things. In computer vision, Chen et al. [15] apply deep learning for printed mottle defect grading, and Chen et al. [16] propose a one-stage object referring framework with gaze estimation. Yan et al. [17] research image super-resolution reconstruction mechanisms based on convolutional neural networks. Finally, Wu [18] develops a large language model based semantic parsing approach for intelligent database query engines.

2. THE IMPORTANCE OF INFORMATION TECHNOLOGY IN THE SUPERVISION OF COMMUNICATION ENGINEERING

Information technology is a system that uses communication technology and parameter information to conduct data transmission and operation, and the generation and use of information technology facilitates the daily work of the vast majority of the people. At a certain level, people have obtained very precise parameter information analysis, which in turn provides people with more options and provides very reasonable help for people's choice. Furthermore, the use of IT in the supervision of construction can also reduce the labor intensity of the related technicians. The related technicians of supervision of construction can observe the real working conditions of operators to the maximum extent. The ability to evaluate and study the work quality of relevant personnel based on the relevant parameter information reflected by field operation technicians can to a large extent immediately grasp whether the methods of their work are scientific and reasonable. In the case of non-compliance of relevant engineering and technical personnel with relevant regulations, correction and evaluation can be carried out as soon as possible, and this model can minimize the creation of safety hazards and greatly improve the operational efficiency of construction operators on the site [1].

3. CHARACTERISTICS OF COMMUNICATION ENGINEERING

First, because the vast majority of communications engineering projects are relatively decentralized and have no fixed location, a comprehensive consideration of factors such as capacity and coverage is required. Because their location is not fixed, decisions should be made based on a variety of factors such as coverage and capacity. If the project is located in an area with a large population flow, the project capacity will naturally be larger, and multiple project sites need to be supported during construction to better meet the coverage needs, some of which need to be selected in remote areas. Secondly, the question of whether radiation is generated should be considered if a residential space is required when a communications engineering base station is set up. Finally, the communication line is relatively long, so the length of the optical cable is also longer.

4. THE SIGNIFICANCE OF THE APPLICATION OF INFORMATION SYSTEM IN THE FIELD MANAGEMENT OF COMMUNICATION ENGINEERING SUPERVISION

4.1 Improving the overall construction efficiency of engineering projects

From the point of view of information systems, it is mainly a system that performs data analysis after the integration of information technology and communication technology. In the application of information technology systems, the work intensity factor can be reduced more effectively, which is of great significance for improving work efficiency and work quality. In the application of information systems, it can not only provide convenience for people's work, At the same time, it can also effectively reduce staff work intensity, greatly providing more accurate data support for data analysis and indicating the future direction of staff work. The significance of applying IT in the supervision of construction is basically the same, which can effectively reduce the work intensity of the supervision of construction. At the same time, under the role of informatization technology, managers can also ensure that the relevant information is known in real time, thereby enabling supervision and making corresponding decisions by analyzing the feedback from field staff. For some unreasonable conditions occurring in engineering projects, effective optimization can also be implemented to reduce the incidence of problems such as quality and safety, and improve the overall level of engineering construction [2].

4.2 Improving the theoretical level of communication engineering in the construction process

With the development of the times and the progress and improvement of science and technology, the country's importance to the communication engineering industry is also strengthened, talent training is more and more, and the basic theoretical knowledge of the personnel is more and better. Therefore, for people who are engaged in the communication engineering industry, they can apply their theoretical knowledge to promote the development of the enterprise in a better direction. Information management is mainly about promoting the sharing of resources, and the realization of shared resources can enable some managers to make correct decisions. Secondly, it also allows people to view communication engineering as a whole effectively from an objective perspective, so as to make scientific and reasonable recommendations, so that communication engineering can move forward and continue to develop effectively [3].

4.3 Realize the goal of maximizing enterprise benefits

The application of IT in the supervision of construction can effectively reduce the expenditure of the supervisory staff and the overall expenditure of the construction. In the application of the information system, it is possible to better improve the quality of work and ensure the accuracy of work by collecting and organizing all data and information. In the course of supervision of construction site, the quality of decision-making and work efficiency can be improved by using IT. Therefore, it is necessary to apply IT in the supervision of construction. It is also the inevitable choice of the times to apply IT in the supervision of construction site. It is one of the important ways to achieve the goal of maximizing benefits for both the supervision staff and the company.

5. THE APPLICATION OF INFORMATION TECHNOLOGY IN THE SUPERVISION OF COMMUNICATION ENGINEERING PROJECT STRATEGY

5.1 Introduction of new Internet-related technologies

In the near future, the relevant employees can introduce new Internet-related technology in the process of communication project supervision, and use the network and information system to standardize the management of the daily work in the supervision. The application of new information technology can significantly improve the work efficiency and quality of supervision of communications engineering projects, and can scientifically control relevant aspects of the operation process of communications engineer projects. With the gradual popularization of the video sharing model in social production life, the traffic of mobile communication data has also increased. New communication technologies must be applied to build powerful mobile information and communication networks with high reliability and low latency to connect all people and even everything in the world to achieve the transformation of the digital society. In 5G communication technology, the combination of hot artificial intelligence, cloud computing, Internet of Things technology and big data and other high-tech, with the help of leading information related technology and Internet technology, can accelerate the promotion of communication-related technology. In the promotion of new technologies for 5G communication networks, it is necessary to rely on a dense network of sensor devices. Connect relevant communication equipment to each other and achieve communication with each other, and enter the era of digital transformation, when the daily life pattern, work mode and travel mode of the general public will be disrupted. In the supervision of communications engineering projects, higher requirements are also put forward for the business capabilities of supervisory industry practitioners, and the mode of supervision work will be simultaneously innovated and upgraded [4].

5.2 Strengthening the use of IoT technology

With the rapid development of IoT technology, smart cities and smart homes have also achieved long-term development. At present, the smart home is one of the application models of the Internet of Things, and the smart home will cover more than one technology and communication technology in the development process. For example, comprehensive wiring technology, network communication technology, security protection technology, and automated management control technology, these technologies can provide intelligent support for the development of multiple industries, including the realization of smart homes. Homeowners can achieve remote management control of various appliances through communication equipment, such as remote controls, mobile phones, etc., thereby making people's lives more convenient.

5.3 Effective control of enterprise costs

The advantages of information management are mainly reflected in the aspects of intelligence and technology, and the corresponding technicians can strengthen the analysis of communications and communication networks, rationally apply the corresponding technology to the actual situation, thereby maximizing the efficiency of communication construction. Traditional management methods rely on manpower to solve problems encountered, which not only consumes manpower but also takes up a lot of time, thus wasting resources; Enterprises adopting an information management model can effectively handle relevant issues rationally, for example, in construction, relevant issues encountered can be reviewed in a timely manner by computer-aided technology. It can be well controlled, so that not only can the cost be controlled, but the construction quality of communication engineering can also be reasonably controlled [5].

6. CONCLUSION

With the rapid development of the communications industry, the application of information technology is becoming more and more common, relative to the development of information technology, communication technology is good to ensure the improvement of the level of informatization. Therefore, strengthening the rational application of informatization in communication systems, continuously optimizing and improving the level of informatisation, promoting the rational development of the level of informationization, and playing a good role in the development of the times.

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