

# Discussion about the Application of Information Technology in Construction Project Management

Yixi Song

China National Aviation Fuel Group Limited Chengdu Branch , Chengdu 610212, Sichuan, China

**Abstract:** With the development of society, modern information technology is gradually improved, and now it is widely used in various industries. As one of the industries widely concerned by society, the trends and trends of the construction industry have been widely discussed by the community. The integration of information technology into the management of construction projects can not only accelerate the progress of construction projects, but also ensure the normal operation of the construction process through scientific and effective management of the project. Although China's information technology management technology has been improved a lot, but the mutual integration with the construction project, still need to spend a long period of friction.

**Keywords:** Informationization; Construction engineering; Information management; Engineering management

## Introduction

Information management has obvious advantages over traditional management, whether in terms of management methods, collection of information, accuracy, or efficiency, which are far better than traditional management. Sometimes human judgment can be wrong, but the computer does not, it can point out the scientific management strategy at the right time, to protect the sustainable and healthy development of the relevant enterprises. There are many advantages of information management such as the ability to reduce management costs, improve management efficiency, reduce the rate of management errors, improve the accuracy of management and many other advantages, all of which are also valued by many managers, so many managers want to introduce informatization into the project. This thesis focuses on the concept of information technology, the importance of information technology in construction engineering management, common problems in construction engineering management, countermeasures to strengthen information technology in construction engineering management and the significance of information technology in construction engineering management, which are the next five aspects for further elaboration.

### 1. The meaning of informatization

People say that the 21st century is the era of information technology, because nowadays, people are living in a society surrounded by information, but information is also indispensable in people's daily life. Due to the progress of science and technology in China, computer networks and other technologies have developed at a high speed in recent years and have deeply influenced people's lives. It exists in every aspect of our lives, in every corner, and its emergence also makes our lives and work a lot more convenient. People say that the arrival of information technology is both a disaster and a blessing. The disaster is that the arrival of information technology has accelerated the pace of people's lives and made it impossible for them to stop to think of and see clearly the future direction of development. Fortunately, the arrival of information technology does bring a bit of positive impact and convenience to people's lives. Of course, the arrival of new things is a double-edged sword, we need to see both the positive aspects of its impact on people and a reasonable view of its drawbacks. <sup>[1]</sup>In short, the advantages of information technology outweigh the disadvantages, which can better serve people, add fun to people's lives and improve the happiness index. At the same time, the speed of information technology is also unimaginable, what people do is to understand and adapt to it and enjoy the benefits it brings to people.

### 2. The importance of information technology in the management of construction projects

Information management plays a very important role in every stage of the construction project, and it has a strong systematic and professional to promote the construction of the project has very good benefits. Each project is a combination of many small stages, the key is to manage these small stages to ensure the normal operation of the project. The rapid development of our society has a profound impact on all industries in China. The construction industry has always been an industry of wide social concern, and information technology has had a profound impact on its development. The application of information technology management to construction projects can provide scientific management tools for construction, design and supervision of construction projects, which can improve the competitiveness of the enterprise in the whole construction industry to a certain extent.

### 3. Common problems in construction project management

#### 3.1 The system of engineering management lacks mature and unified standards

Copyright © 2021 Yixi Song

doi: 10.18282/l-e.v10i2.2330

This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License

(<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Many enterprises in China have invested a lot of money in information management, most of the enterprises in China are mainly divided into two sources of management information systems, one is independent research and development, this method takes a long time, invest a lot of money, and less communication with other peer products, which will cause the independence of the product. The second is the direct purchase of products developed by others, which takes less time and can be put into use directly, but may be different from the development of the enterprise and less practical. In the process of later use, more or less problems will also occur. In addition, some enterprises do not have a systematic management strategy in engineering management, and do not develop long-term engineering management plan, and in most cases, they still take one step at a time, which will cause the management of the enterprise has no goal and no purpose. There are also enterprises in engineering management to develop the implementation of the strategy is still in the primary stage, no in-depth self-contained system.

### **3.2 Top management has a more traditional thinking about engineering project management**

There are still many enterprises in project management still use the traditional management mode, with the continuous expansion of enterprises. The information communication between various departments is gradually becoming more frequent. Decision makers are not able to integrate and optimize the information in a timely and effective manner. This can cause inefficiency and distortion in information dissemination, and in many cases can cause the project to collapse. Thus, it can be seen that ensuring the flow of information is a major component of ensuring the normal implementation of engineering project management. Some companies use manual management at all stages of engineering project management, which is not optimal for profit-oriented companies, although it is more humanistic. The use of manual management increases the probability of errors and raises manufacturing costs, which is no longer suitable for engineering project management in today's era compared to information technology.<sup>[2]</sup>

### **3.3 The investment of funds and the level of technological development are not uniform**

China's engineering project management information technology is mainly reflected in two aspects, one is the configuration of the hardware and the second is the perfection of the software, hardware configuration is mainly the purchase of storage equipment and larger servers, etc., the software is mainly the introduction of data management system software to meet the requirements of enterprises on engineering information management. China in addition to the improvement of software technology above the phenomenon of a large area missing, but many enterprises for engineering project management investment is very huge, once the problem in the technical improvement of the above, a large amount of money will be lost, and can not be recovered to the enterprise caused serious financial losses. Many enterprises do not invest wisely in the investment, see the project has good prospects for development, will invest a lot of money, without regard to the serious risks.

### **3.4 Lack of technical support for the development of engineering management software**

China's engineering management software development-related professional engineers are less, resulting in a serious lack of technical support in the development of engineering management software and lead to engineering matters is not normal. Although China has made rapid progress in the development of software such as games and communications, and is in the forefront of the world. But for the project management, the development of related software is still at a disadvantage. Now most of the engineering management software in the market are operational, the lack of stability of information systems, which information systems to ensure stability, will lead to the leakage of information within the enterprise, or hacked, to a certain extent will affect the normal construction of the project.

### **3.5 Lack of humanization in the management of employees**

In the management of construction projects, it is inevitable to manage employees, and it is the basic function of decision makers to manage human resources effectively. And most of the enterprises, the bottom staff are taken to squeeze measures, this method actually does not help the development of the enterprise, not only will cause a certain impact on the reputation of the enterprise, the advancement of the project is also not any help. Human energy is limited to waste human energy on the repetition of mechanical work. It is not only not helpful to the growth of employees, but also not helpful to the improvement of technology. Effective management of human resources is not just squeezing employees, but using scientific methods to assign employees with different skills to the appropriate positions to improve the efficiency of work.

### **3.6 Low execution of engineering management information technology**

There are two main reasons for the decline in the implementation of engineering management information technology, firstly, although in the conditions of information technology, will make the information becomes which and easy to deal with, but also because the conditions of information technology to make the information become transparent, to a certain extent, will cause some departments or the personal interests of employees, which makes many employees to produce slack or resistance psychology. Secondly, because of the emerging technology, many employees can not grasp and use this technology in a timely manner, especially for some old employees, they have been deeply rooted in the traditional technical approach, want to adjust their mindset in a short period of time is not an easy task, coupled with their ability to accept new things is not strong, which will cause emotional depression and a decline in execution.

## **4. Strengthen the information technology in the construction project management measures**

### **4.1 Build an integrated information management system**

Many construction industries will use some quotas in the project establishment and bidding, and the management system of these quotas is very large, and the corresponding calculation volume is also very large. The flexible use of various standards is one of the work contents of many construction industries, and is also the fundamental basis for many project cost measurement. The general construction enterprise project engineering management mainly includes the progress of the project, the corresponding fixed

cost, personnel management, resource allocation, etc.. Of course, these are also the main contents while information engineering management. If there is no integrated information management system among a construction enterprise, then the enterprise will definitely be hindered in the future development process. In today's society, information technology has become the mainstream of society, widely and flexibly traveling between various industries. If an enterprise does not have an integrated information management system, then the advancement of the enterprise in many aspects will be hindered to a certain extent.

#### **4.2 Strengthen the training for managers**

In the process of carrying out the project of information management, personnel is a very important factor. To strengthen the centralized training and assessment system for management personnel. In the training of managers, the first thing to let managers understand the basic content of information technology project management of the meaning and significance of the role, so that they understand the information technology project is mainly what to do, while the personnel of the computer theory knowledge also has certain requirements, not only theoretical knowledge, practical operation should also reach a certain level. In fact, there is also to strengthen the overall quality of management personnel, the overall quality of the staff also has a great impact on the advancement of the project. Managers generally manage are construction personnel, construction personnel are mainly some of the lower education level of farmers, they do not understand all aspects of information technology, in this case, the need for high-quality managers to some grass-roots staff for patient training and guidance at the same time managers to the construction staff will be some of the basic knowledge of information technology to teach and pass. While strengthening the comprehensive quality of management personnel, it is also an efficient use of raw materials and equipment, etc.

#### **4.3 Strengthen the development and maintenance of information management software**

Many construction industries in China have immature development techniques for information management software, and in response to this phenomenon, the main strengthening of the development and maintenance of the software. First of all, the need to introduce software development related technical personnel, this aspect will require technical, professional talents. Of course, the birthplace of talent is the major universities, you can take the school-enterprise joint way, the university's talent into the enterprise, not only the construction-related professional, software development-related professional also help the development of enterprises. After the software development there is also the work of daily maintenance of the software, if the developed software can not be implemented in the project then for the enterprise for the project is a very serious matter. Not only in the development of the above appropriate amount of investment but also in the online software to do a good job of post-maintenance work and so on.

#### **4.4 Raising staff awareness of information technology**

In the information technology project management among the scarce is the talent, information technology to understand the depth of talent, and now is a lot of workers on the information technology understanding is only skin deep, they know information technology and housing construction is not directly related to what, the idea is still stuck in housing construction is to build houses, digging foundations, etc.. And do not recognize what the favorable impact of information technology for engineering, in many enterprises few people will take the initiative to introduce this technology, so constantly improve the staff's understanding of information technology is what many senior management should do, so that employees know how far-reaching impact of information technology on the advancement of engineering. Regular training for staff so that they have the awareness of flexible use of information technology, as well as some basic information technology operation methods, etc.

### **5. The significance of information technology application in construction engineering management**

#### **5.1 Ability to improve the efficiency of the project**

The efficiency of the computer has been much improved compared to the manual and his computing power is so powerful that it is generally more efficient and accurate than human. This allows the relevant management personnel to provide logistical quality assurance, which of course requires accurate measurement and correct construction in construction projects, and will not allow construction deviations that could lead to abortive projects. In the pre-construction period, it must be ensured that the project is operated step by step according to the pre-plan drawings, and the distances on these drawings are precisely measured by the computer, and during the construction process, this standard should be strictly followed to prevent quality problems in the later stages of construction. In the present time belongs to the age of computers, the age of information technology, in such conditions, let the information become transparent and universal. The flood of information makes people dazzled and unable to judge the useful information correctly. In addition to this it can also improve the scientific nature of managers' decision making and the efficiency of implementing management strategies. Although in this era of information flooding, managers still need to have the ability to organize and understand relevant management information in a timely manner, and only by understanding the general trend of society can they provide the next step of implementation strategy for the next project implementation. It is also necessary to effectively integrate and develop management information, which in turn enhances the achievement of management goals, etc.

#### **5.2 Ability to save the cost of the project**

Many construction companies in China are private companies, and most of them are still aiming at business profitability. If you want to increase the profit, you need to reduce the cost of the project. In many enterprises, the managers still pay much attention to the process of cost saving. Under the condition of information technology, it is possible to reduce the procurement cost of construction to a great extent by conducting the corresponding bidding activities online. Under our social conditions, cost saving is also advocated by many enterprises. The awareness of energy saving and environmental protection proposed by our country has been implemented and enforced in many enterprises. Avoid causing excessive waste of raw materials, and effectively and fully utilize raw materials, which is also a means to save the cost of the project. Not only that, the construction personnel in the construction process, but also to do the best use of things, to cultivate the consciousness of construction personnel to save raw materials. Many enterprises invest a lot of money

on top of large engineering construction, this situation will make the implementation of the project with sufficient financial support, in such a case, it will let down its guard on cost reduction. In fact, regardless of whether the investment in the project is huge, there is a need for some control of the cost of the project, which is conducive to the long-term development of the enterprise.<sup>[4]</sup>

### **5.3 Ability to shorten the work cycle**

Shortening the construction period is also a way to save costs. The application of information technology to the construction of the project can make the whole process of the project to be effectively supervised, in this case, can greatly shorten the work cycle and complete the construction task in advance. A large project construction less than half a year more than one or two years, if the work cycle is shortened, it is necessary to introduce the corresponding technical means. The introduction of information technology into it can not only make every stage of the project transparent, but also correct and change the project in time when deviations occur. Traditional engineering supervision has a big problem, they are not able to accurately identify the deviations and mistakes in the project, which will lead to the later work can not be advanced and run properly. Not only in construction, information technology is also used in other areas to fully realize this remarkable feature of shortening the construction period. In modern society, time is very precious for many people, and it is undoubtedly a very beneficial aspect for enterprises to shorten the work cycle, which also enables them to implement and promote other projects at the same time.

### **5.4 Ability to reduce error rate**

The accuracy of computer information technology has been recognized by many people, many people can not do 100% correct rate of work while the computer can do 100% correct work, its accuracy is evident to all. The use of information technology in construction projects is also able to promote the project, while greatly reducing the rate of error to ensure the normal advancement of the project. The computer can effectively supervise each procedure of the construction project, during which it can also make adjustments to the project if mistakes occur. In the pre-construction stage of the construction project, fine planning of the project is required, and a large amount of data is also needed for reference, all of which need to be provided by the computer. At the same time in the calculation of data, the manual more or less will make certain mistakes, but the use of computer can be calculated correctly and quickly. These data calculations are to ensure the implementation of the project and the safety of the project, especially the safety of the project, which involves the lives of people is a major issue, more need to improve the accuracy of the calculation, in order to ensure the safety of the project.

### **5.5 Ability to increase corporate influence**

Information technology can improve the quality of the project, and the quality of the project can affect the image of the enterprise, and a good corporate image can improve the influence of the enterprise. Nowadays, many enterprises, especially construction enterprises, need a solid technical foundation and construction achievements to convince others. The introduction of information technology into the construction project is also a means to improve the influence of enterprises, it needs to improve the quality of the project first, when people know that the enterprise's engineering construction of high quality, the corresponding project volume will increase, which can also improve the influence of an enterprise in the industry. Let more people know the strength of the enterprise, and then improve the influence of the enterprise, the ultimate purpose of improving the influence is also for the better development of the enterprise forward. Improve the influence of enterprises not only in the construction industry, but also need to make a name in the world, so that more people understand the rapid development of China's construction, understanding China's speed, China's quality.

## **6. Conclusion**

With the development of society, the integration of information technology into the construction industry is also the trend to follow. Although the integration of the two still has some problems, but China's relevant construction enterprises are actively working to improve, and the advantages of the integration of information technology into the construction industry is also the development of many enterprises dreamed of. And the integration of the two can also improve the speed of development of information technology to a certain extent. The integration of information technology tools and construction project management also requires a long period of friction, and also to achieve a real integration effect.

## **References:**

- 
- [1] An exploration of the application of information technology in the process of construction management of housing construction [J]. Fang YC, Huang C. Construction Knowledge.2017 (09)
  - [2] Analysis of the use of information technology in the process of construction management of housing construction [J]. Dong Bo i doors windows.2017 (08)
  - [3] An analysis of the application of information technology in the process of construction management of housing construction [J]. Li Yuan. Low carbon world.2016 (17)
  - [4] Chen Xiaorong. Ruminations on the application of information technology in construction engineering management [J]. Engineering Technology:Full Text Edition, 2017(1):00013-00013.