Computer Information Technology Application in the Engineering Cost Information Management Research

Huwei Zhang*
Liaoning Jianzhu Vocational College, Liaoyang, 111000, Liaoning, China

*Corresponding author e-mail: zhanghuwei0035@lnjzxy.edu.cn

Abstract. With the arrival of the information age and constant progress of computer network technology, project cost information management has been in progress transformed. Engineering cost staff gradually changed the traditional way of engineering cost management, no longer use pen, paper, calculator and so on to complete the work of engineering cost, but a leap forward in computer information technology applied to the work of engineering cost information management, a lot more efficiency and quality of engineering cost information management. This article summarized the meaning of engineering information system of cost control and its composition, on the basis of based on FUIG function by SVM model of engineering cost information management efficiency of data analyzing, comparing with the accurate data to demonstrate application of computer information technology management of engineering cost information advantage over traditional engineering cost information management, and prospects the development trend of engineering cost management.

Keywords: Computer Information Management, Project Cost, Information Management, Technology Application

1. Introduction
With the advent of the era of information, the modern engineering cost industry continues to develop, the computer in production, management and other links play a huge role, in the engineering cost management, apply information management techniques more and more common. ’s rapid economic growth, on the other hand, push the continuous expansion of the project, the need to manage the project cost information is also constantly increased, only rely on manpower to the relevant data and information for efficient and quality management, the informatization reform of the management is imminent, the application of computer information management technology for engineering cost management provides accurate and up-to-date technology, using scientific and reasonable cost information management, reduce the overall cost of engineering, but also to a certain extent, but also promoting reform and development construction market [1].

In today's society, electronic computer information technology has been gradually applied to all walks of life, using its unique advantages, has a positive impact on all walks of life. More and more enterprises no longer rely solely on human resources for information management, but gradually apply
computer information technology in information management, so as to improve business efficiency, and then embark on the road of enterprise informatization. Electronic information technology has a great promotion effect on all industries and enterprises in China, which can promote enterprises to stand out in the fierce competition market and have a certain development space in the international market. In the engineering process of our country, most of the engineering cost workers spend most of their working time in calculating the quantity of the project, while ignoring the important part of the project management. By studying the time allocation of foreign engineers, it is not difficult to see that they attach importance to project budget and project management. The experience of foreign engineers and the rapid development of computer information technology urge us to exert the powerful role of computer information technology in engineering cost information management [2]. The application of computer management technology provides a convenient and precise technical method for project cost management, in the meantime, it also improves the development speed of the construction market. Project cost management information system can effectively accumulate and analyze the relevant engineering cost information, and on this basis, predict the existing data of the engineering cost, so as to control the engineering cost more accurately.

This paper revolves around information management system application in the engineering cost information management, on the basis of based on FUIG function by SVM model of engineering cost information management efficiency data calculation, comparing with the traditional engineering cost information management efficiency, to the actual data prove that the computer information technology application in the engineering cost information management advantages, promote our country to speed up the development of computer information technology, and promote the application of information technology in enterprises, especially in the application of information management and innovation, make managers to change the traditional ideas, the computer information is applied to the project cost information management to give support and funding, Make information technology better, faster and more efficient in information management.

2. Project Cost Information Management System

2.1. Project Cost Information Management System
Engineering Cost Information Management System (Construction Cost Information Management System the CCIMS), composed, and the computer is a to the overall project Cost Information collection, transfer, sorting, processing and application of System, it can be for engineering Cost Information and data to conduct a comprehensive research and analysis, also can effectively utilize the existing form of Information to predict the future Cost of development, in order to better control and determine the project Cost [3].

The engineering cost four parts constitute the information management system: the information source, the information processor, the information customer and the information manager. In addition, the application of computer information management technology in project cost management mainly has the following advantages: high accuracy, easy to modify and adjust, pricing achievement projects, complete data, man-machine dialogue, easy to accumulate and analyze data, and high work efficiency [4]. In addition, in the process of engineering cost information management, more procedural and standardized management is realized, which can continuously accumulate data, so as to improve the use efficiency of data, thus realizing informationized and precise engineering cost information management.

Using the computer to the computer information technology project cost related data and information integration, analysis, and calculated, and a large amount of information accumulated in the process of engineering cost, form the experience database, the massive data management is hard to do traditional human engineering cost information management, computer information technology in the role of the project cost management is self-evident.

2.2. Advantages and Disadvantages of the Project Cost Information Management System
Traditional engineering cost information management simply relies on human resources, which leads to low efficiency of overall management. However, with the development of modern information technology, computer information technology has been paid more attention to in engineering cost information management, and it has been constantly innovated with technology.

From the perspective of the application history of computer information technology in engineering cost information management, the world has experienced single application, comprehensive application and system application, and the software has also developed from a single function to an integrated function. In recent years, although China has made great progress in this field, it creatively developed an information management system, which has certain advantages. At the same time, due to the rapid development and the jumping development of some parts, the system has certain deficiencies.

To be specific, the engineering cost information of computer information technology management has advantages such as high accuracy, fast calculation speed, easy modification and adjustment, and abundant information database [5]. The project cost information management by computer can get the accurate result, the accuracy is far higher than the traditional manual information management, and the time is far less than the traditional method, can greatly improve the efficiency of information management. But at the same time, due to the rapid development of computer information technology, need certain computer application base, puts forward some relevant management personnel to rigid requirements, and computer information technology application in the engineering cost information management belongs to the new product, the development is not plain sailing, it will appear some problems and defects, still need to continuously improve and perfect the [6].

In spite of this, the engineering cost information of computer information technology management is generally superior to that of traditional human management. This paper USES SVM model to calculate the engineering cost information efficiency of computer information technology management, and illustrates the great role of computer information technology in engineering cost information management with actual data.

### 3. Computer Information Management Efficiency Computing System

#### 3.1. Data Calculation Formula

First, we use SVM model to simulate the engineering cost index selection, according to the selection of engineering measure, determine the input vector of the model, all kinds of information from the engineering cost management efficiency as the main object of analysis, through processing the SVM model, will originally complex time series is stationary, and carries on the further analysis, accurately, through the analysis of project cost structure, selection of the construction of characteristic factors, the calculation formula is:

\[
M = \sum \text{EI} \times Y_Q
\]

Where, \( M \) is the basic index parameter of engineering cost information management, \( \sum \text{EI} \) is the basic characteristic factor of engineering cost, \( Y_Q \) is the characteristic calculation factor, and \( E \) is the number of data samples. No directional analysis is performed in this calculation [7]. On the basis of the above project cost information index selection, the project cost information is quantitatively processed. Some of the data in the project cost information data are quantitative and some are qualitative. For the sake of improve the accuracy of the engineering cost information management efficiency and quantify it, in order to ensure that the input and output data are uniform and easily convergent, the sample is normalized to ensure that zero value does not appear in the standardized data table when the internal relative gap remains unchanged. Computation formula is as follows:

\[
X_{df} = \frac{g \times \partial}{X_e - X_j} \times 0.8
\]
3.2. Data Calculation Model System Based on SVM Model

The SVM model is applied to the sample analysis, through the SVM model of the original data are decomposed and according to various cost components, adopt the method of forecast after superposition, in order to improve the prediction accuracy, with the help of FUIG function has the higher training error and test error, making it a computer under the information technology application of the project cost information management efficiency calculation model [8], predictive value are obtained.

By FUIG function calculation, complete computer under the information technology application based on the SVM model calculation model of the project cost information management efficiency of a building, through the model of computer information technology application to predict the project cost information management efficiency, comparing with the traditional engineering cost information management efficiency, computer information technology with tangible data to accurately reflect the enormous effect for engineering cost information management.

4. Computer Information Management Efficiency Data Analysis

4.1. Application of Computer Information Technology in Engineering Cost Information Management

The application of computer information technology in engineering cost information management benefits from the rapid development of computer information technology, before which the engineering cost information was managed by traditional human resources. The application of computer technology is not overnight things, is in the technology continuous development, on the basis of perfecting the company choose to use computer information technology instead of traditional artificial to step by step to supervise and control the project cost information, statistical data as shown in figure, from 2015 to 2019, five years GuanLiLv computers in engineering cost information management and the change trend of traditional GuanLiLv as shown in figure 1.

![Figure 1. Change trend of computer management rate and traditional management rate of engineering cost information management from 2015 to 2019](image)

4.2. Analysis of Calculation Results

| Cost of the sample | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-------------------|---|---|---|---|---|---|---|
| Computer management efficiency | 40 | 50 | 63 | 50 | 66 | 70 | 80 |
| Traditional management efficiency | 30 | 50 | 60 | 40 | 60 | 50 | 45 |
| Standard values | 40 | 45 | 50 | 55 | 60 | 65 | 70 |

4.2. Analysis of Calculation Results
SVM model is a machine training method. We can use this model to calculate the relevant data of computer information technology in engineering cost information management. Data accuracy based on improve the project cost information management perspective, firstly, the project cost index, and to quantify the engineering cost information processing, on this basis, refer to the SVM model, building engineering cost information management data model based on SVM model, to justify the computer information technology for project cost information management.

The experimental results show that the efficiency of engineering cost management using computer information science and technology is much higher than traditional technology engineering cost information management.

Through data sample collection and calculation model calculation, the efficiency of traditional engineering cost information management can be plotted with the efficiency of engineering cost information management under the application of computer information technology. The experimental comparison results are shown in Figure 2.

![Figure 2. Comparison diagram of engineering information management efficiency](image)

It can be seen from the above comparison figure that there is a big difference between the efficiency of traditional engineering cost information management and the efficiency of engineering cost management by using computer information technology. The application of computer information technology is not only higher than the traditional management method, but also tends to be higher than the standard value.

Traditional cost information management relies mainly on the human process, the computation time is long, slow manual calculation and easy to calculate the coarse, low precision, the application of computer information technology in construction cost management, can save human resources, improve the management efficiency and the accuracy, can to a certain extent, reduce the construction cost of the parties.

5. Conclusions

To sum up, with the domestic computer information technology rapid development, computer information technology application in the engineering cost information management, increasing the role of the computer information technology in the project cost information management is in constant increase [9], based on the development of computer information technology, the use of the Internet, engineering cost information and data collection, and strengthen the extraction of historical data and existing data, to establish an efficient and accurate cost information management system, far more than traditional human information management, to a certain extent, can promote the development of construction market. Although computer information technology in the application is still in the exploration period, also can appear more problems to be solved, these problems to a certain extent can hinder the development of engineering cost information management informationization construction [10], therefore, we through the clear data poor practical computer after the role of information technology in engineering cost information management, should pay more attention to, constantly
improve it in the information management system, the importance of the construction of computer information technology to be more perfect, efficient and accurate management information system of engineering cost, the reality of the information management of the new era of development requirements.

References
[1] Dmitry Tsadikovich, Aakash Kamble, Amir Elalouf Controlled information spread for population preparedness in disaster operations management[J] International Journal of Disaster Risk Reduction, 2020, 42
[2] Hasan Burak Cavka, Sheryl Staub-French, Erik A. Poirier Developing owner information requirements for BIM-enabled project delivery and asset management[J] Automation in Construction, 2017, 83
[3] J.P. Emmet-Booth, P.D. Forristal, O. Fenton et al. Visual soil evaluation – Spade vs. profile methods and the information conveyed for soil management[J] Soil & Tillage Research, 2019, 187
[4] Li Ding, Zhongsheng Wang, Xiaodong Wang et al. Security information transmission algorithms for IoT based on cloud computing[J] Computer Communications, 2020, 155
[5] Jie Wu, Michael D. Lepech Incorporating multi-physics deterioration analysis in building information modeling for life-cycle management of durability performance[J] Automation in Construction, 2020, 110
[6] A.F. Romero, M. Oliveira, D.M.S. Abessa A simple Bird Sensitivity to Oil Index as a management tool in coastal and marine areas subject to oil spills when few biological information is available[J] Marine Pollution Bulletin, 2018, 128
[7] Gozde Basak Ozturk Interoperability in building information modeling for AECO/FM industry[J] Automation in Construction, 2020, 113
[8] Suzuette S. Soomai Understanding the science-policy interface: Case studies on the role of information in fisheries management[J] Environmental Science and Policy, 2017, 72
[9] Richard J. Holden, Yamini L.P. Karanam, Luiz Henrique Cavalcanti et al. Health information management practices in informal caregiving: An artifacts analysis and implications for IT design[J] International Journal of Medical Informatics, 2018
[10] Marcus Woo The World’s Biggest Computer Chip[J] Engineering, 2020, 6(1)