Application of Big Data Technology in Cost Management and Control in Construction Project

Liang Chen\textsuperscript{1,*} and Heping Dai\textsuperscript{2}

\textsuperscript{1}Chongqing University of Posts and Telecommunications, Chongqing 400065, China
\textsuperscript{2}Chongqing Bishan District Inspection Service Center, Chongqing 402760, China

*Corresponding author e-mail: chenliang@cqupt.edu.cn

Abstract. Currently, the competition of construction industry is increasingly fierce, the market is basically transparent, the traditional enterprise cost management model has been unable to adapt to the development of the construction market in the new era. In order to better control the cost and improve the benefit, construction enterprises must realize the technicalization, informationization and digitization in cost management. Cost management must be controlled by informationized and scientific management means.

Keywords: Big Data, Construction Projects, Cost Management

Introduction
At present, the competition of domestic construction industry is increasingly fierce, and the traditional construction enterprises are in the situation with small profit or loss in the construction market. Under the new normal of social and economic development, China's construction enterprises are required to change their ideas and business modes. Therefore, it is of great economic significance to establish a reasonable cost database and big data should be utilized for cost management.

1. Overview Construction Project in Cost Management
Currently, the development of the construction industry has entered a stable period, and the extensive management mode of enterprises has been unable to meet the requirements of the information age, so the transformation and upgrading of enterprises is imminent. The internal cost management of construction enterprises mainly refers to the costs of various production and operation activities incurred by construction enterprises to reduce construction costs and finally achieve cost control objectives through various measures and technical means under the premise of ensuring construction progress and quality, mainly including labor, materials, machinery, engineering management fees, etc. For construction enterprises, due to its single source of profit, the top priority is to well regulate project cost management to achieve cost objective.

Project cost control refers to the reasonable analysis and comparison of project cost and planned cost to control the project cost in a controllable range, so as to minimize the economic risks brought by the project cost and make the project cost to reach a reasonable level. Cost control is a work involving many links, which requires the project manager to have high professional quality with a high
2. Status Quo of Construction Enterprises in Cost Management

2.1. Low Quality in Manpower and Management
Project managers in construction enterprises, especially grassroots construction enterprises are generally not highly educated and have disordered management concepts. Therefore, it is difficult for them to guide labor workers to carry out effective standardized construction. Generally speaking, site management personnel lack subjective initiative and sense of ownership and have a high attitude towards site waste treatment. Project management personnel of construction site always pay attention to progress, light cost, and have a weak awareness of cost. It's not true that even the cost is negligible if you can do the job quickly and brilliantly. The management is good, the quality is good, the related cost decreases accordingly. Construction is a comprehensive project goals of enterprises, management of integrated management of technical level is low, lead to better use the flexible and innovative technology, a new construction technology on site construction management, also cannot reasonably arranged according to the actual situation of the labor, machinery, materials, easy to cause the waste of labor, lazy and so on, resulting in increased costs [3].

2.2. Lack of Procurement and Operation Management Mechanism
Many construction enterprises will lose money every year or every project may be in deficit state, the reason is that the material procurement is not perfect and there is no sound, reasonable mechanism and management means. In the construction installation cost of the construction unit, the material cost accounts for about 65% of the total cost, which accounts for a large proportion. But many construction companies do not pay much attention to it and some companies just pay attention to the minor issues. The suppliers can be chosen by considering the issues in inquiry, price comparison, analysis. The organizational structure varies from large enterprises to small departments. Each department and its members are part of it and assume its responsibilities, and the key problem is that there is a state of interconnectedness between each department and each member. At present, many construction enterprises lack necessary communication and connection between enterprise management and project management [4].

2.3. Insufficient Understanding of Cost Management and Management
Many units in our country lack the corresponding management consciousness in the cost management work, leading to the problem that many construction units and construction enterprises have not established the corresponding cost management system. But in fact, the lack of communication and exchange between departments is also an important reason for inaccurate budgeting. Some supervision units even do not pay attention to the cost management work, and they lack corresponding management awareness and management methods, resulting in the overall design of the cost control effect is not obvious. In engineering practice, when various construction forms start construction, there will often be a shortage of funds, resulting in a certain deviation in the cost of each link, resulting in the waste of human and material resources. When controlling costs, not only explicit costs such as market prices, travel and reception expenses, staff salaries and office expenses should be considered, but also implicit costs, such as loss of machinery and equipment, unreasonable system, and increased engineering costs [5].

2.4. The Impact of Changes of Market Price
The market is the main body in the market economy system. Due to the flexibility of market factors, the price of engineering materials tends to fluctuate, which makes the problem of over-budget more prominent. In the construction process, 60% of the cost is paid by materials, indicating the necessity of controlling building materials. However, at present, there are still many deficiencies in the cost control of materials, such as blind updating of materials, incomprehension of processing and treatment of materials, etc., which make new materials unable to give full play to their performance, weak maintenance awareness of mechanical equipment, and mechanical failure can shorten the service life without maintenance, thus increasing the project cost [6]. In short, there are many uncertain factors in the market at present, which have a great impact on the project cost, but the market factors are difficult to control. Grasp the law, focus, you can better control the project cost.

3. Specific Ways to Use Big Data Technology to Promote Cost Management of Construction Enterprises
In today's world, the arrival of the era of big data has changed people's traditional way of thinking and ideas and has promoted the rapid development of social economy, and continuously brought innovation and technology to mankind. Mankind is keenly aware that massive data has indeed promoted the progress of human civilization. At present, in order to explore its potential value in the construction industry, big data thinking has been applied in the cost management of construction projects.

3.1. Information and Digitization of the Hardware of the Project
The construction site of this project is equipped with IP video monitoring systems in entrances and exits of all floors, entrances and exits of lobbies, and tower cranes, which can be connected to the enterprise information network and realize the real-time monitoring and management of project construction and it is capable of identifying and correcting deficiencies and defects in site construction in a timely manner to reduce labor use. A guard system is set up at the main entrance of the site, and real-name management can effectively grasp the situation of labor, materials and machinery entering and leaving the site, so as to settle the labor and material costs in the future [7].

3.2. Establishing a Digital Information Network Platform
The big data of construction industry mainly includes the data of project cost, building materials, building structure, building technology and building construction management. Among them, cost and material data are the most important, and cost data are accumulated from these three core indicators. At the same time, we continue to conduct horizontal and vertical comparative research on the company's previous standard data, and timely formulate corresponding measures to control costs and achieve the expected cost targets.
3.2.1. Material data. The cost control of fine materials is of great significance to the cost control of construction enterprises in China. The price of raw materials mainly comes from market inquiry and actual purchase price. The purchasing department is responsible for market inquiry, conducting market inquiry and price comparison mainly through logistics resources, forming internal pricing, and making regular adjustment; On the other hand, it also provides reference for the formation of market pricing in the actual procurement process, compares different prices in the actual procurement process, updates the database in real time, and facilitates the follow-up price information query and price information retrieval [8].

3.2.2. Content index database. The content index database is used to retrieve the single building area before the project starts or complete drawings are available, including concrete, steel bar, template, block, etc. Construction enterprises can quickly calculate the main amount of the project according to the content index of the corresponding project in the database, and provide the basic budget for the project starts. In the process of construction, the pre-control of engineering quantity can effectively prevent the waste of material procurement, which is of great significance to the control of engineering cost. In addition, a contract management information system shall be established to use a large database to establish a streamlined, standardized and digital platform for engineering contracts, collect contract income according to engineering, type of work and specialized subcontracts, and electronically scan contracts for follow-up inquiries. The content of the contract must comply with legal and industrial standards, and care should be taken to avoid unnecessary losses and material waste caused by certain provisions [9]. The premise of this requirement is that the electronic warehouse must undergo careful inspection and review, including the transfer of contracts between departments.

3.3. Conducting In-Depth Analysis Using a Large Number of Data Technologies. The development of a construction unit fails to be achieved without cost analysis. The more accurate cost control, the more economic and social benefits can be guaranteed, accumulated experience can be ensured, internal work innovation can be ensured, and the more market needs can be adapted to, and the more economic risks can be reduced. Therefore, the attention must be given by related personnel, and the cost accounting information system can be established to improve staff quality and perfect the system for cost analysis. In-depth analysis of the data can be conducted to timely understand problems and shortcomings in the development of enterprises. The successful experience can be summarized to effectively promote the construction of the enterprise in the future work, so as to realize enterprise development goals for sustainable development [10]. In cost analysis, construction enterprises must do a good job in the collection of cost data, effective collection of relevant information. After collecting all kinds of data, we should make a summary and classify the data according to certain standards. By comparing and analyzing the project cost, we can intuitively see some problems in contradiction with the budget, so as to ensure that the project cost does not exceed the budget.

4. Conclusion
With the advent of the era of big data, a new management model will emerge in the construction industry, and various emerging technologies will be widely applied, bringing opportunities and challenges to the development of all walks of life. Big data can effectively solve the problem of overcapacity and provide enterprises with market monitoring and support in decision-making. The integration and application of big data can effectively enhance the soft power of construction enterprises in the construction market, which is of great significance to enterprise innovation and revenue increase.

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