Cost Information Retrieval Model Based on Open Sources for Students Learning of Construction Cost Management

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Abstract. Construction cost management course is currently one of the core courses in construction colleges. Since any construction project is so unique and complex that it is difficult for students to find out the right price in a short time during their learning of construction cost management course. This paper presents a cost information retrieval model based on distributed database which would search all kinds of construction cost and price data based on open online resources. By converting information from distributed database to data warehouse and data mining technique, the useful cost information from massive data is collected automatically and the trend of future prices and rates of construction can be predicted. This retrieval model can provide students more construction cost and price information than ever, and students can eventually estimate construction cost rapidly and correctly that is the core of construction cost management course.

Keywords: construction cost management, information retrieval, open sources, learning.

1 Introduction

The process of construction projects is essence in construction management. No matter the project owner or contractors, both of them hope to achieve the expected economic benefits in this deal. Most attention of project participants, however, will be focused on entire construction cost management. The purpose of the curriculum of construction cost management is to help students seek further professional and basic skills, familiar with the basic principle and method of the whole process of construction cost, master the use of labor, materials, machines consumption quota and the procedure of estimating construction budget.

The basic process of construction cost can be described as follows. Firstly complete the Bill of Quantities for the construction project. According to the construction on-site drawings, calculate the amount of each list items. Then verify accurately the final project cost based on the cost estimation information that obtains from all practical resources. Among them, it is the most important to estimate the unit price correctly, the construction cost is combined with the selection of labor, materials, machines unit price. Unreasonable cost information is overwhelmingly likely to reduce the accuracy of project costs.
The main characteristics of current project cost information are market-oriented and special. There are two main reasons. Under the pattern of pricing through Bill of Quantities, the project cost information is mainly from the enterprise internal economic measure, settlement material and the master of the market. Because of variety of work procedure and productivity, the cost control system and risk-bearing capacity in different construction enterprise changes and different companies would suggest various price to clients based on themselves estimation and information. In addition, the innovation of modern construction technology promotes the construction productivity and management process optimization that accelerates the development of new construction materials. This dynamic cost information is an obstacle for students to learn construction cost management course.

Current open web resources have created a good learning platform for students. Through this platform, a large amount of construction cost information including price information issued by local cost management departments, quotes of building materials manufactures online, other information from market research and so on, could be searched. To face numerous and jumbled cost information, students feel it hard to make their decisions. In fact, construction cost changes with the market, and it is not fixed set of data, so the cost information demands for dynamic management. Therefore, it is possible for students to find reasonable information in the course of learning process through applying computer information technology to manage the construction cost information.

2 The Construction Cost Information Distributed Database Model

Database is a warehouse which is used to organize, store and manage data according to its structure. The construction cost information distributed database is a process of collecting, processing, analyzing and releasing construction cost data. The establishment of this database can be mainly divided into three parts: data requirement analysis, conceptual model of distributed database design and the logical model of distributed database design.

Data Requirement Analysis. The main task of data requirement analysis is to explicit type, range, quantity and practical application of all kinds of cost information required in the valuation course according to the actual use demand.

The construction cost information distributed database is established for the purpose of providing students with cost information required in the construction cost management course and solving the problem of inquiry difficult. Data stored in the database should first reflect price information comprehensively and then must be constantly updated and supplemented in order to ensure the timeliness of information. Cost information of built construction has great value of reference, so it also should be included in the database.

In summary, the data in need basically has the following three categories: market cost information promulgated by the departments of each district project cost management; price information issued on construction related website and collection of historical data.