

Research on application of big data mining technology in engineering project management

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ABSTRACT

In recent years, due to the rapid development of the social economy, China's information industry has risen rapidly and gradually stepped into a period of vigorous development of information technology. Systems engineering management has therefore brought about new changes and demands. Under such historical background, traditional engineering project management means can hardly adapt to the latest characteristics of engineering project management. Therefore, the use of big data mining skills has become a breakthrough to improve the ability of project management. In view of the application advantages and development status of big data mining skills in engineering project management, this chapter gives several specific countermeasures and research directions

KEYWORDS

data mining; engineering project management; application

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(1) ADVANTAGES OF BIG DATA MINING TECHNOLOGY IN ENGINEERING PROJECT MANAGEMENT

To Provide A New Way for Its Management Optimization

Information technology developed gradually makes big data analysis has become a developing trend, under the development trend, engineering information management become more scientific and integrated with new channels and opportunities, and also to the project in efficiency, quality, and operational risks management of several important aspects, such as further optimization put forward the new path, which means big data mining Technology development will have a vital and far-reaching influence on the improvement of engineering management level and management efficiency. There because it is well known that the project is the systematic characteristics and complexity, it also caused many current technical levels and work efficiency of the project is not very high, however, due to the coming of the era of big data analytics, engineering can be advanced under the condition of complete information technology development and application of the efficient management of data resources. In the performance evaluation work of the project, for example, people thought that involved in the evaluation index is more, thus caused during the evaluation process is too complex, at the same time, the cost of the whole evaluation is quite high, but in the use of the powerful data mining technology, it can save huge amounts of data information in the assessment of management work becomes more compact and orderly, and evaluation assessment of the tube The means of reasoning are also more diverse.

Value Advantage of Technology Application

Big information mining skills, in fact, from the huge amount imbroglia, trivial and other noisy find themselves in the big data analysis in project management really need data information, so as to dig out all information connotation, the full value to the correct cognition to work on the information needed to truly, avoid to cause chaos and weed out the useless information, This is the great value of data mining. Data mining technology is therefore with its unique advantages, in today's engineering project management in the practical application, in today's society.

Considering the repeatability of the project work process, the requirement of relatively unified, centralized, and systematic management can only be superficial analysis, resulting in insufficient management level. The application of big data mining technology will be able to make a systematic and effective integration and summary of rich big data analysis information, so as to carry out project construction in a more comprehensive way.

(2) THE MOST SPECIFIC STRATEGIES USED BY BIG DATA MINING TECHNOLOGY IN ENGINEERING PROJECT MANAGEMENT

(2.1) Build A Big Data Mining Management Framework

In order to make the mining technology of big data be properly used in the process of construction management, and to further optimize the effective management of big data mining technology in the information market and other fields and improve the centralized control of enterprises, we need to establish the management architecture of big data mining. The necessary management framework includes ensuring that all organizations and departments are held accountable and that when the final decisions on management projects are evaluated at the top of the company, they are carefully summarized and reported. Not only so, operation of project developers also need to a detailed analysis of data collected throughout the project testing and summed up, meanwhile lists scientific and detailed data analysis and reasonable theoretical basis for the report, so that increase the authenticity of the data analysis, and to make the company to choose the best way to effective implementation. In addition, in order to ensure the instantaneity of big data analytics information, rationality and credibility, and integrity, in the implementation of big data analysis and data analysis in the process of information mining, first you need to do strict quality management and monitoring of all large data information and operation of ensuring project developers can correct material selection and use of information, and then rely on the analysis of large data After measurement of all things, and in turn the progress of the implementation of the project, construction project quality, real-time monitoring of dynamic balance and the total cost of project construction, etc. The whole project construction quality management system for a period of time adjustment, and classified as well as strict quality management of each link rationality has made the science evaluation experts, once have inadequate or data processing is wrong Erroneous and deviated data must be revised and adjusted immediately. Then, in order to help the company, make rational and optimal decisions on all projects, the company needs to provide necessary and objective opinions and evaluations on projects in order to achieve the sustainable and healthy development of the company. To ensure the maximum efficiency of company project management at the grass-roots level and enterprise's future development trend correctly, not only to build a big data mining management architecture but also on the basis of large data mining again make the company to recognize their own actual situation, the management of a large number of engineering project management of the enterprise to effectively integrate to rationalization project data management of all departments, to project the future In order to establish a planning information data management center, we should make a scientific and reasonable objective evaluation of the development needs of the Through this series of planning, big data mining technology in the process of engineering project management can be more effortlessly, to ensure the healthy and steady development of enterprises in the future.

(2.2) Set Up A Special Big Data Mining Team

Talent training quality has always been the key to guarantee company's sustainable development, and the data mining technology as a new management means, often need to have a professional technical team for information service platform construction management and so on each work, to be able to apply this kind of information management technology of data mining technology and reasonable applied to engineering projects, and set up a professional large data Analysis and excavation organization is an important guarantee that its technology can be systematically, reasonably and scientifically applied to engineering projects. The professional big data mining team includes the following departments:

- **Establish a project team for project progress data mining**

In order to fully realize the value advantages of engineering data mining technology, We must set up the progress of the data mining technology team, so that they can to have formed in the process of construction project of a large number of reliable data information, system, concentration, a full range of information collection and management, in a large amount of data containing the input of the original investment, construction method, data information basic construction, etc., after the expert's assessment of the analysis, In this way, the scientific research progress of the project team can be implemented more efficiently and the construction progress can be ensured in accordance with the design of the project implementation plan.

- **Establish engineering quality analysis data mining project team**

To establish the quality analysis data mining is the main purpose of the project management team, effective set display all the data in the process of project information, and through in-depth analysis technology of data mining, to establish the quality control of comfort you delete structure, in order to guarantee the maximum in the process of construction of the project safety, reduce the risk. Including the prevention of the construction project acceptance link in the lack of standards, construction materials management is not strict, as well as the project construction unit designer's own problems, so as to effectively improve the project quality management level and construction benefits.

- **Build a complete engineering cost management data mining project team**

Establish and complete the construction project cost management data mining group, the overall cost estimate of construction works must be data information, quality parameters, production quality data information, transportation, logistics information, and construction materials cost accounting data information and other kinds of information, systematic and detailed classification, and then using the data mining technology to form the corresponding architecture Project capital cost accounting management system. In the construction process of the cost management system, people can directly experience the attention of the construction project management to the construction cost, which can greatly reduce the status quo of the construction management level caused by delayed project quality and over budget factors.

(2.3) Building A Dynamic Monitoring Mechanism

In the process of project implementation, to achieve a comprehensive consideration for the interests of the various aspects, will need to establish and improve the system of dynamic monitoring of project cost, quality, time and other important nodes implement strict monitoring, in order to avoid to a great extent on the execution of the project operation in all possible risks, make the project can be executed successfully. Besides, in terms of personnel, we should try our best to stimulate the innovative thinking consciousness and enthusiasm of all project researchers to explore new fields, so that these researchers can give full play to their thinking and obtain more research results on the basis of fulfilling their basic responsibilities. Management for engineering project schedule management to implement the project management work in various positions and link, the project progress plan and implementation of dynamic contrast, if there are data deviation, should be timely analysis, find out the cause of the error, take corresponding measures to make the project schedule to be able to get back on track. Finally, in terms of project cost management, it is mainly to monitor the use of funds and effectively control each expenditure.

(2.4) Build A Risk Prevention Mechanism

In order to avoid the project management work affected by various risks, it is necessary to establish a set of risk prevention mechanism which is suitable to the characteristics of the project management work, and clear the obstacles for the implementation of the project management work. First of all, it is necessary to improve the risk management awareness of project managers, so that they can deal with the risks that may appear in all projects, make reasonable analysis and formulate countermeasures. Secondly, a risk feedback platform should be established to make full use of the strength of all project researchers to implement the awareness of risk prevention into the whole process of project plan implementation and give reasonable feedback to abnormalities in the process of project implementation. Thirdly, through the implementation of strict and standardized technical training and evaluation of technical personnel, to improve the level of scientific research personnel. Finally, the establishment of internal responsibility management mechanism, the implementation of effective constraints on managers, in order to prevent malfeasance phenomenon.

(3) PROBLEMS ENCOUNTERED IN ENGINEERING PROJECT MANAGEMENT BY USING BIG DATA MINING

(3.1) Data Cannot Be Analyzed Correctly

The huge construction engineering system must contain a large amount of data, if the timely use of professionals to analyze these data reasonably, effective analysis, will cause the project quality delay, and even the construction of substandard quality and other serious consequences. In the long run, will inevitably lead to the various indicators are not designed to adapt to economic and social development level and the market demand, thereby greatly restricted the

development of the enterprise, directly or indirectly caused to produce deviation on the development of the whole architecture, not only will lead to the loss, but also can lead to more severe results.

(3.2) Project Engineering Is Objectively Affected by The Market Economy

All walks of life, in the field of business development will be affected by the socialist market economy, construction project management is also. Due to the different economic and social environment in different periods, the construction engineering field will also be influenced by the socialist market economy, resulting in enterprises must consider more risks of the development of socialist market economy when managing projects. For the increasing construction projects, enterprises need a lot of funds in order to successfully carry out the whole project, which may further increase the risk of the operation and development of the whole project. On many traditional major project, if can't reasonable use of big data analysis to general analysis of its own, or meets the macroeconomic situation is especially bad, enterprise can't control the cost of production and capital operating condition correctly, vulnerable to macro-economic situation, resulting in the loss of major project. Therefore, in order to further improve the service quality of construction project management, it is necessary to conform to various changes in the market, and summarize, sort out and classify them.

(3.3) Collection and Processing of Information Data

As the market economy is diversifying, human needs are also being idealized. In terms of the actual management status of the project construction, data processing because of the large in the background of the project very informative, needed information management is chaotic, so management requires quite difficult, but if the information management and large data analysis are no effective processing method, will be very easy to greatly reduce the project construction management effect, still can form new at the same time The problem. And if in the incomplete information management, the analysis is likely to complete the project design to the market demand and the reality is opposite, if the project scheme design and the evaluation results and the market does not fit, not only unable to increase the company's operating efficiency also can bring the corresponding losses to the company, and if it's not completely accepted by the market, will lead to over time The company's products are gradually excluded from the market. With the growth of market demand, the quantity of engineering data has increased dramatically, but the quality management of engineering projects is increasingly far away from the market under the influence of data.

(4) CONCLUSION

To sum up, due to the continuous in-depth application of data mining information technology in engineering construction projects, and due to its advantages in data acquisition, summary, statistics and other aspects, the efficiency and level of engineering construction projects has been greatly improved. But at this stage, as a result of construction engineering project within the company for the use of data mining technology has yet to form scale, the lack of application of the engineering application of new technology made comparatively deep research, make the application of data mining technology in construction project management is more perfect and reliable, and help its application in other engineering fields can also obtain good application performance.

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