Research Article

Construction of Financial Management System Model Based on Internet Technology

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Based on the continuous development of Internet technology, the Internet has been fully applied in many fields. How can enterprises effectively use Internet technology to improve production efficiency, optimize the operating environment, and consolidate overall profitability? Combining the actual situation of enterprises with Internet technology has become one of the hot issues in the current society. With the increasing business volume of enterprises, the financial data generated by the data management system of enterprise financial department has become increasingly huge. At the same time, a large amount of financial data plays a vital role in the development of enterprises. In this paper, two data processing technologies, big data technology and data mining technology, are adopted to design and optimize the enterprise financial management model under the framework of Internet. It is very important and urgent to use data mining technology to realize the systematic management of enterprise finance, and it is also of practical value to study huge enterprise financial data based on data mining. In order to maintain sustainable development in the fierce market competition, enterprises must change the existing financial analysis work mode. Based on the theory of enterprise financial management under Internet information, this paper compares the factors affecting the financial management mode. Therefore, it is necessary to design the financial management model of enterprises.

1. Introduction

“Internet plus” refers to a new format developed by the Internet under the impetus of innovation. This new form of economic and social development, which evolved from the Internet, forced financial information users to understand the business situation of enterprises from simply reading financial statements to front-end business data [1]. The development of information technology has brought great changes to human society, economy, politics, and culture [2]. Human beings have gradually transitioned from the industrial age to the information age. When the development of scientific information technology and the environment of social information become more and more mature, the role of information technology in the development of enterprises is also becoming more and more significant, an important means [3]. It is urgent to deeply integrate financial management with “Internet +,” build a set of new financial management model that is updated in real time, easy to understand, scientific, and reasonable, give full play to the innovative and integrated role of the Internet in optimizing resource allocation, and create new advantages of the Internet economy [4]. Among them, the management of enterprise groups’ funds is an important means to realize their competitive strategy, and financial funds are the blood of enterprises, an important breakthrough for enterprise groups to carry out and innovate their work, and an inevitable requirement for enterprise groups to participate in global competition [5]. With the emergence and application of new technologies such as the Internet of Things, cloud computing, and intelligent terminals, more and more people are involved in the generation and accumulation of data. The data is not only represented by the mass of data but also the complexity of which is becoming increasingly significant [6]. Financial management is an important part of enterprise management, and the goal of financial management is
determined by the goals of the enterprise. Therefore, in general, the goal of financial management is to maximize enterprise value.

The maximization of enterprise value reflects the deep understanding of economic benefits, that is, the maximization of enterprise economic benefits [7]. In financial management activities, financial data is the working object of financial workers. As the core data of enterprises, financial data directly reflects the operating results and operating conditions of enterprises in a certain period of time [8]. Under the background of Internet, all kinds of accounting information are integrated through information technology, and business operators form intellectual resources to serve the financial management activities of enterprises through the integration and sharing of multidimensional data. In the Internet age, the environment of financial analysis has also changed a lot [9]. At present, with the rapid spread of information on the Internet, the previous financial analysis mode has gradually fallen behind [10]. In order to maintain sustainable development in the fierce market competition, enterprises must change the existing financial analysis work mode. Based on the theory of enterprise financial management under the Internet information, compare the factors affecting the financial management mode, construct a financial sharing management mode and introduce management indicators, conduct application and evaluation research on the relevant cases of enterprise financial sharing management mode, and obtain the corresponding research conclusion [11]. The main links constituting the financial management system are financial prediction, financial decision-making, financial planning, financial control, and financial analysis [12]. These links represent different stages of financial management. They are closely related, restrict, and cooperate with each other, forming a cycle of financial management. Financial decision-making and use of funds are effective for enterprises [13]. Generally speaking, it can be divided into four stages: intelligence activities, design activities, selection activities, and review activities [14]. Information activity is the process of collecting information and finding out the basis of decision.

With the needs of economic development and the continuous advancement of management practices, financial management is being separated from information management and gradually forming an independent management field [15]. Financial management will comprehensively capture, disseminate, and utilize the wisdom and skills of enterprise employees, combine the collected information with work and people, realize financial management and sharing, and use the collective wisdom and creativity of all employees to obtain competitive advantages in social development. At present, my country’s effective financial forecasting system has not yet been formed, the financial management system is not perfect, the laws and regulations are not perfect, and the importance of cash flow forecasting is lower than that of profit and loss profit forecasting; some enterprises separate the accounting from the budget and use the accounting to reverse the budget; some enterprises make decisions it is not market-oriented, and the level of marketization is relatively low. However, the above research has not solved the technical construction under the Internet technology well. Therefore, this paper puts forward the following innovations on this basis:

1. Based on the efficiency and information processing capabilities of the Internet and according to the nature of financial management, this paper will combine big data analysis technology to build a financial management system model. Since modern enterprises have huge financial data, how to analyze and process data has become the key work of enterprises. Big data technology has advantages in processing complex data, so it is helpful to embed this technology in model design.

2. In addition, based on the above data processing methods, the financial data are further filtered, simplified, and aggregated under the data processing methods proposed in this paper so that the financial management can be extended in various fields. Based on data mining model and decision tree model, a model suitable for financial management is constructed.

The chapters of this paper are arranged as follows. The first chapter of this paper is the introduction, which discusses the background and significance of the topic selection and expounds the innovation of the article. In the second chapter of this paper, the innovative achievements and research ideas of this paper are put forward based on the research achievements of Internet technology in the field of financial management at home and abroad. The third chapter is the method part, which deeply discusses the application and principle of relevant algorithms and puts forward a new financial management data analysis and processing model based on the previous research results and the innovation of this paper. Based on the discussion of the experimental data, the fourth chapter establishes the main results of the financial management model. The fifth chapter of this paper is the conclusion part, which summarizes the research results and related work of this paper.

2. Related Work

Studies by Wang et al. show that the way of managing corporate financial data often leads to the waste of corporate financial data, which cannot be used reasonably. When business leaders or financial department personnel want to compare the financial data of the enterprise in different periods with the business projects of the enterprise, they usually have to manually consult or drag the data tables to find them item by item [16]. Gu et al. believe that enterprises all want to improve their competitiveness in the competition, so they make great efforts in the sales and production of products and constantly expand the scale of enterprises, so as to occupy more markets, which requires enterprises to obtain more funds through financing to develop enterprises [17]. The research of Liu et al. shows that they have conducted an extended research on the portfolio theory and have
worked out a “capital asset pricing model” through the research, which enriches the theoretical research of financial management. During this period, the research of financial management theory mainly focused on the potential return and risk of finance and analyzed the relationship between the expected risk return and risk of listed companies’ assets [18]. Mohamed and Alshalfan believe that under the background of big data, most enterprises are facing the dilemma of more data and difficult decision-making. For traditional building material enterprises, the basic data has the characteristics of relying on manual collection, difficult collection, and lagging data. In the face of the collected data, the financial personnel need to spend a lot of labor and time to sort it out and then carry out the next analysis work, which cannot provide real-time and accurate analysis information to the enterprise management in time [19]. Huang et al. think that different financial management modes should be applied in different levels of organizations. By analyzing the enterprises with different forms of economic organization, it is concluded that there are three typical financial management modes in the world [20]. May’s research results show that under the economic background of globalization and increasingly active international trade, the focus of financial management has shifted from enterprise investment, financing and management to foreign exchange risk and international investment, and international financial management has become the research focus [21]. Lin believes that the company has always focused on training all employees, guiding all employees to participate, and giving full play to the role of continuous improvement. In accordance with the highest requirements of the industry, they have successively developed different levels of learning, actively explored the operation of the informatization support system, and strived to realize informatization as soon as possible, covering basic management, informatization, and solidifying workflow and promoting the establishment of a transparent, agile, efficient, and process-based information management platform for enterprise information management [22]. Rocha et al. believe that when an enterprise makes a decision, it is necessary to have a financial plan to implement it, that is, to systematically and concretely express the production and operation objectives determined by the financial decision in figures. Financial planning is to formulate and coordinate various main plan indicators according to financial objectives by means of scientific, technological, and mathematical methods [23]. The research of Latifi et al. shows that financial companies usually operate in debt. Therefore, financial companies must be able to ensure that funds meet the requirements of enterprise groups at any time. At the same time, in the process of operation, funds also need to keep good liquidity at all times [24]. Arooj and others believe that “Internet +” is an innovative “shared thinking.” In the context of Internet big data, financial information providers are not simply collecting, sorting, and statistics. Financial information users are no longer a leader or a customer of a certain industry. “Internet +” as a new productivity of Internet reform, the financial management function needs to meet the needs of timeliness and sharing of various financial management information [25]. Chen et al. believe that the development speed of computer software technology is also very fast. From the basic operating system to the emergence of various types of application software with different functions, network technology and multimedia technology, it has been deeply involved in all aspects of our lives [26]. The research results of An and Shen show that information management is the information infrastructure construction, information management awareness, and information management ability of modern enterprises. The construction of enterprise information system needs the guidance of information model. As a modern management tool for enterprise management, we must make it clear that information technology has become an important symbol of enterprise competitiveness [27].

Based on the research of the above related work, this paper determines the positive role of Internet technology in the field of financial management, constructs a financial management model combining multiple technologies, makes in-depth analysis and research on the data obtained and collected by using Internet technology, makes more effective use of data, and mines the valuable information hidden behind the data, so as to simplify and efficiently manage.

3. Methodology

3.1. Related Theoretical Analysis and Research

3.1.1. Big Data Technology. The 21st century is an era of information explosion, and the global data volume is exploding. According to the investigation and research of the Internet Data Center in the United States, the annual growth rate of Internet-based data in the world has reached 50%, and at present, about 90% of the data in the world are produced in recent years. Massive data only describes the basic characteristics of “big data.” Compared with traditional data, big data has particularity in terms of data generation speed, data expression type, and data generation value, and traditional information technology means can no longer satisfy data processing requirements in the era of big data. From a technical point of view, the challenges brought by big data are first technical. When the number or type of data reaches a limit, the traditional data acquisition, storage, processing, and analysis technologies are no longer applicable, and distributed storage, stream processing, and other technologies must be adopted. From a technical point of view, the challenges brought by big data are first technical. When the number or type of data reaches a limit, the traditional data acquisition, storage, processing, and analysis technologies are no longer applicable, and distributed storage, stream processing, and other technologies must be adopted. From a business perspective, big data ultimately needs to serve business and create value. Due to the limitations of manual data collection and processing, traditional building material companies cannot obtain a large amount of data for systematic analysis. Through digital transformation, the big data financial analysis platform established on this basis can be used to solve the real-time decision-making needs of enterprises, effectively and comprehensively realize the
integration of business and finance, and provide strategic data support for enterprise managers. Big data technology needs a new processing mode to have stronger decision-making, insight, and process optimization ability to adapt to massive, high growth rate and diversified information assets. Figure 1 is a schematic diagram of the operation way of financial management under big data technology.

In the era of big data, the antiwar of new information technology affects the financial management mode of enterprises. The traditional financial management model cannot adapt to the changeable market environment. The global economy has become a diversified economy with resource sharing, integration, and rapid development. Data is an asset; how to make good use of this asset and dig out the business value that the enterprise can use in the big data will have a crucial impact on the core competitiveness of the enterprise. The financial sharing management mode is a distributed management mode based on information technology, which optimizes the organizational structure, standardizes the business process, improves the efficiency of business process processing, reduces the operating cost or creates value, and provides professional production services for internal and external customers from the market perspective. The traditional financial analysis is based on the relevant data provided by financial accounting. The data collected in these financial accounting are usually the original documents, bills, and accounting vouchers during accounting. These data are basically financial data collected within the enterprise. Financial analysis based solely on financial data is not comprehensive.

3.1.2. Analysis and Connotation of Financial Management. An enterprise is a social and economic unit with a certain economic activity as its content and according to a certain organizational structure. From the perspective of use value and value in Marx’s economy, the economic activities of enterprises can be divided into two categories, namely, production and business activities and financial management activities. The business situation of an enterprise will eventually be reflected through the financial situation. When making business decisions, the managers of the enterprise need to take the relevant financial data as the basis to ensure the scientific rationality of the decisions. There is correlation between financial indicators. Analyze the correlation of financial indicators by using the formula

$$r_{xy} = \frac{n\sum x_i y_i - \sum x_i \sum y_i}{\sqrt{n\sum x_i^2 - (\sum x_i)^2} \sqrt{n\sum y_i^2 - (\sum y_i)^2}}$$

where \(x, y\) represents the two variables and \(r_{xy}\) represents the correlation coefficient of the two variables.

In order to achieve better development, enterprises need to innovate the operation mode of financial management, which should be scientific and reasonable, and ensure that it can conform to the actual situation of enterprises, so as to improve the profits of enterprises. Enterprise financial management can carry out dynamic management mode, improve the level of financial information management, make the financial management mode more novel; the utilization rate of enterprise financial information is low, and the programming of financial software is unreasonable. At present, most enterprises in our country have their own financial management systems, but these financial management systems have the problems of scattered construction and repeated development, and even some enterprises still have different financial management systems used by higher-level companies and lower-level companies. In this case, information cannot be shared between enterprises. If an enterprise establishes a financial management model, it needs to effectively connect the group finance with the financial authority of its subsidiaries, so as to construct a new group financial management model with group finance as the main factor. After the emergence of the Internet, the
development of enterprises should make full use of the Internet. In financial management, multiple platforms can be established, and all daily financial statements and audit management can be carried out through the platform, which can effectively improve the enthusiasm of financial management. Figure 2 is the basic model diagram of financial management.

The above diagram shows the relationship among enterprise management, financial management, and financial management mode. Through the relevant research on financial management, it is found that the financial management mode serves the financial objectives. The financial management behavior of an enterprise can effectively integrate the production factors of the enterprise. Through carrying out various production activities, the whole financial management activities can run through the production.

3.1.3. Application of Data Mining Technology. Data mining, also known as knowledge discovery, is the process of discovering rules from a database. The idea of data mining originated from statistics, which is a synthesis of theories and technologies such as statistics, database technology, and artificial intelligence technology. The development of data mining benefits from the excellent performance of high-performance computing technology and distributed technology in processing massive datasets. Data mining is to discover potential, unknown, valuable, and usable data information from a large number of random, fuzzy, incomplete, and manic data, which is actually generated in production and life. Data mining generally refers to the process of searching hidden information from a large amount of data through algorithms. At present, with the in-depth development of data mining technology, researchers have conducted more extensive research on mining algorithms, and the application fields of mining algorithms also involve finance, education, Internet, and other aspects. From the current data mining classification, the widely used mining algorithms generally include decision tree algorithm, Bayesian classification algorithm, cluster analysis algorithm, association rules, neural network algorithm, and genetic algorithm. The most important thing of data mining technology is that it has great advantages in classification and prediction,
clustering, association rules, time series, and so on. Combined with these methods, it can effectively deal with massive data, which is suitable for the complexity of financial data on the Internet. Figure 3 is the basic flowchart of data mining.

3.2. Algorithm Design of Financial Management Model. The basic idea of the decision tree algorithm: first, the training set as a whole is regarded as the root node, the appropriate standard is determined, and the splitting attribute is selected. Then, according to the different values of the split attribute, the training dataset is divided into several subdatasets, which are used as the first layer of subnodes under the root node. The analysis method of predictive data mining is classification algorithm, which is a model to distinguish data classes from concepts. Its main goal is to find out the models that can accurately describe them according to datasets. The decision tree method is the most famous algorithm among classification algorithms. Aiming at the shortcomings of ID3 algorithm, an improved version of ID3 algorithm c4.0 is proposed 5 algorithm. The C4.5 algorithm is a decision tree algorithm based on information entropy. Its advantage is to use the concept of information gain rate to replace the information gain of ID3 algorithm. It inherits the basic construction idea of decision tree and selects the splitting attribute by using the information gain rate instead of the information line as the selection standard, which avoids the defects of ID3 algorithm.

Let \( T \) be the dataset, the category set in it is \( \{c_1, c_2, \ldots, c_k\} \), select an attribute \( V \) to divide \( T \) into multiple subsets, the value of \( V \) is \( n \) values \( \{v_1, v_2, \ldots, v_n\} \) that do not overlap with each other, and then \( V \) is divided into \( n \) subsets \( \{v_1, v_2, \ldots, v_n\} \), among which the value of all instances of \( T_i \) is \( v_i \).

Let \( |T_i| \) be the example set of \( |T_i| \) bit dataset, \( V = v_i \) is the number of examples of \( |c_j| = \text{freq}(c_j, T) \) which is the number of examples, and \( |c_j| \) is the number of examples with
category $V = v_i$ in $c_j$ examples; then,

$$P(c_j) = \frac{|c_j|}{|T|} = \text{freq}(c_j, T).$$ \hspace{1cm} (2)

The above formula is the probability of occurrence of $c_i$.

$$P(v_i) = \frac{T_i}{T}.$$ \hspace{1cm} (3)

The formula is the occurrence probability of $V = v_i$. In the process of constructing the decision tree, it is necessary to select an attribute to divide the data so that most of the class values of the data on the child nodes are the same. If the class values of data on a certain node are evenly distributed, the node is the largest, and vice versa. Therefore, the formula of information entropy is as follows:

$$\text{Info}(V) = -\sum_{i} P(v_i) \log P(v_i) = -\sum_{i=1}^{n} \frac{T_i}{|T|} \log \frac{T_i}{|T|}.$$ \hspace{1cm} (4)

At this time, the information entropy of attributes can be calculated, but each attribute needs to be measured at that time, so a numerical standard for the amount of information is required, so the information gain is introduced.

$$I(c, V) = H(c) - H\left(\frac{c}{V}\right) = \text{Info}(T) - \text{Info}_V(T) = \text{gain}(V),$$

$$\text{gairation}(V) = \frac{I(c, V)}{H(V)} = \frac{\text{gain}(V)}{\text{split} - \text{Info}(V)} n.$$ \hspace{1cm} (5)

By calculating the value of information gain, which node is selected in the decision tree construction, the larger the
information gain, the greater the contribution to the classification, and the smaller the contribution to the classification.

Multivariable stochastic time series prediction can predict the future by establishing a stochastic time series model. Autoregressive moving average model is one of the most classical models in stochastic time series prediction. If the time series is stable, normal, and zero mean, set $X = \{x_t | t = 0, 1, 2, \cdots, n-1\}$. If the value of $X$ at $t$ time is not only related to the values of the previous $n$ steps but also related to the interference of the previous $m$ steps, then the multiple linear regression method is used ($n, m = 1, 2, \cdots$). The idea can be obtained by the autoregressive moving average model ARMA($n, m$) generally expressed

$$x_t = \sum_{i=1}^{n} \phi_i x_{t-i} - \sum_{j=1}^{m} \theta_j x_{t-j} + \alpha_t,$$  \hspace{1cm} (6)

where $\alpha_t \sim \text{NID}(0, \delta^2_{\alpha})$ in the above formula. The autoregressive model AR($n$) is a special case of the ARMA($n, m$) model. If the ARMA($n, m$) model is expressed, when $\theta_j = 0$, the AR($n$) model can be expressed as

$$x_t = \sum_{i=1}^{n} \phi_i x_{t-i} + \alpha_t,$$  \hspace{1cm} (7)

where $\alpha_t \sim \text{NID}(0, \delta^2_{\alpha})$ in the above formula. At this time, since there is no moving average part in the model, it is called the $m$-order autoregressive model, which is named AR($n$). The moving regression model MA($m$) is another special case of the ARMA($n, m$) model. If the ARMA($n, m$) model is expressed, when $\phi_i = 0$, the MA($m$) model can be expressed as

$$x_t = \alpha_t - \sum_{j=1}^{m} \theta_j x_{t-j},$$  \hspace{1cm} (8)

where $\alpha_t \sim \text{NID}(0, \delta^2_{\alpha})$ in the above formula. Since there is no autoregressive part in the model, it is called the $m$-order moving average model, denoted as MA($m$). Lattice structures are often used to enumerate all possible itemsets. In general, a dataset containing $d$ distinct items may produce $2^d$ frequent itemsets. At the same time, $R$ rules may be generated, and $R$ can be expressed by the following formula:

$$R = \sum_{k=1}^{d-1} \binom{d}{k} \times \sum_{j=1}^{d-k} \binom{d-k}{j} = 3^d - 2^{d+1} + 1.$$  \hspace{1cm} (9)

An original method for discovering frequent itemsets is to determine the support count of each candidate itemset in the lattice structure. Usually, we can reduce the computational complexity of generating frequent itemsets by reducing the number of candidate itemsets and reducing the number of support comparisons. There is a priori principle that it is necessary to introduce first; that is, if there is an itemset with frequent modules, all its subsets must also be frequent. Through the embedding and integration of the above algorithms, the processing ability of the financial management model has been greatly improved, and it will have better performance when dealing with different situations.

4. Result Analysis and Discussion

Based on the above introduction and the construction of the model design, this paper conducted a simulation experiment to verify and test the practicability and accuracy of the model and judged the advantages of the model in the optimization and analysis of financial management through the experimental data and the processing of the experimental data. Figures 4 and 5 show the comparison of algorithms on different datasets.

Through the above comparison, it can be seen that under the same quantitative index, the model designed in this paper is superior to the original model in different datasets, especially in the first dataset. Under the same conditions, the output efficiency and processing are in a very high...
optimization category, which is 54.3% higher than that of the original model, which will greatly simplify the system flow and realize the model optimization in hardware. In addition, in dataset 2, referring to the advantages of Internet technology and the efficiency of configuration, combined with the financial management system, this paper designs the configuration suitable for the actual operation and processing process of financial management, which plays a reasonable and simplified role in structure. In order to better realize the model efficiency, therefore, reasonable configuration must be indispensable. Figures 6 and 7 show the comparison before and after the optimization of cost, profit margin, and operating cost.

In this paper, two important measurement indicators, cost profit margin and operation cost rate, are selected for evaluation. After detection and comparison, it is found that the optimized model has an obvious trend to affect the advantages of enterprises in decision-making and strategy through the impact on financial management. First, in terms of stability, the optimized model has a great advantage in complex processing because it embeds big data technology in algorithm design. This has a high degree of relevance in the complex and cumbersome text content and data processing of financial management in practice. Therefore, in the comparison chart, there will be a trend of high efficiency and high precision. In the actual test, there will be a 74.2% increase in the financial risk decision-making of enterprises, which is important for enterprises to rationally allocate resources and make correct financial risk prevention, great help. Figure 8 shows the change trend of the financial management level of the enterprise after the optimization of the financial management model.

In the above figure, it can be seen that the change in the evaluation level of financial indicators in all enterprise financial schemes is greater than that before optimization, indicating that the optimization and adjustment control model of the financial management model used in this paper has played a positive role in the economic benefits based on the financial scheme. Therefore, after the optimization of the financial management platform is completed, the financial adjustment and management have a significant economic benefit improvement, which has a good role in promoting scientific decision-making.

5. Conclusions

The design of financial management model based on Internet technology is of great help to the current financial management of enterprises. This paper analyzes the requirements of the model, including business requirement analysis, model functional requirement analysis, and non-functional requirement analysis, and clarifies the process, user roles, and corresponding functional operations of the financial analysis model. Connect the financial management work with each other, build a complete financial data warehouse, and aggregate, analyze, and bundle the data. To streamline the system data and information, it is necessary to closely combine the actual needs of the financial department of colleges and universities and design a reasonable system flow according to the workflow, which is a clever way to correct financial management and decision-making and can have better convenience and application effect. Under the same conditions, for different situations, the obtained output efficiency and processing are in a high optimization category, which is 54.3% higher than the original model, which will greatly simplify the system process and realize the model on the hardware. In the actual test, generally, the financial risk decision-making of enterprises will be improved by 74.2%, which is very helpful for enterprises to reasonably allocate resources and make correct financial risk prevention. Therefore, with the continuous deepening of the development of the Internet, the innovation and optimization of financial management are worth studying.

Data Availability

The data used to support the findings of this study are included within the article.

Conflicts of Interest

No competing interests exist concerning this study.

References
