Research on Enterprise Investment Strategy Risk Management Based on Decision Tree Classification

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Abstract: With the continuous development and changes of China's social economy, market competitiveness has become the main development trend. For enterprises, no matter in the realization of social status, or in the promotion of economic direction, they are facing enormous challenges. The internal and external environment for the survival of enterprises has undergone profound changes and has entered a more open environment. This environment has not only brought us many opportunities, but also brought us more and more uncertain factors, and the probability of investment risks is getting bigger and bigger. Decision tree decision-making method has the characteristics of clear hierarchy, simplicity, vividness and image in the decision-making process. Especially, the decision-making problem is in multi-stage and multi-level, which can express the correlation and mutual influence between the decision-making in each stage and the overall decision-making conveniently. This paper introduces how to apply the decision tree method to the field of enterprise investment strategic risk management, which has auxiliary function and practical significance for managers to make more accurate and reasonable decisions.

1. Introduction

Enterprise investment is the main development trend of economic development and benefit goals. The amount of capital investment and the investment mode in a reasonable period of time all affect the change of enterprise financial risk [1]. In order to survive and develop, enterprises must pay attention to the investment effect and economic benefit, and make operational planning and scientific decision on the industry direction, economic scale and economic benefit of project investment in combination with their own technical and economic ability [2]. The decision-making of enterprise investment policy and the choice of investment scheme, the analysis and management of investment risk and the avoidance of investment risk directly determine the success or failure of enterprise investment, and thus determine the success or failure of enterprise strategy [3]. Enterprise risk management is a method and process in which an enterprise tries to control the results of various uncertain factors within the expected acceptable range in the process of achieving the future development strategic objectives, so as to ensure the realization of the overall interests of the organization [4]. In the process of financial management, and financial investment is a basic investment activities, will be affected by a variety of factors, and this phenomenon will also have a direct impact on the operation of the enterprise [5]. At present, China's financial management level is still relatively low, and the financial risk of enterprises has also changed greatly, which not only affects the healthy development of enterprises, but also reduces the progress and implementation of China's national economic development [6].

Strategy generally refers to the overall, fundamental and long-term planning. Financial risk is one of the main reasons leading to business failure. The overall level of financial management of Chinese enterprises is low, which leads to high financial risk, which seriously threatens the healthy development of enterprises [7]. Enterprise investment strategy is a fundamental plan for purchasing real assets or financial assets with enterprise resources in order to obtain the expected return proportional to risk in a certain period of time under the conditions of market economy and competition, according to the requirements of enterprise mission and objectives [8]. The choice of

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risk response strategies is an important part of risk management. The correct use of scientific analysis methods can avoid the situation of relying only on experience to deal with risks, so that the expected effect of risk response strategies can be quantified and analyzed rationally [9]. With the continuous decline of the effect of the existing financial risk management mode of enterprises, it objectively requires enterprises to make clear the importance of financial risk management, and introduce comprehensive risk management in the field of financial management as soon as possible, so as to promote the level of financial risk management of enterprises to a higher level and control the financial risk of enterprises within an acceptable range [10]. This paper introduces how to apply the decision tree method to the field of enterprise investment decision-making, which has an auxiliary role and practical significance for managers to make more accurate and reasonable decisions.

2. Connotation and Characteristics of Decision Tree Analysis

Decision tree analysis is a method often used in decision analysis. Its basic idea is to build a decision tree through a batch of known training data, and then use the built decision tree to predict the data. It can clearly and intuitively show the various factors that affect the decision-making, and determine the action plan to solve the problem by judging the probability and the final expected value of various schemes. Comprehensive risk management requires that risk management should run through the whole process of risk business activities to achieve risk tracking analysis, so as to better adopt different coping strategies at different stages of risk. In the process of carrying out the actual investment, enterprises need professional personnel to be responsible for this work, so as to ensure the effectiveness of the transaction. It can also be clearly seen that the effect and quality of financial investment have a direct relationship with the comprehensive quality of relevant staff, and will also have an impact on the final income [11]. Now the decision tree analysis is more perfect and scientific, which has become the main method of western investment decision-making and an indispensable part of feasibility study. The main goal of decision tree analysis is to maximize the benefits or reduce the cost of human and physical resources as much as possible. In the process of financial decision-making, enterprises must strictly follow the relevant regulations and important procedures.

In the preparation stage of major decision-making, it is necessary to use a reasonable scheme for feasibility analysis, and then pass the deliberation of the high-level meeting. Only in this way can we ensure the perfection and practicality of financial investment decision-making. The four abilities of entrepreneurs have a positive effect on entrepreneurial performance, as shown in Figure 1.

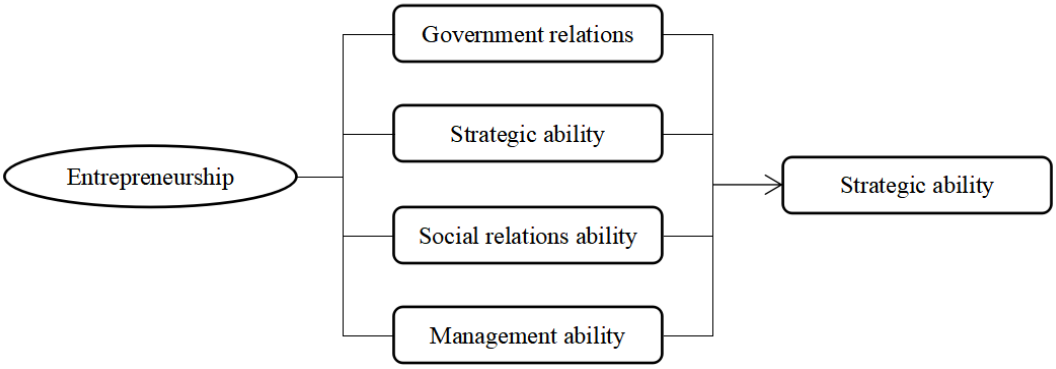

Fig.1 Research Model

Decision tree method is to use the principle of probability theory, using decision points to represent decision problems, using scheme branches to represent alternative schemes, and using probability branches to represent various possible outcomes of schemes. After calculating and comparing the profit and loss values of various schemes under various outcome conditions, it provides decision-making basis for decision makers in case of risks. From the analysis of political stability, the continuity of national policies and the stability of social security are the prerequisites for the stability of the stock market. From the analysis of the changes of relevant markets, how to

distribute social funds among these markets has different influences on the overall investment value of the stock market. From a practical point of view, most enterprises will seriously ignore the quality and comprehensive quality of relevant personnel when implementing internal restructuring, so many types of problems will appear in the process of work, which seriously affects the quality and effect of financial transactions. In addition, there are still many staff members who lack professional awareness and can't control their behavior in the face of interests, thus not only losing economic benefits, but also damaging the reputation of enterprises. The main feature of decision tree analysis is the use of decision tree graph, so the whole decision analysis process is intuitive, concise and clear.

The orderly diagram of the decision-making process constructed by the decision maker according to the decision tree can not only observe the overall situation of the decision-making process, but also reasonably analyze, calculate and compare the decision-making process on this basis, so as to make the best decision. Comprehensive risk management refers to the process that an enterprise comprehensively implements the enterprise risk management process in various business activities around the business strategy and business objectives, and achieves the risk management objectives by shaping a good risk management culture, improving the internal control mechanism and building a risk management system [12]. The measurement of investment risk is the second stage of investment risk management, which studies and calculates the probability of investment risk and its influence on the financial situation of enterprises, thus laying a foundation for better controlling investment risk and implementing risk management in the next step. Managers of enterprises often encounter several situations when making decisions in the future, each of which may appear. People can't know for sure at present, but they can infer the probability of various situations according to previous data. Because decision tree analysis is carried out under the condition of unclear situation, decision-making is always linked with uncertain factors in the future. In this case, people apply experience and criticism to systematically and logically express various alternatives and make decisions on the basis of merit, which will help us reduce risks and avoid losses in investment [13]. In the process of making financial investment decisions, if the risk prevention mode used by enterprises is not perfect, it will also affect the actual effect of investment activities. At present, when many enterprises invest, the risk prevention schemes used can't meet the actual needs, so they can't solve the uncertain factors and improve the probability of economic losses.

3. Countermeasures of Financial Investment Risk in Enterprise Financial Management

3.1 Strengthen the Investment Environment of Enterprises

The influence of the enterprise in the investment environment also makes the enterprise have great financial changes, so the establishment of a good environment can guarantee a better way of investment. In the establishment of the investment plan, before the implementation of the preparation work, the enterprise should arrange reasonable market personnel to understand and analyze the investment environment, and take the relevant data information as the main task result, so as to ensure the favorable basis for the risk effect of investment. After analyzing the causes of enterprise investment risk, it is necessary to take corresponding management measures for various reasons, and use scientific management methods to prevent and control, so as to avoid risk loss as much as possible. Profit maximization is the ultimate goal of enterprise management. Various management systems formulated by enterprises are to save costs as much as possible. Enterprises should also consider costs and benefits when formulating investment risk prevention systems [14]. The development of comprehensive risk management in enterprise financial management must be promoted orderly under the correct concept. According to the basic requirements of comprehensive risk management, enterprise managers need to update the concept of risk management and abandon the traditional and backward concept of risk management, so as to clear up the conceptual obstacles for the development of comprehensive risk management.

If enterprises want to improve their ability to cope with financial risks, they should take financial investment business as the core development part, clarify the relevant work content and scope,

control the functions and authorities of relevant staff, and adhere to the principle of occupational incompatibility. In the process of investment risk management, the first step is to formulate the investment risk management objectives. The second step is to decompose the formulated investment risk management objectives to the units or individuals who are directly responsible, and clarify the management authority of the relevant responsible persons and the responsibilities for the failure of the objectives. Risk management strategy is the core part of enterprise investment risk management, which is used by investment decision-makers to manage investment projects. In the process of risk decision-making, risk will change with time and environment. Enterprises should carry out self-monitoring management according to the change of risk. Comprehensive risk management requires enterprises to deal with all kinds of risks in a unified way. Specifically, in the field of financial management, it is also necessary for enterprises to build a risk management committee to deal with all kinds of financial risks as a whole.

3.2 Improve the Early Warning Mechanism of Enterprise Financial Risk

For the relevant personnel in the financial management department of the enterprise, it is also necessary to analyze and sort out the investment environment of the enterprise reasonably. According to the data from the market survey, all investment departments, management departments and relevant financial personnel should cooperate with each other to grasp the dynamic changes of the enterprise in the external market, and carry out more comprehensive and accurate analysis and discussion within the enterprise. If we want to effectively reduce the risk in the process of investment, we need to build a sound investment risk management system. Enterprise managers and leaders need to establish a good sense, and also use scientific and reasonable program to improve the risk prevention mechanism. At the same time, the risk management committee is also responsible for the coordination of different departments of the enterprise. In the overall financial risk management, if it is necessary to communicate and negotiate with different departments, the risk management committee will coordinate, so as to break the gap between various departments and realize the timely sharing of risk management information of various departments. The relevant investment personnel and financial management personnel only have a good sense of risk, in the actual investment work, can grasp the problems in the development of enterprise investment in all aspects and implement effective solutions. In the early stage of investment work, the relevant management personnel of the enterprise publicize the risk awareness of the financial personnel and staff according to the actual development conditions of the enterprise in the society, and strengthen their training and education in various knowledge and risk management methods.

A rational manager always seeks a management combination x that minimizes the risk under the condition of a given expected return level R_0, that is, solves equation (1) or makes the expected return reach under the condition of a given risk level V_0 Maximum, that is, to solve the equation (2):

$$\begin{cases} \min \quad x^T \Sigma x \\ s.t. \quad r^T x \geq R_0 \\ \qquad \sum_{i=1}^{n} x_i = 1, \quad x \geq 0 \end{cases} \tag{1}$$

$$\begin{cases} \max \quad r^T x \\ s.t. \quad x^T \Sigma x \leq V_0 \\ \qquad \sum_{i=1}^{n} x_i = 1, \quad x \geq 0 \end{cases} \tag{2}$$

Among them, $x=(x_1,x_2,\ldots,x_n)^T$, $r=(r_1,r_2,\ldots,r_n)^T$, $i=1,2,\ldots,n$. ri represents the ratio coefficient of the i-th corporate management to the total management; $r^T x$ represents the rate of return of the corporate management portfolio; $x^T \Sigma x$ represents the risk of the corporate management portfolio; $\Sigma=(\sigma_{ij})_{n\times n}$ represents the rate of return covariance matrix. The sensitivity analysis data of risk assessment is shown in Table 1. The relationship between risk evaluation and risk factors changes is shown in Figure 2.

Table 1 Sensitivity Analysis Of Risk Assessment

	Evaluation value	Score after change
Production risk	0.716	0.839
Manage risk	0.833	0.952
technical risk	0.628	0.741
Market risk	0.629	0.854

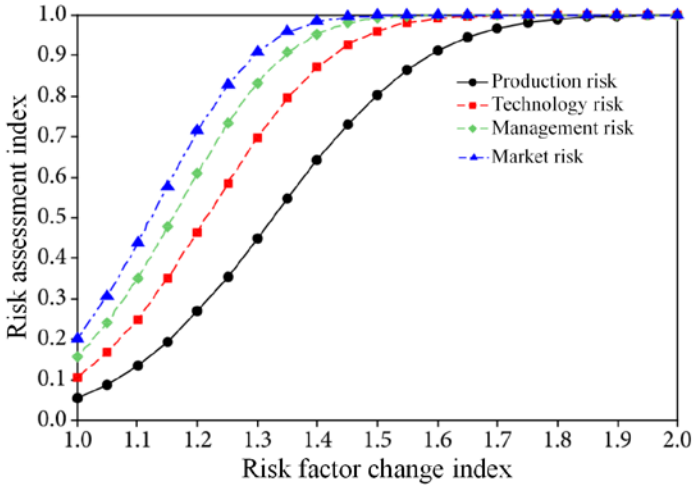

Fig.2 Relationship between Investment Risk Evaluation and Changes in Risk Factors

Corporate financial comprehensive risk management needs to pay attention to building a risk management information system, and use the information management system to enhance the effect of comprehensive risk management. When choosing an investment project, an enterprise must fully consider its own economic strength and economic environment, and choose an investment project that suits the enterprise itself. The available investment projects include avoidance investment, preventive investment, restraining investment, diversified investment, imitation investment and transfer investment. Strengthen the risk early warning mechanism for the financial risks of enterprises, and strengthen early warning management methods in each production environment of the enterprise. In order to ensure that enterprises can reduce the risk of production and increase in implementation and production, a comprehensive supervision mechanism must be established. Comprehensive supervision and early warning methods must be strengthened for the overall situation of the enterprise in production and the management behavior of financial personnel. So as to provide corporate investors with powerful information and effective establishment programs [15]. In terms of improving risk management information systems, companies can invite experienced and strong companies to conduct information system construction needs analysis, and develop risk management information systems based on demand analysis. Fortunately, enterprises should carry out corresponding trainings for employees to enable them to master the specific requirements and basic operating specifications of the risk management information system, so as to give full play to the supporting role of the information system for comprehensive risk management.

4. Conclusions

Under the increasingly fierce social development of enterprises, only by completing good investment methods and ensuring the production efficiency and growth of the enterprise can the economic status be improved. In the process of developing enterprise financial management, financial risk prevention and control are an indispensable part. Therefore, if you want to ensure the stable and healthy operation of the enterprise, it is necessary to conduct research on financial investment risk factors. The quality of decision tree analysis mainly depends on data and judgments. If the data and judgments are correct, the probability estimates provided are more practical and accurate, and the reliability of decisions made through decision tree analysis will be greater. Before making investment decisions, companies must conduct a scientific analysis of investment risks and returns, weigh the pros and cons between the two, in order to make correct investment decisions.

Enterprise managers should make full use of technical means, such as quantitative risk analysis methods such as decision tree methods, while doing qualitative decision-making methods such as organizational structure construction and strengthening internal control to avoid risks. Faced with the new challenges of venture capital and the emergence of a new social economy, to enable enterprises to maintain a healthy level of development and construction in society, they must achieve reasonable management and financial directions in their own development and enterprise construction. Implement. When making investment decisions, you must carefully consider the value-at-risk factors, and correctly estimate the degree of risk borne by the investment decision, so as to avoid the inaccurate assessment of the investment risk of the enterprise, which will cause the enterprise to make mistakes in the investment decision, cause the enterprise investment to fail, and cause the enterprise to fail. Due loss.

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