

# Developing A Smart Artificial Intelligence Algorithms Based Financial Management Systems Reliability Analysis

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## ABSTRACT

Artificial intelligence (AI) has significantly impacted the traditional enterprise financial management (EFM) mode in the business while also fostering the change of financial staff and the EFM mode. In order to increase the efficacy and dependability of the EFM system's decision-making process, a pre-alarm model is established in this paper using a data-driven concept and an AI algorithm. Through the simulation experiment of financial data, the viability of the EFM system is examined. The findings of the simulation demonstrate that the enterprise financial decision-making model presented in this article has a higher predictive accuracy for the financial status of businesses. The accuracy rate is enhanced by 18.88% and the recall is increased by 17.25% when compared to the conventional support vector machine (SVM) approach. Under the presumption of guaranteeing social benefits, applying the EFM method described in this article to businesses and even other fields can optimise the financial capital flow and promote the maximisation of economic advantages. In order to make information docking more convenient and quicker, enterprise managers can track the financial status of their companies and how project funds are being used at any time and from any location. They can also modify the way that previous publications were published and merge financial and non-financial data with the constantly expanding big data.

## INTRODUCTION

EFM is the cornerstone of a business and the central function of its operations. Effectively preventing financial losses, lowering corporate risks, and paving the way for business success and expansion can all be achieved by performing well in the pre-alarm phase of EFM [1]. Financial statistical analysis can benefit from the application of data mining technology since enterprise financial data contains a large amount of production and operation data. EFM pre-alarm is the process of analysing and forecasting all data that occurs in enterprise activities and presenting enterprise management with data charts that illustrate the hazards associated with those activities [2]. This is done through the use of comparison analysis, ratio analysis, factor analysis, and other analysis methods. The advent of artificial intelligence (AI) will replace repetitious labour in society, including more complex technical and mental labour, which will surely result in a more significant shift in the way society is organized [3]. Good financial incentives and a fulfilling reward system can encourage employees to perform more diligently and effectively in the EFM mode of the business, preventing problems from arising [4]. The study of artificial intelligence (AI) encompasses several areas, such as language recognition, image recognition, robots, human brain response systems, and more [5]. Artificial intelligence (AI) has an impact on both natural science and the social economy in daily life. AI has had a significant impact on the conventional EFM mode in the EFM sector.

EFM pre-alarms can not only predict financial risks in advance, but also provide an effective basis for business decision-making and resource allocation of enterprise managers, as well as correct the business direction of enterprises. The application of intelligent technology in EFM has become an inevitable trend of the current EFM reform and transformation. The optimal application of AI is the key to ensure the comprehensive quality of EFM to be effectively manifested. Intelligent analysis started to be widely used in the EFM of enterprises, and many of them started to recruit relevant talents to lay the foundation for the intelligent EFM of enterprises [7].

Businesses desire to expand and thrive without the involvement of EFM, and the precise tasks performed by management as part of EFM work mostly consist of evaluating enterprise financial indicators, keeping an eye on and lowering enterprise financial risks, and making financial decisions [9]. Many EFM system builders are quite concerned

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with summarising the drawbacks of AI application and developing an application strategy that is appropriate for the given scenario, given the technological demands of EFM in the modern era [10]. It is necessary to change the model and do strategic research in order to make EFM more valuable to businesses in the AI era and to increase its effectiveness. This article presents the EFM pre-alarm model.

## METHODOLOGY

### A. *Feasibility of AI in EFM*

An enterprise is a collection of related and diverse economic management operations. To keep the business operating normally, the financial staff members are required to gather and handle these pertinent data and information. One of the key initiatives to enhance businesses' current management capabilities is to encourage the transformation of EFM. Without AI, the financial burden is currently enormous, time-consuming, difficult, subjective, and onerous. EFM should fully utilise the professional accounting role of financial staff while also offering more effective and scientific information support for top managers of firms' decision-making through the successful integration of AI and big data [11]. This kind of task can be completed by the machine itself thanks to AI. By utilising its deep learning capabilities, the robot can quickly become familiar with the enterprise's workflow and operate in batches to efficiently gather, process, and input data, as well as generate final reports. This greatly enhances the efficiency of financial work and decreases financial labour costs.

Simply gathering and processing financial data will require a significant amount of labour, material resources, and time, and the efficiency will be quite low due to the volume of data and information generated and used by financial activities. With the use of text recognition, voice entry, and image recognition, big data collection technology and artificial intelligence (AI) may swiftly, effectively, thoroughly, and precisely gather the necessary financial information during the information identification and collecting process [12]. Risk pre-alarm was formerly accomplished by financial staff through calculation, analysis, and reporting; however, this was constrained by variables including the timeliness of reporting and the accuracy of artificial calculation and analysis. Businesses can rapidly and reliably gather information through big data analysis with AI's assistance. Additionally, by creating a risk pre-alarm model that compares historical data, industry data, and other indicators, businesses can automatically identify risks and mitigate them. This is crucial for the stability of an organization's operations.

Financial staff lack significant big data analysis capabilities, which prevents them from processing and analysing massive amounts of data quickly and effectively, nor from efficiently extracting critical information from the many varieties and complexities of financial data. AI has many benefits in operation; it can operate a large amount of financial data, find the reasoning rules in financial data, realise the sorting and analysis of future financial data, and increase the analysis efficiency of financial data. This is in addition to using big data preprocessing to clean, fill, and standardise the collected original data.

AI significantly reduces the information distortion brought on by human factors while processing information because it uses both normal procedures and its own exceptional computation and analytical abilities. AI and big data analysis techniques are combined to create enterprise financial data, which is obtained directly and used to create financial statements with different dimensions. Different financial statements are required for different financial indicators based on the demands of different organisations; multi-angle and multi-level comparative analysis is performed to intuitively depict the changes of diverse financial data.

### B. *Pre-alarm model of EFM*

The state of the finances is unknown, complex, and difficult overall. To some extent, AI can be programmed and standardised, which will simplify operations and increase efficiency[13]. Once the data is located, the form of collection is used to generate statistics and disseminate information. By selecting the most important information, we can turn it into intelligent shared information, end the historical information silos, and integrate each piece of information into the management system as a whole. Then, we can exchange corporate data, steer clear of monotonous tasks, and perform well in terms of correctness, singleness, and preventing the loss of information sources. Figure 1 depicts the EFM pre-alarm support system's data processing flow.

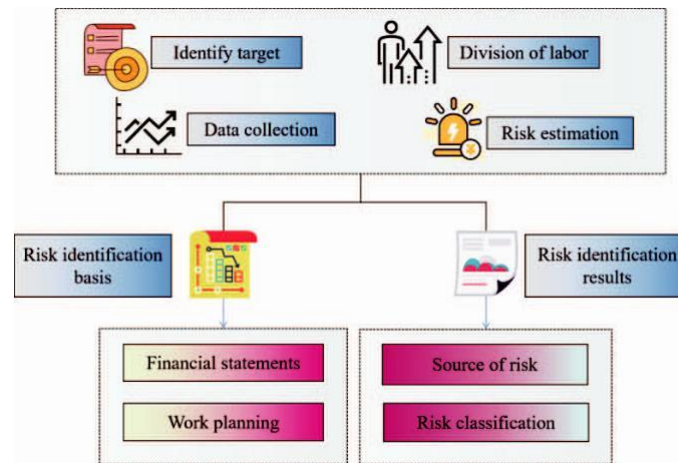


Figure 1 Data processing stage of EFM pre-alarm support system

Pre-processing data technology uses one or more mapping points to thoroughly analyse the appearance of items in association and uses small sample analysis to verify the legitimacy of the data. Company managers can enhance their management of their businesses by interpreting certain information found in the data, which is obtained through thorough analysis of company financial data. The features of financial decision-making challenges are the basis for model selection in universities' financial decision-making systems. As the financial budget, one atomic model is chosen from a variety of models, and these models are combined as needed to create a composite model that can solve a difficult problem with making decisions.

**RESULT ANALYSIS AND DISCUSSION**

AI Blockchain Technology's Openness Transparent bodies guarantee the openness and transparency of their data by allowing anybody with permission to review the information on the blockchain at any time and making the data in the system publicly accessible. Furthermore, a huge amount of financial data may be handled by the organic cloud computing combination, which can also deepen process specialisation, standardise financial processes, increase process efficiency, and save operating costs. Using decision-making and EFM as the study object, big data is combined to achieve data concentration, and data selection is sourced from an EFM information platform.

To mine the data and disseminate the intelligent information, the chosen data should be collected, standardised, and gathered. A comprehensive intelligent decision-making system should then be built. The primary cause of the erroneous data in the system is the cleaning and sorting process, which recovers as much of the correct values as possible from the low-quality data that is generated by missing values and noisy values.

Motivated by Big financial data, a full sample space is frequently included in the data input. A comprehensive sample space was created based on this to increase the model's accuracy. The outcomes show that the strategy suggested in this article works.

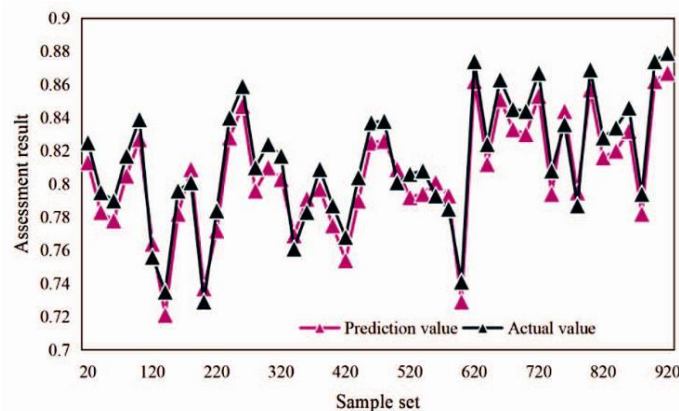
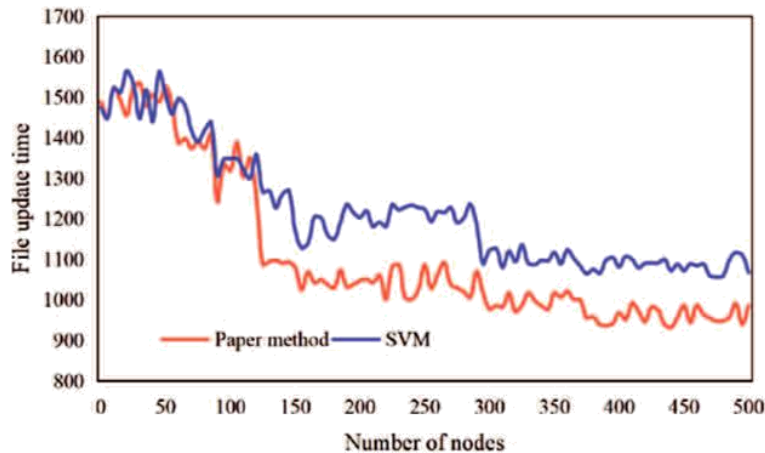


Figure 2 Learning results of this model

The convergence of financial risk prediction findings is easily observed, providing a good approximation of the original data and a foundation for predicting future data.

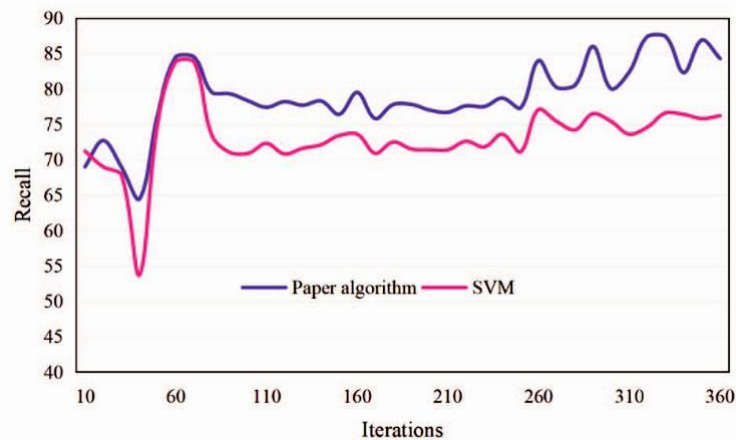
To regulate the complicated and dynamic actual world and make wise decisions, financial agents must measure the mental accounts of various agents involved in the decision-making process and connect situational emotional calculations to construct an artificial agent. In other words, in order for financial agents to possess the requisite situational emotional intelligence, automatic emotional situational information gathering as well as the identification and computation of emotional conditions are carried out in real-world settings. At the same time, financial staff psychological accounts are somewhat modified.



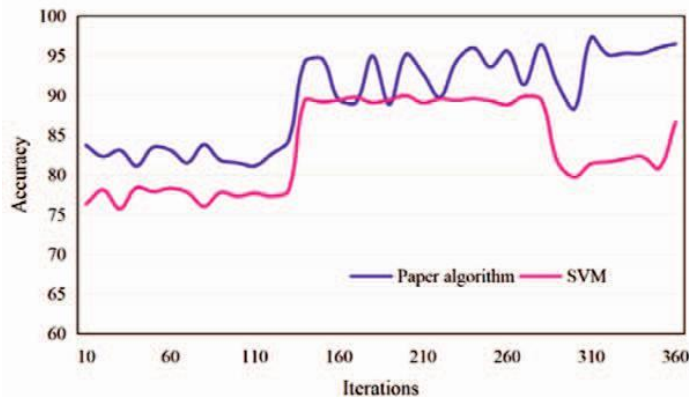
**Figure 3 Performance comparison of algorithms**

Big data mining and analysis are the foundations for the efficient application of big data in the corporate finance management stage. The main application content among them is the efficient mining of massive data. Enhancing the development and usefulness of financial informatisation is necessary to support the expansion and practical use of financial big data in EFM.

Every facet of enterprise management is involved in EFM. The project aims to advance the AI of EFM in businesses through a methodical approach that involves not only the finance department but also the recognition and overall planning of management, the integration and docking of financial and business systems, the enhancement of multiple systems, and the promotion of process standardisation. Figures 4 and 5 compare the algorithm's memory and accuracy in predicting financial situations.



**Figure 4 Comparison of recall of financial situation forecast**



**Figure 5 Comparison of forecast accuracy of financial situation forecast**

This method's recall and accuracy have increased by 17.25% and 18.88%, respectively, over traditional SVM. The accuracy, effectiveness, and dependability of decision-making have all increased thanks to the enterprise financial analysis approach this study suggests. Owing to computers' significant advantages in data processing, patterns don't need to be simplified, which increases their accuracy. We may successfully lessen the reliance on human experience by mining the logical linkages between data, which will increase the objectivity and dependability of financial analysis and forecasting. Given that a significant amount of financial data in AI mode is held in electronic data and that data loss or leakage may result in irreversible losses for businesses, data security management needs to be strengthened.

## CONCLUSION

With the fast advancement of science and technology in the twenty-first century, artificial intelligence has continued to advance. By gathering, analysing, and rearranging information, information helps organisations create and implement rational, scientific plans. It also clarifies the relationships between departments within the enterprise. The big data mining-based decision tree technique used by the efm pre-alarm model has the advantages of low computation, straightforward transformation, and high accuracy. It also requires no parameter setting, can be applied to a wide range of domains, and excels at handling high-dimensional data.

The findings indicate that this article's enterprise financial decision-making model has a higher degree of accuracy in predicting the financial status of businesses. Recall is raised by 17.25% and accuracy rate is increased by 18.88% when compared to the standard SVM algorithm. Utilising data mining and artificial intelligence algorithms can boost an organization's competitiveness, increase productivity, and support strategic decision-making by leveraging the network's and computer system's real-time analysis capabilities to analyse financial data promptly.

Businesses must demonstrate their commitment to comprehensive management by implementing AI and big data into their EFM systems, solving real-world financial problems, increasing financial efficiency, and offering reliable, accurate data that reduces risk when making business decisions.

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