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Design and research of enterprise risk management avoidance system based on KGN-LLM algorithm

Jiaqi Ma[1,8], Yuxin Li[2,9], Liru She[3,10], Ziying Qin[4,11], Jingyi Meng[5,12], Yandong Hu[6,7,13]

[1]Finance related majors School of Finance and Public Administration, Harbin University of Commerce, Harbin, Heilongjiang, china
[2]School of Accountancy, Harbin University of Commerce, harbin, Heilongjiang, China
[3]Fuyang Normal University, Fuyang, Anhui, China
[4]Zhonghuan Information College Tianjin University of Technology, Tianjin, china
[5]Harbin University of Commerce, harbin, Heilongjiang, China
[6]School of Computer and Information Engineering, Harbin University of Commerce, Harbin, Heilongjiang, China
[7]Corresponding author

[8]19565652153@163.com
[9]1423726792@qq.com,
[10]17555884058@163.com
[11]qapathy520@163.com
[12]17337272364@163.com
[13]m18964799825_1@163.com

Abstract. With the increasing complexity of enterprise asset management, traditional risk management methods have become inadequate to meet the demands of real-time monitoring and efficient decision-making. In order to improve the efficiency and security of enterprise asset management, this paper proposes a method for reasoning the avoidance of enterprise asset flow management risks based on the KGN-LLM algorithm. It primarily involves the field of financial risk avoidance, including preprocessing and analysis of enterprise asset flow data, constructing a knowledge graph of enterprise asset flow data using the KGN-LLM model, monitoring real-time asset management data, identifying and analyzing risks, evaluating identified risks, and implementing asset management risk avoidance decisions. It is demonstrated that this method of reasoning the avoidance of enterprise asset flow management risks based on the KGN-LLM algorithm can effectively improve the efficiency and security of enterprise asset management.

Keywords: KGN-LLM Algorithm, Knowledge Graph, Asset Management Risk Avoidance

1. Introduction

In the process of enterprise asset management, there are complex issues regarding risk assessment and decision-making. Traditional decision-making methods rely on human experience and limited data, which may lead to imprecise decisions. By utilizing deep learning models (such as LLM) and knowledge graphs, enterprises can gain a deeper understanding of the correlations and potential risks among assets,

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thereby improving decision accuracy. Meanwhile, enterprises need to monitor asset status in real-time to promptly identify and manage risks. The lack of effective real-time monitoring systems may result in the occurrence and spread of risk events. By combining real-time data and advanced analytical techniques, enterprises can construct early warning systems to identify potential risks in advance and take preventive measures.

KGN-LLM is a technology that combines knowledge graphs and deep learning models. By processing complex data relationships and making inference decisions, it helps enterprises avoid risks in asset flow management. Moreover, this technology, by combining enterprise asset flow data, conducts risk identification, evaluation, and avoidance decisions, ensuring the security and stable operation of enterprise assets. A knowledge graph is a graph structure used to represent relationships between entities, typically composed of entities, attributes, and relationships. Knowledge graphs help transform data into structured information and provide a more intuitive and understandable way to express associations between entities. Knowledge graphs have been widely applied in various fields such as natural language processing, recommendation systems, and intelligent question answering. Deep learning models are supervised learning methods used to handle data with labeled information. The goal of deep learning models is to predict and classify new data by learning the relationship between data features and labels. They are widely used in tasks such as classification, regression, and clustering, helping to improve the accuracy and efficiency of data analysis and decision-making. The core idea of KGN-LLM technology is to utilize structured information in knowledge graphs, combined with the learning ability of deep learning models, to model and infer complex data relationships. In the decision-making process of avoiding risks in enterprise asset flow management, KGN-LLM technology can help enterprises construct knowledge graphs related to asset flow management, including enterprise assets, flow management policies, risk factors, and other information. By learning the vector representations of entities and relationships in the knowledge graph, KGN-LLM technology can extract feature information from the data, assisting enterprises in quantitatively evaluating asset flow management risks and reasoning avoidance decisions.

In conclusion, the application of KGN-LLM technology provides new ideas and methods for decision-making in avoiding risks in enterprise asset flow management. By combining knowledge graphs and deep learning models, KGN-LLM technology can help enterprises gain a more comprehensive understanding of the complex data relationships in asset flow management, thereby improving decision accuracy and efficiency, thus ensuring the security and stable operation of enterprise assets.

2. Necessity of Enterprise Risk Management

2.1. Traditional Backwardness in Enterprise Management Models

Some enterprises have insufficient development in risk management models, and their work philosophy remains relatively traditional. In daily risk management, traditional models are still adopted, resulting in incomplete information collection. Moreover, in the era of big data, facing massive data information, traditional models are no longer applicable. Under traditional models, communication and contact between departments and employees are hindered by documents and calls, leading to obstacles in collecting relevant information. Work objectives and management strategies are not coordinated with the strategic planning and implementation of the enterprise, resulting in significant deviations in expected financial results after business operations. Management processes focus on reporting analysis, while neglecting information analysis and control. Data between departments are not connected and systematic, making centralized management difficult. Additionally, unreasonable job settings require a considerable amount of time for data collection, and during transmission, distortions may occur, leading to data lacking comprehensiveness and authenticity. In actual control work, inadequate data analysis capabilities make it difficult to extract useful value from this data, identify existing problems, issue effective warnings, resulting in the occurrence of various business and financial risks [1].

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2.2. Imperfect Enterprise Risk Management System

Enterprise risks are categorized into different types, among which tax risks are one of the common issues faced by enterprises, including changes in tax policies, the complexity of tax regulations, and risks of tax disputes. By strengthening tax management, enterprises can promptly understand changes in tax policies, correctly grasp tax regulations, avoid tax risks, and prevent disputes and controversies caused by tax issues, ensuring the sustainable development of the enterprise [2-3]. Meanwhile, enterprises also face contract risks, which may result in financial losses, damage to reputation, and the breakdown of cooperative relationships. Financial losses result from economic losses caused by contract risks, including increased contract performance costs and payment of penalties. Reputation damage arises from negative publicity effects caused by contract risks, affecting the corporate image and reputation. The breakdown of cooperative relationships refers to deteriorating or terminating relationships with partners due to contract risks, impacting long-term development and partnership relationships [4]. Therefore, enterprises need to carry out risk control, which refers to the control of risks that may be encountered in the operation process. It requires enterprise managers to master risk management strategies in light of actual development needs and ensure the smooth implementation of comprehensive budget management operations [5]. Risk control involves identifying, assessing, and preventing risks. Risk identification involves identifying and confirming various risks that may exist in the procurement process, including supplier risks, contract risks, and logistics risks. Risk assessment evaluates and prioritizes various risks, determining their importance, impact, and likelihood. Risk prevention involves developing corresponding preventive measures and plans for various risks to reduce the probability and impact of risk occurrence. Risk response involves developing corresponding response measures and plans for various risks to address potential losses [6]. Through these risk management measures, enterprise risks can be controlled to a certain extent.

2.3. Enhancing Risk Avoidance Efficiency

To enhance the understanding of internal control and financial risk management among internal control environment managers, it is necessary for enterprises to change traditional management concepts and strengthen internal control. Only in this way can effective management of financial risks across the entire enterprise be achieved. Decision-makers in enterprises should fully understand the security, integrity, and value-added nature of enterprise funds and continuously innovate internal control and management concepts based on this foundation, thereby ensuring the efficient operation of the enterprise. At the same time, relevant government departments should conduct systematic ideological and managerial education for current enterprise managers, enabling them to develop a practical internal management system to ensure its smooth implementation [7-8]. Improving productivity The positive impact of enterprise management on improving economic benefits is mainly reflected in improving productivity. With effective organization and coordination, enterprise management can ensure the rational allocation of resources and avoid waste and inefficiency. Effective resource management helps maximize the effectiveness of each resource, thereby improving the efficiency of the production process. Enterprise management can also develop scientific production plans and processes, optimize production processes, reduce bottlenecks and resistance in production, thereby improving overall production efficiency. Through these methods, enterprises can achieve more output with the same resource input, effectively enhancing economic benefits. Enterprise management can use incentive mechanisms and employee training to improve the efficiency and professional level of employees. The improvement of employee enthusiasm and professional competence will directly affect the improvement of productivity, thereby positively affecting the economic benefits of the enterprise [9].

3. Enterprise Risk Avoidance System Based on KGN-LLM Algorithm

Collecting relevant knowledge and data in the field of enterprise asset management, including asset information, flow rules, risk factors, etc., to establish a knowledge graph network, modeling relationships between different entities (assets, rules, risks, etc.), forming a directed graph structure. Inputting the constructed knowledge graph network into a deep learning model, such as a model based

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on graph neural networks. Through learning, the model can extract potential feature representations from the knowledge graph, capturing complex relationships and patterns between entities. Combining the learned feature representations with real-time asset management data to perform avoidance decision reasoning. The KGN-LLM model performs real-time monitoring and analysis of asset flow management risks, identifying potential risk situations. Based on avoidance strategies and decision rules, risk avoidance decisions are made, including adjusting asset allocation and formulating contingency plans. Continuously optimizing the knowledge graph network and deep learning model based on actual situations to improve the model's reasoning ability and accuracy. By combining practical cases and experiences, continuously improving avoidance decision strategies to enhance the efficiency and risk avoidance capability of asset management.

3.1. Data Preprocessing

Data collection and processing form the basis of implementing this system. Enterprises need to collect various types of data in the asset management system, including asset flow, asset value, risk events, etc. These data can be obtained from internal systems and external data sources. The data should be cleaned, transformed, and standardized to ensure accuracy, completeness, and quality, providing a reliable foundation for subsequent analysis and reasoning.

3.2. Construction of Knowledge Graph by KGN-LLM Model

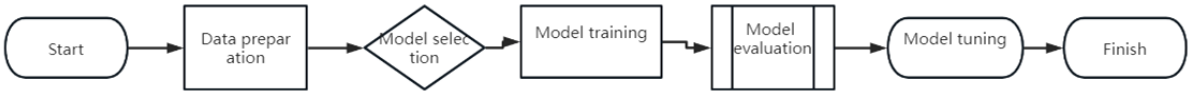

Figure 1. Detailed process of constructing knowledge graph by KGN-LLM model

After preprocessing enterprise asset flow data, the KGN-LLM model constructs a knowledge graph of enterprise asset flow data, which is an important step in implementing this method. Based on the collected data, enterprises need to construct a knowledge graph of asset management, including asset relationships, risk factors, avoidance strategies, etc. The construction of the knowledge graph needs to follow certain specifications and standards to ensure clarity and accuracy. The establishment of the knowledge graph will provide a basis for the subsequent construction of the KGN model and the training of the deep learning model LLM. The KGN model abstractly represents the knowledge graph network, mapping entities and relationships in the knowledge graph to a graph structure. The construction of the KGN model needs to consider key attributes and relationships in asset management for subsequent learning and reasoning by the deep learning model LLM. The establishment of the KGN model will provide a basis for the reasoning of risk avoidance decisions in asset management. Next, training of the deep learning technology LLM model is conducted. The LLM model extracts key features from asset management by learning the feature representations in the knowledge graph for subsequent risk analysis and decision reasoning. The training of the LLM model requires a large amount of data and computing resources to ensure accuracy and robustness. Through training the LLM model, enterprises can better understand complex relationships in asset management, improving decision accuracy and efficiency. Training the deep learning technology LLM model usually involves steps such as data preparation, model selection, model training, model evaluation, model tuning, and model deployment. Model selection involves selecting suitable neural network structures, such as Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), Long Short-Term Memory Networks (LSTMs), etc., to ensure appropriate models are chosen in different environments. Evaluation of model performance includes metrics such as accuracy, precision, recall, F1 score, etc., and adjustments are made to optimize the evaluated values for use.

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3.3. Risk Analysis and Decision Reasoning by LLM Model

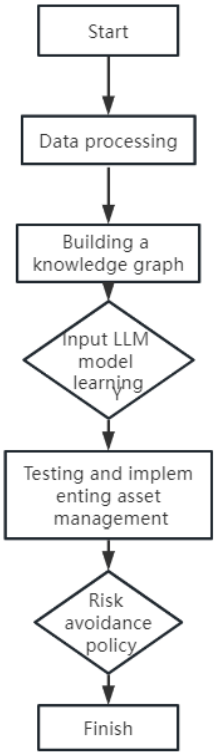

Figure 2. Decision reasoning process for risk avoidance of enterprise management risks based on KGN-LLM algorithm

The LLM model achieves intelligent analysis and decision reasoning of asset risks by learning feature representations in the knowledge graph. The method of decision reasoning for avoiding risks in enterprise asset flow management utilizes intelligent technology to improve asset management efficiency, reduce risk losses, and ensure asset security. Real-time asset management data is input into the trained LLM model for risk analysis and decision reasoning. Meanwhile, based on historical data and real-time information, the LLM model identifies potential risk events and provides avoidance decision strategies. Through risk analysis and decision reasoning by the LLM model, enterprises can promptly identify and avoid potential risks in asset management, ensuring the security and stable operation of assets.

To achieve real-time monitoring and early warning, continuously monitor changes in the data of the asset management system, update the knowledge graph and retrain the LLM model in a timely manner. Through real-time monitoring and early warning systems, enterprises can promptly identify and respond to potential asset risk events, ensuring the stability and security of asset management.

4. Model Analysis

Against the backdrop of continuous improvement in information technology, the operational management systems and organizational structures of construction enterprises are constantly being adjusted and optimized. In order to maintain advantages in a competitive market environment, enterprises need to focus on themselves and innovate their financial management systems. On one hand, accelerate informatization construction while clarifying financial management objectives; on the other hand, optimize organizational structures to facilitate the smooth progress of various financial tasks. By standardizing various business accounting practices, accurate accounting information can be obtained. In the long run, enterprises can establish a brand-new digital financial management system to achieve management objectives. Only in this way can enterprises maintain their development momentum in a

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constantly changing market environment. The improvement of informationization brings new opportunities; therefore, enterprises need to adjust their financial management strategies to adapt to new business requirements and changes in the market environment [10].

The enterprise risk management avoidance system based on the KGN-LLM algorithm introduced in this paper can improve decision accuracy. By using the deep learning model LLM to learn the feature representations in the knowledge graph network, it can more accurately analyze asset risks and enhance decision accuracy and precision. Combining real-time asset management data, it can monitor asset risk situations in a timely manner, issue early warnings for potential risk events, assist enterprises in taking avoidance measures promptly, and achieve real-time monitoring and early warning. Through intelligent technology, it can conduct decision reasoning based on historical data and real-time information, provide personalized asset risk management solutions, and help enterprises better avoid risks through intelligent decision reasoning. Meanwhile, by improving management efficiency, the method of decision reasoning for avoiding risks in enterprise asset flow management can enhance asset management efficiency, reduce losses caused by risks, and ensure the security and stable operation of assets. The beneficial results mentioned above demonstrate that the enterprise risk management avoidance system based on the KGN-LLM algorithm can achieve comprehensive intelligence and automation in enterprise asset risk management, providing enterprises with all-round support for asset risk management.

5. Conclusion

In conclusion, this system, by utilizing the deep learning model LLM to learn feature representations in the knowledge graph network, can more accurately analyze asset risks and enhance decision accuracy and precision. The decision reasoning method for avoiding risks in enterprise asset flow management based on KGN-LLM introduced in this paper can effectively improve the efficiency and security of enterprise asset management, bringing more benefits and value to enterprises.

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