Research on Enterprise Risk Identification and Early Warning System based on Big Data Background

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Abstract. Big data is a powerful tool which can modernize governance systems and improve governance for current public governance. Based on that, this paper discussed the research on situation of enterprise risk identification and early warning system under the background of big data. At first, the paper integrated the definitions of risk and enterprise risk management by domestic and foreign experts. Secondly, the author put forward that the development of risk identification and intelligent early warning is inevitable in the era of big data, and gave suggestions for improving the early warning system. Finally, the paper described the prospects of risk identification and early warning systems in the context of big data in the future. In summary, it is important to establish a closed-loop management chain of data security protection.

1. Introduction

1.1. Definition of Risk and Enterprise Risk Management
Many experts and researchers have given different perspectives of risk definition from their own research direction. In "Economic Theory of Risk Insurance," Willett emphasized; "Risk is an objective manifestation of the uncertainty of events that are unwilling to happen." In "The Risk, Uncertainty, and Profit," Knight pointed out; "Risk is measurable uncertainty." In summary, this paper defines risk as the uncertainty of the objective existence of loss in a specific environment.

Risk management is generated and developed along with the progress of society and the development of the economy. Enterprise risk management is the technical method that the relevant departments of the enterprise focus on the enterprise risk management and adopts the enterprise risk management to manage the enterprise risks, and create a continuous, dynamic process of preparing, managing implementation, managing reports, and managing oversight improvements.

This definition contains the following aspects:

(1) Enterprise risk management should be carried out around the enterprise risk management objectives to ensure the realization of business objectives;
(2) The main body of enterprise risk management is the relevant departments of the enterprise, not just the risk management department;
(3) Enterprise risk management should adopt appropriate technical methods, including qualitative technical methods, quantitative technical methods, and a combination of qualitative and quantitative methods;
(4) Enterprise risk management consists of four links: management preparation, management implementation management report and management supervision improvement. The management
preparation phase mainly involves identifying specific projects, collecting and collating information, formulating plans, issuing notices, etc.; the management implementation phase mainly includes risk identification, risk response, risk assessment, risk warning, risk control, etc., it is the reporting risk; the management supervision improvement phase mainly involves supervision evaluation and management improvement;

(5) Enterprise risk management is a dynamic and continuous process.

1.2. Risk Identification and Early Warning System

1.2.1. Risk identification
Risk identification refers to the systematic and continuous understanding of the various risks faced by various methods and the analysis of the underlying causes of the occurrence of risk accidents before the occurrence of a risk accident. The risk identification process consists of two parts: perceives risk and analyses risk. Perceiving risk is the basis of risk identification, understanding the various risks that exist objectively, and further analysis on the basis of this, to find the conditions that lead to the occurrence of risk accidents, to develop risk management plans, to conduct risk management decision-making services. The key to risk identification is to analyze the various factors that cause a risk accident.

Risk identification is the process of identifying the real and potential nature of a risk in a way that is perceived, judged, or categorized. The risks that exist around people are diverse, both current and potential, both internal and external, both static and dynamic. The task of risk identification is to identify the main risks faced by economic agents from the complex environment. In addition, risk identification can be judged through perceptual knowledge and historical experience, on the other hand, it can be analyzed through the analysis of various objective data and risk accidents, summarized and organized, and necessary expert interviews to find out obvious and potential risks and their loss patterns. Because risk is variability, risk identification is a continuous and systematic task that requires risk managers to pay close attention to these changes in existing risks and to detect new risks at any time.

1.2.2. Risk early warning system
Risk prediction requires a comprehensive analysis of a large amount of information, and backward manual management methods can no longer be adapted. Only relying on high-tech means, combined with manual management, to improve the automation level and processing ability of analysis, can gradually improve the accuracy and timeliness of risk prediction. Therefore, the establishment of a highly automated and intelligent risk warning system, in close cooperation with other systems, will play an active role in the enterprise risk management system.

The risk warning system is actually based on the characteristics of the research object, by collecting relevant data information, monitoring the trend of risk factors, and evaluating the strength of various risk states deviating from the warning line, issuing early warning signals to the decision-making layer and taking them in advance. A system for pre-control countermeasures. Therefore, to build an early warning system, we must first construct an evaluation index system and analyze and deal with the indicator categories. Secondly, based on the early warning model, comprehensively evaluate the evaluation index system. Finally, based on the evaluation results, set the early warning interval and take corresponding countermeasures.

2. The Inevitability of Risk Identification and Intelligent Early Warning
In order to get more effectively and timely warn of hazardous events, risk pre-research and judgment can be controlled before destructive impact, and event risk identification and intelligent early warning are needed based on big data.

(1) Big data cracks the characteristics of surface, one-sidedness and lag of information, and grasps information in time through data technology to realize risk research and judgment. The development of big data informatization provides the source of power for enterprise risk identification and intelligent early warning. The open source information data can extract the data, content and specific
(2) Big data can build a database of potential risk factor data simulation analysis based on extensive data to improve risk perception and early warning. Massive metadata can provide data resources for potential risk factors of events, build risk year simulation analysis database based on risk factor data, perform database analysis on the causes and causes of potential risk factors induced by past events, and explore risks through potential risks. The data simulation analysis library retrieves similar events and other potential risk factors, and timely performs risk prevention and control to reduce the harm to the enterprise.

(3) Analysis and dynamic monitoring of big data can improve the real-time dynamics and accuracy of enterprise risk identification and intelligent early warning. The big data technology also can realize real-time dynamic collection and information statistics of fragmented data, realize quantitative analysis of massive data and full data early warning mode through dynamic data monitoring, effectively avoid time lag and sample error of sample data in traditional mode, ensure timely control of enterprise risks, improve the accuracy and timeliness of risk identification, in order to achieve dynamic and intelligent early warning of enterprises.

3. Suggestions on Improving Enterprise Risk Identification and Early Warning System

3.1. Establish a Sound Risk Identification and Early Warning System

The role of data resources is very obvious in the process of building a national governance system in a modern economic system. Data has great advantages in the process of application, and it can provide strong support for the development of society so as to manage risk for big data. Work provides security, raises people's awareness of data protection, and enables data resources to survive in a large environment, so it must ensure that risk management of big data has a sound identification and early warning system. In other words, the risk management of big data must be controlled by a law. A well-established identification and early warning system actually strengthen the top-level design of big data risk management. In this highly competitive market, it is only under the protection of the law that it can continue to advance. Without the support of relevant laws and regulations, it is difficult for big data to promote economic and social development and innovation of related technologies.

The risk management of big data is an important part of the artificial intelligence era, and the means of big data risk management is an important management behavior for artificial intelligence. If it can be based on the open laws of big data, big data Security protection will be much easier, and the development of artificial intelligence is getting stronger and stronger. In this process, it is necessary to continuously confirm the security management specifications of big data. It should be noted that in the process of building the security assurance system, in addition to strengthening the construction of the risk management process, it is necessary to establish a risk assessment, risk reward and punishment and other systems to ensure a more comprehensive system of data risk management. In the era of artificial intelligence, the risk identification and early warning system is not static. The risk management mechanism designed for the social situation at that time needs constant optimization and reconstruction when the external social environment changes.

3.2. Building an Enterprise Risk Management System

It is necessary to further clarify the responsibilities of relevant departments and personnel for building a risk management system. The authority of data resources and the management of data should be implemented in relevant departments and personnel. And scientific management methods should be adopted to further standardize data management. In the process of building a risk management system, risk monitoring and regulation is an important component. If data security is not effectively guaranteed, it may have adverse effects on production. Therefore, it is necessary to comprehensively protect data and resources, implement the responsibility for the protection of data and resources, and clarify the authority and reward and punishment measures of the person in charge of security. What is more, security leaders are more cautious in data access authority approval and exception behavior processing.
3.3. Establish an Enterprise Data Information Resource Directory System
The data information resource directory system plays a key role in meeting data security requirements. Especially in the premise of the openness of Chinese government data, the development of data must go through this stage. There are three different roles in the data information resource directory system. These three different roles have different responsibilities, including the managers, providers, and users of the information resource catalog. They have their own management responsibilities and authorities. Effective implementation of all aspects of data resources. In the process of data management, we are more eager to have more freedom in the acquisition and utilization of data in the future. Under the premise of data security, we must monitor and manage the risks from the production process in order to achieve this goal as soon as possible.

4. Prospects of Risk Identification and Early Warning Systems

4.1. Combine Risk Identification and Early Warning System with Artificial Intelligence Effectively
In the future of big data risk management, the degree of integration between risk management and artificial intelligence will be higher under the impetus of artificial intelligence, and risk management technology will achieve further breakthroughs. Risk management will be highly accurate, and risk management under high precision will not only be more secure, but also alert to risks in the future. Under the influence of the intelligent era, the risk management simulation technology will be further implemented. The higher the similarity between the simulation technology and the reality, the better the development environment of risk management. It can be believed that in the near future, the ability of risk identification and early warning system will be closer to human thinking, which is the advantage of artificial intelligence integrated into big data risk management.

4.2. Apply Intelligent Risk Management to More Areas
The continuous updating and optimization of information technology has gradually recognized artificial intelligence in various fields. The widely application of artificial intelligence technology not only marks the arrival of the intelligent era, but also means that the intelligent society will be our life and enterprise. In all aspects of social life, data risk management is involved, especially after human beings enter the era of intelligent information, data information has become an indispensable part of business management. Data information has a direct relationship with corporate privacy. Enterprises do well in risk management of big data, in fact, they are doing a good job of protecting their privacy. Big data risk management is applied to a wide range of fields, which will inevitably lead to further improvement under the guidance of artificial intelligence.

4.3. Big Data Risk Management under Artificial Intelligence Leads a New Era of Society
Under the impetus of artificial intelligence, the implementation of big data risk management is essentially opening up a new era as soon as possible. It is not only an intelligent era, but also an era of civilization. The development of science and technology intelligent technology plays a vital role in the operation and management of human society. It uses intelligent risk management to sense external environmental changes accurately and promote social security progress. With the rapid development of artificial intelligence technology, the risk management of big data is also facing more opportunities and challenges. It is undeniable that an era of big data has been opened under the guidance of artificial intelligence.

5. Conclusion
The risk management and control of enterprises in the era of big data mainly start from three parts: organizational management, implementation of legal system and improvement of risk management technology. Now standing at a new historical starting point, data resources have already become the whole social and economic development under the era of big data and artificial intelligence. At the same time of technological development, big data risk management cannot be left behind. It is very important to establish a closed-loop management chain of data security protection.
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