Future Development of Information Management Systems Based on Big Data Technology, Artificial Intelligence Technology and Cloud Computing

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Abstract: The progress of computer technology and the development of the era bring significant opportunities for the innovation and change of the modern information management system. This paper mainly analyses the functions, applications. At the same time, the basic situation in the field is briefly described. The paper concludes that with the continuous development and popularization of information management systems, enterprises are prompted to use information systems to manage information and improve efficiency. The paper enumerates the information management systems designed in different fields and highlights the importance of big data, artificial intelligence and cloud computing technologies in information management systems,offering new insights into the integrated application of big data, cloud computing, and artificial intelligence. This paper aims to introduce the current situation and future development direction of the information management system, provide relevant reference for the relevant business units, and help them better apply the information management system to improve the management level and competitiveness.

1 INTRODUCTION

An information management system is a system that uses computer technology and information technology to collect, store, process, transmit and utilize information. Its main functions include data collection, storage, processing, analysis and transmission to support decision-making, business process optimization and knowledge management within an organization. The functions of information management systems are diverse and flexible and can be customized and extended according to the needs of organizations to help them realize information management and improve work efficiency and decision-making. With the rapid development of the Internet and the rapid progress of information technology, information management system, as an important information tool, can help organizations and individuals to organize better, store, retrieve and share information, and improve work efficiency and decision-making. The current information management system is not only a product of a single discipline, but can be cross-fertilized and applied with multiple disciplines. This interdisciplinary cross-application promotes the continuous innovation and development of information management systems and provides more comprehensive and effective support for the informatization process of various industries.

At present, information management systems play an important role in various fields. In enterprise management, information management systems are widely used in enterprise resource planning, customer relationship management, and supply chain management, helping enterprises to improve management efficiency and decision-making level and enhance competitiveness. In healthcare, information management systems are used in medical data management, disease monitoring and prevention, and medical resource scheduling, providing technical support and guarantees for medical and healthcare services. In the field of financial services, information management systems are used in risk management, transaction processing, customer service, and improving the operational

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efficiency and service quality of financial institutions. In education and training, information management systems are used in student management, teaching resource management, online education, which promotes the informatization of education and the improvement of teaching quality.

Firstly, this paper will review the development history and application status quo of information management system, discuss the practical application of information management system in various industries, and analyse its advantages and limitations in improving management efficiency, optimizing decision-making process and reducing costs. Next, this paper will discuss the cross-application of information management system and other disciplines, and analyse the impact of cross-application on the optimization and upgrading of information management system. Finally, this paper will look forward to the development prospect of information management system, combining new technology and new concepts, exploring the development trend of information management system driven by new technologies such as big data, artificial intelligence, cloud computing, and proposing the future development direction and strategy of information management system.

2 CURRENT STATUS OF DEVELOPMENT OF INFORMATION MANAGEMENT SYSTEMS

2.1 Development History

Early information management relied mainly on manual processing and storage, including manual records, file management and other methods. This stage of information processing is inefficient, error-prone and unable to meet the growing demand for information processing. With the development of computer technology, information management has gradually become electronic. Organizations began to use computer systems to process and manage information, improving the efficiency and accuracy of data processing. The emergence of database management systems has made data storage and retrieval more efficient. Information management systems became networked in the context of the growing popularity and development of the Internet. Information sharing between different departments and locations within organizations has become more convenient, and information exchange with external partners has also been achieved. Systems such as Enterprise Resource Planning (ERP) and Supply Chain Management (SCM) began to emerge. At the current stage, along with the rapid development of artificial intelligence, big data, cloud computing and other technologies, information management systems are gradually becoming more intelligent. The system is capable of data analysis, intelligent decision support, automated processes and other functions, providing organizations with more thoughtful and personalized information management services.

2.2 Status of the Management Information System

In recent years, information management systems have been widely used around the world. More and more enterprises and organizations have begun to pay attention to information management and have invested a lot of resources to help daily business operations and decision-making. Many universities and research institutes are also developing information management systems while training a large number of information management talents to promote the development of information management systems. Information management systems have been widely used in various industries, and information management systems in different sectors are customized according to needs to achieve information management and service optimization. After years of development and improvement, the information management system has a high stability and reliability and can meet the needs of long duration, high frequency, and large volume of usage.

3 TRENDS IN THE DEVELOPMENT OF INFORMATION MANAGEMENT SYSTEMS

Talent cultivation is essential to developing an information management system. Universities should innovate the training mode of information management system talents and endeavor to cultivate high-quality talents to meet the actual needs of society. The professional training of information management system should focus on its own history and characteristics, establish a multi-level and diversified talent training mode, offer interdisciplinary courses, and cultivate students' comprehensive ability. People should establish training objectives, co-operate with employers to run

schools, so that students can apply knowledge through practice, and strive to solve the problem of inconsistency between the teaching content of the school and the requirements of the employing units(Zhou,2021). The current rapid development of information technology, the school should The current rapid development of information technology, the school should continue to innovate the teaching content, regular evaluation and improvement of the training mode, to cultivate talents to meet the requirements of society.

3.1 Continuous Improvement of Technical Level

With the rapid development of cloud computing, AI technology and big data, information management systems are increasingly inclined to adopt cloud deployment and big data analysis. Cloud computing provides a more flexible and scalable deployment method for information management systems. By building models and databases using cloud computing and storing a large amount of data in the cloud reduces the cost of using computers to process information while enhancing their operating and processing capabilities. Through cloud computing, the system can achieve advantages such as resource sharing and elastic expansion to maximize economy and benefits(Li,2022). Taking the cloud computing resource management system of the disaster preparedness centre as a benefit, the platform achieves unified deployment and promotes on-demand allocation and dynamic scheduling of resources, which not only makes resource utilization much higher, but also ensures the safe operation of applications. The cloud computing resource platform transforms the business of the disaster recovery centre from the original manual operation mode to the IT-based mode supported by process and automation, bringing economic and managerial benefits (Luo, 2023).

3.2 Intelligence and Automation

Information management systems are gradually moving towards intelligence and automation by introducing technologies such as artificial intelligence and machine learning to achieve functions like intelligent data analysis and automated decision support, thereby enhancing the system's level of intelligence. For example, an intelligent traffic information management system based on AI technology identifies road conditions, compares traffic flow in different directions, calculates the current traffic flow on road segments based on the traffic recognition system, analyzes and compares traffic flow on different road segments, and determines the optimal green light duration to control traffic signals and address urban traffic congestion issues(Li,Xie,Zhu,et al, 2023). In improving student management systems using artificial intelligence technology and big data analysis algorithms, Ying Wang and Yunfan Sun conducted an experimental analysis using the random forest algorithm and found that the system's information processing speed doubled after training(Wang and Sun,2023). Therefore, artificial intelligence technology and big data analysis algorithms can significantly improve the efficiency of information management systems in processing information, providing strong support for the intelligent development of information management systems.

3.3 Mobility and Convenience Development

With the popularity of mobile Internet, the information management system tends to support various mobile devices, such as mobile phones and tablets, allowing users to access the system anytime and anywhere. At the same time, the system will also provide cross-platform support so that users can seamlessly use the system on different devices, providing a more convenient mobile office and service experience and meeting the needs of users to access information anytime and anywhere. In the development of the mobile office information management system for rail transport supervision, smart terminals are used as the carrier and a variety of advanced technologies are adopted, including VPN, database synchronization and identity authentication. The organic combination of smartphones, wireless networks and OA systems realizes office work at any time and place, strengthens communication between enterprise management and construction sites, provides decision-making support, significantly improves office efficiency and saves costs(Cai,2020).

3.4 Data Security and Privacy Protection

With data leakage and privacy issues becoming increasingly serious, information management systems face security and privacy protection challenges, such as network information theft and system attacks, which require enhanced security technologies and management measures. Network and system security is monitored in real time by using big data technologies to collect and process massive

amounts of data, such as security logs, in order to respond to anomalies in a timely manner. For example, using aggregation algorithms to group data and identify anomalous groups, in addition, through data analysis and modelling, one can gain a more comprehensive understanding of the security status of information systems, identify security threats in a timely manner, predict future risks and assign appropriate countermeasures(Wang,2024). With the help of big data technology and encryption technology fusion can better combat the threat of wrongdoing in the information system. Digital signature technology is based on data and information objects, and ensures the operational security of the information management system by establishing a key system. This approach can be interfaced with the daily operation of the information management system. At the same time, the integration of cloud technology and data mining and other technologies can ensure that the key technology has irreproducibility, to prevent the authority to be stolen, so as to enhance the security of the information management system.The key technology can prevent the theft of rights, thus improving the security of the information management system(Xu,2023).

4 APPLICATION AREAS OF INFORMATION MANAGEMENT SYSTEMS

The final sentence of a caption must end with a period. In addition to the traditional enterprise information management, information management system also involves the following new fields and application scenarios. Medical information management systems can help hospitals and clinics manage patient information, medical records, medical records and other data to improve the quality and efficiency of medical services. It can also support remote medical services and medical big data analysis. In the logistics management of hospitals, the information management system can achieve information sharing and collaboration among hospital departments by centralizing information on materials, equipment, personnel, etc. on the same platform, and hospital managers can monitor and deal with problems in real time through the system, which improves the efficiency and level of logistics management and reduces the cost of logistics management.The system can improve the efficiency and level of logistics management and reduce the cost of logistics management(Chen,Xu,2023).

In the education system, schools and educational institutions can use information management systems to manage student information, curriculum arrangements, teaching resources, achieve digitization and intelligence in the education process, and enhance teaching effectiveness and management efficiency.

Financial institutions also need information management systems to manage customer information, transaction data, risk control, etc., to support the operation and supervision of financial business. At the same time, they can also be applied in the field of financial technology to promote financial innovation and digital transformation.

Retailers and e-commerce platforms use information management systems to manage product information, inventory, orders and other data, to achieve supply chain management, sales forecasting and customer relationship management, and to improve sales efficiency and user experience. Inseparable from e-commerce is the logistics system. In the future, intelligent logistics systems will enable paperless work in logistics operations, such as automated picking and three-dimensional systems in distribution centre. Logistics companies and supply chain managers can share information through innovative information management methods to achieve data interaction between logistics and cooperating companies, interaction with end users, and tripartite linkage information transfer, and enhance the ability to classify and control order information data and data development and research capabilities. At the same time, it is also necessary to strengthen the information management of end-users to improve the user experience(Zhou,2021).

In the future, the construction of smart cities will require information management systems to integrate various types of data in the city, including traffic, energy, environment, etc., to achieve intelligent management and optimization of urban operations and improve the quality of urban life.

By expanding applications in different fields, the information management system can better meet the needs of various industries, promote digital transformation and intelligent development, and provide society with more convenient and efficient services and management methods.

5 CONCLUSIONS

This paper mainly discusses the current situation and future development trend of information management systems. Through the analysis of the current situation

faced by the current information management system and the future development trend, this paper concludes that the information management system plays a significant role in various fields, providing favorable support for the development of various industries. In the future, big data technology, artificial intelligence technology and cloud computing technology will continue to perfect and improve the information management system, bringing more efficient and more intelligent system performance to meet the needs of society. At the same time, the information management system is also faced with security problems through big data technology real-time monitoring and data encryption technology and other timely detection and resolution of security problems, to ensure the security of the information management system. However, this paper also has some shortcomings. The paper's elaboration on the development trend of information management system is relatively general. Although the content of the paper mentions the operational use of big data, artificial intelligence and cloud computing in the information management system, it does not provide specific data to support the lack of a more comprehensive and in-depth study of the development of these technologies.

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