

Research on Cross-Application and Pattern Innovation of Artificial Intelligence Technology in Enterprise Management

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Abstract : This paper deeply studies the cross-application of artificial intelligence (AI) technology in enterprise management and the mode innovation caused by it. Firstly, through detailed analysis of specific application examples of AI in key management fields such as supply chain management, human resource management, financial management, marketing and strategic decision-making, it is revealed how AI technology can promote the intelligent transformation of enterprise management processes, improve the efficiency and accuracy of decision-making, and promote enterprises to achieve digital transformation and intelligent upgrading. In the process of cross-application, AI not only optimizes the execution of traditional management activities, but also gives birth to new management models and service forms, such as intelligent enterprise operation model, customer-centric service model, and the construction of learning organization and innovation ecology. However, the widespread adoption of AI technology also comes with a series of challenges, including data security and privacy protection, technological maturity and talent shortages, organizational change and cultural resistance. In response to these challenges, this paper puts forward corresponding countermeasures, including strengthening data governance and compliance construction, increasing talent training and introduction, and building an open and inclusive corporate culture, so as to provide practical guidance for enterprises to smoothly promote AI application. Through comprehensive theoretical analysis and empirical research, this paper not only enriches the theoretical system of the application of AI in enterprise management, but also provides valuable insights for enterprises how to use AI

technology to achieve sustainable development in the complex and changeable market environment. Finally, this paper looks forward to the future development trend of enterprise management mode driven by AI technology, and emphasizes the importance of continuous innovation and learning for enterprises to maintain competitiveness in the era of digital economy.

Keywords: AI in Management; Digital Transformation; Data Security; Talent Gap

1. Introduction

1.1 Research Background

With the rapid development of information technology, artificial intelligence, as one of its core driving forces, is penetrating into various fields of society and economy at an unprecedented speed, profoundly changing people's lifestyle and working mode. In the field of enterprise management, the application of AI technology has not only greatly improved management efficiency and decision-making accuracy, but also promoted the innovation and change of management mode. From supply chain management to human resource management, from financial management to marketing, AI technology is gradually penetrating into all aspects of enterprise management and becoming a key force to promote the digital transformation and intelligent upgrading of enterprises.

1.2 Literature Review

With the fourth industrial revolution and the sixth wave of technological revolution, intelligence led by a new generation of information technology is gradually replacing mechanization, electrification and information technology into a higher-level form of industrialization [1], and the deep integration

of artificial intelligence technology and manufacturing industry has reshaped production relations and improved productivity. Scholars Wright and Bourne [2] first summarized the characteristics of intelligence from the meaning of intelligent manufacturing, and believed that intelligent equipment can replace manual labor in a small range, and can carry out self-control and self-learning in the production and manufacturing process, so as to optimize the manufacturing process and improve the manufacturing environment. Kusiak [3] points out that intelligence can not only replace human manual labor, but also use software algorithms to simulate human brains for self-decision-making in the manufacturing process. Dumitrache [4] believes that intelligent system integrates the knowledge of computer hardware and software, can identify the problems in the production process, find out the causes of the problems based on algorithms, and combine the causes of the problems to provide a multi-layer behavioral decision model for solutions. Dutra [5] and Silva [6] believe that intelligence can adapt to different changes in the scene. Facing the diversity and uncertain demand of the market, intelligent manufacturing link and intelligent service link are combined to make the reasonable allocation of production resources, the cooperation between people and machines and equipment, and the production mode is more flexible and flexible. Chen [7] and Chaplin [8] pointed out that intelligent industrialization, as a new economic development paradigm, plays a significant role in promoting mass customization from the perspective of economic and environmental sustainability. Pan [9] pointed out that profound changes have taken place in the information environment, and intelligent development has entered a new stage of AI 2.0. This is a deep learning stage driven by big data. Intelligence has the characteristics of group intelligence of the Internet and man-machine hybrid enhanced intelligence, which makes intelligence at this stage have intuitive perception ability. Ray Y [10] mainly analyzed the characteristics of three modes: Internet of Things manufacturing based on cyber physical system, cloud manufacturing relying on cloud computing and big data analysis technology, and intelligent

manufacturing based on information and communication technology.

Gunasekaran and Ngai [11] point out that smart technologies enable virtual enterprises in cyberspace, breaking the time and space constraints of physical enterprises, and supply chain management that supports RFID and the Internet provides sustainability for raw material supply and product distribution for enterprises. Ai is more equitable in sourcing and selecting the best suppliers than human judgment decisions. Keshetri [12] pointed out that the application of intelligent technology in supply chain management has become a reality around the world. Choy [13] believes that intelligent technology enables enterprises to enhance the ability of equipment maintenance and management to reduce ineffective waste in the production process, and at the same time, the application of various databases improves the internal management efficiency of enterprises and the ability to respond to changes in the external environment. Sheng Liu [14] believes that intelligent technology can enhance the flexibility of manufacturing links and production processes, laying the foundation for personalized agile manufacturing, and reducing management problems and coordination costs caused by production equipment conversion.

1.3 Research Significance

This study aims to deeply explore the status quo, mechanism, challenges and mode innovation of cross-application of AI technology in enterprise management, in order to provide theoretical support and practical guidance for enterprises how to effectively use AI technology to improve management efficiency and enhance market competitiveness. By systematically analyzing the specific application cases of AI in various fields of enterprise management, it reveals its reshaping effect on enterprise management process and the innovation and change of management mode brought about by it. At the same time, this study will also focus on the main challenges faced in the process of AI application, and propose corresponding coping strategies, so as to provide useful references for enterprises to smoothly promote AI application.

2. Analysis of Cross Application of Artificial Intelligence Technology in Enterprise Management

2.1 Cross-Cutting Application of AI in Supply Chain Management

In supply chain management, AI technology not only optimizes traditional aspects such as material demand forecasting, inventory management and logistics distribution, but also promotes collaboration and transparency in all aspects of the supply chain. Through big data analysis, AI can accurately predict market demand and realize intelligent response of supply chain. At the same time, AI-driven automated warehousing systems and intelligent logistics networks have significantly improved the operational efficiency and flexibility of the supply chain. In addition, AI also enhances the transparency and traceability of supply chains through technologies such as blockchain, reducing supply chain risks.

2.2 The Cross Application of AI in Human Resource Management

The application of AI in human resource management covers many aspects such as recruitment, training, performance evaluation and employee relations. Through natural language processing and machine learning techniques, AI can automatically screen resumes, assess candidates' abilities, and help develop personalized training plans. In the performance evaluation process, AI can provide objective and comprehensive employee performance reports based on big data analysis to provide a basis for decision-making. At the same time, AI is also improving the employee experience and enhancing employee satisfaction and loyalty through tools such as intelligent chatbots.

2.3 Cross-Cutting Application of AI in Financial Management

In the field of financial management, AI technology has promoted the intelligent transformation of financial management. By automating account processing, intelligent auditing, and financial forecasting, AI has significantly improved the efficiency and accuracy of financial work. In addition, AI can also identify and evaluate risks based on big data and machine learning algorithms,

providing strong support for investment decisions and risk management of enterprises. At the same time, AI also promotes the development of financial sharing services and realizes the optimal allocation and sharing of financial resources.

2.4 Cross Application of AI in Marketing

The application of AI in marketing has greatly improved the accuracy and effect of marketing. Through functions such as user behavior analysis, personalized recommendation and intelligent customer service, AI can accurately locate target customer groups and achieve accurate push of marketing information. At the same time, AI also helps enterprises timely understand market dynamics and consumer demand changes through social media monitoring, public opinion analysis and other means, and provides data support for the development of marketing strategies. In addition, AI has also promoted the development of marketing automation, reducing marketing costs and improving marketing efficiency.

2.5 Cross-Cutting Application of AI in Strategic Decision Making

At the strategic decision-making level, AI technology provides strong decision support for enterprises. Through functions such as big data analysis, simulation and intelligent forecasting, AI can help enterprises gain a deep understanding of market trends, competitor dynamics and internal resources, providing a scientific basis for strategy formulation. At the same time, AI can also evaluate and compare strategic plans in multiple dimensions through optimization algorithms and machine learning models to provide optimal choices for decision makers. In addition, AI also promotes the formation of a data-driven decision-making culture in enterprises and improves the overall decision-making ability of enterprises.

2.6 Synergies and Pattern Innovation in Cross-Application

The cross-application of AI technology in enterprise management not only promotes the independent optimization and upgrading of various management fields, but also gives birth to new management models and service forms through synergistic effects. For example,

the AI-driven intelligent enterprise operation model realizes close collaboration and efficient operation of supply chain, production, sales and other links; The customer-centric service model combines personalized service with precision marketing through AI technology; The construction of learning organization and innovation ecology depends on the application of AI in knowledge management and innovation incentive. The emergence of these new models and new forms not only enhances the competitiveness and adaptability of enterprises, but also lays a solid foundation for the sustainable development of enterprises.

3. Model Innovation of Artificial Intelligence Technology in Enterprise Management

4.1 Data-Driven Management Model

Data-driven management is one of the most significant innovations driven by AI technology. This model emphasizes taking data as the core resource, mining the value behind the data through big data analysis, machine learning and other technical means, and providing scientific basis for enterprise management decisions. In the data-driven management mode, enterprises can grasp the market dynamics, customer needs and internal operations in real time, and achieve accurate decision-making and rapid response. At the same time, the model also promotes data sharing and collaboration within the enterprise, improving the overall operational efficiency.

4.2 Intelligent Decision Support System

Intelligent decision support system is another important application of AI technology in enterprise management. The system integrates data analysis, simulation, optimization algorithm and other technical means, which can provide comprehensive decision support services for enterprises. Through intelligent decision support system, enterprises can make strategic planning, resource allocation and risk management schemes more scientifically, reduce decision-making risks and improve decision-making efficiency. In addition, the system can also be customized according to the actual situation of enterprises to meet the individual needs of enterprises.

4.3 Automation and Intelligent Operation

The wide application of AI technology has promoted the automation and intelligence of enterprise operations. In the mode of automation and intelligent operation, enterprises can use AI technology to realize the automatic control of the production process, the intelligent management of the supply chain and the intelligent upgrade of customer service. This operating model not only reduces labor costs and improves operational efficiency, but also significantly improves product quality and customer satisfaction. At the same time, automation and intelligent operation also help enterprises to achieve fine management and improve resource utilization efficiency.

4.4 Customer-Centered Service Model

AI technology also facilitates the formation of customer-centric service models. In this model, enterprises use AI technology to deeply understand customer needs and preferences, and provide personalized and intelligent service experience. For example, through the intelligent customer service system to achieve 24-hour online service, through the intelligent recommendation system to provide personalized product recommendations. These services not only enhance customer stickiness and loyalty, but also create new revenue streams for businesses. At the same time, the customer-centric service model also promotes the in-depth interaction and co-creation between enterprises and customers, and promotes the continuous innovation and development of enterprises.

4.5 Intelligent Learning and Organizational Innovation

AI technology also provides strong support for enterprise intelligent learning and organizational innovation. By building intelligent learning platform and knowledge management system, enterprises can realize the rapid accumulation and effective dissemination of knowledge. At the same time, AI technology can also provide personalized learning resources and services according to the learning needs and interests of employees. These measures not only improve the learning efficiency and innovation ability of employees, but also promote knowledge sharing and collaborative innovation within the enterprise.

In addition, AI technology also promotes the flat and networked development of enterprise organizational structure, enhancing the flexibility and adaptability of organizations.

4.6 Implementation Path and Challenge

Although AI technology provides a broad space for enterprise management model innovation, its implementation process also faces many challenges. First of all, enterprises need to invest a lot of resources in technology research and development and personnel training; Secondly, data privacy and security issues are one of the important factors restricting the application of AI. Finally, enterprises need to overcome organizational inertia and cultural barriers to promote the smooth transformation of management models. Therefore, when implementing AI-driven management model innovation, enterprises need to formulate scientific strategic planning, strengthen technological innovation and talent training, improve data governance system and create an open and inclusive corporate culture.

4. Challenges and Coping Strategies

In the context of the increasing penetration of artificial intelligence technology into all levels of enterprise management, its transformative impact undoubtedly brings unprecedented opportunities for enterprises, but at the same time, it is accompanied by a series of complex and far-reaching challenges. These challenges not only involve technical problems, but also deeply touch the organizational structure, cultural atmosphere, talent reserve and regulatory compliance and other dimensions, requiring enterprises to take a global perspective and forward-looking strategies to deal with.

First of all, from the technical point of view, the effective application of AI technology is highly dependent on high-quality data resources, however, in reality, the quality of data is uneven, and the problem of privacy protection is increasingly prominent, which has become a key factor restricting the development of AI technology. In order to solve this problem, enterprises need to build a sound data governance system to ensure the accuracy, integrity and security of data, and adopt advanced encryption technology and anonymization processing means to strictly protect user privacy. In addition, the rapid

iteration of AI technology requires enterprises to maintain a high sensitivity and rapid response to new technologies, and constantly promote technological innovation and upgrading by establishing an organizational culture of continuous learning and close cooperation with universities and research institutions.

Secondly, the application of AI technology has put forward profound changes to the organizational structure and culture of enterprises. The traditional hierarchical organizational structure is often difficult to adapt to the flat and networked development trend brought about by AI technology. Therefore, enterprises need to promote the optimization and reconstruction of organizational structure to enhance the flexibility and adaptability of the organization. At the same time, the corporate culture needs to shift from process-centric to data-centric, strengthening the data-driven culture and encouraging employees to make decisions and actions based on data. In this process, enterprises need to focus on cultivating an open and inclusive cultural atmosphere, encourage employees to actively embrace new technologies and new thinking, and jointly promote the innovation and development of enterprises.

Moreover, the shortage of talents and skills is a challenge that cannot be ignored in the application of AI technology. The professionalism and complexity of AI technology requires companies to have a workforce with relevant skills and knowledge. However, in the current market, AI technical talents are in short supply, and enterprises are facing the problem of difficult recruitment and training. In order to solve this problem, enterprises need to broaden recruitment channels and attract outstanding talents at home and abroad to join; At the same time, strengthen internal talent training, and improve the AI skill level of employees through training and practice. In addition, enterprises also need to establish a skill certification and incentive mechanism to stimulate the enthusiasm and initiative of employees to learn new technologies, and lay a solid talent foundation for the long-term development of enterprises.

Finally, regulatory and policy uncertainty is also a challenge that enterprises must face

when applying AI technology. With the rapid development and wide application of AI technology, relevant regulations and policies are also constantly improving and adjusting. Companies need to pay close attention to policy developments and trends, and adjust corporate strategies and plans in a timely manner to ensure compliance. At the same time, enterprises also need to establish a policy risk assessment and response mechanism to reduce the impact of policy changes on enterprises. In addition, actively participating in the policy formulation and discussion process is also an important way for enterprises to cope with regulatory and policy challenges, and strive for a favorable development environment for enterprises through voice and suggestions.

To sum up, enterprises face a complex and far-reaching set of challenges when applying AI technology. To effectively address these challenges and seize the opportunities presented by AI technology, enterprises need to develop comprehensive response strategies from multiple dimensions, including technology, organization and culture, talent and skills, and regulations and policies. Through the implementation of measures such as strengthening data governance, promoting organizational structure change, reshaping corporate culture, cultivating AI talents, and paying attention to changes in regulations and policies, enterprises can more steadily promote the application and innovation of AI technology, and lay a solid foundation for the long-term development of enterprises.

5. Conclusion

The application of artificial intelligence technology in enterprise management has shown great potential and far-reaching influence. Through the establishment of data-driven management mode, the application of intelligent decision support system, the automation and intelligent upgrading of operation process, the innovation of customer-centric service mode, and the reshaping of intelligent learning and organizational culture, AI technology has not only significantly improved the operational efficiency and management efficiency of enterprises, but also brought unprecedented competitive advantages to enterprises. At the same time, we are also deeply aware that in the promotion

and implementation of AI technology, enterprises are faced with technical, organizational, talent, regulations and other challenges. However, it is these challenges that prompt enterprises to continue to explore and innovate, promote the deep integration of AI technology and business management practices, and jointly create a new chapter in business management.

Looking to the future, with the continuous progress and wide application of AI technology, its role in enterprise management will be more prominent. First of all, with the continuous improvement of data processing and analysis capabilities, AI will provide enterprises with more accurate and real-time decision support, so that enterprises' strategic planning and market response capabilities have reached an unprecedented height. Secondly, the intelligence and automation characteristics of AI technology will further optimize the operation process of enterprises, reduce labor costs, and improve production efficiency and product quality. In addition, with the increasingly diverse and personalized needs of customers, AI will provide enterprises with more intelligent customer service solutions, enhance customer experience and enhance customer loyalty.

At the same time, the application of AI technology in enterprise management is still facing many unknowns and challenges. How to ensure the privacy and security of data, how to balance the relationship between technological progress and ethics, how to cultivate and attract AI technical talents, etc., need the joint efforts of enterprises and all sectors of society to constantly explore and solve. The development of enterprise management in the future will pay more attention to the integration and innovation of AI technology. Enterprises should actively embrace AI technology, strengthen technology research and development and personnel training, and promote the change of organizational structure and culture to adapt to the management changes brought by AI technology. At the same time, the government and industry associations should also strengthen policy guidance and supervision to provide a good external environment for the healthy development of AI technology.

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