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Research on the Impact of Artificial Intelligence Technology Application on Innovation Performance of Manufacturing Enterprises

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Abstract: With the development of the times and the advancement of information technology, artificial intelligence (AI) technology has been widely applied in social production and life, playing an important role in promoting social and economic development. This paper will analyze the impact of AI technology on the innovation performance of manufacturing enterprises. Based on the analysis of its impact and combined with the current application status of AI technology in innovation performance of manufacturing enterprises, reasonable suggestions are put forward, aiming to promote the innovation of performance management in manufacturing enterprises and inject strong impetus into their development.

Keywords: Artificial Intelligence Technology; Manufacturing Enterprises; Innovation Performance

1. Introduction

As an important foundation of China's industrial development, manufacturing enterprises need to keep pace with the times in their production and operation, adopt advanced technologies and management concepts to maintain healthy development. In terms of enterprise performance management, they should actively introduce AI technology to carry out performance management. This can not only stimulate employees' work enthusiasm but also promote the long-term stability of enterprises, laying a solid foundation for their sustainable development.

2. Impact of AI Technology Application on Performance Innovation of Manufacturing Enterprises

AI technology has had a positive impact on performance innovation of manufacturing enterprises. On the one hand, the application of AI technology can improve the efficiency of performance management. Through AI technology, a large amount of data can be processed quickly and accurately, realizing automation and intelligence of performance management, reducing risks and errors caused by traditional manual operations. Moreover, AI technology can provide more accurate performance evaluation results for manufacturing enterprises based on historical and real-time data, helping enterprises better identify and optimize key links of performance management and improve the overall performance level. On the other hand, AI technology has also enhanced the objectivity of performance management, making performance more fair and reasonable, which is conducive to stimulating employees' work enthusiasm and enhancing team cohesion and overall efficiency. The introduction of AI technology can also optimize the performance management process, reduce cumbersome manual operations, allowing managers to devote more energy to strategic planning and decision-making, promoting the innovative development and long-term competitiveness of manufacturing enterprises. In addition, the innovation of AI technology in performance management of manufacturing enterprises lies in promoting the transformation and development of the entire industry. Facing the AI era, performance management innovation in small enterprises has become an irresistible trend. Using AI technology to carry out innovative performance management is an inevitable trend of the times, which is of great value to the healthy and sustainable development of enterprises.

3. Current Status of AI Technology Application in Innovation Performance of

Manufacturing Enterprises

The application of AI technology in performance management of manufacturing enterprises has become an inevitable trend. More and more enterprises have adopted this advanced performance management method, and its application effect is obvious, effectively improving their internal management level, especially promoting the innovation and iteration of performance management. However, the existing problems cannot be ignored. On the one hand, some enterprises still do not pay enough attention to this advanced performance management method, still adhering to empiricism and traditional manual performance management, with a serious lack of understanding of AI technology. This will lay huge hidden dangers for the development of enterprises, leading to the overall development of enterprises lagging behind the times. On the other hand, although some enterprises have realized the advantages of AI technology in performance management, the application depth of AI technology is insufficient. A superficial application cannot give full play to the advantages of AI technology in performance management, resulting in inadequate application of AI technology in performance management. In addition, the proficiency of performance management personnel in AI technology application is also an important problem. Some performance management personnel have limitations in AI technology application due to age and knowledge structure, unable to truly use AI technology to carry out enterprise performance management. These are the problems to be solved urgently in the application of AI technology in performance management of manufacturing enterprises[1].

4. Strategies for Innovative Application of AI Technology in Performance Management of Manufacturing Enterprises

4.1 Transform Performance Management Methods and Actively Introduce AI Technology

The innovative application of AI technology in performance management of manufacturing enterprises requires changing ideological concepts and performance management methods, and actively introducing AI technology for performance management. Firstly, managers of manufacturing enterprises should fully realize the advantages of AI technology in performance management, create an atmosphere of attaching importance to AI technology within the enterprise. Especially for performance management personnel, they should be guided to use AI technology for performance management. Training can be organized to enhance their cognition and acceptance of AI technology, let them understand the advantages of AI technology in simplifying processes and improving decision-making scientificity, and encourage them to take the initiative to learn knowledge related to AI technology, improve their technical application ability, ensuring that AI technology can be effectively applied in performance management. Secondly, it is necessary to accelerate the informatization construction of performance management, continuously promote the transformation of performance management in manufacturing enterprises towards informatization, and build a performance management information system based on AI technology. The system should integrate functions such as data analysis, prediction model construction, and intelligent decision support, realizing automatic collection, processing, and analysis of performance data, reducing errors and time costs of manual operations. Through the AI-based performance management information system, enterprise managers can obtain employees' work performance data in real-time, timely find and solve problems in performance management, and improve management efficiency[2]. In addition, the construction of the performance management information system should pay attention to data security and privacy protection, ensuring the security of employees' personal information. Furthermore, it is necessary to accelerate the popularization of AI technology application in enterprise performance management, widely publicize and promote the advantages and application cases of AI technology within the enterprise, enhance all employees' cognition and trust in AI technology. Various forms such as enterprise technical exchange meetings can be held to let employees understand the role of AI technology in helping enterprises improve performance management level, thus continuously popularizing this advanced performance management method. Transforming performance management methods and actively introducing AI

technology can give full play to the advantages of AI technology in performance management innovation of manufacturing enterprises, promoting the transformation and progress of performance management in manufacturing enterprises[3].

4.2 Deeply Explore the Advantages of AI Technology and Improve Performance Management Efficiency

The application of AI technology in innovation performance of manufacturing enterprises requires continuously exploring the advantages of AI technology and applying it to improve enterprise performance management efficiency. Firstly, it is necessary to deeply explore the application advantages of AI technology in enterprise performance management. AI technology can not only process a large amount of data quickly and accurately but also present objective data based on historical data and daily behaviors. Through data analysis of AI technology, enterprises can timely find problems in performance management and take measures to improve them quickly. Moreover, AI technology can help enterprises build intelligent performance evaluation models, continuously optimize the evaluation system through machine learning algorithms, ensuring the fairness and accuracy of evaluation results. In this way, enterprises can improve the efficiency of performance management and enhance employees' satisfaction and loyalty. Secondly, the application of AI technology in performance management innovation of manufacturing enterprises can collect employees' real-time work efficiency and results. Through intelligent monitoring and analysis systems, comprehensive tracking of employees' work status can be realized. This real-time collection can accurately record the time invested and completion quality of employees in various tasks, effectively identifying efficient and inefficient work patterns. With the deep learning ability of AI technology, enterprises can further analyze the deep-seated reasons behind employees' performance, which helps enterprises adjust management strategies in a timely manner, optimize resource allocation, provide employees with personalized training and development suggestions, and promote the improvement of employees' personal abilities and career growth. Deeply exploring the advantages of AI technology can effectively improve performance management efficiency, providing strong support for the innovative performance management of manufacturing enterprises[4].

4.3 Strengthen Training of Performance Management Personnel and Enhance Performance Management Effect

The application of AI technology in innovation performance of manufacturing enterprises needs to focus on the professional quality of performance management personnel, strengthen their training, and enhance the effect of AI performance management. Firstly, it is necessary to formulate a systematic training plan for performance management personnel, which should include basic knowledge of AI technology, operation methods of performance management software, and data analysis using AI technology. Through regular training and assessment, continuously improve the professional skills and comprehensive quality of performance management personnel, enabling them to better adapt to the application of AI technology in performance management, thus giving full play to the advantages of AI technology and improving the efficiency and accuracy of performance management. Secondly, performance management personnel should be encouraged to actively learn the in-depth application of AI technology in performance management. Opportunities for external learning and communication can be provided for them. By communicating with performance management personnel from other enterprises in the industry, they can learn more practical experience and successful cases, apply these valuable experiences to their own work, further improve the level of performance management. In addition, external learning and communication can also broaden the vision of performance management personnel, providing more inspiration and motivation for performance management innovation in manufacturing enterprises. Strengthening training of performance management personnel can enhance performance management effect, providing effective support for the popularization of AI technology in manufacturing enterprises[5].

5. Conclusion

The application of AI technology in

performance management innovation of manufacturing enterprises has become an inevitable trend in industry development. For manufacturing enterprises themselves, it can continuously improve the internal management system, strengthen internal control while improving enterprise management efficiency, and promote enterprise development and transformation. Introducing AI technology for innovative performance management can enhance the development vitality of enterprises and lay a solid foundation for their stable development. In future development, it is necessary to continue exploring new performance management methods, constantly bringing forth new ideas to lay a solid foundation for the healthy development of enterprises.

References

[1] Zhang Yizhe. Impact of artificial intelligence technology application on innovation performance of circulation enterprises from the perspective of dynamic capabilities [J]. Journal of Commercial Economics, 2025, (12): 154-157.

[2] He Yun, Xiong Zixian. Impact of artificial intelligence technology application on innovation performance of manufacturing enterprises [J]. Science Research Management, 2025, 46(05): 13-22.

[3] Wu Qiang, Huang Fu, Wang Pei. Artificial intelligence technology and enterprise innovation performance—also on the enabling role of new productive forces [J]. Research on Financial and Economic Issues, 2024, (10): 67-80.

[4] Li Guo, Bai Yunpu. How does artificial intelligence application affect innovation performance of manufacturing enterprises? [J]. Collected Essays on Finance and Economics, 2024, (12): 102-112.

[5] Chen Huiying, Liu Tonghui, Wang Jiakun. Identification of influencing factors and analysis of key path improvement for innovation performance of artificial intelligence enterprises [J]. Science and Management, 2025, 45(01): 34-39.