Research on the Influence of Artificial Intelligence on Enterprise Management Decision-making

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Abstract: *With the continuous development of science and technology, artificial intelligence (AI) is more and more widely used in enterprise management decision-making. AI can provide enterprises with more accurate, efficient and intelligent decision support by analyzing and processing a large amount of data. The following is to discuss the influence of artificial intelligence on enterprise management decision-making from eight aspects. The application of artificial intelligence in enterprise management decision-making has broad prospects and potential. It can improve the operational efficiency of enterprises, reduce costs, optimize the allocation of resources and improve market competitiveness. However, enterprises should also pay attention to data privacy protection, data quality, algorithm transparency and other issues when applying artificial intelligence. At the same time, we also need to consider the moral and ethical issues of artificial intelligence in decision-making and the possible risks and challenges.*

Keywords: *artificial intelligence; Enterprise management; administrative decision*

1. Introduction

In today's digital age, the rapid development of artificial intelligence technology is profoundly changing our way of life and work. According to the data, in 2022, the leading industries of artificial intelligence application penetration rate in China were Internet, finance, government, telecommunications and manufacturing (Figure 1). As an important part of social economy, enterprises are inevitably influenced by artificial intelligence technology. The wide application of artificial intelligence technology enables enterprises to analyze data and make decisions more efficiently. Through big data analysis and machine learning algorithms, enterprises can better understand market trends, consumer demand and competitive situation, thus optimizing strategic planning and resource allocation. With the continuous development of artificial intelligence technology, more and more enterprises have introduced AI technology into strategic management. The arrival of AI technology has brought great impact and change to enterprise strategic management. This paper will analyze the influence of AI technology on enterprise strategic management, and discuss how to deal with this influence.
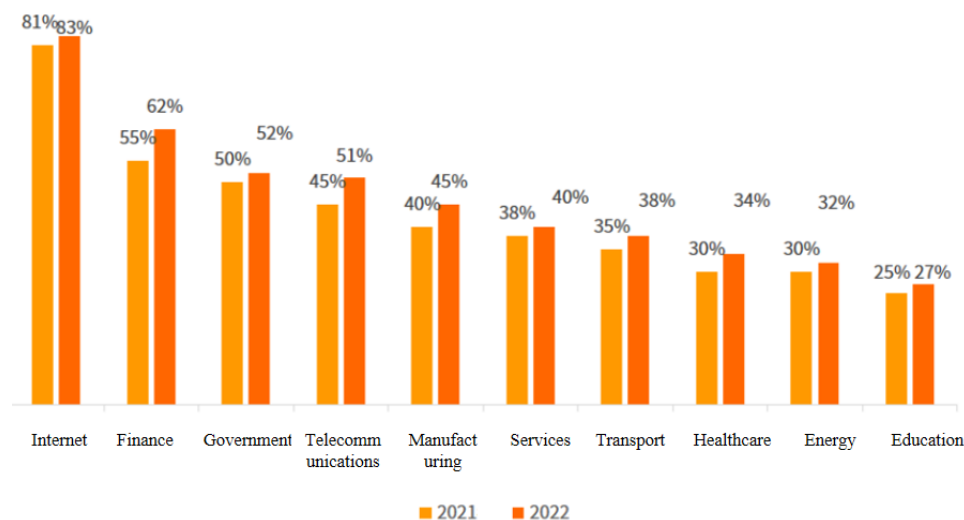

Figure 1. Artificial intelligence application penetration rate in various industries in China in 2021-2022 (Data source: data.iimedia.cn)

2. The concept and characteristics of artificial intelligence

2.1 The concept of artificial intelligence

Artificial Intelligence is an important branch of computer science at first. From the Dartmouth Society in 1956 to today, after years of development, artificial intelligence has gradually developed into a comprehensive discipline involving many disciplines, such as automatic chemistry, bionics, medicine, linguistics, philosophy, informatics and so on. Based on the research of other scholars, this paper simply summarizes the concept of artificial intelligence as studying the laws of human intelligence activities and constructing an artificial system with certain intelligent behavior. Generally, it can be understood from two aspects: strong artificial intelligence and weak artificial intelligence. Weak artificial intelligence, also known as intelligent machine, is a machine that can autonomously perform various anthropomorphic tasks under various conditions, such as AlphaGo playing Go. It can also be understood as letting machines or computer systems handle some tedious tasks that were done by human intelligence in the past, such as accounting. Strong artificial intelligence requires intelligent machines to carry out thinking activities like human beings, such as judging, reasoning or proving things, recognizing and perceiving things, understanding and designing behaviors, or learning and solving problems. It requires machines to have their own thinking, be able to understand external things and make decisions or even actions spontaneously. They behave like a "human" and may even be more outstanding and reliable than human reactions.[1]

2.2 The characteristics of artificial intelligence

(1) Self-study and adaptability

The artificial intelligence system can analyze independently according to the increasing data, and then learn and adjust its own algorithm model independently, so that it has stronger adaptability. The artificial intelligence system can also make reasoning and decision independently based on the previously acquired knowledge and information, and provide more efficient solutions. In addition, in artificial intelligence, confidentiality and security are very important. Artificial intelligence system needs data interaction and application on the premise of ensuring data integrity and privacy.[2]

(2) Efficient data processing ability

Artificial intelligence system can process a large amount of data, extract, classify, mine and analyze information quickly and accurately, thus helping users to make various decisions. At the same time, artificial intelligence technology can realize the automation and intelligence of machines. For example, robots can complete the work of handling, monitoring and inspection of goods through artificial intelligence control, thus reducing the labor intensity of human beings. Artificial intelligence system can better communicate and interact with human beings through human-computer interaction, such as voice recognition, audio recognition and visual interaction. Artificial intelligence system also has the ability of natural language processing, which can complete natural language analysis and semantic understanding according to human natural language input.

(3) Multi-domain application ability

Brain-like intelligence inspired by brain science achievements is also gaining momentum, and the trend of hardware platform of chips is also very obvious. These major changes have made artificial intelligence enter a completely different stage from the previous 60 years. Artificial intelligence technology is widely used in medical care, finance, games, logistics, education, smart home and other fields, and brings convenience and innovation to mankind.[3]

3. The influence of artificial intelligence on enterprise management decisions

Man-machine collaborative management decision-making can be understood as the deep combination of machine algorithm and human thinking in decision-making, and the decision-making task can be completed together through their interaction, in order to improve the decision-making level. The starting point of introducing machine algorithm into management decision-making lies in the limitation of human cognition, that is, human beings can only judge with limited information and cognitive ability, [and machine algorithm can make up for the above disadvantages to a great extent through its powerful data acquisition and calculation ability. On the other hand, the "fuzzy" experience formed by human decision makers through long-term practice also has its unique value. Among them, part of human experience and

knowledge are difficult to be completely transformed into algorithm rules, and at the same time, it is difficult to completely index the comprehensive effects that may be produced by management decisions and bring them into the category of algorithm optimization. Therefore, man-machine collaborative decision-making attempts to integrate the advantages of machine algorithm and human thinking to form an enhanced decision-making model.

3.1 Strategic decision-making and operational optimization

AI can provide accurate strategic decision support for enterprises through the analysis of market trends, competitors, customer needs and other data. For example, AI can analyze market data, predict future market trends and customer needs, and help enterprises to formulate more accurate product development, marketing and sales strategies. In addition, AI can monitor and analyze the operation data of enterprises in real time, find problems and bottlenecks in the operation process, and put forward optimization suggestions to improve the operation efficiency and production efficiency of enterprises. For example, AI can predict equipment failures and maintenance requirements through the analysis of production data, and reduce production interruptions and maintenance costs.(As shown in figure 2)
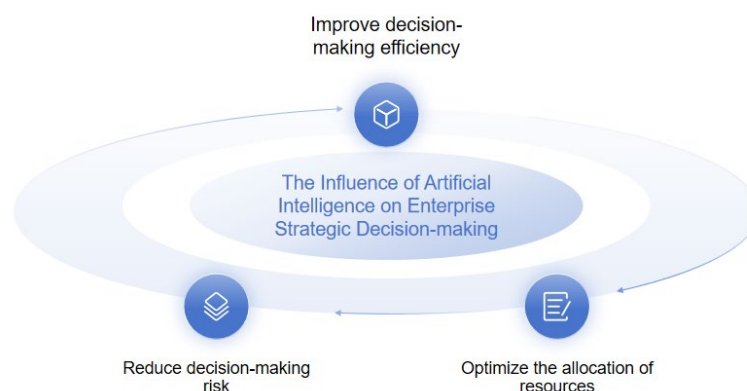

Figure 2. The Influence of Artificial Intelligence on Enterprise Strategic Decision-making

The most commonly used enterprise systems mainly include enterprise resource planning system (ERP)[4], supply chain management (SCM)[5] and manufacturing execution system (MES)[6]. Through the application of artificial intelligence system, all aspects of enterprise procurement and production operation have improved efficiency and reduced costs. Typical artificial intelligence products include Starship intelligent distribution robot, rookie intelligent order sorting system product, JD.COM coyote picking robot, etc. A typical company is Baosteel Group in Shanghai, which keeps up with the pace of Industry 4.0 era and upgrades its smart equipment. During this epidemic period, production and development were maintained through the technology of "intelligent manufacturing" and the intelligent means such as "black light factory", "no face-to-face production" and "smart logistics".

3.2 Financial intelligence decision-making

Under the background of artificial intelligence, the construction of enterprise intelligent financial system is of great significance to improving financial decision-making and management efficiency. By using artificial intelligence technology, enterprises can automatically collect and integrate a large number of financial data from multiple data sources. This includes data from various departments within the enterprise and data from external channels. In intelligent decision-making, using artificial intelligence technology, enterprises can automatically discover patterns, trends and correlations in massive financial data. The results of data analysis and mining can help enterprises to deeply understand the financial situation, identify potential risks and find the driving factors of financial performance. Such analysis can provide accurate and real-time data support and insight for intelligent decision-making. Using artificial intelligence technology, an intelligent prediction model based on historical data and external factors can be established. This model can provide accurate financial forecasting and scenario analysis, and provide guidance for decision makers in risk management and resource optimization. Intelligent financial planning and forecasting can help enterprises make wise financial decisions, improve performance and competitiveness, and intelligent risk management system can help enterprises reduce potential loss risks and increase their ability to identify abnormal situations[7].

3.3 Marketing and Customer Service

AI can make more accurate marketing strategies and promotion activities for enterprises through the analysis of market trends and competitors' data. For example, AI can predict future market trends and customer needs by analyzing market trends and competitors' data, and formulate more accurate marketing strategies and promotion activities for enterprises. At the same time, AI can understand customers' needs and preferences through the analysis of customer data, and provide more personalized and high-quality services. For example, AI can predict customers' purchasing preferences and needs by analyzing customers' purchasing history and behavior data, and recommend products and services that are more in line with customers' needs. In short, in practical applications, related systems such as customer relationship management system (CRM) can help enterprises coordinate all business processes related to sales, marketing and service. It can help companies identify, attract and retain the most valuable customers. The typical company is king of the children, a unicorn enterprise in the maternal and child industry. King of the children has accumulated big data through the comprehensive digitization of consumers; Realize accurate marketing through intelligent analysis, and improve conversion rate, customer unit price and repurchase rate. At the same time, through multi-scene, omni-channel and digital products such as APP, WeChat and smart stores, a user participation and interaction system is created.

3.4 Technical support and human resources

AI can quickly locate technical problems and improve the efficiency and accuracy of technical support by analyzing the technical support data of enterprises. For example, AI can predict possible technical problems through the analysis of technical support data, prevent and solve them in advance, and reduce the cost and time of technical support. AI can understand employees' job performance and career development needs through the analysis of human resources data, and provide more accurate recruitment and training support. For example, AI can predict the career development and promotion needs of employees through the analysis of employee performance and professional experience data, and provide enterprises with more accurate recruitment and training plans. For another example, in practical application, enterprises can complete a new attendance system through artificial intelligence face recognition and intelligent punching, and record employee attendance data more conveniently, quickly and accurately. Artificial intelligence systems can also analyze and process data, classify and summarize data, and so on. When training employees, the artificial intelligence system can analyze employees' strengths and weaknesses, identify employees' training needs and plan targeted training methods according to each employee's usual work records. When conducting employee performance appraisal and salary setting, the artificial intelligence system can also use big data to understand the salary level, national employment rate, unemployment rate and other data of various cities and enterprises in the same industry, and calculate reasonable salary standards. It can encourage the enthusiasm of employees, reduce the expenses of enterprises and standardize the management system of enterprises.[8]

3.5 Risk management and innovation drive

AI can find potential risks and problems through the analysis of financial, legal and technical risk data of enterprises, and provide risk early warning and suggestions. For example, AI can find potential financial risks and fraud through the analysis of financial data, and provide timely risk warning and treatment suggestions for enterprises. AI can stimulate innovation inspiration and bring more business opportunities and development space for enterprises through the analysis of market trends and user demand data. For example, AI can discover new user needs and market opportunities through the analysis of user needs and behavior data, and bring more business opportunities and development space for enterprises.

4. Suggestions on the influence of artificial intelligence on enterprise management decision-making

4.1 Improve the internal control and supervision system

Enterprises should establish a perfect internal control and supervision system to avoid the potential risks and hidden dangers brought by AI technology, while ensuring the positive role of AI technology in enterprise strategic management, and avoiding its negative effects reasonably. If some sensitive data need to be restricted, effective privacy protection and information security precautions should be taken.

4.2 Strengthen staff training

Enterprises should strengthen employee training and improve the practical application ability of employees' AI technology. The achievement of AI technology needs the support and implementation of talents. Strengthening employee training can not only improve employees' practical operation ability, but also broaden their horizons and help them better understand the background and value of AI technology.

4.3 Adjust the organizational structure of enterprises

Enterprises should adjust their organizational structure according to the application requirements of AI technology. For example, after the introduction of AI technology in intelligent decision-making and production optimization, it is necessary to appropriately optimize the internal organizational structure and workflow of enterprises to ensure that AI technology can truly exert its advantages and promote the efficient and stable development of enterprises.

4.4 Strengthen technological innovation and talent introduction

Enterprises should strengthen technological innovation and talent introduction, especially in the field of AI technology, continue to invest in scientific research and development and talent training, and actively explore the business innovation mode combined with cutting-edge technology, so as not only to continuously update the products and services of enterprises, but also to improve the core competitiveness and market share of enterprises.[9]

5. Conclusion

To sum up, for enterprises, the effective combination of intelligent management and intelligent decision-making can make better use of artificial intelligence technology and data analysis means, thus promoting the implementation of functional strategies such as production and operation, financial management, marketing and financial management, and improving the efficiency and profit of enterprises.[10] The application of artificial intelligence system requires enterprises to have corresponding resources and capabilities in order to keep up with the times. In order to cope with this change, enterprises should adopt optimization strategies such as establishing intelligent decision-making system, improving the quality of managers and strengthening the integration of internal and external data to enhance their core competitiveness.

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