Research Prospect of Efficiency Improvement of Artificial Intelligence for Enterprises

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Abstract: In today's era of digital economy, the rapid development and wide application of big data and artificial intelligence have promoted the vigorous and upward development of the economy. As an important part of the social economy, enterprises are also actively exploring the combination of artificial intelligence, so as to promote the improvement of production efficiency. At present, the academic fields have made some progress in the study of enterprise digital transformation, but there are still many controversies and discussions. Based on the transformation of Corindor Glass formula, this paper verifies the improvement of artificial intelligence on enterprise efficiency and verifies its practicality and operability through the actual case of artificial intelligence improving enterprise efficiency. On this basis, it analyzes the relevant fields that enterprises can improve through artificial intelligence, analyzes the existing problems, and gives reasonable suggestions. Through the double verification of theory and practice, it can be concluded that although there are still some imperfect aspects of artificial intelligence, it has a great role in promoting the efficiency of enterprises. In general, the combination of artificial intelligence and enterprise production will promote the modern, intelligent, scientific and technological, flexible development of enterprises.

1 Introduction

Artificial intelligence is at the forefront of today's scientific and technological development, profoundly changing the way enterprises operate with its powerful data processing and analysis capabilities. For enterprises, the application of artificial intelligence is not only a technical innovation, but also a key means to improve efficiency and optimize resource allocation. Firstly, artificial intelligence can significantly improve the level of automation of enterprises. Secondly, artificial intelligence plays a non-negligible role in decision support. In addition, artificial intelligence also plays an important role in improving customer experience. Finally, artificial intelligence shows great potential in application chain management, risk control, and more. In summary, the application of artificial intelligence has important strategic significance for improving enterprise efficiency. It can save enterprise costs and optimize resource allocation through automated data analysis, while also creating greater value for enterprises by improving customer experience and risk management. With the continuous development of artificial intelligence technology, its application in enterprises will be more extensive, allowing enterprises to improve efficiency and gain a competitive edge in the market.

With the advent of the era of big data, artificial intelligence has also developed rapidly and played an important role in the present. Artificial intelligence is a set of techniques and methods aimed at making machines, especially computer systems, mimic human intelligence processes [1]. In the process of combining with reality, it has also been widely concerned by people. However, AI is only a means, a tool, not an end in itself [2]. Therefore, only by combining with the real industry to create value for the society, can it reflect its role.

Economic development is an important standard to reflect social value. With the continuous improvement of the status of digital economy in the national economic system, digital and intelligent transformation has become a very hot topic [3-5]. Most of individuals insist Artificial Intelligence will have transformational impact on businesses and they are increasingly calling for digital and intelligent economy [6]. At the macro level, the transformation of the digital economy has brought about changes in life at the social and industry levels. These changes are based on the application of big data and digital technologies [7]. At the micro level, as an important subject to promote social and economic development, more and more enterprises also realize the importance of digital technology to their own development and actively carry out enterprise technological innovation activities [8].

All areas of the economy strive for efficiency and competitiveness [1]. In the past, many factors such as high-quality human resources, innovation potential, advanced management, competent personnel and investment policies were the criteria to judge whether an enterprise has an advantage [9]. But now Artificial Intelligence is one of the key drivers of digital transformation and enterprises need to adapt to its various requirements [10]. With the other significant factors and the development of these advanced technologies, the enterprises will be more and more competitive. The era of big data is coming irreversibly.

This paper contributes to four aspects: First, according to Corindor Glass production function, it proves the rationality and constructiveness of artificial intelligence to enterprise efficiency; Second, this paper will conduct a reasonable analysis of Huayang Group smart mine and SF Cloud system, in order to show the practical help of artificial intelligence to enterprise performance; Third, this paper will point out the specific areas where AI can be used in enterprises; Fourth, this paper will elaborate the existing problems of artificial intelligence and corresponding suggestions.

The remaining structure of this paper is as follows: the second part is the specific research and analysis of the business model through the formula, the third part is the specific field that artificial intelligence can be used to improve the effect of enterprises, and the fourth part is the research and suggestion of the existing problems of artificial intelligence. The fifth part is the summary of the full text.

2 Research on Industrial Characteristics and Business Models

2.1 Introduction and analysis of production efficiency formula

Based on the Cobb-douglas production function [11]:

$$Y = A(T) \cdot K^{\alpha} \cdot L^{\beta} \tag{1}$$

Artificial intelligence input E is introduced, and the elastic coefficient is η.

$$\mathrm{Y} = \mathrm{A(T)} \cdot \mathrm{K}^{\alpha} \cdot \mathrm{L}^{\beta} \cdot \mathrm{E}^{\eta} \tag{2}$$

According to Equation (2) in order to improve production efficiency, it is necessary to reasonably improve the total factor productivity (A), capital use efficiency (K), labor production efficiency (L), and continuously improve the efficiency of artificial intelligence (E). Reasonable distribution of elastic coefficients. With the continuous development of

artificial intelligence, α+β+η will be greater than 1, so that the return to scale is increasing, and eventually the production scale is greater than the input. This increases productivity in multiple ways.

The introduction of artificial intelligence can improve TFP（TFP is an important concept used in economics to measure economic growth. TFP reflects how effectively an economy or firm, given a given amount of capital and labor inputs, converts those inputs into output. In simple terms, TFP represents the contribution of productivity or technological progress to output growth in addition to capital and labor.） by improving production efficiency, reducing waste and optimizing resource allocation. At the same time, artificial intelligence also reflects technological innovation, which has greatly helped to improve TFP, where:

Capital input (K): AI can improve the efficiency of capital use, thereby increasing the marginal output of capital.

Labor input (L): AI technology can change the nature of the labor force, increase the skills of the labor force, improve the production efficiency of the labor force and thus change the marginal output of the labor force.

Artificial Intelligence input (E): The introduction of artificial intelligence technology can be regarded as an extension of the production function, and its role in production cannot be ignored.

Elasticity coefficient of returns to scale: The application of artificial intelligence usually leads to the increase of returns to scale. For example, artificial intelligence can improve production efficiency and improve production flexibility through data analysis, thus expanding production scale.

2.2 Business model case study

2.2.1 Huayang Group intelligent mine project

The close combination of artificial intelligence and mining industry is a major progress in realizing intelligent, modern and scientific mining exploration (Table 1).

(1) Artificial intelligent equipment: the use of automation equipment and robot technology to replace traditional manual work reflects technological progress, which can improve TFP, enhance production efficiency, and reduce accident risk. At the same time, through the establishment of intelligent system, real-time monitoring and maintenance of equipment operating status can be realized, and production costs can be further reduced.

(2) Artificial Intelligence data analysis and decision system: with the help of artificial intelligence technology, the smart coal mine construction scheme can realize the deep analysis and mining of a large amount of data. Through the establishment and training of data model, it can realize the prediction and early warning of various abnormal situations in the coal mine production process, improve the efficiency of capital operation and expand the marginal output of capital.

(3) Artificial Intelligence teaching and training system: through intelligent teaching training, improve the quality of workers, increase the skills of workers. Therefore, it increases the productivity of labor and changes the marginal output of labor.

The application of the intelligent coal mine construction scheme can bring many advantages, which can improve the safety of the mine, improve the utilization rate of resources, upgrade production efficiency, reduce labor costs, and reduce the risk coefficient. Make the mine operation more efficient and reliable, and timely solve the safety hazards.

Table 1. Intelligent Coal Mine Time Variation

Project/Time	2022	2023	2024

Intelligent mining face	50	92	126
Intelligent coal mine	0	2	6
Intelligent coal preparation plant	0	0	1

2.2.2 SF Fengzhi cloud intelligent system project

The close combination of artificial intelligence and logistics industry can greatly improve transportation efficiency, save transportation costs, and promote the rapid development of the transportation industry (Fig.1).

(1) Artificial intelligence algorithm solution system: it has played a significant role in warehouse network planning, path optimization, inventory planning and dynamic replenishment. By collecting various abnormal data and conducting overall analysis, the iterative intelligent algorithm system has been continuously upgraded.

(2) Artificial intelligence logistics and transportation digital system: it makes delivery more convenient, and greatly reduces the economic and human cost of logistics and transportation. Making logistics and transportation develop in a more scientific and modern direction.

(3) Artificial intelligence business drainage system: intelligent docking with offline merchants, intelligent processing of merchant feedback, comprehensive analysis and processing of various data, laying a solid foundation for further improving user experience. Data analysis, root-cause diagnosis and improvement measures are transformed from manual analysis to large-scale model deployment, ShunFeng Technology is committed to building a smart supply chain ecosystem, which not only solves SF's own supply chain problems, but also solves customers' problems.

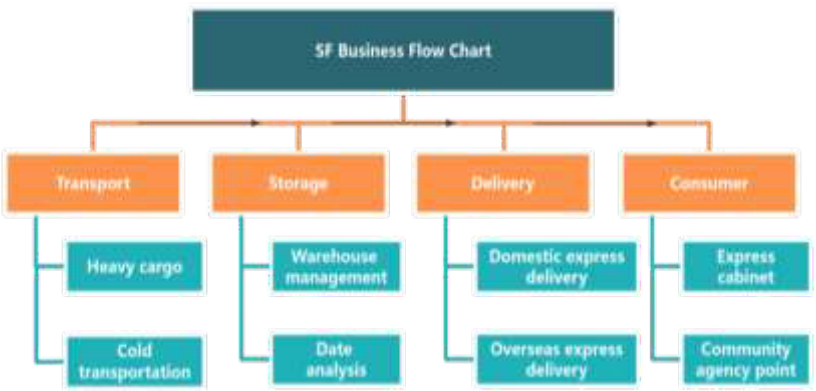

Fig. 1. SF Business Flow Chart

2.2.3 Amazon Web Services

Amazon uses AI and machine learning to optimize inventory management. AI analyzes historical sales data, seasonal changes, and consumer behavior trends to predict demand and automatically adjust inventory levels. This allows Amazon to quickly restock when needed, avoiding overstock or out-of-stock situations.

(1) Inventory management system:Through precise inventory management, Amazon reduces the cost of holding inventory and the need for storage space

(2) Feedback system:Customer satisfaction is increased because goods are easier to find and buy when they need them.

(3) Cargo filling system:Quickly replenish stock when needed to avoid overstock or out of stock and a new mode of automatic cargo filling is established

Therefore, the large-scale combination of artificial intelligence and commercial companies reflects the modernization and scientific development of business. Artificial intelligence embodies the most advanced technology level, improves the marginal benefit of capital and labor, and itself plays an important role in production. Therefore, the combination of artificial intelligence and business is the inevitable result of the development of The Times and technology.

3 Application of artificial intelligence in enterprise efficiency

The wide and deep application of artificial intelligence (AI) in enterprise efficiency has significantly improved the operational efficiency, decision accuracy and market competitiveness of enterprises. Here are a few key areas of application:

3.1 Automate processes and tasks

3.1.1 Data processing and analysis

AI can automatically perform data cleaning, statistical analysis and visual report generation to improve work efficiency and data accuracy. For example, in the field of financial analysis, AI can automatically analyze a company's financial situation, identify potential risks and provide early warnings to better aid decision-making.

3.1.2 Office document writing

AI can automatically generate various contracts, reports and documents according to preset templates, reducing manual writing time and improving office efficiency.

3.1.3 Human resource management

AI can automatically perform tedious work such as resume screening, interview scheduling and performance evaluation to help enterprises efficiently recruit and manage talents.

3.2 Intelligent analysis and decision support

3.2.1 Market insight and prediction

Through deep mining and analysis of large amounts of data, AI reveals market trends, predicts risks and finds potential investment opportunities, providing important decision support for enterprises.

3.2.2 Customer behavior analysis

AI can analyze users' shopping habits, preferences and feedback, and provide enterprises with personalized marketing strategies and customer service programs to enhance customer satisfaction and loyalty.

3.3 Intelligent service and product innovation

3.3.1 Intelligent recommendation system

The e-commerce platform uses AI recommendation system to recommend products according to users' interests and purchasing behaviors to improve conversion rate and user satisfaction.

3.3.2 Intelligent customer service

AI chatbots can automatically answer common questions, transfer to human customer service and voice recognition of customer needs to improve customer satisfaction and service quality.

3.3.3 Product innovation

AI technology is also used in product innovation to discover market needs through data analysis and drive the development of new products or services.

3.4 Project management and supply chain optimization

3.4.1 Intelligent project management

AI manages project progress, resources and risks through intelligent project management software to improve the success rate and efficiency of projects.

3.4.2 Supply chain optimization

AI can analyze sales data, predict demand and optimize inventory management, reduce inventory costs and risks, and improve logistics efficiency.

3.5 Automatic production and quality control

3.5.1 Intelligent manufacturing

AI and robotics are combined to achieve automated production lines and smart factories, improving production efficiency and product quality.

3.5.2 Quality inspection

AI conducts quality inspection of products in the production process through image processing and machine learning technology to reduce the defective rate and improve production efficiency.

3.6 Network security and risk management

3.6.1 Intelligent threat detection

AI monitors and analyzes network traffic in real time, identifies potential security threats, and protects enterprise information security through technologies such as intelligent threat detection, behavior analysis, and automatic response.

3.6.2 Risk assessment

AI is used in financial services for risk assessment to help banks and other financial institutions prevent potential financial risks.

To sum up, the application of artificial intelligence in enterprise efficiency covers many fields such as automated process and task processing, intelligent analysis and decision support, intelligent service and product innovation, project management and supply chain optimization, automated production and quality control, and network security and risk management. These applications not only improve the operational efficiency and decision-making accuracy of enterprises, but also bring greater market competitiveness and business value to enterprises.

4 Problems and Inspirations

The rapid development of artificial intelligence (AI) has brought great opportunities, but also caused many problems and challenges. These problems are not limited to the technical level, but also involve multiple dimensions such as law and society. Here are some of the main problems with AI in practical applications and their implications.

4.1 Problems

4.1.1 Excessive investment:

The combination of artificial intelligence and business requires a large amount of capital investment, which is a huge burden for enterprises. In order to reduce expenses, many short-sighted enterprises have low enthusiasm for developing AI.

4.1.2 Technical imperfections and instability

Artificial intelligence is still in the development stage, and many technologies are not clear, which is prone to some instability and defects, causing a blow to the profits and reputation of enterprises.

4.1.3 Social and economic issues

Unemployment and career transition: AI's automated capabilities could replace a large number of repetitive and low-skilled jobs, leading to increased unemployment. For example, automated production lines and intelligent customer service systems may replace the jobs of factory workers and customer service agents. This will have an impact on the job market and social stability.

Digital Divide: The development of AI technology may exacerbate social inequality. Those who have the technology and resources will benefit, while those who lack them may be further marginalized. This digital divide is likely to widen globally, especially in developing countries.

Social dependence: As AI systems become more widely used in daily life, people's dependence on them increases. This can lead to an over-reliance on technology and reduced ability to solve problems and think independently. In addition, AI system failures or malicious attacks may pose a threat to social stability and security.

4.1.4 Legal and regulatory issues

Legal liability: The autonomy of AI systems makes it difficult to determine legal liability when things go wrong. The current legal framework has not fully adapted to the challenges posed by these emerging technologies.

Lagging regulations: The pace of development of AI technology far outpaces the development of laws and regulations, resulting in a lack of clear regulatory standards in many AI-related application fields. This can lead to companies facing uncertainty when developing and deploying AI technology, or even taking advantage of legal gaps to avoid liability or gain improper benefits.

Transnational conflicts of law: AI applications are global in nature, and countries have different legal systems, ethical standards, and cultural backgrounds, which can lead to legal conflicts and compliance challenges in transnational AI applications.

4.2 Ispirations

At the international level, countries should establish transnational cooperation mechanisms, promote the standardization of artificial intelligence regulation on a global scale, reduce transnational legal conflicts, and promote the universal and fair application of artificial intelligence technology around the world, narrow the digital divide, and ensure that technological progress benefits all social groups.

From the perspective of the government, a training mechanism for laid-off workers should be established to adapt to the changes and development of the era of artificial intelligence. Formulate an artificial intelligence security law, regulate the development of the artificial intelligence industry, and severely crack down on security crimes using artificial intelligence.

For enterprises and research institutions, they should take the initiative to comply with laws and regulations when developing artificial intelligence systems and avoid taking advantage of legal loopholes to seek profits. Secondly, more resources should be invested in improving data quality, including the collection of diverse and high-quality data sets, as well as the adoption of data enhancement and noise filtering technologies. Furthermore, General Artificial Intelligence (AGI) research should continue to explore how to develop AI systems that can perform well in a wide range of tasks. Finally, development institutions should also strengthen the security research of artificial intelligence systems, develop technologies to resist adversarial attacks, and improve the robustness of artificial intelligence systems.

The rapid development of artificial intelligence has brought unprecedented opportunities to society, but also caused a series of complex problems. From ethics, to law, to society, to technology, to the environment, there are serious challenges in every field. To ensure that AI technology can benefit humanity while avoiding potential negative impacts, all parties need to work together. Governments, businesses, academic institutions, and the public need to work together to develop reasonable policies and regulations, promote the fair use of

technology, strengthen moral and ethical education, and always focus on safety and sustainability during technology research and development. Only in this way can we truly achieve the healthy development and long-term progress of artificial intelligence technology.

5 Conclusion

This paper verifies the rationality and operability of artificial intelligence to improve production efficiency by introducing Corindor Glass production function and Corindor Glass production function variant formula and introducing reference quantity reasonably. Then, the practical operation analysis of Huayang Cloud mine intelligent system and SF Fengzhi cloud system is carried out to verify that artificial intelligence and enterprises can be organically combined to improve production efficiency. Then, it makes a reasonable discussion on the utilization of artificial intelligence in enterprise efficiency, and clarifies the important role of artificial intelligence in intelligent analysis, rational decision-making, intelligent service, product innovation, project management and other aspects. At the same time, it points out the existing problems of artificial intelligence, such as excessive investment, unstable technology, and legal and ethical problems, and gives corresponding suggestions and measures. For example, the formulation and improvement of artificial intelligence-related laws and regulations can be accelerated; The government and enterprises actively develop employment retraining programs to help workers adapt to the needs of new careers in the era of artificial intelligence; Strengthen the security research of artificial intelligence system and develop the technology of resisting counterattack. Promote the further vigorous development of artificial intelligence and actively integrate with enterprise production, and promote the modernization, science and technology and intelligence of enterprise development in the digital era.

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