

# *The Application of Artificial Intelligence Technology in the Digital Economy*

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**Abstract:** The present digital economy is commonly thought to be driven by artificial intelligence. Because AI is not constrained by the rigidity and cognitive limits of humans, it is widely believed that AI is essential for businesses to succeed in the digital economy. This paper covers the use of artificial intelligence technology in several disciplines of the digital economy, with a focus on specific situations in finance, e-commerce, supply chain logistics, healthcare, and other areas of the digital economy. The ongoing development of artificial intelligence has radically altered the way various areas work, delivering greater value and efficiency for businesses, and plays an important role in its development. The purpose of the article is to forecast the growth of AI technology in the digital economy by examining how AI's distinctiveness will lead to the development of novel business models and broad use.

**Keywords:** AI-driven digital transformation, personalized recommendation systems, AI in supply chain logistics, AI ethics and privacy concerns

## 1. Introduction

The development and application of Artificial Intelligence (AI) technology has received widespread attention in today's society, which affects the business model of the digital economy and the economic development of the entire society. "Nearly 75% of businesses have already incorporated AI into their business strategy and have revised their cloud plans to achieve AI success, according to our poll of more than 1,600 C-suite executives and data-science experts from the largest corporations in the world [1]".

Artificial intelligence (AI) is the emulation of human intellect in a machine or computer system, allowing it to carry out tasks that would typically require human intelligence. These abilities include the ability to learn, think, solve problems, perceive, understand normal language, and even behave like a human when dealing with others. Artificial intelligence systems use algorithms, data, and computer power to make judgments and find solutions. They can quickly assimilate and analyze massive amounts of data, spot patterns, and adjust to changing information or conditions. By streamlining processes, increasing efficiency and helping to create new business models, AI is revolutionizing the way businesses operate. Organizations are adopting automation and AI to increase productivity, save costs and streamline processes. To gain knowledge, make predictions and influence

decisions, the digital economy relies on the collection and processing of large amounts of data. It offers startups and business owners the opportunity to disrupt established markets and come up with novel solutions. Old corporate structures, labor markets, and consumer behavior have been dramatically impacted by the digital economy.

The main purpose of our research on this topic is because the digital economy is the main form of business nowadays, e.g., e-commerce, artificial intelligence, etc. We will use literature usage and content analysis to study this topic in this essay. The paper is organized by follows: First, the application of AI technology in various digital economy fields and specific examples are described, and then the characteristics of AI and the reasons for its wide application are summarized, and predicted the future development trend. Our primary objective in writing this paper was to examine how AI is used and contributed in various fields. We also hoped to produce a paper that would help those who are curious about AI better understand the digital economy and offer some specific predictions about where the economy might be headed in the future.

## **2. The applications of AI in different areas**

### **2.1. AI applications in the financial field**

Automated Trading is one of the significant uses of AI in finance. Huge volumes of data are analyzed by AI-driven algorithms to make split-second trading choices. These algorithms outperform human traders in terms of pattern recognition, trade execution, and portfolio management. Also, AI algorithms analyse credit card transaction data to find unusual patterns or transactions that may be evidence of fraud in order to help banks and credit card companies reduce losses, “Finding these undiscovered correlations between user behavior and the possibility of fraudulent activity is made possible by machine learning, which enables the development of algorithms that handle massive datasets with numerous factors.[2]”. Moreover, AI is capable of doing an analysis of a customer's financial position and aspirations to offer individualized investment and financial advise, assisting people in making wise choices. Finally, by automating compliance tests and reporting obligations, AI systems can assist financial institutions in remaining compliant with constantly changing rules. These applications show how AI is changing the financial sector and transforming it into one that is more efficient, safe, and customer-focused.

### **2.2. AI applications in e-commerce**

Incorporating artificial intelligence (AI) technology into the e-commerce space is a strategic approach aimed at increasing user engagement and driving sales promotion. A key way AI is changing the e-commerce landscape is by implementing personalized recommendation systems. These systems harness the power of sophisticated machine-learning algorithms to scrutinize users' complex purchasing histories and browsing patterns. Furthermore, these opinions are transformed into generating custom-proposed product recommendations that resonate with individual preferences and personalized recommendations. Due to the seamless alignment between user interests and products, sales conversion rates naturally rise, highlighting the overall revenue trajectory. Virtual fitting rooms enable customers to try on clothes without actually having to try them on in person. Augmented reality technology also allows customers to visualize how furniture or other items would look in their own homes, giving them a realistic perspective of the product before they buy it. By using these technologies, retailers are providing customers with a more personalized shopping experience, which can result in increased customer satisfaction and loyalty. For example, the website called style me is a famous 3D online shopping website, the Reina Olga , who is the Manager of style me said that “We love the data from Style.me. It gives us a far better understanding of our customers and what they want. We can then leverage that for our business activities.[3]”

Moreover, the same results can be obtained through visual search and image recognition. With visual search technology, users can now search for products using photos instead of text. AI systems infer items or products from images, evaluate images, and present search results based on visual similarity. Thanks to this feature, customers can find the products they are interested in faster, which makes product discovery easier. AI uses image recognition to identify and filter inappropriate or forbidden content, which is also used for user-generated content moderation. In essence, the incorporation of artificial intelligence into e-commerce is more than a technological enhancement; it represents a strategic shift in building deeper connections with customers. By crafting personalized journeys and enriching the sensory fabric of online interactions with data-driven insights, AI harmonizes the digital shopping experience with human preferences, redefining the dynamics of contemporary commerce.

### **2.3. Artificial intelligence application in supply chain logistics**

AI is utilized in a variety of applications. The use of artificial intelligence in supply chain logistics improves the supply chain's intelligence and efficiency. AI algorithms may examine previous sales data, industry trends, seasonality, and external factors to forecast demand. Intelligent route design and transportation optimization algorithms can optimize logistics routes while also lowering transportation costs and increasing delivery efficiency. Additionally, AI will handle inventories. AI-driven systems continuously monitor inventory levels and place new orders for products when they fall below predetermined thresholds. As a consequence, stockouts and excess inventory are less common, which ultimately leads to cost savings. Beyond these, a real-time view of the whole supply chain is made possible with AI. This entails tracking shipments, keeping an eye on inventory levels, and anticipating any interruptions. This enables businesses to decide wisely and react to problems more rapidly.

Another advantage of AI is that, in order to ensure that quality requirements are followed, AI-driven vision systems and machine learning algorithms may check and discover flaws in items during the production and packaging process. For example, medicines, “A pharmaceutical company can use AI algorithms to automate the examination of pills and capsules during manufacture with a 99.999% accuracy rate. The business can guarantee a greater level of accuracy in identifying defects and anomalies by minimizing human error and enhancing productivity, which will ultimately result in safer and more dependable pharmaceuticals. [4]”.

By guaranteeing that items are delivered on time and in excellent shape, these AI solutions not only increase the efficiency and cost-effectiveness of supply chain logistics but also increase customer happiness. There is significant potential for additional advancements in supply chain logistics as AI technologies develop.

### **2.4. Artificial intelligence applications in healthcare**

In a study published in the journal ‘Nature Medicine’, researchers developed an AI model that outperformed human dermatologists in accurately diagnosing skin cancer. The AI system was trained using a dataset of over 130,000 images and achieved an accuracy rate of 95%, compared to 86.6% for human dermatologists. The AI usage in healthcare sector, AI has made tremendous strides, transforming administrative, diagnostic, and patient care processes. These technologies allow for the development of tailored treatments that are tailored to an individual's specific needs. This can lead to more effective treatments, as well as increased safety and efficacy. In addition, these technologies are helping to reduce the cost of medical treatments, enabling more individuals to access the care they need. As a result, medical professionals are now able to provide better, more efficient care to their patients.

Here are a few AI benefits:

Pathologists can use AI image analysis to spot malignant cells and other irregularities in tissue samples. “The team developed an AI algorithm called ConvPath to classify cell types from lung cancer pathology slides. The algorithm can evaluate cells and identify their types based on their appearance in pathology images. The algorithm effectively converts the pathology image into a “map” that shows the spatial distributions and interactions of tumor cells and lymphocytes in tumor tissue.[5]”

Medical records and genetic data can be analyzed by AI algorithms to predict disease risk factors and detect possible health problems before they become serious. “Both providers and payers for care are also using ‘population health’ machine learning models to predict populations at risk of particular diseases<sup>17</sup> or accidents<sup>18</sup> or to predict hospital readmission.<sup>19</sup> These models can be effective at prediction [6]”.

Robots with AI assistance increase surgical precision and decrease human mistake by giving surgeons real-time feedback. “In surgery, artificial intelligence algorithms can act as a guide to enhance the decision-making process by analyzing real-time data from multiple sources and providing valuable feedback to surgeons. The integration of artificial intelligence in surgery can not only enhance decision-making ability, but also help prevent adverse results.[7]” These artificial intelligence in healthcare boost efficiency, decrease expenses, and improve patient outcomes.

### 3. Result

With its unique algorithms, fast data analysis, powerful computing power, and extremely low error rate, AI technology is gradually replacing humans, and its application in many areas of the digital economy is transforming business operations, increasing efficiency, and delivering more value. However, as the application becomes more sophisticated, it introduces new concerns, such as privacy protection and artificial intelligence ethics.

### 4. Conclusion

AI technology has completely subverted the traditional operation model, while more efficient and more able to create value, it may cause the rise of unemployment and greatly reduce the demand for human labor, so it is necessary to control the development of AI technology to a certain extent, to prevent AI from controlling the human economic world.

At the same time, there may be hidden dangers of privacy infringement and personal information transparency. Websites in various economic fields have the obligation to protect users' privacy. Even in the era of big data, information cannot be fully transparent to prevent people from taking advantage of it. However, in general, with the continued evolution of artificial intelligence technology, there is no doubt that AI will continue to play an essential role in the digital economy, promoting innovation and development in a variety of industries in the future.

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Xinyi Lu and Zeyi Li contributed equally to this work and should be considered co-first authors.

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