

Application of Artificial Intelligence in Enterprise Digitalization

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Abstract. In the past 10 years, the general trend of digital economy development has further promoted the application of core technologies including artificial intelligence. It is clear that artificial intelligence technology has started to play a significant role in many facets of business development in recent years. The "tentacles" of artificial intelligence technology can be said to have reached into every sphere of social economy, from design to production, from management to marketing. From an industrial standpoint, a number of sectors, including manufacturing, energy, and transportation, have started to "polish" with the use of artificial intelligence technology. This paper first analyzes the relationship between artificial intelligence and enterprise digitalization from two perspectives, then examines how AI is affecting business digitalization from various angles. Besides, I predicted the future of artificial intelligence in enterprise digitalization after researching chatbots, intelligent agent assistant, and other key application.

Keywords: Artificial intelligence; enterprise; digitalization.

1. Introduction

1.1 Definition of Enterprise Digitalization

The Internet and associated industries have advanced rapidly in China's digital industry. Data is crucial to a digital economy product and service manufacturing. The digital economy includes digital industrialization and industrial digitization. Digital industrialization focuses on the information sector, while industrial digitization modernizes and transforms existing industries [1].

Enterprise digitalization integrates digital marketing, digital technology, and big data on the SAAS cloud engine platform to produce digital assets with multiple software matrices as long-term carriers for organizations. Enterprise digitalization has its own strategic characteristics. They establish an enterprise model that can create and capture profits in new ways and establish new and powerful customer and employee value concepts. Most importantly, a digital business should be unique. Enterprise digitalization builds rich, long-term marketing by accumulating transaction data, e-commerce data, media content data, industry data, user data, potential customer data, and product data. It steadily creates long-term digital operations for organizations and helps them become digital enterprises [2].

1.2 Definition of Artificial Intelligence

Artificial intelligence is the study of theories, techniques, tools, and application systems that mimic, extend and improve human intelligence.

Artificial intelligence seeks to understand intelligence and construct machines that behave like humans. This research includes language recognition, picture recognition, natural language processing, expert systems, and robotics. Since artificial intelligence's invention, theory, technology, and applications have grown. Artificial intelligence may enable "containers" for human knowledge. AI can think and process like humans. Artificial intelligence can think, but it may never match human intelligence.

The definition of artificial intelligence can be divided into two parts, namely "artificial" and "intelligent". "Artificial" is easier to understand and less controversial. Sometimes we have to consider what humans can make, whether humans can construct artificial intelligence, etc. However, "artificial systems" are typically artificial.

"Smart" is debated. Awareness, identity, and thought are also covered (including unconscious thinking). Man, only understands his own intelligence. Due to our limited grasp of human intelligence and our own intellect, defining "artificial" intelligence is difficult. Human intelligence is often studied with artificial intelligence. Studying animal or man-made intelligence is also considered relevant to artificial intelligence [3].

One sentence to explain artificial intelligence is that traditional computer technology allows people to learn and use the language of machines to deal with problems, while artificial intelligence allows machines to learn to use human language and ways of thinking to deal with problems [4].

1.3 Research Purpose and Content Framework

In order to research how artificial intelligence is being used in business digitalization, this paper first sorts out the relationship between artificial intelligence and enterprise digitalization from two aspects of digitalization and enterprise and then examines from a variety of angles how artificial intelligence is affecting business digitalization. After conducting research on chatbots, intelligent agent assistant, and other key application of artificial intelligence in the field of enterprise digitalization, I made a prediction about the future direction of this technology.

2. The Relationship Between Artificial Intelligence and Enterprise Digitalization

2.1 The Relationship Between Artificial Intelligence and Digitalization

Artificial intelligence requires digitization. Digitization unlocks the value of massive data, which enriches digital machine learning and accelerates artificial intelligence. The early digital world's lack of diverse data and powerful data computing and processing capabilities prevented artificial intelligence from self-learning and training, keeping it in scientists' labs.

Data grows exponentially at 40% per year in the digital world of the 21st century. Supercomputing power, deep machine learning technology, lighter industrial design materials, more complex control mechanisms, and broader machine perception technology have also accelerated artificial intelligence. Machines can "see", "listen", and "speak" with natural language and image/video understanding technologies, "self-learn" with deep learning neural networks, and "decision-make" with big data processing. The machine "perceives" and "operates" with sensors and actuators. These AI systems can quickly analyze massive amounts of data and understand natural language and images. Artificial intelligence may predict our behavior one day. They can see, hear, and feel in the digital world and interact naturally with sensors and actuators if their behavior is more accurate than ours.

Artificial intelligence is becoming more like "silicon-based life" based on silicon and silicide. Digitization lays the groundwork for artificial intelligence, and life-giving AI will be the ultimate form of digitization.

2.2 The Relationship Between Artificial Intelligence and Enterprises

From the previous discussion, we can see that artificial intelligence technology is constantly moving from labs to commercial applications and slowly permeating our lives. Today's computers can characterize billions of neurons, advise us, and act as intelligent assistants.

Technology-leading companies like Google, Amazon, Facebook, Ali, Tencent, and others are using these technologies to gain more business and customers and erode market share in other industries like media, retail, finance, etc. In a world where the fittest survive, many companies say "innovate or perish." Modern enterprises should realize that many AI technologies already exist and are developing rapidly, waiting for resourceful executors to use them to innovate their products and services.

Know your industry, products, and services to survive. Which link needs AI? Which AI methods are feasible? When will AI replace a skill? How will users communicate and behave?

Enterprises should also realize that memory, computing, learning, and intelligence are no longer human privileges but independent of the material level. When AI replaces jobs, the business game may change unexpectedly. Thus, firms must combine artificial intelligence technology with their needs and growth at the right time to survive in the new business norms.

In an Internet age where customers rule, companies should recognize that human-computer interaction is shifting customers from traditional models to new ones. Touch interaction on mobile phones is replacing mouse and click interaction. Smart homes, smart assistants, VR/AR, and robots will enable more natural human-computer voice interaction. By then, human-computer voice interaction will be mainstream, and businesses that cannot provide it may lose customers like those that cannot provide mobile phone services.

In an era where no one knows who their competitors are, companies should see that technology is unifying and simplifying, creating electronic versions of multifunctional Swiss Army Knives for humans. Smartphones replace GPS, cameras, tape recorders, and CD players. Amazon devours US retail. Google searches images, music, videos, maps, and more. A complete communication ecosystem integrates video chat, photo/video sharing, circle of friends, etc. How will unmanned vehicles and drones affect automobiles, transportation, tourism, and upstream and downstream industries? In the age of artificial intelligence, businesses must become rule-makers or part of an electronic Swiss Army Knife to survive.

Finally, enterprises should know that once artificial intelligence replaces streamlined, stylized, and data-based work, it will be much more efficient than humans. Convenient AI replication will lower prices. Businesses must act immediately. They should monitor AI development, research how AI technology will affect their related industries, plan how AI will develop within their organizations, reserve AI-related talent, and train their staff to perform tasks that AI will eventually be able to do. We can only change, surpass, and integrate into the new era of artificial intelligence by always feeling like we're going to be eliminated by the times [5].

3. Impact of Artificial Intelligence on Enterprise Digitalization

3.1 Realize Intelligent Business Solutions Through Digital Transformation

The world is changing and becoming more tech-savvy, and businesses are becoming fully data-driven. Customers look for something that is easy to access and use. To keep its promise to customers, every company must ensure comfort, speed and convenience while minimizing costs.

Businesses can benefit from digital transformation by putting information, products and services at customers' fingertips. However, smarter solutions are needed to make businesses smarter. This is where smart technologies such as artificial intelligence, machine learning, and the Internet of Things come in handy. Artificial intelligence is in high demand for business development and advanced technologies are making the process more efficient.

The adoption of AI tools can enable businesses to trigger processes and lead to paradigm shifts while remaining focused on the main goal – digital transformation. Every business benefit from digital transformation, whether through ERP platforms, email, cloud computing, remote work software, e-commerce, video streaming, telemedicine, or otherwise. For the skills required for the process, more and more companies are choosing to hire workers with advanced AI education.

3.2 Customer Experience after Digitalization of Enterprises will be Changed by Artificial Intelligence

Twitter found that customers value customer service 30% more than the brand. Guo Ming believes that "the customer is God", but few companies understand what God needs. Consumers want proactive engagement, instant gratification, and personalized service.

Personalization and forecasting will be the themes, and big data and artificial intelligence will improve channel customer service and efficiency.

Customer service channels include voice, mobile apps, enterprise accounts, social media, online chat, SMS, video, and Internet of Things self-service. Multiple-channel users solve problems. Although there are many channels, user satisfaction depends on information consistency, customer service representatives listening skills, and quick problem resolution.

However, artificial intelligence-based intelligent recognition, matching, and answers will be widely used to push more accurate information to customers. Technological innovation is essential. Digital transformation requires enterprise follow-up. It should permeate the enterprise's internal organization and functional departments, be implemented in operations, and promote in-depth digitalization from planning, production, sales, and management. Enterprises must also integrate well and understand customers.

The customer experience life cycle allows enterprises to evaluate the customer experience. This cycle has three stages based on its links. They are the drainage stage before purchase, the purchase stage, and customer relationship management. These three stages can attract users through multi-channel pushes, retain users with a lot of valuable data entry and analysis, and improve user loyalty in a virtuous circle.

Thus, the key to contacting and serving customers in the digital age is to create a customer-centric, Internet and intelligent technology-based ability to meet customer needs through omnichannel resources, realize customer self-service, and move toward zero-based, all-around functions [6].

3.3 Transformation Trends of Enterprise Digitalization in 2022

According to Gartner, 91% of businesses are engaged in some form of digital initiatives, and 87% of senior business leaders say digital is a top priority. By 2022, at least 96 percent of respondents intend to use AI simulations such as digital twins. This adaptable technology runs real-time simulations using virtual copies of assets, processes, and systems.

According to a study by Statista, CEOs are using two main strategies to keep their business alive in the age of COVID-19: 37% for digital transformation projects and the remainder for remote work experience.

At least 89% of companies globally have adopted a digital-first business strategy to streamline their business processes. Digital skills are the most important skills in today's job market and require continuous reskilling. The World Economic Forum suggests that by 2022, at least 54% of workers will need to reskill in digital skills development.

Another interesting finding from the Gartner survey is that by the end of 2022, intelligent systems will drive approximately 70% of all customer engagements. Why are more businesses turning to AI certifications to encourage the development of quality-focused AI skills? According to Salesforce, 59% of hiring managers believe the growing impact of artificial intelligence contributes to the digital transformation skills companies need.

Still, according to PwC, 55% of recruiting firms are concerned about digital skills and believe that a lack of core skills hinders innovation.

3.4 The Role of Artificial Intelligence in the Digital Transformation of Enterprises

On a larger scale, enterprises tend to organize the use of artificial intelligence tools to analyze data and predict the future, so as to formulate effective decision-making strategies. According to a PwC survey, about 86% of people believe that artificial intelligence is a mainstream technology. This is because artificial intelligence technology has evolved into a driving force, incorporating technological innovations such as natural language processing, machine learning, predictive analytics, data labeling, and more.

AI tools can help any company increase revenue; for example, they can help businesses identify areas of weakness and leverage accurate forecasts of market trends, prospects, and competitors. When AI makes decisions, they are far superior to those made by humans, and without bias or emotion.

Businesses today require vast amounts of data, research, and analysis to make good business decisions. According to Forrester, by 2030, data analysts expect 29% of jobs to be eliminated through automation, leaving room for 13% to be created.

Building predictive models for optimized decision-making, automatically generating insights, and developing intelligent applications for internal and external use, such as data quality automation, robotic process automation, conversational AI for smart assistants, and chatbots, are all Examples of how artificial intelligence is used.

3.5 The Importance of AI in Digital Transformation in 2023

According to Accenture, artificial intelligence could boost profitability across industries by an average of 38% by 2035 and is expected to generate an additional \$14 trillion in revenue that same year.

According to IDC, by 2025, AI technologies will power approximately 90 percent of the processes and products of advanced enterprise applications.

2023 may see more AI technologies such as machine learning, programming languages, development skills, chatbots, customer behavior patterns, perfect customer preferences and reduced HR involvement.

Artificial intelligence is constantly evolving to automate every process with high speed and reliability. Finance, healthcare, education, transportation, automated code generation, automated testing, automated solution development, augmented analytics, and other industries have embraced the incorporation of AI.

Nonetheless, new AI-based technologies introduced to the industry, such as the “distributed cloud,” facilitate access to massive amounts of data through digital transformation. This convinces 74% of enterprises to become highly advanced in data management by the end of 2023, up from 37% today[7].

4. Application of Artificial Intelligence in Enterprise Digitalization

4.1 Chatbots: The Rise of AI Dialogue

Chatbots refer to those customer service agents powered by artificial intelligence. A customer asks a chatbot a question, and the chatbot looks up information from numerous systems and gives the customer an answer.

Today's chatbots improve customer service and save organizations money. Juniper Research predicts chatbots will save companies \$8 billion annually.

Ping An is a Chinese financial services company. Ping An used chatbots first. Conversational chatbots, trained by AI, can answer millions of client inquiries daily with greater accuracy and comprehension. This system reduces call center wait times and saves money.

Chatbots can largely help us answer some simple questions, and in the process of answering questions, they can also provide services such as bank balance inquiries. For chatbots, we think that its main application scenario is not just to answer simple demands from customers. A good chatbot should accurately identify the customer's intentions and behave accordingly. We think of chatbots as a small component in the contact center solution, which is the role of the agent. After judging customer intentions, the next step is to be controlled by an intelligent routing engine. There are many channels for chatbot applications. Websites, mobile apps, and instant messaging tools can all be integrated with chatbots.

Conversational AI's origins Auto-recognizing speech Automatic voice recognition converts speech into text when we speak to our home or phone virtual assistants. NLP can be used to construct natural human-technology interaction systems. Chatbots respond to client inquiries using speech synthesis-based text-to-speech.

An accurate, fast, and scalable chatbot can manage hundreds or thousands of client inquiries. Chatbots must also have customizable voices and languages. Sounds easy—the what's problem? The issue is that the process is not completed. Manually adjusting the software to make it accurate and

speedy can hinder a data science team's job. Thankfully, more software solutions are available to cut chatbot development time from months to days. Before constructing a chatbot, teams can practice with a pre-trained model.

4.2 Intelligent Agent Assistant

Smart Agent Assistant is a smart answering assistant for artificial agents. The intelligent agent assistant uses AI speech technology and big data processing to perform semantic analysis throughout the agent's call process and provide real-time business counseling, monitoring, and management. Improve corporate brand image, business skills, and service efficiency, save money, and improve customer service.

The intelligent agent assistant recognizes speech and understands semantics using a human-machine collaboration mechanism. It is like a "customer service expert" who advises the agent 24/7, speeds up training, supervises, and improves hotline work. Increase telesales orders and empower call center agents with AI.

Three main functions. Intelligent response assistance. Huayun Tianxia Intelligent Agent Assistant converts incoming calls into text using speech recognition and matches standard answers in real-time to help call center agents quickly find the best professional speech responses (knowledge content prompts and answers Speech guidance), improve service efficiency and accuracy, track and remind dialogue subjects, and discover clues.

Monitor agent behavior and risk warning. Real-time business compliance monitoring, early warning of service standards like seat emotional speech speed, polite language, etc., prompt customer emotional changes, and supervises topic lists, content summaries, and historical information backtracking.

Third, data collection. Real-time call content customer conversation data collection speeds up work order generation and efficiency.

Use AI to simplify agents' jobs daily. Consumer-business communication will be plentiful. Artificial intelligence uses data from websites, mobile apps, and instant messaging tools. Based on our company's digital imprints, we can predict customer needs before they interact. This pre-judgment helps our artificial agent when the customer cannot complete the service through self-service [8].

4.3 Customer Journey Analysis and Predictive Matching Technology

Leverage rich customer context information to create a massive impact. Even a single piece of information can have a significant impact on converting customers. Businesses can collect important data such as a customer's browsing history, events along the journey that triggered a customer call, or the resolution of a similar customer problem. Intelligent systems can analyze this rich contextual information in real-time to create customer lifetime value.

Personalize your journey with analytics insights. Businesses use analytics to better understand their customers and personalize their journeys. As marketers, we can better understand our customers and their behavior patterns by segmenting them. Then, use the collected data to predict whether a new customer will convert based on machine learning information from previous customers. We can also determine how many customer segments to divide and the characteristics of each customer segment.

Because the customer journey analysis and predictive matching technology are focused on the customer's omnichannel and customer journey, we know what interactions have been carried out in each channel, and all the data that ultimately achieve business results. Based on the data we collect; artificial intelligence can determine which customer path is the best. Based on the results of this analysis, the business processes of our enterprise can be optimized [9].

5. Application Trends of Artificial Intelligence in Enterprise Digitalization

5.1 The Growing Importance of Data Visualization

Data visualization involves integrating data from internal and external sources, performing advanced analysis and visualization, and gaining data insights. Its main impact is to empower people at all levels of enterprise management to better participate in the process and be empowered by data, improving data literacy and obtaining data and business insights, based on Action Plan for Data Insights. Managers value the ability to monitor abnormal trends and operational abnormalities in data discovery. The customer's needs for abnormal discovery and early warning were very clear when we conducted digital intelligence operation consulting and intelligent operation center design for two leading customers in the domestic agriculture and animal husbandry industry and the home appliance manufacturing industry. They believed that the judge's rules for abnormalities were actually a set of rules. Reflections on management [10].

Data finding and visualization are becoming more important daily due to data application development. Data discovery was the top 2022 BI trend according to a 2021 German Business Application Research Center poll.

5.2 The Demand for Real-time Data and Analysis is more Urgent

During the Internet economy's growth in 2010, real-time data and analysis demand skyrocketed. Today, real-time data is still crucial. After the COVID-19 pandemic in 2019, governments and business management organizations have seen how real-time data and analysis can help them quickly understand the situation, dispatch resources, and make reasonable response strategies. Therefore, the timeliness requirements for management activities like enterprise business analysis are increasing, and traditional static reports and reports can no longer meet them. Current business managers want real-time data, agile reports with dynamic data cards, and adjustable report boards. Real-time data and flexible and dynamic dashboards can quickly and efficiently obtain important information in the fast-paced social and business environment. Yuannian Technology implements data middle platform products for many customers with very high real-time data requirements. Normalcy's "new normal."

5.3 Collaborative Business Intelligence Makes the Decision-making Process more Transparent

Collaborative business intelligence includes BI, AI, social media, cloud computing, data middle platform technology, and more. Online meetings and collaboration enable rapid collaborative problem-solving. Organic integration improves enterprise information flow, data-driven business decisions, and automated report generation. For instance, collaborative business intelligence can be an interactive online report with large, medium, and small data cards (users can freely choose custom options like organization, time, dimension, etc.). The same-quality screens (monitoring large screen, business theme screen, mobile small screen, etc.) allow more people to participate in the information chain and absorb their insights and help companies solve remote office and home office problems. Other company internal collaboration efficiency.

With the digitalization of the market and society, whether active or passive, corporate executives, middle-level, and grassroots employees will participate in the digital construction of the company from different angles and in different ways. Collaborative business intelligence can bring a more efficient decision-making process (full participation of multiple roles) to the enterprise, and at the same time make the entire decision-making process transparent.

5.4 The Combination of Business Intelligence and RPA Automation Improves Enterprise Data Drive

In 2021, Tibco's acquisition of Blue Prism, and the subsequent establishment of strategic partnerships between Alteryx, Qlik, and UiPath, all intuitively demonstrate the strategic trend of cooperation between companies in the business intelligence field and RPA (process automation robot) companies. The technical trend behind it is the deep integration of RPA automation technology and

AI and BI analysis platforms, which can greatly enhance data analysis and insight capabilities and influence enterprise behavior, allowing data analysis to shift from descriptive analysis to predictive analysis and diagnosis. gender analysis shift.

The "AI+BI" data analysis platform discovers problems, locates the main factors and drivers that affect the problems, makes recommendations for follow-up actions and process triggers, automatically match the corresponding solutions and tasks, and pushes them to the mailbox or OA of the person in charge. In the system, this is the diagnostic analysis capability of "AI+BI+RPA". This ability can guide the actual behavior of the physical world with data insight, and achieve the purpose of data-driven behavior and data-driven corporate governance in the true sense. Building a data-driven enterprise must be based on the premise that data analysis has reached the level of diagnostic analysis capabilities. The good news is that we are getting closer to this goal.

5.5 Natural Language Processing Technology will be more Widely Used in the Field of Data Analysis

Similar to RPA automation, natural language processing technology can also get through the channel from data to action, but it is realized in an indirect way. From the Ask data of Tableau to the Smart Answer in the first year, to Alibaba's Smart Q, the mainstream data analysis product platforms have or plan to add NLP algorithms and language interaction functions to their platforms, making natural language interaction capabilities the standard capabilities of the new generation of data analysis software. Its purpose is to significantly reduce the learning threshold of data analysis systems and software so that a large number of people with non-data analysis backgrounds can easily participate in the process of applying data analysis software without special training and training.

Although the overall adoption rate of NLP by enterprises is not high, some enterprises have begun to use AI technologies such as NLP to improve data quality and assist in data discovery. The industry expects NLP technology in enterprise data analysis to grow.

5.6 AI Engineering Promotes Popularization and Application of Artificial Intelligence Technology

AI engineering combines mature algorithms and technologies (such as some mature open-source algorithms) with industry and enterprise needs, rather than in-depth research and exploration of AI, algorithms, and cutting-edge technology branches. Created a feasible project plan. AI has represented the "avant-garde" and "ideal kingdom" since the 1950s. After decades of development, AI technology and business models have disrupted all walks of life, resulting in many real-world AI technology implementations. Due to the widespread adoption of AI technology, AI engineering will accelerate AI application implementation.

AI engineering is the subject of realizing the operationalization of AI models, which means the maturity of AI technology and a better user experience. For enterprises that want to use AI to realize intelligent operations, AI engineering can significantly reduce the cost of technology migration. Reduce the difficulty of forming a talented team. The combination of AI and big data will be closer, which will effectively promote the digital and intelligent transformation of enterprises and even industries, and improve production efficiency.

6. Conclusion

Artificial intelligence is changing our lives. Digitalization is known as the fourth industrial revolution. The Internet of Things, big data, cloud computing and artificial intelligence are the technical support of digitalization, while artificial intelligence is the top tool. In the future, all industries will use artificial intelligence technology to transform our production efficiency and quality of life like the second industrial revolution. So the prospect of AI is limitless. It is still in the stage of weak AI, and the stage of strong AI and super AI has not yet arrived.

AI products will eventually be used in many industries. Artificial intelligence has received a lot of attention in recent years, and the voice in the market is also relatively high. Driven by big data, the Internet of Things and Internet technology, the last link of the entire industrial Internet solution must be artificial intelligence.

Digital enterprises have bright prospects for artificial intelligence, but challenges and opportunities exist. Intelligent interaction presents many challenges and opportunities. We want to build smart service robots to help people. On one hand, it is hoped that robots can understand people's intentions and have the knowledge to truly serve. From an industrial perspective, the era of intelligent interaction will see a large number of intelligent machines providing services for people, and these services will be ubiquitous. This also challenges the technology and consolidates the basic technology layer, including speech semantic analysis, emotional intelligence analysis, large-scale language model, knowledge graph construction and reasoning decision intelligence, cross-language, cross-visual multi-modal representation learning, etc. On top of these basic researches, it is necessary to establish a series of core capabilities, such as language understanding, language content generation, multi-round human-computer interaction and dialogue, multi-modal information processing, etc. Only at the core capability layer can a series of user-perceivable applications, such as interactive intelligent platforms such as intelligent customer service, intelligent marketing and shopping guides, intelligent interaction, etc.

At the same time, breakthroughs in intelligent human-computer interaction technology often open up new digital service scenarios. For example, the latest digital human technology, through synthetic voice, emotion, visual image and three-dimensional graphic modeling customizes voice personalization, and image style, and drives facial actions and expressions through voice and emotion, turning voice interaction into better virtual interaction, thus creating a virtual image.

There are a lot of digital and intelligent space and growth opportunities in enterprises. Artificial intelligence and human-computer interaction technology will also bring more and better opportunities. All digital enterprises should be technology-based and push enterprise digitalization to a new level.

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