



Innovative Strategies for Business Architecture Models in the Era of Artificial Intelligence

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Abstract. Driven by the wave of digitalization, artificial intelligence technology has become a key driving force for the innovation of business architecture model. Advances in technology have not only changed the way enterprises process data and perform tasks, but also provided enterprises with in-depth market insight and accurate decision support to better understand consumer demand and market trends. This paper discusses how artificial intelligence helps enterprises to realize the innovation of architecture mode in many business links, such as procurement, production, logistics and marketing, and demonstrates the specific benefits of these innovations through case studies in the garment industry. Through the application of artificial intelligence technology, enterprises can improve the efficiency of inventory management, enhance personalized recommendation, improve production efficiency, increase customer satisfaction, speed up market response, control costs and improve the accuracy of sales forecasting. These improvements not only improve the operational efficiency of enterprises, but also enhance the market competitiveness of enterprises, and bring significant economic benefits to enterprises.

Keywords: Business Architecture Models, Artificial Intelligence, Innovative Strategies

1 Introduction

In the contemporary era, the swift growth of the digital economy has seen artificial intelligence technology advancing to a sophisticated stage, increasingly integrating into diverse sectors and domains, and emerging as a pivotal catalyst for market transformation. Over the course of its evolution, Artificial intelligence has transitioned from a laboratory concept to tangible application scenarios. The advent of big data has endowed businesses with the capacity to amass, manipulate, and scrutinize data at an unmatched velocity and magnitude. This ability has not only amplified the operational efficacy of businesses but also furnished them with more

profound market insights and more reliable decision-making support. By delving into and dissecting vast datasets through Artificial intelligence, companies are better positioned to comprehend consumer needs, market dynamics, and competitive landscapes, thereby devising more potent market strategies [1]. Artificial intelligence, through mechanisms like machine learning and deep learning, can emulate human cognition and actions, automating a spectrum of intricate tasks. Within the corporate realm, Artificial intelligence has been instrumental in enhancing the caliber of service and the operational efficiency across areas such as smart customer support, smart recommendations, and smart risk management. Amidst the surge in data volume and the concurrent enhancement of computational capabilities, businesses are compelled to reassess and reengineer their commercial frameworks to keep pace with these shifts. The objective of this paper is to investigate the avenues through which businesses can secure a competitive edge by innovating their business architecture models in the age of artificial intelligence.

2 Artificial Intelligence and Business Architecture Model

2.1 Artificial Intelligence

AI emulates, amplifies, and broadens human intellect through man-made approaches and tech, creating mechanical cognition that mirrors the responsiveness of human intellect. In its role as a novel technological advancement, AI signifies a substantial enhancement in societal productive forces. Commonly, AI is categorized into three tiers: computational, perceptual, and cognitive intelligence. Computational intelligence pertains to rapid computation, retention, and data storage capabilities, while perceptual intelligence pertains to the recognition and judgment of tangible natural elements. Cognitive intelligence, on the other hand, pertains to the faculties of comprehension and analysis. Propelled by advancements in machine learning and deep learning, perceptual intelligence, which targets visual and auditory recognition technologies, has surpassed the industrial threshold, enabling machines to discern and identify tangible natural elements. AI is primarily constituted by five key technologies: computer vision, machine learning, natural language processing, robotics, and biometrics [2]. As AI technology evolves and matures, it integrates with big data, algorithms, and blockchain, becoming integral components of AI's technological framework.

As shown in Figure 1, China's AI industry grew from 154.6 billion yuan in 2020 to 247.3 billion yuan in 2023, with an average growth rate of 17.0%. As of October 2024, the scale of the core industry of artificial intelligence in China has been increasing, and the number of enterprises has exceeded 4500. Nearly 200 large models of generative artificial intelligence services have been put on record and launched to provide services to the public, with more than 600 million registered users. From 2020 to 2027, the scale and forecast of China's artificial intelligence market are shown in Figure 1.

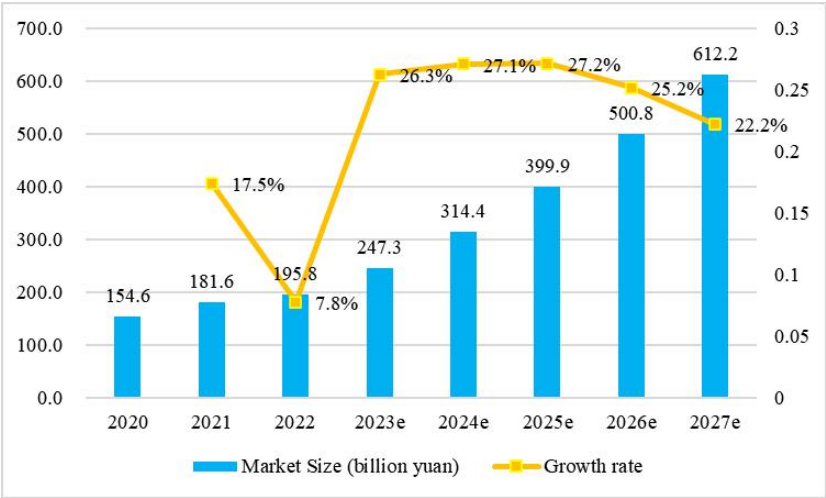


Fig. 1. Scale and Forecast of Artificial Intelligence Market in China

(data source: <https://zhuanlan.zhihu.com/p/671504159>)

2.2 Business Structure Model

A business architecture model is a framework and methodology that guides an enterprise in how to organize and structure its business processes, technology systems, and organizational structures to achieve business goals and strategies [3]. It covers how enterprises create value by integrating different business components and processes, and how technology can be used to support these business activities. The business architecture model focuses not only on the internal operations of the enterprise, but also on how the enterprise interacts with the external environment, including customers, suppliers, partners, and competitors. This model emphasizes alignment between business and technology strategies, ensuring that technology investments support and drive business growth and innovation. The business architecture model usually includes the identification of the core competence of the enterprise, which is the key for the enterprise to compete in the market. It also involves optimizing these capabilities to improve efficiency, reduce costs, and enhance the customer experience. When designing business architecture models, enterprises need to consider market trends, technological developments, changes in customer needs, and the actions of competitors. A good business architecture model can help enterprises adapt to the rapidly changing business environment.

3 Principle of Business Architecture Model Innovation in the Era of Artificial Intelligence

Artificial intelligence technology helps enterprises to realize the innovation of value proposition. Artificial intelligence technology helps enterprises to efficiently complete the collection and processing of customer data, extract customer needs through data analysis, and then improve product services around the latest customer needs to better meet customer needs. Artificial intelligence technology can understand customers' consumption psychology according to their historical behavior, keenly capture customers' psychological characteristics, consumption preferences, behavior habits and other key information, support enterprises to make scientific decisions, adjust product and service production plans, and ultimately achieve value proposition innovation [4]. Artificial intelligence technology can also explore the potential needs of customers in a deeper level, relying on data analysis to obtain customer demand information. Relying on advanced digital technology to create demand scenarios, artificial intelligence guides customer groups to generate new consumer behaviour and update business models.

Artificial intelligence technology helps enterprises to realize innovation of value creation. Artificial intelligence technology helps enterprises efficiently integrate and analyse the business data of customers, suppliers and other partners, obtain key information, help enterprises make scientific decisions in grasping the trend of demand changes, reasonably determining product prices, accurately scheduling product production and inventory, and optimize production and operation activities in the whole process. Big data analysis capabilities can also help enterprises to accurately evaluate, identify and screen their partners, create a more robust network of partnerships, improve the productivity and quality of enterprise products and services, so as to achieve innovation in value creation. In addition, AI technology can also help enterprises keep abreast of the changing trend of market demand, adjust production and operation strategies in a timely and reasonable manner, and cooperate with partners to promote production and operation activities, so as to achieve business model innovation.

Artificial intelligence technology helps enterprises to realize the innovation of value transmission and realization. The goal of value delivery is to efficiently deliver products and services to customers who recognize and accept their products and services. Artificial intelligence technology can help enterprises timely and accurately capture target customers similar to the value standards of enterprise products and services, and realize the rapid delivery of value. Enterprises can accurately and efficiently identify and classify target customers through big data, develop new products and services around customer needs, improve the pertinence and applicability of products and services, and complete the value interaction between enterprises and customers [5]. Artificial intelligence technology transforms the one-way value transmission from enterprises to customers into a two-way value interaction mode between them, and completes the innovation of value transmission and realization model.

4 Innovation Strategies for Business Architecture Model in the Age of Artificial Intelligence

4.1 Procurement Model Innovation

Deploying Artificial intelligence has catalyzed a transformation in procurement management, significantly enhancing procurement efficiency and slashing expenses, thereby delivering a multitude of benefits to businesses. By leveraging smart supplier management and predictive analytics, Artificial intelligence equips companies to more effectively seize market opportunities and minimize the costs associated with purchasing. This enables companies to select optimal suppliers and timing for acquiring goods at lower prices and with superior service. Moreover, the automation and intelligence of procurement processes decrease the need for labor and resources, further driving down procurement expenses. The integration of Artificial intelligence into procurement activities heightens the level of automation and intelligence, thereby substantially boosting procurement efficiency [6]. Companies are thus enabled to swiftly access critical data such as supplier details and market trends, facilitating more precise and punctual decision-making in purchasing. Automated and intelligent procurement processes also mitigate the incidence of human mistakes and delays, enhancing both the quality and efficiency of procurement operations. Artificial intelligence furnishes companies with a more comprehensive and precise dataset, aiding in the formulation of more scientific and rational purchasing strategies. Leveraging big data and machine learning, systems can automatically gather and analyze a wide array of information, presenting enterprises with visual data displays and analytical reports. This allows for a more transparent grasp of market conditions and supplier dynamics, guiding companies to make more knowledgeable purchasing decisions [7]. Additionally, the implementation of intelligent and automated procurement processes can also elevate customer satisfaction and loyalty, thereby strengthening a company's market standing. By harnessing Artificial intelligence, companies can more effectively manage procurement processes, lower costs, refine inventory control, and enhance overall operational efficiency and competitive edge.

4.2 Production Model Innovation

The primary role of artificial intelligence in the digital transformation of manufacturing industry is to significantly improve production efficiency and reduce costs. Through the application of machine learning, in-depth learning and other advanced technologies, enterprises can achieve real-time analysis and optimization of production data. Automated production reduces labor costs. Intelligent manufacturing uses automated production lines and robotic technology to replace a large number of human labors. This not only reduces labor costs, but also makes the production process more stable and efficient. Through automatic production, enterprises can achieve 24-hour uninterrupted production, greatly improving production efficiency [8]. Digital management optimizes resource allocation. Intelligent manufacturing realizes real-time monitoring and data acquisition of production process. Through the

analysis and mining of data, enterprises can more accurately grasp the production situation and optimize the allocation of resources. Adjust the production plan according to the real-time status of the production line to avoid overproduction or underproduction. Artificial intelligence technology realizes intelligent analysis and prediction of production data. This enables enterprises to make decisions more quickly and respond to market changes and customer needs. Intelligent decision-making can greatly improve the production response speed, shorten the time to market, and enhance the market competitiveness. Artificial intelligence has a high degree of flexibility and scalability, which can achieve multi-variety and small batch production. This enables enterprises to better meet the individual needs of customers and improve customer satisfaction and loyalty. The new production mode can also reduce capital occupation and improve capital turnover. Artificial intelligence can automatically adjust production parameters according to real-time data, ensure that the production line is kept in the best working condition, and further reduce energy consumption and material waste. In addition, the intelligent predictive maintenance system can identify the risk of equipment failure in advance, reduce downtime, ensure production continuity, and further reduce costs.

4.3 Logistics Model Innovation

In the logistics industry chain, artificial intelligence will participate in the three basic links of warehousing, transportation and distribution. In addition, artificial intelligence technology can also be used as the underlying technology to guide the existence of logistics technology, so as to achieve a comprehensive management platform for technology landing. Against the backdrop of AI, the contemporary intelligent warehouse management system ought to achieve automated and detailed control over warehouse data, direct and regulate operational procedures, and enhance the efficiency of warehouse space usage, thereby optimizing warehouse management and elevating the overall operational caliber of the warehouse. The realization of these attributes is contingent upon the advancement of AI technology. The efficacy of a transportation system is inherently linked to AI technology, particularly in the realms of autonomous navigation and smart management. Full-scale automation in logistics transportation is predicated on unmanned technology, encompassing autonomous logistics vehicles and coordinated logistics convoys [9]. All the data calculation of driverless technology is to remotely control the driving behaviour of logistics vehicles through the network. Artificial intelligence algorithm is used to analyse the temporary environment, complete the planning and decision-making of transportation path, and realize intelligent scheduling. In the new generation of logistics, many scenes cannot be controlled manually, and computer vision can replace human vision, thus greatly improving logistics automation [10]. Through video recognition technology, real-time intelligent management of the warehouse can be realized, and the accumulation degree and channel situation in the warehouse can be automatically identified, so as to reduce the non-standard storage situation in the warehouse. Target detection technology can complete the detection, thus realizing the full automation of inventory and greatly reducing the related human input. The shape recognition technology based

on visual recognition can quickly judge the shape of goods, so that the sorting robot can classify goods quickly and accurately according to the shape of goods.

4.4 Marketing Model Innovation

Artificial intelligence can process and analyse a large amount of consumer data, including purchase records, search history, social media interactions and so on. Through these data, Artificial intelligence can build consumer portraits and identify consumers' purchasing habits, preferences and needs. This in-depth understanding helps marketers to develop more precise market positioning and product development strategies. Based on consumer portraits, artificial intelligence can achieve personalized marketing content recommendation. Whether it's email marketing, social media advertising or online shopping platforms. Artificial intelligence is capable of recommending the most pertinent products and promotions by leveraging consumers' past actions and preferences. Such tailored interactions can markedly enhance both the likelihood of consumers making purchases and their allegiance to a brand. The propelled smart customer service systems are designed to offer assistance, resolve inquiries, and manage order fulfilment as well as post-sales issues. Utilizing natural language processing, these systems interpret and reply to consumers' queries in natural language, offering prompt support. This intelligent customer service not only boosts consumer contentment but also eases the burden on human customer service staff. Artificial intelligence can handle numerous marketing duties automatically, including the management of email campaigns, social media, and advertising deployment. With predefined rules and algorithms, Artificial intelligence can autonomously disseminate customized marketing messages and refine ad strategies, thereby increasing the productivity of marketing campaigns. Furthermore, Artificial intelligence's predictive analytics enable forecasters to anticipate market movements and consumer actions. Through the study of historical data, Artificial intelligence can identify potential sales opportunities and risks, and provide scientific basis for marketing decisions. This forward-looking analysis helps companies stay ahead in a competitive market.

5 Effects of Business Architecture Model Innovation in the Era of Artificial Intelligence

In the era of artificial intelligence, the innovation effect of business architecture model is remarkable, especially in the field of garment industry. Through the application of artificial intelligence technology, garment enterprises can achieve double improvement of efficiency and effect in multiple dimensions. A company is a leading apparel manufacturing and retail enterprise. Facing the fierce market competition and the rapid changes in consumer demand, the company decided to use artificial intelligence technology to optimize its business architecture model. Six months later, the effect of its business architecture model innovation is shown in Table 1.

Table 1. Effects of Business Architecture Model Innovation(data source: <https://www.stylumia.ai/>)

Number	Indicator	Performance before application	Performance after application	Improve the effect
1	Inventory turnover rate (times/year)	3.5	4.6	32.7%
2	Sales (ten thousand yuan)	2024.1	3262.8	61.2%
3	Full-price sell-through	21461	26356	22.81%
4	Adoption rate of designs with wholesale partners	21.10%	85.30%	304.27%
5	Sales forecast accuracy	72.7%	88.2%	21.32%

Table 1 illustrates the significant impact of artificial intelligence (AI) on business architecture model innovation, particularly in the clothing industry. This table compares key performance indicators before and after the application of artificial intelligence technology, highlighting substantial improvements in various aspects of business operations. The inventory turnover rate increased by 32.7%, indicating that artificial intelligence has improved the efficiency of inventory management. This is because artificial intelligence can predict demand more accurately, thereby better controlling inventory and reducing holding costs. Due to the ability of artificial intelligence to analyze customer data and provide customers with the most suitable products, its sales have significantly increased by 61.2%. Full price sales increased by 22.81%, indicating that artificial intelligence helps align production with consumer preferences, reduce price reductions, and improve profitability. The adoption rate of designs with wholesale partners has skyrocketed by 304.27%, demonstrating the popularity of artificial intelligence in the industry. Meanwhile, the accuracy of sales forecasting has increased by 21.32%. In summary, the integration of artificial intelligence and business models has brought significant operational and financial improvements.

6 Conclusions

The application of artificial intelligence technology provides new possibilities for the innovation of business architecture model. By optimizing the procurement process, improving production efficiency, improving the logistics system and personalized marketing strategy, enterprises can achieve the dual promotion of operational efficiency and market competitiveness. The case study of the apparel industry further confirms the actual effect of these innovative strategies, showing the remarkable effect of artificial intelligence technology in improving inventory turnover, sales, production cycle and customer satisfaction. These achievements not only bring direct

economic benefits to enterprises, but also point out the direction for the future development of the whole industry. With the continuous progress of technology and the deepening of application, AI will continue to promote the innovation of business architecture model and bring more growth opportunities and market advantages to enterprises.

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