

Research on the Design of Business Models and Transformation Management of New Entrepreneurial Ventures Driven by Artificial Intelligence

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Abstract. This study aims to explore the design of business models and transformation management of new entrepreneurial ventures driven by artificial intelligence (AI). Through literature analysis, the study delves into the impact of AI applications on business models in new entrepreneurial ventures and explores effective strategies for transformation management. Firstly, the research reviews the concepts and development of artificial intelligence, analyzes the theoretical foundations of business model design for new entrepreneurial ventures, and emphasizes its importance. Secondly, this paper discusses the opportunities and challenges brought by artificial intelligence to traditional business models, as well as the role and influence of artificial intelligence in enterprise transformation management. Finally, focusing on business model innovation, the research reveals methods and strategies for utilizing artificial intelligence technologies in business model innovation. The research findings indicate that artificial intelligence has a significant impact on the design of business models and transformation management in new entrepreneurial ventures, providing innovative opportunities and effective transformation pathways. However, the study also has certain limitations, and future research can further explore other relevant factors and expand the sample size for a more comprehensive understanding.

Keywords: Artificial intelligence, New entrepreneurial ventures, Business model, Transformation management, Model design.

1. Introduction

In recent years, the rapid development of artificial intelligence (AI) has brought about significant transformations and opportunities across various industries. Especially in the realm of new entrepreneurial ventures, the application of AI technology has not only fostered business model innovation but also propelled enterprise transformation and growth [1]. This study aims to explore the design of business models and transformation management of new entrepreneurial ventures driven by artificial intelligence, aiming to uncover its practical applications and effects. In recent years, scholars both domestically and internationally have conducted extensive research on the design of business models and transformation management of new entrepreneurial ventures driven by artificial intelligence. Lee et al. (2019) described AI technology as a catalyst for business model innovation, highlighting the serendipitous factors that arise from emerging technologies [2]. Garbuio and Lin (2019) provided timely and critical analysis of AI-driven healthcare startups, proposing a methodology for designing business models for AI healthcare startups, and identifying emerging business model prototypes used by entrepreneurs worldwide to bring AI solutions to the market [3]. Wang et al. (2022) introduced AI and blockchain-based business innovation to enhance business practices and maintain secure interactions among diverse customers [4]. Therefore, by synthesizing these literature findings, this paper aims to elucidate the key issues in business model innovation and transformation management within new entrepreneurial ventures driven by artificial intelligence, and provide relevant solutions and recommendations.

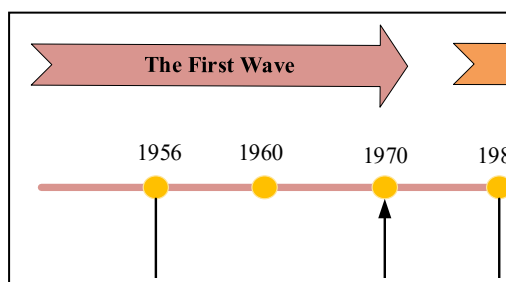
2. Artificial Intelligence and Business Model Design for New Entrepreneurial Ventures

2.1 Definition and Development of Artificial Intelligence and New Entrepreneurial Ventures

2.1.1 Artificial Intelligence

Artificial Intelligence (AI) is a technology and system that aims to simulate and execute tasks similar to human thinking and decision-making [5]. It involves building intelligent agents capable of perceiving the environment, understanding and learning knowledge, reasoning and making decisions, and interacting and communicating with humans. Key features of artificial intelligence include machine learning, natural language processing, computer vision, and expert systems. It has a wide range of applications in various fields, including healthcare, finance, transportation, manufacturing, and logistics. AI can assist in faster and more accurate decision-making, improve productivity, enhance user experiences, and provide innovative solutions for complex problems and challenges.

The concept of artificial intelligence has evolved over the past 60 years since its inception in 1956. AI technology has gone through six stages and three waves, namely: the initial development stage, reflective development stage, application development stage, stagnation development stage, steady development stage, and vigorous development stage, as illustrated in Figure 1.



Development history of artificial intelligence.

2.1.2 New Entrepreneurial Ventures

New entrepreneurial ventures refer to early-stage enterprises that prioritize innovation and creation and seek rapid growth and high-risk returns by introducing new business models, products, services, or technologies [6]. These ventures are typically led by entrepreneurs or teams who, through innovative thinking and entrepreneurial spirit, aim to disrupt existing market patterns and create new market opportunities. New entrepreneurial ventures often face high risks and uncertainties but also possess significant growth potential. They strive for rapid market share expansion and seek investment opportunities with high returns. The characteristics of new entrepreneurial ventures are illustrated in Table 1.

Table 1. Typical characteristics of new entrepreneurs

Characteristic	Describe
Innovation	Introducing new business models, products, or technological innovations to bring new solutions to the market
High growth potential	Pursuing rapid growth and scale expansion, with high market growth rate and revenue growth potential
High risk	Faced with various risks and uncertainties such as market, technology, and finance, but also with corresponding return opportunities
Flexibility and Agility	Flexible organizational structure and quick decision-making mechanism to adapt to market changes and rapid iteration

Table 1 illustrates four main characteristics of new entrepreneurial ventures, including innovativeness, high growth potential, high risk, and flexibility and agility. These ventures play a vital role in driving economic growth, creating employment opportunities, fostering technological

innovation, and catalyzing social change. They not only have economic significance but also contribute to the progress of society and the development of innovative ecosystems.

New entrepreneurial ventures can be classified based on various aspects such as their industry focus, types of innovation, or stages of development. Table 2 presents several common types of new entrepreneurial ventures.

Table 2. Different types of new entrepreneurs

Type	Characteristic	Include
Technology startups	Develop and provide new technological products or services based on technological innovation	Software Development Company
		Artificial intelligence technology startups
		Biotechnology Company
Social media and internet companies	Based on the Internet and digital technology, providing online social media platforms, e-commerce services, online content creation, etc	Social network platforms
		E-commerce startup company
		Online education platform
Gaming and entertainment companies	Focusing on game development, virtual reality (VR) technology, entertainment content creation, etc	Game Development Studio
		Virtual reality technology startups
		Digital entertainment content production company
Green and Sustainable Enterprises	Addressing environmental and sustainable development challenges, developing and promoting environmentally friendly technologies, renewable energy, etc	Solar Energy Company
		Environmental technology startups
		Sustainable Agriculture Company
Health Technology Enterprise	Utilizing technology and innovation to solve problems in the medical and health sectors	Telemedicine startups
		Health Data Analysis Company
		Medical device research and development enterprises
Cultural creativity and art enterprises	Based on the cultural and creative industries, covering art, design, cultural activities, and creative industries	Artwork platform
		Design Studio
		Cultural and creative startups

With the advancement of innovation and technology, various types of new entrepreneurial ventures continue to emerge. As shown in Table 2, new entrepreneurial ventures primarily include technology startups, social media and internet enterprises, gaming and entertainment companies, green and sustainable development enterprises, health technology companies, and cultural and creative arts enterprises. Technology startups are dedicated to technological innovation and the development of tech products or services. Social media and internet enterprises provide online platforms, e-commerce, and content creation. Gaming and entertainment companies focus on game development and virtual reality technology. Green and sustainable development enterprises address environmental issues and promote eco-friendly technologies and renewable energy. Health technology companies apply technology to address challenges in the medical and healthcare fields. Cultural and creative arts enterprises are based on the cultural and creative industries, encompassing art, design, and cultural activities.

2.2 Theoretical Foundations of Business Model Design for New Entrepreneurial Ventures

A business model refers to the strategies and methods adopted by enterprises to create, deliver, and capture value. It describes how an enterprise organizes resources, designs products or services,

establishes partnerships, interacts with customers, and achieves profitability. The business model encompasses aspects such as value proposition, target market, value delivery mechanisms, revenue streams, and key partnerships [7].

Theoretical foundations for business model design in new entrepreneurial ventures encompass three main aspects:

(1) Innovation theory plays a crucial role in the design of business models and the management of transformations for new entrepreneurial ventures. It helps enterprises introduce new ideas, products, services, or technologies and create unique business models to facilitate transformation and development. Innovation theory provides enterprises with thinking tools, frameworks, and methods to maintain competitiveness in rapidly changing market environments and achieve sustainable innovation and growth. It inspires enterprises to challenge traditional industry models, seek new market opportunities, and innovate their business models. Additionally, innovation theory is closely related to the management of transformation in new entrepreneurial ventures, offering a mindset and tools for transformation management. It assists enterprises in identifying and evaluating transformation opportunities and effectively carrying out organizational change and resource allocation. By applying innovation theory, new entrepreneurial ventures can design business models more effectively, adapt to market demands, and achieve successful transformation management.

(2) The theories of efficacy and efficiency are of significant importance in the design of business models and the management of transformations in new entrepreneurial ventures. Efficacy theory focuses on how enterprises can effectively utilize limited resources to achieve desired objectives and enhance their production, innovation, and execution capabilities. On the other hand, efficiency theory emphasizes maximizing output under conditions of limited resources. In the context of business model design, these theories can help enterprises optimize various aspects and enhance value creation and resource utilization efficiency. In the realm of transformation management, efficacy and efficiency theories provide frameworks for guiding enterprises in adjusting their organizational structures, processes, and technologies to adapt to market demands. They assist enterprises in identifying bottlenecks and opportunities for transformation and formulating corresponding strategies to improve overall efficacy and efficiency. By applying the theories of efficacy and efficiency, new entrepreneurial ventures can maximize resource utilization, enhance organizational performance, adapt to market changes, and drive successful development.

(3) The theory of entrepreneurial ecosystems views entrepreneurship as a complex ecosystem that encompasses elements such as entrepreneurs, enterprises, investors, government, and incubators. These elements are interdependent and interact with each other, influencing entrepreneurial activities. The entrepreneurial ecosystem is dynamic and evolves over time and in response to changing environments, requiring constant adaptation and adjustment from entrepreneurs and enterprises. The emergence of new entrepreneurs and enterprises, as well as the growth and exit of existing businesses, collectively shape the developmental trajectory of the entrepreneurial ecosystem.

3. The Importance of Business Model Design and Transformation for New Startups in the Era of AI-Driven Innovation

The rapid development of artificial intelligence (AI) technology has brought forth new business opportunities while challenging the traditional business models and modes of development for established enterprises. In this context, new startups need to adapt to the business landscape of the AI era through continuous innovation and transformation. The design of business models and effective transformation management are of paramount importance for startups as they enable them to seize new business opportunities, enhance market competitiveness, and achieve sustainable growth. Under the impetus of AI, startups must reevaluate their business models, contemplating how to leverage AI technology to improve the efficiency and quality of their products or services while creating greater business value. Additionally, startups must also pay attention to aspects such as data privacy and security to avoid risks and vulnerabilities associated with the utilization of AI technology.

Furthermore, startups need to consider how to transform their traditional business models into ones that are better suited for the AI era. Thus, for new startups, both business model design and transformation management are crucial.

4. Analysis of Business Model Design and Transformation Management for New Startups in the Era of Artificial Intelligence

4.1 The Role and Impact of Artificial Intelligence on the Business Models of New Startups

Artificial intelligence (AI) plays an increasingly important role in enterprise transformation management. On one hand, through data mining and analysis, AI can help businesses identify potential opportunities and challenges, providing more accurate decision support. On the other hand, AI technologies can optimize internal business processes, improving efficiency and reducing costs. Furthermore, AI can enable businesses to achieve more personalized and targeted marketing, enhancing customer satisfaction and loyalty. In terms of transformation management, AI can assist companies in quickly adapting to market changes and new business models, facilitating transformation and upgrading. Additionally, through AI technologies, companies can achieve more precise talent recruitment and development, enhancing employee productivity and satisfaction. In conclusion, AI holds significant importance and impact in enterprise transformation management and is expected to become one of the key driving forces for business development in the future.

4.2 The Success Factors of Business Model Design and Transformation Management for New Entrepreneurs Driven by Artificial Intelligence

In AI-driven startups, the success of business model design and transformation management relies on technological innovation and application, user demand and experience, data-driven decision-making, flexible organizational structure and culture, strategic partnerships and ecosystem development, as well as continuous learning and innovation. Startups should focus on leveraging AI technology to provide differentiated products or services that meet market demands and enhance user experience. Data analysis and decision support are crucial for guiding decision-making and capturing market trends. Strategic partnerships and ecosystem development help facilitate resource sharing and market expansion. Continuous learning and innovation enable companies to maintain competitiveness and adapt to market changes. The combined effect of these factors will help startups achieve success in business model design and transformation management in the context of AI-driven innovation.

5. Methods and strategies for innovating business models using artificial intelligence technology

Methods and strategies for business model innovation using artificial intelligence technology include:

(1) Data-driven business model innovation: Companies can utilize AI technology to collect, analyze, and leverage large amounts of data to discover market trends, user needs, and behavioral patterns. Based on this information, they can redesign their business models. By gaining a deep understanding of the data, companies can uncover new business opportunities and growth points and innovate their business models based on data insights.

(2) Personalization and intelligent services: With the help of artificial intelligence technology, companies can provide personalized and intelligent products or services to meet individual user needs. By analyzing user data and behavior patterns, businesses can offer customized recommendations, suggestions, and services for each user, enhancing user experience and loyalty.

(3) Automation and intelligent business processes: By incorporating artificial intelligence technology, businesses can automate and make their internal processes more intelligent, leading to

improved efficiency and cost reduction. For example, leveraging machine learning and natural language processing techniques can enable automated customer service and post-sales support, reducing human workload and enhancing response speed.

(4) Creating new markets and value chains: Artificial intelligence technology provides opportunities for businesses to explore new markets and create new value chains. By analyzing market demands and trends and incorporating AI applications, businesses can uncover new business opportunities, establish new market domains, and build entirely new value chains.

(5) Collaboration and innovation with ecosystems: Collaborating with other businesses, partners, and innovation ecosystems is essential for driving business model innovation. Through partnerships, companies can share resources, technology, and market channels, accelerating the innovation and development of their business models.

(6) Continuous learning and innovation: Artificial intelligence technology is constantly evolving, and businesses need to continuously learn and stay up-to-date with the latest technological advancements. By embracing continuous learning and innovation, companies can maintain a competitive advantage, continuously improve and optimize their business models, and adapt to rapidly changing market demands.

6. Conclusion

In conclusion, we have discussed the role of artificial intelligence (AI) in the design of business models and transformation management in startups. AI provides opportunities for data analysis, decision support, and process optimization for businesses, while also driving business model innovation and creating competitive advantages through differentiation. However, AI also brings challenges such as data security and technology management. Therefore, startups need to develop clear strategies and management measures, including technology integration, talent development, and establishment of partnerships. In summary, AI provides opportunities for innovation and transformation for startups, but subsequent success requires active adaptation and effective management by the companies.

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