

AI Helps Research on the Transformation of Intangible Cultural Heritage and Creative Industries

-- Take Dayu Culture as an Example

Long Ye*, Luqiang Sheng, Ronghua Tang

School of Arts, Anhui University of Finance and Economics, Bengbu, Anhui 233030, China

*2507597914@qq.com

Abstract

Taking Dayu culture as an example, this paper discusses the application of artificial intelligence in the transformation of intangible cultural heritage and creative industries. As an important part of traditional culture, intangible cultural heritage is facing the dual challenges of inheritance and innovation. Through the study of Dayu culture, the current situation and problems of intangible cultural heritage creative industry are analyzed, and the application scheme of artificial intelligence in its transformation is proposed. Through the application of artificial intelligence technology, the digital storage, dissemination and creative design of intangible cultural heritage can be realized, and the competitiveness and market influence of the intangible cultural heritage industry can be improved. It also analyzes the possible challenges faced by artificial intelligence in the transformation of intangible cultural heritage and creative industries, and proposes corresponding solutions. This study has certain theoretical and practical significance for promoting the transformation and development of intangible cultural heritage and creative industries.

Keywords

Artificial intelligence; Intangible cultural heritage; Creative industries; Transformation; Dayu culture.

1. Introduction

Non-material Cultural Heritage (ICH) is the crystallization of human wisdom and creativity, and carries rich historical, cultural and artistic values. However, with the development of modernization and globalization, intangible cultural heritage is facing increasingly severe challenges, such as the dilemma of inheritance, the pressure of market competition, and cultural innovation. In order to preserve and pass on intangible cultural heritage, the creative industries are seen as an important avenue for transformation. Creative industries can not only inject intangible cultural heritage into modern life, but also inject new vitality into intangible cultural heritage. However, in the process of transformation of intangible cultural heritage and creative industries, there are still a series of challenges and problems. The traditional intangible cultural heritage industry often faces problems such as insufficient market demand, lack of creative design, and decline of traditional handicraft technology. In response to these problems, traditional means have become unable to meet the needs, so the introduction of artificial intelligence technology has become a new idea and solution. Taking Dayu culture as an example, this paper discusses the application of artificial intelligence in the transformation of intangible cultural heritage and creative industries. As an important part of traditional Chinese culture, Dayu culture has an important historical status and cultural value. Through the study of Dayu

culture, this paper aims to explore the possibility and value of artificial intelligence technology in the transformation of intangible cultural heritage and creative industries.

2. Overview of Dayu's Cultural and Creative Industries

2.1. Industry Overview

(1) Industrial scope. The industrial scope includes creative design, cultural tourism, digital communication, education and training, cultural and creative industry parks.

(2) Industrial entities. ① Businesses: Businesses in the creative industries are the main players and enablers. ② Designers and creative talents: Designers and creative talents are the core of Dayu's cultural and creative industries. ③ Cultural institutions and organizations: Cultural institutions and organizations play an important role in Dayu's cultural and creative industries. ④ Government departments and policy support: government departments play an important role in guiding and supporting the development of Dayu's cultural and creative industries.

2.2. Market outlook analysis

At present, Dayu's cultural and creative industry shows a certain development trend and potential in the market. Market demand growth: As an important part of traditional Chinese culture, Dayu culture has a unique historical value and cultural connotation, which has attracted more and more consumers' interest and attention. People's pursuit and recognition of traditional culture have contributed to the growth of demand for Dayu's cultural and creative products. These products include arts and crafts, home furnishings, clothing accessories, and more, with unique design and cultural elements. Creative design innovation: With the development of the creative industry, Dayu cultural and creative design is also constantly innovating and making breakthroughs. Designers and creative talents create more fashionable and international products by combining Dayu culture with modern art and design. These innovative designs can meet the needs of different consumer groups and enhance the market competitiveness of Dayu's cultural and creative products. Cultural tourism development: Dayu cultural and creative industry and cultural tourism combined, to promote the development of cultural tourism. More and more tourist attractions and routes take Dayu culture as the theme, attracting more tourists to experience and visit. The development of cultural tourism has provided more market opportunities for Dayu's cultural and creative industries, and has also led to the development of related industrial chains. Digital communication: The development of digital technology provides a new way and platform for the dissemination and promotion of Dayu's cultural and creative industries. Through the establishment of digital platforms and applications, Dayu culture is displayed and disseminated in the form of multimedia, which can better attract the attention and participation of young people. At the same time, digital communication also provides convenience and channels for brand building and sales expansion of Dayu's cultural and creative industries.

3. Problems Encountered in the Transformation of Dayu's Cultural Creativity

3.1. The supply chain is not optimized enough

As the TCM involves multiple links, including design, raw material procurement, manufacturing, packaging and distribution, the flow of information and collaboration between these links may not be smooth and transparent. This leads to miscommunication, information asymmetry, and difficulty tracking in the supply chain, which affects the efficiency and quality of the entire supply chain. Dayu's cultural and creative industries may face supply chain disruptions or delays in the process of transformation. As different links and participants are involved in the

supply chain, once a problem occurs, such as unstable supply of raw materials, manufacturing delays, etc., it may lead to the interruption or delay of the entire supply chain, affecting the production and delivery of products. In the transformation of Dayu's cultural and creative industries, due to the involvement of multiple links and participants, there may be duplication of work, waste of resources and high costs in the supply chain. This may be due to the lack of smooth information, insufficient collaboration, and insufficient optimization of processes in the supply chain, which affects the competitiveness and market performance of products. The supply chain of Dayu's cultural and creative industries may face a variety of risks, such as changes in market demand, competitive pressure, and fluctuations in raw material prices. However, due to the lack of collaborative management and risk management between various links in the supply chain, it may be difficult for enterprises to respond to and manage these risks in a timely manner, resulting in insufficient stability and flexibility of the supply chain.

3.2. The matching degree of market demand is not enough, and the homogenization is serious

Understanding the needs and preferences of the target market is crucial in the transformation of the creative industries, however, it is difficult to design products that meet the preferences of consumers if there is insufficient or inaccurate research on market needs. Dayu's cultural and creative industry may have the problem of insufficient research on market demand, resulting in a mismatch between products and consumer needs. Dayu's cultural and creative industries may face serious problems of homogenization, that is, high product homogeneity, lack of innovation and differentiation. This may be due to fierce competition in the market, unclear market demand, etc. Products that lack innovation and differentiation often struggle to attract consumers' attention and purchase intentions. There may be an imbalance between supply and demand in Dayu's cultural and creative industries, that is, oversupply or undersupply. If there are too many homogeneous products in the market and consumer demand is limited, it will lead to fierce market competition and it will be difficult to meet the diverse needs of consumers.

3.3. Difficulty in financing

During the financing process, the investor usually evaluates the credit profile of the business to determine the investment risk and return. However, Dayu's cultural and creative industry may be relatively new due to the characteristics of the industry and the stage of development, the lack of sufficient credit history and evaluation methods, which leads to increased financing difficulties. Long return on investment cycle: Dayu's cultural and creative industry products and projects often have a long R & D and production cycle, while the market response and sales cycle is also long. This makes investors have a longer waiting time for returns and increases the risk, which may lead to a decrease in the interest and enthusiasm of some investors in Dayu's cultural and creative projects. Uncertain market prospects: Dayu's cultural and creative industries are also facing the challenge of uncertain market prospects in the transformation. Due to changes in market demand and consumer preferences, Dayu's cultural and creative industries may not be able to predict future market trends and potential business opportunities, which also increases the uncertainty and difficulty of financing. Lack of professional financing channels and platforms: Dayu's cultural and creative industries may lack professional financing channels and platforms, resulting in limited financing opportunities. Due to the particularity of the industry and the relatively lagging development of the situation, some traditional financial institutions may lack understanding and confidence in the financing projects of Dayu's cultural and creative industries, thus reducing the opportunity for financing.

3.4. Awareness of property rights needs to be improved

Practitioners in the creative industries do not have a sufficient understanding of the importance and methods of IP protection, and are prone to IP infringement. The lack of awareness of the protection of intellectual property rights can easily lead to the theft or reproduction of innovative achievements in the creative industries, which has a negative impact on the development of enterprises and the healthy development of the creative industries. In the process of transformation, Dayu's cultural and creative industry may face the problem of imperfect laws and regulations on intellectual property protection. The lack of clear legal protection and norms can easily lead to the infringement of intellectual property rights of creative industries and the protection of their own innovation achievements. Lack of professional intellectual property management institutions: Dayu's cultural and creative industries may lack professional intellectual property management institutions and cannot manage and protect intellectual property rights in a timely and effective manner. The lack of professional intellectual property management institutions can easily lead to confusion and irregularities in intellectual property protection, affecting the innovation and development of the industry.

3.5. Shortage and demand for professional talents

In the process of creative transformation, Dayu's cultural and creative industry has increased the demand for talents with high-level creativity, design, technology and other aspects. However, due to the relatively recent development of the creative industry, the cultivation and reserve of high-end talents are insufficient, and there is a certain matching problem between supply and demand. Dayu's cultural and creative transformation requires creative industry practitioners to have professional knowledge and skills, and be able to skillfully use creativity, design, technology and other aspects of knowledge. However, there may be some practitioners who lack the professional capacity to meet the demand for high-end talents in the creative industry. In the transformation of Dayu's cultural and creative industry, the talent training mechanism may be relatively imperfect. The lack of industry-oriented education and training institutions, as well as practice platforms to connect with enterprises, makes it difficult to cultivate and reserve high-end talents to meet the needs of the creative industry.

4. Cause Analysis

4.1. The production process is complex, the distribution level is multi-layered, and the cost is high

The development of creative products requires market research, design, original creation and other links, and the cost of these links is high, especially original creation requires more manpower, time and resources. Dayu cultural and creative products usually need to be made with special processes and materials, which may require a high level of technology and professional equipment, thus increasing the complexity and cost of production. Some creative products require the use of special raw materials, which may be scarce or difficult to obtain, resulting in increased costs. Since the production and sale of creative products need to go through multiple links, such as manufacturers, wholesalers, retailers, etc., each link will increase a certain cost, especially in the traditional distribution model, each distributor will sell at a markup, resulting in an increase in the price of the final product. Creative products often need to be marketed and promoted, including advertising, exhibitions, events, etc., which can be costly and can be unaffordable, especially for small-scale creative businesses. As a part of traditional culture, Dayu culture has unique historical and cultural characteristics. However, in the modern market, consumer needs and preferences may not align with traditional styles and

forms. Therefore, in the process of transformation, how to meet the needs of the modern market while retaining the traditional culture is a big challenge.

4.2. Changes in consumer demand

With the development of society and the improvement of people's living standards, consumers' demand for cultural and creative products has become more diversified. Not only do they pursue practicality and functionality, but also artistry and individuality, hoping to be able to express their personality and taste through creative products. Consumers have higher and higher requirements for the quality of cultural and creative products. They pay more attention to the texture, materials and craftsmanship of products, pursue exquisite and unique designs, and are no longer satisfied with ordinary products, but also hope to be able to buy unique, tasteful and creative products. With the increase in environmental awareness, consumers are also paying more and more attention to the environmental friendliness of creative products. They are more inclined to buy products made with environmentally friendly materials and try to avoid negative environmental impacts. Consumers are also increasingly demanding personalization. They want to be able to customize a product that is unique, different, and able to meet their specific needs and preferences. Consumers' demand for storytelling and emotional resonance of cultural and creative products is also gradually increasing. They pay more attention to the story behind the product and the creative inspiration of the designer, hoping to resonate with the creator through the product and get emotional satisfaction. After the transformation of Dayu's cultural creativity, consumers' demand for cultural and creative products has become more diversified, focusing on high quality, enhancing environmental awareness, increasing demand for personalized customization, and pursuing storytelling and emotional resonance. For these changes, enterprises need to pay more attention to the changes in consumer demand, and constantly innovate and improve the design, quality and service of products to meet the needs of consumers.

4.3. The time and cost of rights protection are long

The process of rights protection usually relies on legal means, including litigation, mediation, arbitration and other procedures, which are often cumbersome and require a lot of time and energy. In the process of rights protection, it is necessary to provide sufficient evidence to support one's rights and interests, but it is often difficult to collect and sort out evidence, especially for the infringement of evidence, which is more complicated and requires a lot of manpower and material resources. The process of suing and defending rights entails certain costs, including attorney fees, litigation fees, appraisal fees, etc., which can be a huge burden for small-scale creative enterprises. The process of rights protection usually takes a long time, from prosecution to trial, which may take months or even years, during which it may require multiple court hearings and mediation, which virtually increases the time cost of enterprises. In the process of rights protection, enterprises may need to invest a lot of resources and energy, which will affect business activities and even cause damage to the reputation of the enterprise. Dayu's cultural and creative transformation rights protection time is long, and the high cost is mainly reflected in the cumbersome legal procedures, difficult evidence collection, high litigation costs, high time costs, and the impact on business and reputation. In order to reduce the time and cost of rights protection, enterprises can strengthen the work of contract signing and intellectual property protection, increase the monitoring and prevention of infringements, and improve the awareness and ability of internal intellectual property protection. At the same time, we will establish a cooperative relationship with relevant rights protection institutions or lawyers so that disputes can be resolved more quickly and efficiently.

4.4. Supporting facilities cannot meet the diverse needs

In the process of creative transformation, Dayu culture may need to expand new business areas and forms, but the existing supporting facilities may not be able to adapt to diverse needs. For example, a gallery that was originally designed to display works of art could not meet the needs of today's many types of creative events. Some of the supporting facilities may have existed for a long time, the equipment is aging, and the functions are outdated. In this case, it is difficult for the facilities to meet the needs of the modern creative industries, and it is not possible to provide advanced technical support and an innovative working environment. The development of the creative industries often requires a certain scale and space to support more creative activities and talent gathering. If the facilities are small, unable to accommodate enough creative teams or provide a suitable venue, it will limit the room for the business to grow. The transformation of the creative industries often requires professional support and guidance, but if the supporting facilities lack the relevant professionals and resources, the development of creative enterprises will be affected. For example, there is a lack of professional event planning and management teams to provide a full range of service support. Supporting facilities that do not provide good opportunities for communication and cooperation may limit collaboration and innovation among creative enterprises. The development of the creative industry requires interaction and cooperation between creative talents, so the lack of communication platforms will limit the development of enterprises. The performance of Dayu's cultural and creative transformation facilities that cannot meet the diverse needs is mainly reflected in the simplification of facilities, obsolescence of facilities, inappropriate scale, lack of professional support and lack of communication and cooperation opportunities. In order to solve these problems, Dayu Culture can consider upgrading and renovating facilities, introducing more professional talents and resources, and actively seeking cooperation and exchange opportunities to meet the needs of the diversified development of the creative industry.

4.5. The talent mechanism is weak

In the process of creative transformation, Dayu culture may need talents with creative thinking and professional skills to drive innovation and change. However, if there is not enough talent to recruit the right talent, it will affect the development of the creative industries. The creative industry is growing rapidly and requires constant updating of knowledge and skills. If Dayu culture lacks training and development opportunities to improve the professional ability and creative level of employees, it will limit the process of creative transformation. Creative talent often requires a high degree of freedom and incentives to be creative. If Dayu culture lacks the corresponding incentive mechanism and cannot stimulate the creative potential of employees, it will limit the innovation ability of the creative industry. Creative transformation requires collaboration and convergence of talents from different fields and professions. If Dayu culture lacks cross-border cooperation opportunities and cannot attract and develop talents with multi-field backgrounds, it will limit the innovation ability of the creative industry. In the creative industries, attracting and retaining high-level talent is crucial. If Dayu culture lacks a talent introduction and retention mechanism, unable to retain outstanding talents, it will affect the development of creative transformation. The weak performance of Dayu's cultural and creative transformation talent mechanism is mainly reflected in the lack of talent reserves, lack of training and development opportunities, lack of incentive mechanisms, lack of cross-border cooperation opportunities and lack of talent introduction and retention mechanisms. In order to solve these problems, Dayu culture can strengthen the introduction and training of talents, provide training and development opportunities, establish incentive mechanisms and cooperation platforms, in order to attract and retain innovative talents, and promote the process of creative transformation.

5. Measures

5.1. Establish a smart supply chain

AI can establish a smart supply chain in Dayu's cultural and creative transformation, and provide more efficient, accurate and sustainable supply chain management through intelligent technology and data analysis. By integrating internal and external data sources, including sales data, inventory data, production data, etc., AI technology is used for data analysis to understand the real-time status of the supply chain, grasp market demand and consumer behavior, and provide data support for decision-making. Leverage AI algorithms and machine learning models to analyze historical sales data and market trends, predict changes in product demand, optimize inventory management and supply planning, and reduce inventory overhangs and stockouts. AI technology is used to automate the management of warehousing and logistics. For example, robots are used to automatically sort and store goods, and intelligent logistics systems are used to optimize distribution routes and transportation plans to improve logistics efficiency and accuracy. Through AI technology, suppliers are evaluated and screened, a supplier database is established, and supplier performance and quality are monitored in real time, providing data support and decision-making basis, so as to optimize supply chain cooperation and management. AI technology is used for risk analysis and early warning, timely detection of supply chain risks and problems, such as supplier delays, raw material price fluctuations, etc., and measures are taken in advance to deal with risks and ensure the stability and sustainable development of the supply chain. Through AI technology and data analysis, we can understand customer needs and behaviors, personalize recommendations and customize products, provide a better customer experience, increase customer loyalty and satisfaction, and thus promote sales and performance growth. AI can help Dayu Culture establish a smart supply chain, improve the efficiency and reliability of the supply chain, reduce costs and risks, and promote the smooth progress of creative transformation.

5.2. Construction of high-end customized production roads

AI can help realize the construction of high-end customized production roads in the transformation of Dayu's cultural creativity. Using AI technology, by analyzing a large amount of market data and consumer behavior data, we can understand market trends and consumer needs, and provide data support for creative design. AI can also use generative models, such as GANs, to generate unique designs, providing a variety of options for custom production. AI can achieve efficient management of the supply chain through intelligent analysis and optimization algorithms. Through real-time data monitoring and forecasting, AI can provide accurate demand forecasting and inventory management, enabling efficient scheduling and resource allocation for customized production. AI can be combined with advanced manufacturing technologies (such as industrial robots, Internet of Things, etc.) to achieve intelligent manufacturing and automated production. Through the application of AI technology, the production process can be optimized and automated, including product design, raw material selection, parts manufacturing, assembly and other links, so as to improve production efficiency and quality. AI can leverage big data and machine learning technologies to enable personalization and customer engagement. By analyzing customer preferences and needs, AI can recommend suitable products and design solutions, provide customized shopping experiences and services, and enhance customer satisfaction and loyalty. Using AI technology, Dayu culture can achieve intelligent quality control and after-sales service. Through AI visual recognition technology and sensor data analysis, product quality can be monitored in real time, problems can be detected and corrected in advance. At the same time, AI can provide intelligent after-sales service through natural language processing and machine learning technology, including question answering, maintenance guidance, etc. AI can help Dayu's cultural and

creative transformation to achieve high-end customized production road construction, provide more personalized and high-quality products and services, meet the needs of different customers, and increase market competitiveness and brand value.

5.3. Strengthening the right to protect copyrights

AI can strengthen the right to protect copyrights in the transformation of Dayu's cultural creativity. Using AI technology, it can automatically identify and monitor Dayu's cultural works through image recognition and text analysis, including text, pictures, audio and other forms of works. Through the establishment of copyright database and watermarking technology, infringement can be effectively prevented and copyright evidence can be provided. AI can monitor piracy on the Internet through web crawlers and big data analytics. Using text matching and comparison algorithms, pirated works can be discovered and tracked, and legal measures can be taken in a timely manner to protect rights. Digital rights management (DRM) technology restricts and regulates the use and dissemination of digital works through encryption, license management, and access control. AI can be combined with DRM technology to provide intelligent encryption and authorization management, effectively protecting the copyright of Dayu culture. AI can help Dayu Culture establish a compliance framework, including contract management, intellectual property registration and rights protection. Through natural language processing and data analysis technology, AI can provide legal risk assessment and compliance advice, help Dayu Culture better protect copyright, and cooperate with relevant legal institutions to strengthen copyright protection.

AI can raise public awareness and respect for copyright through intelligent education and advocacy strategies. By promoting the importance and impact of copyright protection, we should strengthen the warning and punishment of infringement, and form a good atmosphere for copyright protection. AI can help Dayu's cultural and creative transformation, strengthen the right to protect copyrights, improve the awareness and protection of copyrights, and maintain the healthy development of the creative industry.

5.4. Improve the incentive mechanism for talent training

AI can improve the talent training incentive mechanism in the transformation of Dayu's cultural creativity. AI can understand the various talents needed for Dayu's cultural and creative transformation through data analysis and talent demand prediction models. AI can analyze industry trends, technology needs, and market demand, and provide talent planning and strategic guidance for Dayu culture. AI can develop personalized talent training plans based on talent demand analysis. Through intelligent learning systems and personalized education platforms, AI can provide effective training and learning resources to help employees improve their skills and knowledge. AI can use natural language processing and data analysis to understand employees' career development needs and potential. Based on this data, incentive mechanisms can be designed, including salary incentives, promotion opportunities, project rewards, etc. AI can also provide employee performance evaluation and personalized career planning to help employees discover their strengths and development directions. AI can build a talent management platform that integrates recruitment, training, performance evaluation, and other functions. AI can use natural language processing and machine learning algorithms to automatically screen candidates, match job requirements, and provide intelligent talent management tools to improve recruitment and training efficiency. AI can build a knowledge-sharing platform and collaborative work environment to facilitate communication and collaboration among employees. Through intelligent search and recommendation algorithms, AI can quickly retrieve and share knowledge resources, promoting team collaboration and innovation. AI can help Dayu's cultural and creative transformation, improve the talent training incentive mechanism, improve employees' learning motivation and career development

opportunities, stimulate employees' creativity and innovation ability, and promote the success of Dayu's cultural and creative transformation.

6. Conclusion

AI technology has great potential in the transformation of intangible cultural heritage and creative industries. Through the application of AI technology, the creative ability, production efficiency and market competitiveness of the intangible cultural heritage and creative industries can be improved, and the transformation and upgrading of the intangible cultural heritage and creative industries can be promoted. AI plays an important role in talent development. Through the intelligent learning system and personalized education platform provided by AI, it can help cultivate and motivate high-quality talents required by the intangible cultural heritage and creative industries, improve the skills and knowledge level of employees, and promote the innovative development of the intangible cultural heritage and creative industries. AI plays an important role in the transformation of the intangible cultural heritage and creative industries, and has great potential and value for improving creative capabilities, cultivating talents, analyzing market demand, and promoting innovation and development. In the future, further deepening the application of AI technology in the intangible cultural heritage and creative industries will provide important support and impetus for the transformation, upgrading and sustainable development of the industry.

Acknowledgments

This work is supported by Anhui University of Finance and Economics National College Student Innovation and Entrepreneurship Training Program Project (No.: 202310378040).

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