

# Research on Pechoin's Digital-Intelligent Brand Management Model: A Case Study of a Chinese Time-Honored Cosmetics Brand

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**Abstract.** With the rapid development of digital and intelligent technologies, time-honored brands are undergoing profound structural changes driven by both globalization and digitalization. These brands, while carrying national cultural memories and commercial reputation, also face real challenges such as brand aging, market shrinkage, and consumer loss. This paper takes the representative Chinese time-honored brand "Bai Que Ling" as its research object to explore the empowering mechanism and practical path of digital technology in brand management. Through literature review and case analysis, the study finds that digital technologies (such as big data, artificial intelligence, blockchain, and augmented reality) are deeply involved in core aspects such as consumer insights, product innovation, supply chain optimization, and brand communication, thereby significantly improving brand operational efficiency and market responsiveness. Simultaneously, Bai Que Ling has achieved a deep integration of traditional culture and modern technology by constructing a data-driven end-to-end management system, using immersive online and offline experiences and content marketing. This has transformed the brand value from a single product supply to a user-centric lifestyle solution, gradually forming a brand management model of "technology empowering cultural inheritance." The study concludes that the digital transformation of traditional brands not only requires technological investment but also emphasizes cultural continuity and the reinterpretation of brand stories. The dynamic balance between culture and technology is key to the sustainable development of time-honored brands.

**Keywords:** Time-honored branding; Pechoin; Digital-intelligent transformation; Technology-enabled branding; Brand management model; Cultural heritage.

## 1. Introduction

In a highly digitalized competitive environment, brand management is shifting from a focus on "products and experience" to a digital model centered on data, algorithms, and user experience. For time-honored Chinese brands, this presents both opportunities and challenges. On the one hand, aging brands, limited distribution channels, and a lack of innovation have widened the gap with emerging domestic and international brands. On the other hand, technologies such as big data, artificial intelligence, and blockchain have improved supply chain transparency, consumer insight efficiency, and product innovation and communication capabilities, making "technology-culture" synergy possible. Pechoin, a domestic brand founded in 1931, once enjoyed nationwide popularity with its "Oriental Herbal" formula, but experienced a decline in the 1990s due to foreign investment. In recent years, Pechoin has achieved a deep integration of traditional culture and modern technology through data-driven end-to-end management, immersive online and offline experiences, and content co-creation, effectively reshaping emotional connections and market competitiveness. Its exploration provides a typical example for the sustainable transformation of traditional brands in the digital age.

This study aims to reveal the mechanism by which digital technology intervenes in the management of time-honored brands, construct an interpretable analytical framework, and summarize the replicable experience of Pechoin's digital path from the perspectives of management philosophy, marketing strategies, and communication methods. Furthermore, it proposes a synergistic logic of "technology empowerment × cultural inheritance," exploring the governance and ecological path for the sustainable development of time-honored brands. This research hopes to provide theoretical support and practical reference for traditional brands to achieve sustained growth and value reconstruction in the digital age, and to provide a verifiable academic demonstration for the cultural confidence and innovation-driven development of Chinese brands.



## **2. Background of the Development of Time-Honored Brands in the Era of Digital Intelligence**

### **2.1 Current Situation of Time-Honored Brands**

As important carriers of Chinese commercial culture and national memory, time-honored brands are rich in historical accumulation and cultural value, and have formed a unique sense of trust and recognition at the social emotional level. However, with the acceleration of economic globalization and the reshaping of consumption structure, these brands are facing unprecedented transformation pressure. Many of them still rely on traditional business models centered on experience and manual skills, making it difficult to meet the contemporary consumers' demands for personalization, interactivity and instant feedback. At the same time, phenomena such as brand aging, single communication channels and insufficient innovation have placed these brands at a disadvantage when competing with emerging domestic brands and international brands. According to relevant domestic research, more than 30% of time-honored brands in the Chinese mainland are still in a state of weak profitability, with brand recognition and market activity continuously declining (Liu, Chen, & Hu, 2022)[1]. New brands, by virtue of high-frequency digital marketing and social media operation, not only achieve a youthful positioning but also reshape the two-way communication relationship between the brand and consumers, further highlighting the "digital divide" problem of traditional brands in the modern consumption context.

Despite this, time-honored brands still possess core advantages that are hard for other brands to replace. The cultural heritage and craftsmanship credibility formed in their historical accumulation have built a natural trust barrier for the brands; the differentiated competitive value composed of regional culture and national sentiment also holds unique market significance (Chang, Iakovou, & Shi, 2019)[2]. The key lies in how to activate these dormant cultural assets through digital technology, organically integrating the modernization of brand image with cultural inheritance, and making time-honored brands a key force for sustainable development.

### **2.2 Digital Technology's Involvement in the Development of Established Brands**

With the rapid development of digital technologies such as Artificial Intelligence (AI), Big Data, Blockchain, and Augmented Reality (AR), the business and brand management models of enterprises are being systematically restructured. Established brands are gradually exploring paths to digital transformation in this process, primarily manifested in four areas: consumer insight, product innovation, supply chain management, and organizational governance.

#### **(1) Consumer Insight and Product Innovation**

Through big data analysis and algorithmic modeling, brands can more accurately capture consumer needs and behavioral characteristics, providing a scientific basis for product development and market strategies. For example, through data mining of user reviews on social media and e-commerce platforms, companies can identify the aesthetic preferences and pain points of younger consumers, thereby launching product combinations that better meet the expectations of the target consumer group (Liu, Chen, & Hu, 2022)[3]. This process not only improves the accuracy of product innovation but also strengthens consumer participation in brand co-creation, promoting the shift from "data-driven innovation" to "user-co-created innovation."

#### **(2) Supply Chain and Business Management Optimization**

The Internet of Things (IoT) and blockchain technologies are widely used in the supply chain systems of established brands. By establishing a full-chain traceability system encompassing production, warehousing, logistics, and after-sales service, enterprises can achieve transparent and responsible management of the supply chain, improving operational efficiency and enhancing brand credibility in environmental, social, and governance (ESG) aspects (Zou, Liang, & Chen, 2024; Longo, Nicoletti, Padovano, D'Atri, & Forte, 2022)[4][5]. Simultaneously, the application of

blockchain in carbon emission data reporting and supply chain sustainability disclosure provides technical support for building "green trust" for established brands (Chang, Iakovou, & Shi, 2019)[6].

### (3) Brand Communication and Reshaping of User Relationships.

Intelligent algorithms and immersive technologies (such as AR/VR) are changing the way brands interact with consumers. Through augmented reality interactive experiences and AI recommendation systems, enterprises can achieve personalized content distribution and emotional connection, thereby driving the transformation of brands from "passive communication" to "active interaction." Research indicates that these algorithm-based interactive experiences not only increase consumer engagement but also enhance brand loyalty and cultural identity (Zou et al., 2024)[7].

In conclusion, the widespread integration of digital technologies has enabled established brands to break through traditional management boundaries and achieve a structural transformation from "experience-oriented" to "data-intelligence-oriented."

## 2.3 Challenges and Key Drivers

While digital transformation has brought vast opportunities, for most time-honored brands, digitalization remains a complex process characterized by high costs, high barriers to entry, and organizational flexibility and cultural friction. The financial and technological reserves required for digital investment and system upgrades have become significant factors limiting the speed of corporate transformation. Simultaneously, the integration of traditional cultural elements with modern technology has not yet been deeply integrated. Some brands, in pursuing "technological advancement," have neglected the continuity of their core culture, leading to the alienation of brand image and a weakening of cultural identity. Insufficient understanding and execution of digital transformation within some enterprises has also resulted in limited strategic implementation effectiveness (Chang et al., 2019)[8].

However, these challenges also constitute the driving force for the "second growth" of time-honored brands. Consumers' renewed focus on traditional culture provides a cultural foundation for the revitalization of these brands, and policy support for the integration of the digital economy and the cultural industry provides an external environmental guarantee for their digital development (Zou et al., 2024)[9]. Against this backdrop, building a brand management model driven by both "technology empowerment and cultural inheritance" is seen as a key path for time-honored brands to achieve sustainable growth and international leapfrog development.

## 3. Practical Path of Pechoin's Brand Management Model as a Time-Honored Brand

### 3.1 Development of the Pechoin Brand

Founded in 1931, Pechoin (Figure 1) is one of China's oldest skincare brands. With its core concept of "Oriental Herbs," it gained nationwide popularity from the 1930s to the 1980s, becoming a representative brand of Chinese women's skincare, thanks to its natural and safe mineral-based skincare image. However, with the influx of foreign brands into the Chinese market in the 1990s, Pechoin faced a decline in market share and brand aging, and its traditional channel-driven growth model struggled to meet the changing needs of the new generation of consumers.

In the digital age, Pechoin has achieved a significant brand transformation through data technology. The brand has built a full-chain digital supply chain system, forming a traceable mechanism from raw material procurement to production and sales, effectively improving operational efficiency and product quality control. Simultaneously, since 2025, the brand has officially entered the medical aesthetics market, launching three sub-brands: "Jinqueling," "Jinqueling," and "Yuqueling" (Figures 2 and 3), covering anti-aging, skin repair, and medical devices, constructing a closed-loop service cycle from "hospital to pharmacy to home." This series of initiatives marks Pechoin's strategic upgrade from a traditional skincare brand to a comprehensive health and aesthetics brand, reflecting

the possible path for time-honored brands to achieve industrial extension and high-end development in the context of digitalization.



**Figure 1.** Pechoin Brand Logo



**Figure 2.** Layout of Pechoin’s Three Major Aesthetic Medicine Sub-Brands in Biopharmaceuticals



**Figure 3.** Scene of Pechoin’s Aesthetic Medicine Channel Launch Event

### 3.2 Management Philosophy

In its brand management philosophy, Pechoin has always adhered to the core principle of "equal emphasis on inheritance and innovation," combining Eastern herbal wisdom with modern business concepts. Over its more than 90 years of development, the brand has gradually formed a distinctive "upholding tradition while innovating" management philosophy, which means upholding the traditional essence of herbal skincare while proactively embracing the wave of digital transformation. In recent years, Pechoin's management practices have shown a clear data-driven characteristic. The company has established a comprehensive big data analysis system to monitor changes in consumer demand in real time, accurately grasp market trends, and ensure a high degree of synergy between product development, operations, and marketing strategies. For example, by analyzing user feedback on social media, management can adjust product strategies more quickly, ensuring the brand always resonates with consumer preferences.

In terms of organizational structure, Pechoin retains the traditional business unit system to ensure product quality and craftsmanship inheritance, while adding a digital transformation office to promote intelligent upgrades and digital innovation. This structural setup ensures the continuation of traditional advantages while providing space and resource support for innovation. In addition, Pechoin emphasizes "experience inheritance and innovation co-cultivation" in human resource development. Through a collaborative mechanism between senior employees and young digital talents, it achieves the inheritance of traditional craftsmanship and the injection of new thinking, forming a stable and creative talent team, laying a solid foundation for the brand's long-term development.

### 3.3 Marketing Strategy

In terms of marketing strategy, Pechoin showcases a unique approach of "modernizing traditional elements," achieving brand rejuvenation through cross-industry collaborations and digital communication.

Regarding cultural collaborations, Pechoin entered into a strategic partnership with the Dunhuang Museum, launching the "Dunhuang Auspicious Colors" series in 2022 (Figures 4 and 5). This series combines aesthetic elements from Dunhuang murals with modern skincare technology. The packaging features auspicious beasts and patterns from the Dunhuang murals and incorporates augmented reality (AR) technology. Consumers can scan the packaging with their mobile phones to watch Dunhuang cultural animations, creating an immersive experience (Digitaling, 2022)[10]. This innovative initiative garnered widespread attention on social media, with related topics exceeding 120 million views on Weibo, bringing the brand significant social exposure.

In terms of offline channels, Pechoin partnered with the new beauty concept store "The Colorist" (Figure 6), establishing brand experience zones in major city commercial districts across the country. Through smart devices such as digital makeup mirrors and skin analyzers, this provides consumers with a technologically advanced and personalized shopping experience. This move effectively enhanced the brand's premium image and consumer loyalty, further strengthening its market positioning of "technology + service".



**Figure 4.** Pechoin "Dunhuang Auspicious Colors" series crossover collaboration poster



**Figure 5.** Visual poster for Pechoin's "Dunhuang Auspicious Colors" series products



**Figure 6.** Pechoin's display scene in the offline experience area of the "Colorist" beauty collection store.

### 3.4 Forms of Dissemination

Pechoin actively embraces digital transformation in its communication strategy, building an integrated online and offline communication system through diverse media and innovative technologies. Online, the brand deeply integrates into the social content ecosystem, attracting young consumers through KOL content seeding and topic marketing on platforms such as Douyin, Weibo, and WeChat. For example, Pechoin created a high-speed viral campaign around the theme "Upward Us" (Figures 7 and 8), launching the #UpwardUs# Douyin challenge, attracting over 13,000 users to participate and ultimately achieving approximately 250 million topic exposures across the internet. Simultaneously, the brand achieved deep penetration and brand reach among young audiences through content marketing via Vlogs and long-form images.

Offline, Pechoin strengthens emotional connections through immersive experiential activities. The brand partnered with the Xinchang Culture and Tourism Bureau to host the "Intangible Cultural Heritage Integration Poetry Road Dreams" charity gala (Figure 9), deeply integrating traditional cultural experiences with contemporary aesthetics to construct a holistic ecosystem of "cultural symbols—brand communication—consumption conversion." By establishing a linkage mechanism between digital media, immersive experiences, and the inheritance of public welfare culture, Pechoin has not only strengthened the emotional bond between the brand and consumers, but also provided replicable experience for the digital communication of time-honored Chinese brands.



Figure 7. Pechoin “向上的我们” Theme Online Promotion Poster



Figure 8. Pechoin “向上的我们” Theme Online Promotion Poster



Figure 9. Pechoin × Xinjiang Cultural Tourism Bureau “非遗共融·诗路筑梦” Public Welfare Event Scene

#### 4. Digital Empowerment of Culture, Cultural Guidance of Intelligence: Exploration of Pechoin’s Digital-Intelligent Brand Innovation Path

##### 4.1 From Digitalization to Intelligentization: The Systemic Evolution of Brand Operations

A systematic review of Pechoin's digital transformation practices reveals that the company's digital transformation does not rely on the accumulation of tools, but rather gradually manifests as a holistic reconstruction of brand cognition through long-term comparative analysis of operational data and management practices. Comparison of relevant materials, case studies, and data shows that the core value of data lies not in scale expansion, but in its explanatory power and connectivity demonstrated in insight generation, sentiment recognition, and strategic judgment. As operational logic continues

to evolve, brand decision-making gradually moves away from experience-based approaches, forming an intelligent decision-making system based on real-time monitoring, trend inference, and dynamic response.

Among various digital transformation initiatives, the emergence of a "unified data platform" is particularly crucial. A comparison of internal materials, publicly available data, and industry practices shows that this platform, by integrating multiple types of data from R&D, marketing, and consumer ends, reshapes the originally linear and fragmented information chain. Cross-analysis of multidimensional data enables managers to identify consumer emotional changes and behavioral patterns across different touchpoints (such as social media interactions, e-commerce browsing behavior, and offline trial feedback), thereby improving the accuracy and foresight of strategy adjustments and driving the transformation of operational logic from "linear output" to "intelligent cycle."

In terms of in-depth application at the technological level, progress in herbal formula research reflects the digital reconstruction path of traditional experiential knowledge. Related research records show that Pechoin has introduced network pharmacology and machine learning models into herbal component analysis, enhancing the scientific explanatory framework of herbal formulas through synergistic mechanism identification and in vitro experimental verification (Zhang et al., 2024)[11]. The application of such methods makes herbal knowledge, which has long relied on accumulated experience, quantifiable, verifiable, and modelable, providing a sustainable path for the modern expression of the Eastern herbal system.

In summary, the functional positioning of digitalization within Pechoin has gradually deepened from an efficiency tool at the operational level to a key medium for understanding consumers, expressing brand culture, and constructing a meaning system. The multiple changes, from data architecture and R&D system to brand expression logic, all indicate that the way brand value is produced is shifting from experience-driven linear growth to a sustainable development model supported by intelligence and cultural empowerment, laying the foundation for the re-growth of "Oriental Herbal" culture in the contemporary technological context.

#### **4.2 The Reconstruction of Technological Aesthetics: Emotional Connection in Immersive Experiences**

The continued development of the experience economy and virtual interaction technology has shifted the core of brand communication from information presentation to the construction of experiential value. A comprehensive analysis of Pechoin's digital transformation path concludes that the role of digital technology is shifting from an efficiency-enhancing tool to an interface for emotional communication, making the relationship between the brand and consumers more immersive, emotional, and culturally profound. "Technological aesthetics" thus becomes a key theoretical fulcrum for Pechoin's brand experience construction.

In online scenarios, the practical application of AI virtual makeup try-on, skin texture detection, and instant feedback systems has enabled herbal efficacy to gain new expressions in digital interfaces. Related data shows that algorithmic recognition and feedback mechanisms can help users generate an emotional experience of being understood and responded to during interaction, allowing technology to not only transmit information but also trigger emotional identification (Xu, Pratt, & Tuten, 2024; "Unlocking the potential of AI," 2024)[12][13]. This mechanism transforms complex herbal knowledge into perceptible experiential units, allowing cultural symbols to be reconstructed in a way that is close to daily life.

The construction of offline spaces further strengthens the narrative path of "Eastern Culture × Technological Immersion." Digital art installations, AR herbal demonstrations, and multi-sensory interactive systems collectively create an "accessible Eastern realm," allowing consumers to participate in the reproduction of cultural symbols through sight, touch, and hearing, thereby enhancing emotional engagement and experiential stickiness (BrandXAR Report, 2025; Emerald,

2023)[14]. In this structure, cultural symbols no longer remain merely visual presentations but become immersive spaces that can be touched, experienced, and regenerated.

Industry research also confirms the role of visual narrative in the cultural revitalization of time-honored brands. Taking the "Shuangmei" brand as an example, the recoding of Eastern symbols, aesthetic metaphors, and narrative imagery gives traditional culture a new interpretive framework within the modern beauty context, forming a visual system that can evoke cultural memory (Li Guang'an & Shi Binghui, 2024)[15]. This research points out that visual narrative is not simply formal innovation but a reinterpretation of cultural spirit, enabling consumers to confirm their identity and cultural belonging while recognizing the brand. This perspective aligns perfectly with Pechoin's immersive experience strategy, emphasizing that technology does not diminish traditional culture; rather, it activates its value and expressiveness in the digital environment.

Building upon existing practices, innovative paths for immersive experiences can extend from "cultural presentation" to "resonance with life's emotions." Specifically, digital touchpoints need to organize experiential content around consumers' daily rhythms and emotional cycles. For example, based on skin changes, seasonal climates, or seasonal cultural elements, they can provide time-sensitive, caring interactions such as "seasonal skincare suggestions," "nighttime relaxation rituals," or "festival herbal formulas," extending interaction from consumer decisions to life contexts. Offline spaces can combine digital narratives with participatory ritual experiences, such as "herbal energy harvesting," "oriental aroma meditation," or "immersive herbal skincare rituals," constructing experiential segments capable of carrying emotional expression and meaning construction. Supported by data feedback mechanisms, online skin profiles and offline experiential content can form a cyclical experience update path. When user behavior is incorporated into the experience loop, brands can continuously identify changes in consumer emotions, constantly strengthening the immersive relationship and thus forming a long-term interactive structure where "experiences are recorded and emotions are responded to."

Overall, Pechoin's immersive communication does not center on technology itself, but rather establishes a new relational structure between technology, culture, and emotion: technology becomes the interface for emotion generation, culture becomes the foundation for meaning recognition, and consumers are incorporated into the construction of a brand meaning community through the experience. Thus, the brand leaps from a logic of efficacy communication to a system of "emotional and cultural immersion," providing a sustainable narrative path for the modern expression of Eastern herbal products.

### **4.3 Intelligent Co-creation: Brand Value Regeneration in the Digital Age**

In the context of digitalization, the generation of brand value has undergone a structural shift from enterprise-led to multi-stakeholder collaboration. An analysis of Pechoin's practical path reveals that brand communication is gradually moving away from a one-dimensional information output model, towards a meaning-building process jointly driven by consumers, technology, and the brand. The formation of brand value thus exhibits a progressive characteristic, from product utility and emotional resonance to cultural identity, reflecting a profound transformation of the contemporary brand system from material production to cultural production.

In this change, artificial intelligence constitutes a key fulcrum of the co-creation mechanism. Pechoin combines algorithmic recommendations with user-generated content (UGC) to construct a collaborative value generation structure of "human-machine-community." Related research shows that in social commerce scenarios, AI not only undertakes the functions of preference analysis and data aggregation but also participates in deep creative processes such as content theme generation, narrative clue construction, product naming assistance, and visual style co-creation (Value co-creation in social commerce, 2021)[16]. User interaction, in turn, becomes a crucial input for brand reproduction, creating a dynamic cycle of emotional and data feedback that provides real-time impetus for brand innovation.

Based on a comprehensive analysis of practical materials, the design of value co-creation mechanisms needs to expand beyond "content participation" to "identity confirmation." For Pechoin, by creating new national trend symbols and Eastern aesthetic elements as part of the experience mechanism, the brand experience is gradually embedded in consumers' identity construction and cultural belonging. A more scalable approach is to institutionalize co-creation activities into a sustainable structure, such as assigning long-term symbolic identities to users who continuously contribute UGC, like "Herbal Culture Archive Participants" or "Eastern Formula Exploration Collaborators," giving them a place and memorable point within the brand's cultural system. This approach facilitates the transformation of co-creation relationships from short-term interaction to long-term cultural maintenance, making consumers not just content providers but co-creators of the brand's value system.

Overall, Pechoin's intelligent co-creation practice is not a superficial participation driven by technology, but a value regeneration process based on cultural logic. AI has not diminished human emotional expression here, but rather amplified the consumer's subjectivity in the brand narrative; consumers have not been homogenized in brand communication, but have gained a differentiated identity through co-creation mechanisms. By building an intelligent-driven cultural co-creation ecosystem, Pechoin has gradually moved from a product-oriented brand to a cultural system, realizing the contemporary expression and future extension of traditional cultural spirit, and providing a replicable case for the regeneration of time-honored brands in the digital age.

## 5. Conclusion

The case study of Pechoin demonstrates that the digital transformation of time-honored brands is not merely the application of a single technology, but rather a series of gradual adjustments centered around organizational structure, culture, and user relationships. With the improvement of data systems, the introduction of immersive experiences, and the formation of co-creation mechanisms, the brand's operational methods, communication structure, and value expression have undergone substantial changes. Traditional herbal culture has found new ways to be presented in the digital environment, and the brand has established stable emotional connections through richer interactions.

This case further illustrates that the modernization of time-honored brands does not require a trade-off between "tradition" and "technology," but rather finding a way for the two to coexist. Technology provides more precise insights and more flexible expression, while culture provides a continuous source of meaning for the brand. The combination of the two has enabled Pechoin to maintain continuity and possess regenerative capabilities when facing new consumer markets.

Although digitalization brings new governance requirements and organizational pressures, Pechoin's practice proves that as long as the core culture remains clear during technological updates and a sustainable adaptation mechanism is formed in the management system, time-honored brands can still establish a competitive advantage in the new market environment. The future direction of development will depend more on how brands can solidify their cultural positioning in the ever-changing consumer landscape and continuously expand new value spaces on this basis.

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