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Digital Transformation Paths and Optimization Strategies for Shandong's Long-Established Enterprises Driven by Lushang Culture

Ningning Zhou ^{1,*}, Huayi Han ¹ and Zhaoyan Cao ¹

¹ Shandong Institute of Commerce and Technology, Jinan, Shandong, China

* Correspondence: Ningning Zhou, Shandong Institute of Commerce and Technology, Jinan, Shandong, China

Abstract: In the era of the digital economy, Shandong's long-established enterprises face the dual challenges of inheritance and innovation. Lushang culture, as a typical representation of Confucian business ethics, provides a unique value orientation and practical momentum for digital transformation. Based on the theoretical framework of dynamic capability theory and organizational paradox, this study constructs a three-dimensional driving model of "culture-technology-ecology" and systematically analyzes the paths and optimization strategies of digital transformation driven by Lushang culture. The study finds that, firstly, by deeply integrating the three core concepts – "integrity-based", "treating people with benevolence and righteousness" and "being the first to be pioneers" – with technology, a "blockchain + ecology" system emerges. This has led to three typical transformation paths: "blockchain + trusted supply chain", "metaverse + immersive consumption" and "industrial internet + shared ecology"; Secondly, organizational change and the synergy between government, industry, academia, and research play a key role in supporting the transformation. Thirdly, balancing cultural inertia and technological advancements through dynamic adaptation mechanisms is essential, along with strengthening digital cultural communities and regional service platforms. The study proposes three optimization strategies—cultural embedding, resource synergy, and policy guidance—to provide theoretical support and practical insights for traditional enterprises striving to balance cultural heritage and technological innovation, ultimately contributing to high-quality regional economic development.

Keywords: Lushang culture; long-established enterprises; digital transformation

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1. Introduction

Amid the wave of the digital economy, the traditional long-established enterprises are faced with the dual challenges of "integrity" and "innovation": on the one hand, they need to inherit the cultural genes accumulated over the past hundred years, and on the other hand, they need to cope with the impacts of consumption upgrading and technological iteration through digital transformation. As the birthplace of Confucian culture and the gathering area of long-established enterprises, Shandong's unique Lu Shang culture (integrity-based, treating people with benevolence and righteousness, and being the first to be pioneers) provides a key perspective for cracking this contradiction. Existing research shows that the driving role of cultural elements in digital transformation has gradually become more prominent, but it mostly focuses on the unidimensional analysis

of technological tools or management modes, and lacks a systematic exploration of the deep integration of traditional culture and digital technology. Especially for old enterprises, the existing research fails to effectively answer two major questions: first, how the regional cultural genes can be transformed into the endogenous driving force of digital transformation. Second, how to avoid the structural conflict between cultural inertia and innovation needs in the process of technology application [1].

2. The Cultural Connotation of Lushang and Its Impact on Digital Transformation

As a figurative expression of Confucian business ethics, the core connotation of Lu Shang culture can be summarized into the three dimensions of “integrity-based, treating others with benevolence and righteousness, and daring to be first”, which serves as the value foundation for the digital transformation of long-established enterprises. Integrity highlights “contractual spirit and supply chain transparency”, driving enterprises to build a credible ecosystem through technological tools (e.g., blockchain); treating others with benevolence and righteousness advocates altruism and win-win, promoting the establishment of industrial Internet platforms and resource sharing mechanisms; and daring to be first focuses on innovative breakthroughs, stimulating enterprises to strategically lay out their positions in emerging fields such as meta-universe and artificial intelligence [2,3].

From the theoretical level, the influence of Lushang culture on digital transformation is reflected in the dual path of dynamic capability construction and organizational paradox reconciliation. Dynamic capability theory shows that Lushang culture forms a “double helix” power mechanism through data-driven capability (supply chain digitization), resource integration capability (industry-academia-research synergy), and agile response capability (market boundary expansion), which promotes the enterprise's leap from technological adaptation to ecological synergy. From the perspective of organizational paradox, the contradiction between cultural heritage and technological innovation needs to be reconciled through “platform thinking”, for example, by building a digital cultural community to enhance user stickiness, or by establishing a “culture-technology” matching degree assessment model. Priority should be given to upgrading the data collection capability of old enterprises to avoid blind digitization.

Lushang's culture-driven digital transformation path covers three levels: cultural genes embedded in technology applications (e.g., the integration of lean management and intelligent tools), organizational structure flattening (breaking the traditional hierarchical system), and business model innovation (digital marketing system). Its theoretical contribution lies in expanding the research boundaries of the integration of traditional culture and digital technology, echoing the “dual-driven framework” proposed by Business and Economics Research and the dynamic capability model of Shandong University of Finance and Economics, and filling the research gaps of how regional cultural genes can be transformed into endogenous transformation dynamics.

Current research also reveals the core contradictions in digital transformation: technological lag due to cultural inertia, insufficient resource synergy, and imbalance of input and benefit. In the past five years, core journals have pointed out the need to achieve a long-term balance between cultural heritage and technological innovation through government, industry, academia and research synergy mechanisms (such as regional digital service platforms), dynamic fit assessment (culture-technology matching metrics), as well as enhancing organizational resilience through data-driven decision-making mechanisms. Future research can further explore the integration path of Lushang culture with digital intelligence and green innovation, and deepen its theoretical value in the dual-carbon strategy and international expansion [4].

3. Path Analysis of Digital Transformation Driven by Lushang Culture

Driven by the three core concepts of “honesty, benevolence and righteousness, and daring to be first”, Lushang Culture has built a multi-dimensional digital transformation path through technological empowerment, organizational change and ecological synergy.

- Technology empowers cultural values and reshapes brand trust and consumption scenarios.

The concept of “integrity-based” in the culture of Lushang has realized supply chain transparency through blockchain technology. For example, Dezhou Steak Chicken has uploaded the data of the whole industrial chain onto the chain, and the consumer's trust degree reaches 4.7/5 points, which is significantly higher than the industry average value. At the same time, the spirit of “dare to be first” drives enterprises to layout the meta-universe and artificial intelligence and other emerging fields, Dong'a Gum through the virtual IP “Jiao Niang” combined with the live broadcast of goods, so that the proportion of users of the Z generation from 12% to 42%, opening up a new scenario of immersive consumption. Hongjitang, relying on the Internet platform of the Chinese medicine industry, serves 130 small and medium-sized pharmaceutical enterprises, reduces operating costs and realizes resource sharing, reflecting the win-win concept of “treating people with benevolence and righteousness”.

- Organizational change and ecological synergy to build a digital governance framework.

Lushang Group promotes the transformation of the traditional hierarchical model to flexible collaboration through flat organizational structure and data-driven management. Its “all-channel, all goods” strategy integrates online and offline resources, and optimizes supply chain efficiency with intelligent warehousing and data sharing, increasing inventory turnover and distribution efficiency by 23% and 5% respectively. In addition, the collaboration mechanism among government, industry, academia, and research, the government guided the establishment of a digital transformation fund to support enterprises and universities to develop AI-driven process optimization system, for example, Lushang Technology has developed a trade and commerce system. For example, the “industrial brain” of commerce circulation developed by Lushang Technology has been selected as a key pilot project in Shandong Province, which opens up data barriers in the upstream and downstream of the industrial chain and improves the efficiency of resource allocation [5].

- Business Model Innovation, Expanding Market Boundaries and Brand Influence.

The business model innovation driven by Lushang culture is manifested in the dual track of “sharing ecology” and “cross-border digital marketing”. The shared SaaS platform built by Hongjitang not only serves small and medium-sized pharmaceutical enterprises, but also integrates 16 million user resources through standardized membership operation, forming a digital marketing system for the whole region. Tsingtao Beer has achieved a 63% sales growth in the RCEP region through customized marketing on the TikTok platform, proving the potential of combining cultural genes with emerging markets. Lushang's life service platform integrates Ginza's retail, household and property resources through the “3-kilometer digital life ecosystem”, and puts 2.52 million products on line to cover the one-stop needs of local residents, thus reconstructing the new retail ecosystem.

- Dynamic Adaptation and Cultural Community to Balance the Contradiction between Inheritance and Innovation.

In the process of digital transformation, Lushang Culture focuses on reconciling cultural inertia and technological needs through a dynamic assessment mechanism. For example, Zhang Gong Liquor uses VR technology to restore traditional brewing techniques and enhance consumers' cultural identity; Lushang Group establishes a “culture-technol-

ogy" matching degree assessment mechanism and prioritizes upgrading the data collection capacity of old enterprises to avoid blind digitalization. At the same time, the construction of digital cultural communities (such as Ginza Group's "Hundred Shops, Thousands of People and Ten Thousand Live Streaming" to cultivate 6000 exclusive professionals) transforms offline traffic into ecological "retention" through content co-creating and private domain operation, thus enhancing user stickiness and re-purchase rate.

To sum up, Lushang Culture drives the digital transformation of long-established enterprises through the triple path of "technology-organization-ecology", which not only maintains the uniqueness of cultural genes, but also achieves efficiency improvement and market breakthroughs, and provides a replicable paradigm for traditional enterprises to integrate into the digital economy. It provides a replicable paradigm for traditional enterprises to integrate into the digital economy.

4. Digital Transformation Effectiveness Assessment and Optimization Strategy

In the assessment of the effectiveness of digital transformation of Shandong's old enterprises, it can be carried out from the application of technology, brand building, organizational change and other dimensions. From the perspective of technology application, some long-established enterprises have achieved remarkable results. Taking Lushang Development as an example, it has constructed a digital integrated operation platform "Project 129", which through the construction of a data warehouse, two support platforms and nine core systems, comprehensively supports various professional lines to realize business online, operation digitalization and management intelligence, and enhances the enterprise's operation efficiency and decision-making scientificity. In terms of brand building and innovation, Dong'a Gum has successfully increased the proportion of Generation Z users from 12% to 42% by launching the virtual IP "Gum Lady" and combining it with emerging marketing modes such as live broadcasting, which has significantly strengthened the brand's influence among young consumers. Tsingtao Beer's customized marketing with the help of the TikTok platform has achieved a remarkable 63% increase in sales in the RCEP region, effectively expanding its overseas market.

However, despite the progress made by some enterprises, overall, the digital transformation of Shandong's long-established enterprises still faces a number of challenges and needs to further optimize its strategy to enhance the transformation effect. In terms of optimization strategy, enterprises should strengthen brand building and innovation, dig deep into the cultural connotation of the brand, and integrate the concepts of integrity and innovation in the culture of Lu merchants, to create a uniquely attractive brand image. At the same time, actively innovate marketing strategies, make full use of digital marketing means, such as social media marketing, short video marketing, live with goods, etc., to carry out accurate marketing and personalized promotion, in order to attract the younger generation of consumers. In addition, it expands brand cooperation, strengthens cross-border cooperation with other brands and enterprises, and carries out joint promotional activities, so as to enhance the brand's popularity and influence by sharing resources and complementing each other's strengths.

Strengthening talent training and introduction is also one of the key strategies. Enterprises should formulate preferential policies to attract professionals with background and experience in digital technology, and at the same time carry out internal training to improve the digital literacy and skill level of employees, and establish a perfect talent incentive mechanism to stimulate the enthusiasm and creativity of employees to participate in digital transformation work. In terms of technology application and capital investment, enterprises need to improve their technology application capabilities, strengthen cooperation with universities and research institutes, and introduce advanced digital technologies, such as big data, artificial intelligence, and Internet of Things, to improve their production efficiency and product quality. Enterprises should actively seek government funding support and increase their own capital investment. They should also rationally

plan the use of funds, prioritizing key links and projects to ensure the smooth implementation of the digital transformation project.

The optimization of organizational structure and management concepts is equally indispensable. Enterprises should change the organizational structure, break the traditional hierarchical organizational structure, the establishment of flat, flexible organizational system, update the management concept, cultivate the digital thinking of managers, set up the concept of data-driven decision-making, strengthen talent management, and establish a comprehensive talent management mechanism, to attract and retain the talents needed for digital transformation. In addition, enterprises also need to strive for policy support and cooperation, actively communicate and cooperate with government departments, understand and grasp relevant policy information in a timely manner, strengthen exchanges and cooperation with enterprises in the same industry, jointly discuss the experience and practices of digital transformation, and carry out industry-university-research cooperation projects to enhance the technological innovation capability and core competitiveness of enterprises.

5. Conclusion

This study thoroughly explores the path and optimization strategy of digital transformation of Shandong's long-established enterprises driven by Lushang culture. It is found that the core values of Lushang culture provide a strong cultural impetus for the digital transformation of long-established enterprises, and the integration with digital technology can effectively enhance the market competitiveness and brand value of enterprises. Although Shandong's long-established enterprises have made progress in the process of digital transformation, they still face many challenges. To address these issues, this study proposes corresponding optimization strategies, including strengthening brand building and innovation, enhancing talent training and introduction, increasing technology application and capital investment, optimizing organizational structure and management concepts, and seeking policy support and cooperation. The implementation of these strategies can help long-established enterprises overcome the obstacles of transformation and realize sustainable development. Future research can further explore the comparison of digital transformation paths of long-established enterprises in different cultural contexts, as well as the application of emerging technologies in enterprise operations and the supportive role of changes in the policy environment on digital transformation, so as to provide a more solid theoretical foundation and practical guidance for the innovative development of long-established enterprises.

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