

Institutional Logics and Digital Transformation: Insights from the Chinese Baijiu Industry

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Abstract

This study explores the digital transformation (DT) of Chinese Baijiu enterprises, focusing on how institutional logics influence this process. Using Wuliangye as a case study, it examines the stages of DT within China's unique policy environment. Findings reveal that DT in the Baijiu industry unfolds through overlapping stages, where market and government logics interact dynamically. This multi-logical framework provides manufacturers opportunities to influence policies and align strategic priorities, fostering effective DT. The study's insights offer practical guidance for manufacturing enterprises pursuing DT, especially regarding balancing government support and market demands.

Keywords

Chinese Baijiu Enterprises, Digital Transformation, Multiple Institutional Logic, Wuliangye.

1. Introduction

The maturation of AI, blockchain, cloud computing, big data, and 5G has enabled digital applications to reshape manufacturing by integrating virtual and real economies, driving efficiency and innovation. While digital transformation presents opportunities, financial instability affects 60% to 85% of initiatives [1]. For manufacturers, it requires not only technological upgrades but also strategic shifts, shaped by policies like Made in China 2025 and the 14th Five-Year Plan, adding complexity to this process in China.

This study examines the digital transformation of Chinese Baijiu enterprises within this complex institutional environment, using Wuliangye Baijiu Company as a case study. By analyzing Wuliangye's experience, we aim to model the digital transformation of Baijiu enterprises, offering insights for the manufacturing industry's digital evolution.

2. Research Review

Digital transformation (DT/DX) is a phenomenon introduced by the transformative power of digital technologies. This trend has gained significant attention in academic and business settings, including education, government, banking, and manufacturing, especially during the fourth industrial revolution (4IR). For more than 20 years, scholars have been studying the different aspects of digital transformation, including its enablers, barriers, and how it creates value [2]. Digital infrastructure is a "social technology system" [3]. In addition to the technical part, it is more important to embed the social and cultural system situation. The digital transformation of manufacturing enterprises not only requires many challenges such as changes in business models and the innovation of business philosophy, but also to reshape the complex relationship of the external institutional environment that they live in.

3. Research Design

3.1. Research Method

The case study method, with its focus on "highlighting context," "showcasing process," and "revealing relationships" [4], aligns well with examining digital transformation in China's unique institutional setting. This study uses a case approach to explore the dynamic obstacles and strategies within the digital transformation process, which evolves over time. By employing a single, longitudinal case, this research effectively addresses key questions like why and how digital transformation occurs, as well as how multiple institutional influences impact it—areas lacking established theoretical models [5].

3.2. Case Selection

This study employs purposive sampling to select Wuliangye Baijiu Company as a representative case of digital transformation in the Chinese Baijiu industry. Criteria included being a digital transformation pioneer with rich information on its process. As a leading Luzhou-flavor Baijiu producer, national brand, and benchmark in the industry with over \$14 billion in revenue since 2019, Wuliangye exemplifies digital transformation. It has advanced "internationalization" and "digitalization" strategies, applying digital technologies like robotics and smart factories, and partnering with major tech firms like Alibaba and JD.com.

3.3. Data Collection

This study collected data from four sources: Wuliangye's official website, which offered 328 documents (about 80,000 words) detailing the company's digital transformation; Google searches that yielded 300 relevant news articles (around 200,000 words); in-depth books on Wuliangye's history; and an on-site investigation involving discussions with company leaders and a tour of their intelligent plant, providing first-hand insights. Descriptive statistics for each data type (see Table 1).

This study ensures reliability and validity through three measures: using "triangular verification" from multiple sources—official websites, news reports, academic data, and interviews—to confirm evidence credibility; proposing and verifying propositions based on data analysis to address research questions effectively; and recording the case study process to retain original research integrity.

Table 1. Descriptive statistical results of various types of data

Number	Data type	Data description
1	Official website information	328 articles, about 80,000 words
2	News reporting	300 articles, about 200,000 words
3	Related books and materials	2 books, about 200,000 words
4	On site inspection materials	10,000 words

3.4. Case Introduction

Wuliangye Group Co., Ltd, a major state-owned enterprise primarily in the Baijiu industry, also engages in smart manufacturing, food packaging, logistics, investment, and health. Known for its iconic aromatic Baijiu, Wuliangye is a protected brand under the China-EU Geographical Indications Agreement and ranks among "Brand Finance Global 500" and "China's 500 Most Valuable Brands." Since launching its digital transformation strategy in 2018, Wuliangye has seen significant growth, building a global marketing network with 26 domestic divisions, 75 bases, and international centers across Europe, America, and Asia-Pacific. Its multi-channel sales system includes both offline (distributors, supermarkets) and online platforms, with innovations like the "digital liquor license" to enhance consumer engagement.

4. Case Analysis

Multi-institutional logic suggests that organizations operate within multiple, often competing or compatible, institutional logics that influence strategies, decisions, and managerial actions [6]. Scholars examine these logics, particularly market and government, to understand corporate transformation behaviors [7]. For Wuliangye, market logic prioritizes profit within China's evolving market economy, while government logic, through laws and policies, strongly guides corporate actions. Due to the varying tasks across Wuliangye's digital transformation stages, this study, drawing on Tidd [8], establishes a phased model-single coverage, integrated improvement, and innovation-to analyze interactions between digital transformation and institutional logics.

4.1. Single Coverage Phase

Wuliangye began its digital transformation in 2003, focusing on R&D, design, manufacturing, and marketing. Early Chinese digital policies, like the 2002 National Economic Plan and 2006 Information Strategy, offered guidance but limited financial incentives, allowing market logic to primarily drive Wuliangye's digital initiatives. From 2006 to 2012, the company expanded digital sales management and ventured into computer display and chip production to support growth. Government support, including the 2006-2020 Informatization Strategy and 2011 policy on integrating information with industry, reinforced this shift by promoting digitalization across manufacturing.

4.2. Integration Improvement Stage

In the integration and enhancement phase, starting in 2013, Wuliangye advanced its digital transformation across R&D, production, and sales, expanding e-commerce. Key initiatives included a closed-loop digital management system, intelligent brewing, and the "Hundred Cities, Thousand Counties, and Ten Thousand Stores" project to enhance data-driven marketing. Supported by government policies like "Internet Plus," "Made in China 2025," and the 2016 National Informatization Plan, Wuliangye partnered with IBM to integrate cloud computing, big data, IoT, and AI, elevating its transformation to a strategic level and driving growth in response to industry challenges.

4.3. Innovation Breakthrough Stage

In 2018, Wuliangye launched the "1365 Digital Transformation Strategy Blueprint," transitioning to intelligent production to enhance efficiency, reduce costs, and increase competitiveness. Collaborating with tech giants like Huawei, Alibaba, and JD.com, Wuliangye expanded its digital capabilities in R&D, intelligent brewing, logistics, and consumer engagement, supported by investments nearing \$100 million and over 200 new patents. Market opportunities from the industrial internet and supportive government policies, including "Made in China 2025" and the 2021 Action Plan for Innovative Development, provided a favorable environment for Wuliangye's sustained digital innovation and strengthened policy influence.

5. Case Discussion and Discovery

5.1. The Digital Transformation Process of Enterprises Has a Cross Stage Characteristic

Enterprise digital transformation progresses in phases-single-item coverage, integrated improvement, and innovation breakthrough-each with distinct yet interconnected institutional logics. The process is not strictly sequential; earlier stages do not fully determine later ones, allowing overlapping efforts. Rapid technology iterations drive ongoing system upgrades. For

instance, Wuliangye's 2018 partnership with IBM introduced AI to support strategic areas like food, machinery, packaging, logistics, and healthcare. This phased, "small-step" approach minimizes decision risks and builds broad acceptance, enhancing the legitimacy and continuity of digital transformation.

5.2. Enterprise Digital Transformation Process System Logic Selection

In the single coverage phase, companies initiate digital transformation passively, targeting fragmented issues like high costs and extended R&D cycles within specific departments, guided by market logic with limited risks and impacts. During the integrated improvement phase, digital transformation becomes strategic, driven by competitive pressures and cyclical challenges. Enterprises adopt a proactive approach, integrating logistics, energy, and information flows across departments. With government support through incentives and policies, companies align organizational and policy goals, enhancing their digital transformation image and securing greater legitimacy. In the innovation breakthrough phase, companies address industry-wide integration and collaboration needs, investing heavily and prioritizing government logic to influence policy and promote industry-wide digital adoption.

6. Conclusion

6.1. Research Conclusion

The digital transformation of the manufacturing industry unfolds across overlapping stages: single coverage, integration, and innovation. Although each stage has distinct characteristics, rapid technological iteration and the need to balance old and new systems drive cross-stage interactions, bringing challenges like network security and labor impact. Institutional logics also evolve through these phases: market logic dominates initially, while government support becomes pivotal in later stages, fostering a synergy that accelerates transformation. This multi-logic framework offers manufacturing enterprises opportunities to align market and government priorities, using proactive strategies to influence policy and enhance transformation consistency and effectiveness.

6.2. Theoretical Contribution

This study enhances understanding of the digital transformation process in manufacturing by focusing on the dynamic stages and evolving institutional logics. Unlike prior research, which often emphasizes antecedents and outcomes, this study dissects each phase, revealing the complex interplay and overlapping nature of these stages in Baijiu manufacturing. It also provides a comparative analysis of institutional logics, showing how China's unique system and government policies influence digital transformation across phases. These insights clarify how enterprises can leverage policy at critical points, expanding research on the relationship between enterprise actions and institutional frameworks in digital transformation.

6.3. Practical Inspiration

The findings provide valuable guidance for Chinese manufacturing, particularly Baijiu enterprises, on government-supported digital transformation. Companies should begin by digitizing specific business areas to build a solid foundation, then progress to integration and innovation. Understanding and adapting to evolving institutional logics at each stage is essential, as is balancing government and market logics to influence policy. Additionally, attention to risks like network security and privacy is crucial to successful digital transformation.

6.4. Research Limitations

While this single case study offers valuable insights, its applicability to other industries requires further testing. Beyond institutional logics, managerial cognition and resource capabilities significantly impact digital transformation. Future research should include larger samples, integrate factors like manager cognition and resources, and adopt interdisciplinary approaches to better understand the relationship between institutional logics and digital transformation in manufacturing.

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