Digital Transformation for Traditional Retail: Walmart's Success Amidst Pandemic Challenges in China

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Abstract: In today's rapidly developing digital technology era, the digital wave has engulfed every industry, and the traditional retail industry has also reached the crossroads of technological change. However, there is no comprehensive method to summarize the direction of digital transformation. This article aims to provide reliable digital transformation directions for the traditional retail industry by analyzing Walmart China's financial reports, strategic deployment, and current reform achievements from 2018 to 2022. The study found that Walmart China's digital transformation has been relatively successful, even after three years of the impact of the COVID-19 pandemic on the market. The revenue from Walmart China's digital transformation-related areas has repeatedly achieved excellent results. For traditional retail enterprises, choosing partners, digitizing the supply chain, and implementing omnichannel reforms are the correct directions for digital transformation.

Keywords: digital transformation, retail, Walmart

1.   Introduction

Over the past two decades, China's offline retail industry has evolved from the initial mom-and-pop stores to standardized supermarkets, from first-generation department stores to today's diversified formats, such as shopping centers and members-only stores. At the same time, major offline retail scenes, such as supermarkets and department stores, which were initially dominated by foreign giants, have gradually shifted to being led by domestic retailers.

Since 2020, with the repeated impact of the epidemic, the fluctuations in the retail market have intensified, and the retail industry in China has undergone revolutionary changes. Its industry landscape is being overturned and reshaped at an unprecedented speed, with new technologies, formats, and business models emerging one after another. The retail industry is witnessing the most intense market competition while nurturing many leading enterprises eager to change and with digital capabilities at the forefront.

In such an era of great changes, retailers have strategies to cope with the situation and other plans for different regions. This article focuses on studying the financial data and digital strategy of Walmart in China from 2018 to 2022, as well as its current achievements, on objectively evaluating the digital transformation status of Walmart China and providing specific recommendations for its future development.

Chapter 2 provides a literature review of the existing research on Walmart's digital transformation and the digital transformation of retail enterprises in China in the academic community. Chapter 3

provides a specific analysis of the following aspects: Walmart China's financial data from 2018 to 2022, the digital upgrade of Walmart China's supply chain, Walmart China's business cooperation with local e-commerce platforms in China, and Walmart China's omnichannel strategy. Finally, based on the above analysis, future development recommendations are made. Chapter 4 summarizes the research findings and their significance and analyzes the limitations and research prospects of the current study.

2. Literature Review

With the rapid development of the internet and technological advancements, the traditional retail industry finds itself at a crossroads. It is facing the challenge of how to adapt to the changing landscape. As a result, scholars from both China and abroad have conducted research on this issue.

Currently, research on the topic varies between China and foreign countries, with Chinese scholars primarily focusing on the digital transformation of the retail industry from the perspective of China's market characteristics and using Chinese companies as examples. For example, Hong researched the new retail market in China, which combines online and offline sales channels, using Alibaba, JD.com, and Three Squirrels as case studies [1]. Wang and others used a multi-case analysis approach to analyze the digital transformation of retail through case studies of Hema, Darunfa, Xiaomi, and Red Dragonfly. They pointed out that it is not simply a matter of accepting technology but rather a fundamental change to the retail ecosystem [2]. Li et al. based their research on Alibaba's market analysis and China's market characteristics, proposing a novel perspective on "integrating small and medium-sized retail companies into large corporate ecosystems" [3]. Lai used Alibaba and Pinduoduo as examples to analyze the empowering effects of digital technology on the digital transformation of retail, emphasizing the importance of digital technology [4]. Liu et al. analyzed digital transformation's underlying resource allocation issues from the perspective of digital production factors and resource restructuring [5].

And some studies have a more comprehensive range of research topics, mainly focusing on technological support. Rafay proposed a conceptual framework for the digital retail supply chain to understand better the digital transformation of the retail supply chain and its potential impact on supply chain strategy and operational structure [6]. Krcmar proposed a universal system for the retail industry based on the German retail market [7]. Gültekin analyzed omnichannel retail's role and transformation mode in the digital transformation of medium-sized retailers using local Irish retail companies as an example, providing reliable advice for other medium-sized retailers to undergo digital transformation [8]. Christos discussed the relationship between data-driven digital transformation and supply chain resilience during emergencies, allowing retail companies (such as grocery stores) to predict and prepare for emergencies, such as pandemics [9]. Michael used a design science research iterative process to explore the impact of different combinations of technology-mediated value services on the customer-retail relationship, determining services that can support and lead physical retailers in their digital transformation [10].

However, those studies have yet to analyze the performance of foreign enterprises in the Chinese market. This study combines both perspectives and conducts relevant research and analysis from the perspective of the digital transformation of large traditional retailers. Walmart serves as the basis for research to draw a general conclusion based on the characteristics and development of the Chinese market.

3. Case Analysis

Walmart, now known as Walmart, is an American multinational retail corporation that operates a chain of hypermarkets, discount department stores, and grocery stores. It was founded by Sam Walton

in 1962 in Bentonville, Arkansas, USA. Today, Walmart is one of the world's largest retailers, with over 11,000 stores worldwide and over $500 billion in revenue in 2021.

Walmart entered the Chinese market in 1996 by opening its first store in Shenzhen. Since then, Walmart has grown rapidly in China, expanding its retail network and online presence nationwide. In the early years, Walmart China faced several challenges, including cultural differences, fierce competition from local retailers, and regulatory issues. However, the company has overcome these challenges and established itself as a major player in the Chinese retail market. Today, Walmart China operates over 400 stores in over 180 cities across China, with a total retail space of over 10 million square meters. The company offers a wide range of products, including food, clothing, electronics, and household goods, both in-store and online, through its e-commerce platform. In recent years, Walmart China has been working on expanding its digital capabilities, investing in new technologies to improve its online shopping experience and supply chain management. The company has also focused on sustainability, launching initiatives to reduce waste, energy consumption, and carbon emissions.

However, Walmart China still faces challenges in the Chinese market, including intense competition from e-commerce giants like Alibaba and JD.com and rising labor and operating costs. Based on these fundamental circumstances, the author analyzes the digital strategies and current status of Walmart China in recent years, evaluates its performance, and provides recommendations for the future.

3.1. Financial Data Analysis

Although Walmart China made its first foray into digital development back in 2005 with the launch of its first online store, its digital transformation only truly began in 2018. That year, Walmart China announced the establishment of its Digital Technology D in Shenzhen, China. This department was tasked with accelerating Walmart's development and innovation in the digital field. Additionally, Walmart China launched digital services and facilities such as unmanned stores, intelligent stores, and automated warehousing, vigorously promoting its digital transformation. Walmart announced that from February 1st, 2018, it would change its legal name from "Wal-Mart Stores, Inc." to "Walmart Inc." indicating the direction of Walmart's transformation.

In 2018, Walmart's annual growth rate in China's e-commerce market exceeded 30%, and the sales revenue of its e-commerce platform increased by 65.5% to reach RMB 6.8 billion, surpassing the previous year's RMB 4.1 billion. The proportion of e-commerce sales to total sales also rose from 2.6% to 5.6% in the prior year. The mobile e-commerce sales revenue grew by 109%, surpassing the previous year's growth rate, and the proportion of mobile sales to total sales increased from 44% to 63%. The e-commerce business profit increased by 27.6%, reaching RMB 120 million.

In 2019, Walmart's e-commerce sales increased by over 30%, with mobile sales rising by over 70%. In the third quarter's financial report, while the profits of physical retail businesses were generally squeezed, Walmart China's sales revenue grew by 6.3%, with comparable sales increasing by 3.7%, making it the best sales performance in over five years. The sales of Sam's Club grew by double digits, driven by the strong growth of fresh food and omnichannel sales. In 2019, Walmart began experimenting with unmanned shelf technology and opened a pilot store called "Walmart To Go," where customers could scan QR codes to shop for themselves. Walmart China also continued to explore the application of artificial intelligence technology to improve operational efficiency and customer experience. For example, the company launched an AI-based recommendation system on its online shopping platform to help customers find the products they need more quickly and accurately. Walmart China launched a data analysis platform called "Data Café" to help employees better utilize data to make decisions and better understand customer needs to develop complementary business strategies.

According to an eMarketer report, Walmart's market share in China's e-commerce market was estimated to be approximately 1.1% in 2018, 1.5% in 2019, and 2.2% in 2020. And according to the financial reports published on Walmart's official website, the eCommerce net sales for each quarter of the three fiscal years have increased by at least double digits (%), with even the highest growth rate reaching 159% over the two years, thanks to the reform of the supply chain and the strong development of Sam's Club.

From November 1st to 11th, 2021, Walmart's O2O sales reached 180% of the same period last year, and the total store order volume exceeded historical highs. By channel, Walmart's mini program sales achieved an impressive 225% in the same period last year, and Walmart has ranked first in supermarket sales on the JD Daojia app for the fifth consecutive year. Online order delivery volume exceeded 110% of the same period last year. Meanwhile, in partnership with Dada, Walmart's crowdsourced picking project has been running for over a year and has helped achieve high performance during multiple shopping festivals. Since the end of October, crowdsourced picking has been promoted in more than 200 stores nationwide. On November 11th, the picking order volume increased by 110% compared to June 18th, further improving overall order fulfillment efficiency. Sales of edible oil increased 1.3 times year-on-year, and sales of packaged rice increased 1.6 times year-on-year. Sales of fresh products increased by an astonishing 84% year-on-year. This data is an encouraging achievement for Walmart in the process of achieving standardization transformation of fresh products and is also strong evidence of the upgrade in fresh product quality. Home and department store products achieved a year-on-year growth of 292% during the Double 11 period, accounting for 25.2% of sales on the day, setting new historical records. Small home appliances lived up to expectations with a year-on-year growth of 425% and a 312% growth on November 11th. Warm clothing emerged as a surprise, with a year-on-year growth of 618% and a 245.3% growth on November 11th. Walmart's mobile phone sales during Double 11 were robust, growing 267 times, with a year-on-year growth of 257 on November 11th.

Based on the data analysis, Walmart China's digital transformation has been relatively successful. Despite some quarters experiencing a decline in quarter-on-quarter growth rates due to the pandemic, the overall trend for revenue remains positive, particularly for the e-commerce segment, which has shown remarkable growth. In the following section, the author will analyze the specific parts of the digital strategic reform.

3.2. Supply Chain Upgrading Digitization

In 2019, Walmart China allocated 8 billion RMB (approximately 1.2 billion US dollars) to bolster its supply chain logistics, including the construction and upgrade of over ten logistics distribution centers within the next 10 to 20 years. This investment also saw the opening of the South China Fresh Distribution Center, the company's first perishable food distribution center. To continually improve customer satisfaction, Walmart China is dedicated to advancing innovative technologies that optimize operations. Specifically, the supply chain utilizes cutting-edge international data platform Data Lake and mobile applications to enhance data storage and analysis. The digital management platforms enable supply chain managers to seamlessly visualize and mobilize performance management. Walmart China maintains its international standards by implementing standard operating procedures and continuous employee training to enhance operational efficiency through digitization. To improve food quality and safety, the company employs specialized quality inspectors and quality testing laboratories, which conduct inspections of food legal and regulatory compliance and agricultural pesticide residues at distribution centers. These inspections' findings are promptly shared with Walmart stores nationwide.

In August 2021, Walmart China's investment of 85 million RMB in an automated sorting system was officially implemented. The application of the automatic sorting system not only improves the

efficiency of mechanical sorting and accelerates the sorting process but also comprehensively enhances the logistics service quality and storage level of the distribution center's big data technology management, which is an important measure for Walmart to continue to increase its investment in the supply chain. The system is located in the Ping Shan dry warehouse distribution center in Shenzhen, with a total conveyor length of over 5,000 meters and a height of approximately three floors. The system can handle up to 10 million boxes of goods per month, achieving a fast response from order reception to picking and outbound delivery and full-process transportation automation. By the end of the year, it is expected to cover the circulation of goods for nearly a hundred stores and distribution centers in the Guangdong and Fujian provinces. With the rapid development of business and the pull of online consumption, the retail industry's commodity circulation tends to be characterized by high frequency, multiple batches, diverse types of goods, and large fluctuations in the number of goods. The original manual sorting operation mode can no longer meet the requirements of central distribution centers for larger-scale and shorter time-limited distribution.

Based on the data presented in Chapter 1, it can be observed that the digitization and intelligence of the supply chain have resulted in a reduction in management and operational costs. A clearer framework of goods management also provides customers with a better shopping experience. This has significantly increased customer stickiness, improved the credibility of the enterprise, and indirectly enhanced the competitiveness and revenue of Walmart China.

3.3. Cooperate with Chinese E-commerce Platforms.

In the early stages of its e-commerce development, Walmart spent $3.3 billion to acquire Jet.com and a series of other e-commerce platforms. However, all these platforms ultimately failed, except for providing Walmart with an e-commerce building experience. As a result, Walmart did not adopt its previous strategy in China but instead chose to establish cooperative relationships with Chinese e-commerce platforms.

As part of its omnichannel strategy in China, Walmart has increased its investment in Dada-JD Daojia by $320 million, adding to its previous $50 million investment in October 2016. With this investment, Walmart now holds a 10% stake in Dada-JD Daojia and has a board seat. Dada-JD Daojia is a prominent O2O e-commerce platform that serves millions of customers across major Chinese cities. Walmart is collaborating with Dada-JD Daojia to offer one-hour delivery service through the JD Daojia platform, covering nearly 200 Walmart stores in 30 cities. The aim is to provide more convenient services to Walmart and Sam's Club members. Walmart sees great potential in providing seamless online and offline shopping experiences to customers worldwide. Walmart China's President and CEO, Wenyuan Chen, expressed the company's commitment to investing in digital capabilities and working with strong partners to improve the customer shopping experience in China. The collaboration with Dada-JD Daojia is expected to enhance Walmart's omnichannel business and improve O2O customer experiences.

During the peak sales period of August 6th to 8th, 2021, staple foods, baby and maternal products, dairy products, personal care, and cleaning products, and snacks became the top 5 selling categories, with sales reaching 2.1 times that of the same period last year, and baby and maternal products sales going 3.5 times that of the same period the previous year. Driven by factors such as the increase in high-end single-product category proportions, the average unit price increased by 27% year-on-year. During the peak sales period, on average, Walmart store orders fulfilled by Dada took only 3 minutes.

From a data perspective, such collaborative investments are worthwhile and provide vivid examples for other retail enterprises. Even large retailers like Walmart find it challenging to complete independent construction in certain areas, such as last-mile delivery services for home delivery. Therefore, in digitization, external forces can be used to help digitize some of their business, which can be more effective.

3.4. Omnichannel

Walmart is dedicated to integrating its online retail business with its physical stores to create a comprehensive "omnichannel retail platform". In China, which has been collectively traumatized by the impact of the pandemic on offline businesses, Walmart China's physical stores have also been affected. According to statistics, Walmart's store count has undergone the following changes.

The change in the number of physical stores of Walmart China from 2018 to 2021. The number of physical stores offline is decreasing year by year, even though the financial reports of recent years have shown increasing revenue. The closure of offline physical stores cannot be ignored. As a retail giant entering the Chinese market, Walmart must keep its established offline physical stores and transform them into warehouse-like facilities. Therefore, Walmart China is still seeking a balance between digitization and its retail foundation, and its strategy is a full-channel model. A full-channel model is a new retail format combining digital e-commerce with offline physical retail. Walmart has an unquestionable foundation in offline physical retail, and in terms of technology, Walmart has made significant progress. Between 2013 and 2014, Walmart applied for nearly 300 patents; in 2018, they proposed three new technological changes to store experiences: The FAST unloader is a groundbreaking technology that employs automated scanning and sorting processes to prioritize and categorize items by department. Complementing this technology is the Bossa Nova scanner, which utilizes advanced algorithms to identify items that are at risk of stockouts, inaccurate pricing, or labeling errors. These insights are then relayed to the Downstock app, which presents associates with detailed information on out-of-stock items and their corresponding locations within the store. By streamlining these processes, the technology greatly minimizes the time needed to pinpoint and address issues, allowing for more efficient and effective inventory management. In 2020, Walmart released the Alphabot technology, enabling it to pick, pack and deliver shoppers' online grocery orders faster and with fewer headaches. There are countless examples like this, and Walmart began preparing for important changes early on. After 2018, their new business format reforms in the Chinese market were closely related to these two basic conditions: adaptation to the Chinese market and targeted reforms.

To enhance customers' full-channel shopping experience, as of 2019, Walmart has opened more than 50 cloud warehouses nationwide. As the first practice in the retail industry, the cloud warehouse is a full-channel model with warehousing and distribution integration as the core. The cloud warehouses are located in areas that Walmart stores do not cover. They use data from the JD Daojia platform to analyze consumer demand and determine hot spots to help select warehouse locations. Walmart stores directly supply and replenish the cloud warehouses, and Dada-JD Daojia provides a one-hour delivery service to consumers within 3 kilometers of the cloud warehouses. On the JD Daojia platform, the cloud warehouse is an online store under the Walmart brand.

On November 21, 2019, Walmart China announced at its annual development partner conference that they plan to open 500 new stores and cloud warehouses in China in the next 5-7 years, including Walmart Shopping Plaza, Sam's Club, and Walmart Community Store. Walmart China's confidence stems from the achievements they have made: Sam's Club Shenzhen Futian Store has ranked first in global sales for 11 consecutive years; in September 2019, Walmart Shopping Plaza opened its first store in Wanxiang City, Guilin, Guangxi, which features more modern and transparent design, more intelligent and convenient experiences, and more selected and affordable goods, and has been well-received by consumers and become a major traffic generator in the commercial district. After opening eight stores in Guangdong last year, the performance of Walmart Community Store has steadily increased in both sales and traffic, and future expansion of the community stores will be steady and gradual. Although the actual development has not met expectations due to the pandemic and other reasons, Walmart China has promptly changed its strategy: directly closing offline stores that are not

performing well, retaining only valuable old stores, and focusing on providing better design and service in the direction of building new stores, allowing users to have a better offline experience, while fully utilizing the advantages of offline stores. Optimizing the supply chain and allowing products to be seen and obtained immediately can attract users to focus on experiential consumption offline while creating a more intelligent and high-quality brand image.

As Walmart continues to develop its omnichannel platform, the company has been actively exploring and experimenting with various initiatives. One such initiative involves the implementation of electronic price tags in all community and new-generation stores. These tags enable real-time pricing and price adjustments, while also expanding the application scenarios of electronic price tags throughout Walmart stores. This technology helps employees quickly locate products and improve efficiency by providing reminders of the positioning of products. Furthermore, the use of voice-controlled and ring devices allows picking employees to work hands-free. These devices enable picking employees to receive instructions through earphones, transmit instructions through a microphone, locate products through the flashing lights on electronic tags, and scan barcodes through the ring device, streamlining the picking process.

In 2019, Walmart China's omnichannel growth increased by more than ten times compared to 2016, with nearly 50 million registered users on the Walmart mini-program. The annual growth of its omnichannel business has been in the triple digits.

Walmart China's strategy and achievements reflect that omnichannel retail has entered the second half, and the retail format is being reshaped. The combination of physical stores and e-commerce has been proven to be the key to success, as without physical stores, the development of e-commerce will be hindered. Only by combining e-commerce and physical stores can their power be maximized. In addition, we need to update our understanding of offline stores and recognize that they have become a hybrid entity. Offline stores are shopping places and warehouses and picking locations for e-commerce businesses. Although the intervention of the internet has changed consumption channels and habits, consumers' demands for shopping experiences are also increasing, which means that physical stores are still indispensable. Therefore, combining online and offline is essential to provide the best shopping experience.

3.5. Suggestion

According to Walmart's financial report, Walmart China's e-commerce business has been developing rapidly and growing every quarter, despite the pandemic slowing down some growth. However, the future revenue potential remains considerable. Various digital technologies' positive impact on Walmart China's offline stores is also evident. After experiencing setbacks, Walmart China responded quickly and showed surprising abilities in exploring and adjusting its strategies. The omnichannel platform strategy has established its initial strength. However, several large pure e-commerce platforms in China still pose a significant threat, as do local offline retail entities such as Red Flag Chain. Walmart China still needs to make efforts for future development. In terms of online digitization, in addition to construction and cooperation, more marketing and links on social media platforms can be involved, as well as more promotion of new user benefits and activity page links. Regarding the construction of offline stores, after meeting the demand for shelf goods from a certain customer flow, Walmart China can try to combine the warehouse picking a part with the traditional store part so that customers can feel their interests being delivered firsthand while reducing the floor space of traditional stores, which not only reduces operating costs but also increases customers' trust in the company.

4. Conclusion

In China, the retail industry is moving towards omnichannel development in the new retail era, emphasizing channel integration and consumer experience. It is essential for traditional retail enterprises to ensure their fundamental basis - the supply chain. Based on this foundation, the digitalization of various company parts should be considered. It should be noted that digitalization is not just about launching e-commerce mall apps or mini-programs, which is only a small part. The overall digitalization process also includes supply chain digitalization, warehouse management digitalization, enterprise-level personnel management digitalization, data platform integration, and digital technology research and development. Smaller brick-and-mortar retail companies can choose to excel in their direction and select suitable partners for project cooperation in other areas to keep up with the times in certain areas while staying caught up overall. The retail industry in China is still full of vitality, and the development prospects are still broad.

The author analyzes the digital transformation issues facing traditional retail industries in today's era through the case study of a leading player in the industry, Wal-Mart, and includes an analysis of the special transformation programs some foreign companies adopt when entering the Chinese market. This typical case study reflects the general thinking and strategies for traditional retail industries to undergo digital transformation and serves as a reference for others.

The analysis in this article is based solely on publicly available financial data, annual meeting summaries, and technology news disclosed by official sources and media outlets regarding Wal-Mart and Wal-Mart China. More detailed information, such as the cost of implementing unmanned checkout robots in offline supermarkets and the resulting savings or revenue, still needs to be obtained. This makes establishing a detailed and specific input-output ratio digital model difficult. A broad model could be more helpful. Regarding data volume, it is challenging to establish a predictive model for the future, especially with the COVID-19 pandemic in the middle of the period under consideration. This pandemic has led to unique data characteristics and limitations. The author's analysis is based only on the current situation and experiential recommendations for improvement. Based on the available information, Wal-Mart China's future looks promising. However, technological change is rapid and difficult to anticipate. The author believes that obtaining specific income and expenditure details within the company for mathematical modeling is more meaningful research for the future.

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