

Enterprise Information System Enabling Digital Transformation of Retail Industry in the Context of AI: Take Multi-Point Dmall and Fat Donglai Cooperation as an Examples

Lindi Zhang^a

School of Management, Beijing Institute of Technology, Haidian District, South Street, China

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Abstract: Against the backdrop of the deep integration of digital economy and artificial intelligence technology, the retail industry is undergoing a digital transformation from traditional mode to the whole chain. Enterprise information system, as the core carrier of technology empowerment, has become a key force to promote the change of retail industry through data integration, intelligent decision-making and ecological synergy. This paper takes the cooperation between Multipoint Dmall and Fat Donglai as a case study to explore how AI technology can reconfigure the operation mode and value chain of the retail industry through the enterprise information system. The study analyses the technological applications of multi-point Dmall's intelligent replenishment, dynamic pricing, and omni-channel operation tools, revealing the significant role of AI technology in improving the operational efficiency and user experience of retail enterprises. The results of the study show that Dmall's practice provides a replicable model for the digital transformation of the retail industry and promotes the transformation of the industry from an "efficiency revolution" to an "ecological revolution", which is of great theoretical and practical significance.

1 INTRODUCTION

In today's era of deep integration of digital economy and technology, the retail industry is experiencing an unprecedented change. With the continuous development of artificial intelligence, big data, cloud computing and other cutting-edge technologies, the role of enterprise information systems as an important bridge connecting the internal operations of enterprises and the external market is becoming more and more prominent. By introducing advanced enterprise information systems, retail enterprises can achieve efficient integration and deep mining of massive data, provide powerful support for intelligent decision-making, and at the same time promote ecological synergy between upstream and downstream of the industrial chain, so as to stand out in the fierce market competition (Xie et al., 2023). The local retail digitisation rate is 3.1% in China and 4.5% in Asia in 2023, much lower than the 13.3% in the US. The market size of the local retail industry in Asia grew from RMB30.0 trillion in 2018 to

RMB31.1 trillion in 2023, at a CAGR of 0.8%. The market size of the local retail industry in Asia is projected to grow at a CAGR of 1.4% from 2024 to 2028, reaching RMB33.5 trillion by 2028. Against this backdrop, digital transformation of retail companies has become the key to enhancing competitiveness (Dekimpe and van Heerde, 2023). Multi-Dot Dmall, a leader in retail technology, has successfully expanded its business to several countries and regions in Asia. In 2023, Multi-Dot Dmall is the largest retail digital solutions provider in China by revenue, with a market share of 6.5% (He, 2023). Multipoint Dmall's Retail Core Service Cloud is based on the proprietary Dmall SaaS operating system, which helps retailers manage their entire operational processes. The system integrates a range of functionalities across service components such as product sourcing process management, supply chain management, product management, shop management, consumer membership management and head office management, enabling real-time tracking of inventory levels, reducing out-of-stock

^a <https://orcid.org/0009-0004-6343-1024>

rates and increasing sales revenue. As of 2023, the number of customers for the Retail Core Service Cloud is approximately 430, and the company's revenue grows from \$848 million in 2021 to \$1.585 billion in 2023 (He and Ran, 2023).

Multi-point Dmall's technical support has built a competitive barrier of "technology + data" for Fat Donglai and promoted the digital transformation of the retail industry.

This paper focuses on how AI technology has improved the operational efficiency and user experience of retail enterprises through enterprise information systems, reshaped the value chain and competitive landscape, and built technical barriers and ecological synergies. Specifically, Fat Donglai, as a well-known regional retail brand in China, has been limited in brand expansion due to insufficient digitalisation capabilities. In order to break through the bottleneck of the traditional operation mode, Fat Donglai introduced the enterprise information system of Multi-point Dmall. This decision not only reflects Fat Donglai's deep insight into the trend of industry development, but also its urgent need for enterprise digital transformation.

2 INFORMATION ENABLED RETAIL TRANSFORMATION

2.1 AI Technology to Enhance Operational Efficiency and User Experience

2.1.1 Intelligent Replenishment and Dynamic Pricing

The Dmall OS system independently developed by Multi-point Dmall, as the core of its technological innovation, builds a powerful technological base for Fat Donglai. The system covers 15 modules, including product management, supply chain optimisation and member operation, and supports modular combination and plug-and-play functions. Through the deep integration of AI and big data, the Dmall OS system plays a significant role in many business processes.

In terms of intelligent replenishment, the system predicts inventory demand based on average daily sales, helping Fat Dong Lai reduce the out-of-stock rate of fresh food categories from 18% to 3%, effectively reducing sales losses due to out-of-stock. After the introduction of intelligent replenishment system, the inventory turnover days of fresh food

category in Fat Dong Lai shops was shortened from the original 7 days to 4 days, which significantly reduced the cost of capital occupancy and significantly improved the operational efficiency.

Dynamic pricing function shows its unique advantage in the situation of slow-selling goods, AI algorithm analyses the shelf life and sales trend in real time, and dynamically adjusts the promotion strategy, so that the loss rate of expired food in Fat Tung Lai is reduced from 15% to 3%, which significantly reduces the wastage of commodities and improves the profit margins.

Multi-point Dmall's intelligent replenishment and dynamic pricing features are typical applications of its AI technology in the retail industry. Through intelligent replenishment, the system is able to monitor inventory levels in real time and automatically forecast replenishment demand based on historical sales data and market trends, thereby reducing out-of-stock rates and minimising inventory backlogs. For example, after Fat Donglai introduced the system, the out-of-stock rate of the fresh food category was significantly reduced, and the capital turnover efficiency was improved. At the same time, the dynamic pricing function automatically adjusts the price by analysing the shelf life of the goods, the sales rate and the market demand, in order to maximise profits. In actual application, Fat Donglai has effectively reduced the loss of expiring goods and improved overall profitability through dynamic pricing strategy.

2.1.2 Omni-Channel Operation Tools

Multi-point Dmall integrates third-party platforms such as Meituan and HungryMall through a unified central platform to achieve cross-channel synergy of inventory and supply chain and creates an omni-channel operation tool for Fat Donglai. The number of Fat Donglai's members increased from 1 million to 6 million, and online GMV grew by 300%. Specifically, after the launch of Fat Donglai's online mall, its number of monthly active users grew from an initial 100,000 to 700,000, and its order volume increased by more than 50% per month, greatly expanding its market coverage.

Multi-point Dmall's omni-channel operation tool is another highlight of its retail empowerment. By integrating online and offline resources and channels, multi-Dot Dmall helps Fat Donglai realise the opening of its membership system and the seamless connection between online and offline. For example, Fat Donglai's members can place orders online through Multi-Dot Dmall's platform and enjoy the

same membership rights and services as offline shops. This omni-channel operation mode not only improves user experience but also brings significant business growth for Fat Donglai. According to the data on the company's official website, after Fat Donglai cooperated with Multi-point Dmall, the number of members grew from 1 million to 6 million, online GMV increased by 300%, the number of monthly active users of the online mall grew from 100,000 to 700,000, and the number of orders increased by more than 50% per month. As shown in Figure 1, Fat Donglai's annual sales were approximately 7 billion yuan in 2022, grew to approximately 10 billion yuan in 2023, with a year-on-year growth rate of approximately 0.53 (i.e., 53%), and further grew to approximately 17 billion yuan in 2024, with a year-on-year growth rate of approximately 0.59 (i.e., 59%).



Data source: Debonair Institute

Figure 1: Fat Dong Lai's annual sales

2.2 Reshaping the Value Chain and Competitive Landscape

2.2.1 "SaaS+VAS" Model

Multi-dot Dmall adopts the "SaaS + value-added services" model, with 58.1% (1.1 billion yuan) of retail core service cloud revenue in the first nine months of 2022, and value-added services covering precision marketing and supply chain finance. Nestle achieved 300% growth in online GMV through precision marketing. Nestle's online sales grew from 5 million yuan to 20 million yuan per month after cooperating with Multi-point Dmall, and the promotion cycle of new products was shortened by 30 per cent, with significantly faster market response.

Multi-Dot Dmall's "SaaS+Value-added Services" model is an important innovation in the digital transformation of the retail industry. Through this model, DotDmall not only provides basic software

services for retailers, but also helps retailers improve operational efficiency and market competitiveness through value-added services such as precision marketing and supply chain finance. For example, after cooperating with Multipoint Dmall, Nestle has achieved a 300% increase in online GMV through precision marketing, an increase in online sales from 5 million yuan to 20 million yuan per month, a 30% shortening of the new product promotion cycle, and a significant acceleration of market response.

2.2.2 Ecological Synergy and Data Realisation

Multi-point Dmall has developed more than 10 AI application scenarios by building a technology ecosystem with partners such as Microsoft and Flybook. Its user profile data provides advertising services for brands, with marketing and advertising service cloud revenue accounting for 11.4% in 2022. For example, a cosmetic brand accurately positioned its target customer groups through Multi-Point Dmall's user profile data, which increased its advertising effectiveness by 40% and reduced new customer acquisition costs by 25%, effectively improving its marketing ROI.

Multi-point Dmall's ecological synergy and data realisation capability is another major advantage in its digital transformation in the retail industry. Through cooperation with Microsoft, Flybook and other technology partners, Multipoint Dmall has developed a number of AI application scenarios, such as intelligent customer service and unmanned guarding, which not only improves its own service capability, but also provides more diversified solutions for retail enterprises (Yi, 2024).

2.3 Construction of Technical Barriers, Closed-Loop Data Operation and Ecological Synergies

2.3.1 Customer Growth and Data Accumulation

Multi-point Dmall serves 677 retailers globally (as of 2023), covering 15,000 shops. Data from the expanded customer base feeds AI model optimisation. With the increase in the number of customers, Multi-Point Dmall's data processing capacity has been improved, and the accuracy of its AI model has increased from the initial 85% to 95%, enabling it to more accurately predict market demand and consumer behaviour.

Multi-point Dmall's customer growth and data accumulation are the key foundations on which it builds its technological barriers. By serving 677 retail companies worldwide and covering 15,000 shops, Multi-Point Dmall has accumulated a huge amount of retail data. These data not only provide rich training materials for the optimisation of AI models but also form a virtuous cycle in which customer growth promotes data accumulation, which further promotes technological optimisation and thus attracts more customers. With the increase in the number of customers, Multi-Point Dmall's data processing capacity has been continuously improved, and the accuracy of the AI model has increased from the initial 85% to 95%, enabling it to more accurately predict the market demand and consumer behaviour (Sagar, 2024).

2.3.2 Synergistic Value of the Technology Ecosystem

Jointly developed with Microsoft, Flybook and other partners, AI inspection, intelligent clearing and other scenarios have enhanced the technological diversity of the platform. For example, Wellcome Hong Kong's "yuu" membership platform has a user base of 5 million, driving cashless transformation. With the technical support of Multi-point Dmall, Wellcome's member repurchase rate increased by 20 per cent, and the proportion of mobile payment increased from 60 per cent to 85 per cent, greatly improving operational efficiency and customer experience.

Multi-point Dmall's technology ecosystem synergy is an important support for its digital transformation in the retail industry. Through cooperation with Microsoft, Flying Book and other technology partners, DotDmall has developed a number of AI application scenarios, such as AI inspection and intelligent clearing, which not only improves the technological diversity of the platform, but also provides retailers with richer solutions. For example, Hong Kong Wellcome's "yuu" membership platform has reached a user base of 5 million with the technical support of multipoint Dmall, promoting cashless transformation. Through the synergy of these technology ecosystems, multipoint Dmall not only enhances its own competitiveness, but also brings real business growth and operational efficiency improvement to retailers (Kao et al., 2024).

3 CHALLENGES

3.1 Difficulties in Getting the Technology off the Ground

3.1.1 The Problem of Data Silos

In retail enterprises, the information systems of various departments are independent of each other, making it difficult to circulate and share data. For example, the sales department has detailed customer purchase records, the inventory management department knows the real-time inventory of goods, and the marketing department has accumulated rich data on promotional activities, but this key information is often confined to their own independent systems. This fragmented data situation greatly limits the ability of enterprises to grasp market dynamics and consumer demand from a holistic perspective. The lack of effective data interaction mechanisms between different systems, inconsistencies in data formats, untimely updates and other problems are common, bringing huge obstacles to data integration. For example, when enterprises try to introduce advanced intelligent forecasting systems, the reliability of the forecasting results is greatly reduced due to the lack of access to complete and accurate sales and inventory data, making it difficult to effectively assist decision-making (ISG, 2022).

3.1.2 High Cost of Staff Training

The widespread adoption of AI technology is placing new demands on the skill level of retail employees. Employees need to master data analysis tools and even understand complex machine learning algorithms. However, training employees in AI technologies is a time-consuming and resource-intensive task. Not only do companies have to invest heavily in developing or purchasing training courses, but they also need to arrange for professionals to teach and mentor them. In practice, employees may resist due to unfamiliarity and fear of the new technology, thus affecting the effectiveness of the training. Especially for large retail chains with a large and widely distributed workforce, how to ensure that every employee receives effective training and is skilled in the use of AI technology has become a serious challenge for the enterprise. For example, when a large supermarket chain promoted the smart checkout system, the efficiency of the checkout was reduced and the queuing time of customers was prolonged due to the unskilled operation of the

employees, which led to a lot of dissatisfaction and complaints (Noble et al., 2022).

3.2 Difficulties in Getting the Technology off the Ground

3.2.1 Insufficient Transparency in the Collection and Use of Data

Retail businesses often suffer from a lack of transparency in the collection and use of consumer data. Some enterprises do not adequately and clearly inform users of the specific purpose of data collection, the manner of use and the scope of sharing when they register or use their services. Without consumers' knowledge, personal information may be used for secondary marketing or other commercial purposes. This information asymmetry not only violates consumers' right to know but may also trigger consumers' distrust of the company. For example, some e-commerce platforms allow data sharing to third-party partners to be ticked by default during user registration, and consumers' personal information is passed on to other companies without their awareness, resulting in frequent receipt of harassing advertisements (Ratchford et al., 2022).

3.2.2 High Risk of Data Breaches

Retail businesses store vast amounts of sensitive consumer data that is highly attractive to cyber attackers. Hackers try to steal information from businesses' databases through malware attacks, phishing and other means. Once the data is leaked, sensitive data such as consumers' names, addresses, contact details, payment information, etc. will be at risk of being misused, which may lead to serious consequences such as fraud and identity theft. In recent years, data breaches in the retail industry have been commonplace, bringing huge losses to businesses and consumers. For example, the official website of a well-known sports brand had a security breach that led to the leakage of hundreds of thousands of users' personal information, triggering serious public questions about the company's data security and a sharp drop in its share price (Neslin, 2022).

To sum up, retail enterprises are facing challenges in the process of digital transformation under the background of AI, such as the difficulty of technology implementation and the risk of consumer privacy and data security. Enterprises need to consider and plan comprehensively in terms of technology, talent, and management to effectively address these challenges

and achieve sustainable digital transformation (Dekimpe and van Heerde, 2023).

4 CONCLUSION

This paper adopts the case study method to analyse the cooperation between Multipoint Dmall and Fat Donglai and summarises the core value of enterprise information system in the digital transformation of the retail industry. Through the application of intelligent replenishment, dynamic pricing and omni-channel operation tools, Multi-point Dmall has built a competitive barrier of "technology+data" for Fat Donglai, and promoted the transformation of the retail industry from an "efficiency revolution" to an "ecological revolution". revolution" in the retail industry.

Specifically, Multipoint Dmall's intelligent replenishment system helped Fat Donglai reduce the out-of-stock rate of fresh food from 18% to 3% and shorten the inventory turnover days from 7 days to 4 days, significantly reducing the cost of capital consumption. The dynamic pricing function reduces the loss rate of expired food from 15% to 3% through real-time analysis of shelf life and sales trends, reducing waste and increasing profit margins. Omni-channel operation tools helped increase Fat Donglai's membership from 1 million to 6 million, online GMV by 300%, monthly active users on the online mall from 100,000 to 700,000, and order volume by more than 50% per month (He and Ran, 2023).

Further analyses show that Multi-Dot Dmall's "SaaS+value-added services" model and eco-synergy is the key to its success. Nestle achieved a 300% increase in online GMV and a 30% reduction in new product promotion cycle through precision marketing. A cosmetic brand used user profile data to increase advertising effectiveness by 40% and reduce new customer acquisition costs by 25%. Multi-point Dmall has developed scenarios such as AI inspection and intelligent clearing by cooperating with Microsoft, Flybook and other technology partners to enhance the technological diversity of the platform.

In terms of future outlook, it is recommended that Multi-Point Dmall deepen the application of AI scenarios and expand predictive analytics and automated decision-making, such as real-time early warning of the fresh food supply chain. Meanwhile, it should balance R&D and profitability, accelerate market penetration in Southeast Asia, and learn from SHEIN's globalisation path. In addition, it should strengthen ESG practices, combine green retail solutions with carbon trading, and enhance social

value. The integration of AI and enterprise information systems will drive the retail industry from an "efficiency revolution" to an "ecological revolution", and the practice of Dot Dmall provides a replicable digital model for the industry. The practice of multipoint Dmall provides a replicable digital model for industry.

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