

Research on New Retail Ecosystem of E-commerce Based on Big Data Empowerment

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Abstract: This paper studies the digital path of new retail business model under the background of big data, analyzes the new retail value creation mode enabled by big data, and proposes the new retail business ecological architecture of e-commerce based on big data empowerment from the perspectives of optimizing resource allocation, upgrading products and services, and promoting cross-industry cooperation.

1. Introduction

In recent years, with the continuous development of information technology, the improvement of the popularity of digital media equipment in the era of mobile Internet and the upgrading of living and consumption standards, the advantages of B2C (business to customers) online retail mode are becoming more and more significant, accompanied by the booming of new online sales models such as group buying and livestreaming marketing, which has had a strong impact on the traditional retail industry.

Since 2020, COVID-19 broke out all through the world, which not only hit the global economy, but also led to drastic changes in China's retail industry[1]. On the one hand, due to the needs of epidemic prevention and control, many offline shopping malls and supermarkets were forced to shut down, resulting in a sharp decline in offline sales performance; on the other hand, online retail performed well with sharp rise in earnings and profit growth.

Will online retail replace offline retail? Will brick-and-mortar retail die out?

The answer is No.

Since 2017, according to the statistical data, the growth rate of China's online retail sales has decreased year by year, which means that the traditional traffic dividend advantage of the pure e-commerce model is gradually weakening[2]. Online retail is no longer fresh for consumers, and too many routines also make many consumers feel board. That is to say, simple online shopping cannot meet the current consumer demand any more.

On the other hand, the unique advantages of brick-and-mortar retail are also being revalued by consumers. Consumers' requirements for consumption quality and process are constantly improving. They are not only satisfied with the cost performance ratio of online shopping, but also pay more attention to the consumption experience of offline entities, whose consumption methods

show a multidimensional trend.

Based on the changes in the environment of China's retail industry, in October 2016, Alibaba first proposed the concept of "new retail"[3]. The essence of new retail is "Online + offline + logistics", and the combination of the three is the basis. Ma Huateng, president of Tencent, pointed out that the new retail is to use data and various digital technologies to promote offline retail and realize the comprehensive reconstruction and interoperability of people, goods and scenes. Du Ruiyun and Jiang Kan [2] stressed that the new retail is a new business model ecosystem based on the internet background, using new technologies such as big data and cloud computing to reshape and upgrade the structure of different fields of retail goods. Wang Baoyi [5] believes that the new retail is essentially the return of the essence of retail. It is a comprehensive retail format driven by big data and relying on pan-retail form and multichannel integration to meet customers' multidimensional demand[4]. To sum up, despite of different opinions on the connotation of new retail, there is no doubt that big data plays a key driving role in the development of new retail. In other words, new retail can be taken as a data-driven business model [1] .

From the perspective of "big data capability", this paper discusses the driving impact of big data capability on new retail, in order to provide reference for the development of new retail model. At the same time, this study hopes to reorganize and integrate the elements involved in the retail process through big data empowerment, so as to realize a new business model, a new consumption model and a new experience model.

2. Innovation of new Retail Business Model Based on Big Data Empowerment

2.1. Coupling Mechanism between Big Data Empowerment and New Retail Business Model

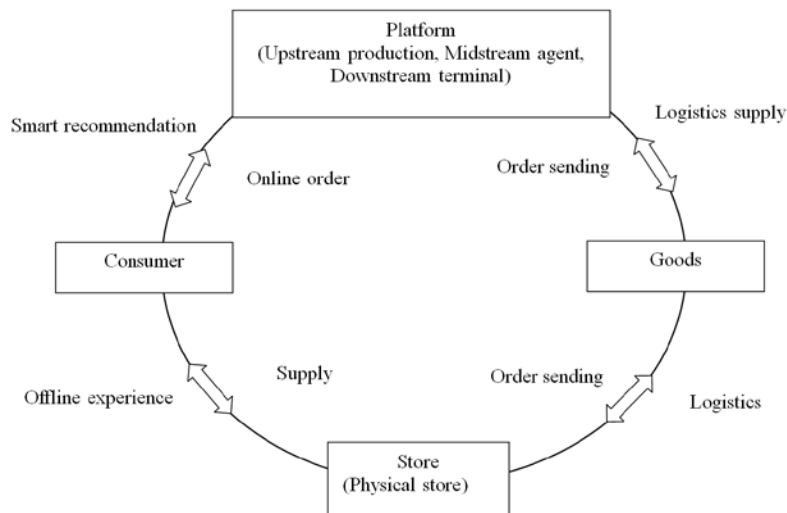


Figure 1: Framework of New Retail Industry Supply Chain

Firstly, a large amount of user consumption behavior data has been precipitated behind the online and offline combined retail business model[5]. For this, the ability to integrate big data resources can be used to collect and standardize the real data of various users generated in new retail, which can be used as an important production factor invested by upstream enterprises. Secondly, based on the previous integration of consumer data, the in-depth analysis ability of big data can be used to realize the accurate definition of customer segmentation and target market, through the analysis of consumers' psychological preferences and historical behavior, and deeply tap the potential value needs of users, so as to clarify the direction for upstream manufacturers and

midstream agents. Finally, the real-time insight and prediction ability of big data is the guarantee of the real-time response of the whole supply chain.

As a result, as shown in Figure 1, the enterprise supply chain mode has shifted from the traditional cooperation between upstream manufacturing enterprises and midstream agents and downstream terminal retail enterprises to the new mode of cooperation between downstream retail enterprises and consumers. At this time, consumption pull, retail push and technology push together drive the transformation and upgrading of the demand-oriented new retail supply chain.

2.2. Connotation of new Retail Business Ecosystem Enabled by Big Data

By analyzing the digital path and mechanism of the new retail business ecology, this paper puts forward the upgrading and optimization process of the new retail business model, that is, the process of realizing the virtualization of the main participants of the new retail business driven by big data and digital technology, so as to innovate the way of industrial value creation and enhance the value-added ability.

From the perspective of value creation, the new retail business ecosystem is represented by obtaining and analyzing data through multi-channel contact network, realizing the online virtualization and offline materialization of the participants in the whole industrial chain, perceiving and matching the needs of consumers, so as to create a consumer oriented value co-creation model for the new retail industry.

By analyzing the new retail value creation mode based on big data empowerment, and aiming at revitalizing small and medium-sized physical retail stores, this paper puts forward the new retail business ecosystem structure based on big data empowerment, as shown in Figure 2.

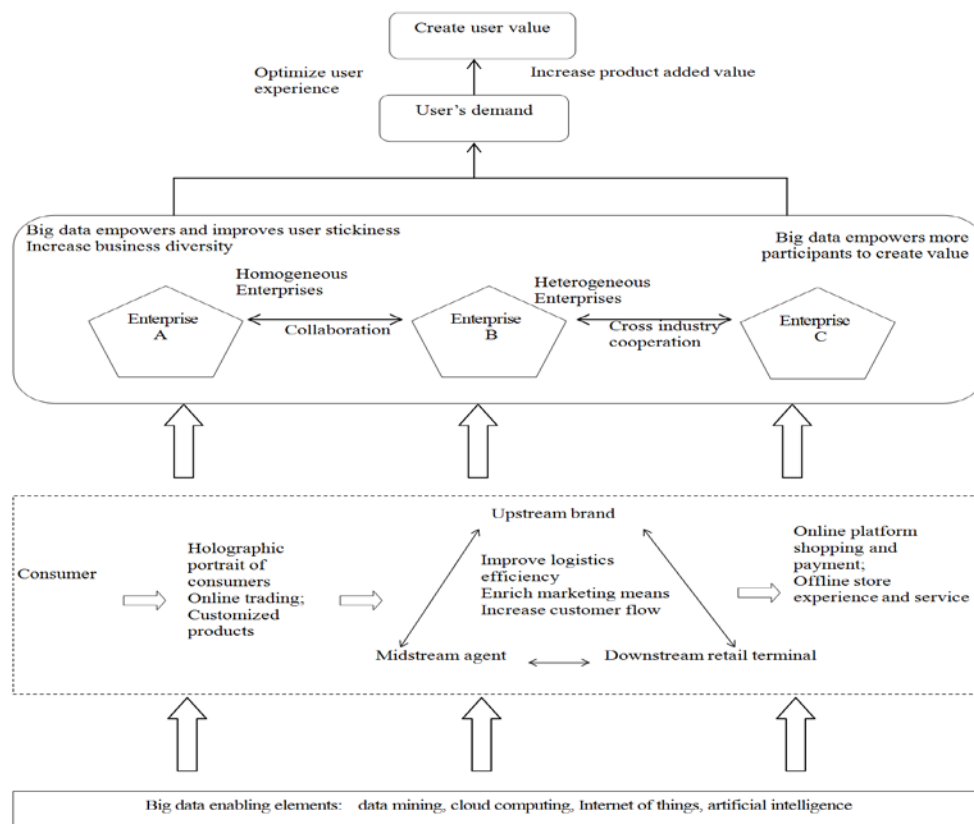


Figure 2: New retail business ecosystem structure based on big data empowerment

2.3. Big Data Enables Functional Innovation of New Retail Physical Stores

In the context of big data empowerment, all physical stores in the new retail business ecosystem will realize functional innovation, including:

(1) Sales function

In the new retail environment, the main function of physical stores is still sales. If there were no profits, they would have faced the risk of bankruptcy. Since consumers' intuitive feelings on consumption environment and goods are much stronger offline than online the sales function of physical stores is definitely the core function. Of course, to realize the sales function, the new retail physical store must improve various services, such as varified payment means, including face recognition payment, and realize various value-added services through the use of Internet of things (IoT).

(2) Storage function

In the new retail business ecosystem enabled by big data, there is a simple principle in the layout of the supply chain - advance as much as possible in order to reach consumers better and faster. Therefore, like capillaries, physical stores in all parts of the city naturally undertake the storage function, and can also realize diversified distribution at the end. Through big data empowerment, we can make more accurate and effective use of various resources, reduce costs and improve service added value.

(3) Experience function

The biggest feature of new retail is "user-centered", which requires the sales subject to meet the individual requirements of users, even the experience before purchase. In most cases, consumers take risks when buying online. Although there are guarantee such as unconditional return, the experience is very poor when return or replacenment happens. On the contrary, physical stores in the new retail ecosystem can improve the experience. Consumers can fully experience the effect of goods in physical stores and even try them on. This extreme after-sales service will greatly improve user experience and satisfaction. From online selection to offline experience, the closed-loop operation of this consumption process can create a new growth point for the retail industry, which is also the general trend in the future.

2.4. Big Data Enables Cooperation between Different new Retail Businesses

In the digital economy, user value has become the core index to guide the allocation of production factors [4]. Information technology significantly reduces the cooperation cost between different enterprises. Cultivating or participating in the ecosystem has become a realistic choice for enterprises to develop in industrial organization. The breaking of traditional industrial boundaries has further accelerated the speed of factor circulation. The competition mechanism will promote the optimization of factor allocation within industrial organizations and realize the efficiency upgrading of the whole ecology.

Through big data empowerment, different retail terminals can share and transfer data value, create new business value, attract more participants to join the ecosystem and increase the scale and diversity of the ecosystem. In this way, data empowerment can play a great role, fully drive the digital upgrading and transformation of the whole physical retail industry, and obtain new vitality.

3. Conclusion

This paper studies the integration of online and offline resources through big data empowerment, so as to inject new development power into the traditional physical retail industry. This topic explores the digital path and mechanism of new retail under the background of big data,

systematically combs relevant research, analyzes the way of new retail value creation based on big data empowerment, and draws the following conclusions:

(1) Big data enables e-commerce to upgrade new retail products and services

In the context of consumption upgrading, the core of the new retail business model is to take customers as center and meet consumers' psychological needs for the consumption process by improving customers' online and offline experience. With the help of big data technology, a large amount of user consumption behavior data is precipitated in China's new retail business model. Through data mining analysis and artificial intelligence technology, we can have a deep insight into its business logic and business value hidden behind the data [3].

Firstly, the real data of various users generated in the new retail should be collected and standardized, and further denoised and cleaned to form data information, in order to become an important production factor of the enterprise; Secondly, through data mining and machine learning technology, the massive information is deeply analyzed to realize the transformation from data resources to information resources; Third, by analyzing the potential value needs of users, we can have an insight into the consumption trend, realize the precise definition and segmentation of the market, and clarify the development direction for enterprises; Finally, based on big data empowerment, retailers can deeply integrate information, experience and future prediction with real business, create satisfactory products and services for customers and enhance the value of enterprises.

(2) Big data enables digital transformation of e-commerce's new retail supply chain

The new e-commerce retail model combining online and offline forces the logistics supply chain to carry out digital transformation and upgrading, so as to improve the agile characteristics of the supply chain through big data technology reconstruction, and deliver goods and services in a better way. Using its ability to sort, analyze and mine data, big data technology can act on the massive data generated in the whole process of the supply chain, so as to better meet the personalized, quality and flexible distribution needs of consumers, reduce inventory pressure and improve distribution efficiency. Through the in-depth analysis of demand information, it can deeply collect and integrate the whole data information chain from suppliers to users in breadth and depth. Through the in-depth analysis of offline consumer supply data, it can share new customer value demands with offline stores, warehouses and suppliers. The big data enabled supply chain can also feed back the product production upstream of the supply chain, so as to realize the accurate matching and binding between products and demand.

(3) Big data enables optimization of resource allocation of e-commerce new retail industry

The continuous accumulation of user data has laid a foundation for new retail merchants to explore user value, predict market trends and judge the behavior of competitors. However, we should also be aware that the data from a single source may be misleading. Only the diversification and multi-dimensional data sources can expand the analysis perspective more comprehensively and accurately. Therefore, for this reason, the internal communication and exchange of the new retail business ecosystem must be strengthened, and the circulation and open source of data should be guaranteed. In order to ensure the equality of ecological internal data, protocols and algorithms should also be shared and jointly maintained, and jointly promote the continuous improvement of the whole ecological technology capability.

As a core factor of production, data not only drives the improvement of industrial efficiency, but also optimizes the allocation of traditional factors of production and improves total factor productivity. Artificial intelligence based on data replaces the labor force in procedural business, promotes the allocation of labor force to non procedural business areas, and is conducive to giving better play to the advantages of subjective consciousness.

(4) New retail digital transformation promotes the cultivation of modern industrial system

Facing the tide of global industrialization upgrading, the traditional part of the current industrial system in many countries has gradually entered a recession and is facing the challenge of jumping out of the industrial structural trap. Taking the new e-commerce retail focused in this paper as an example, it is precisely because we see the plight of traditional physical retail and the bottleneck of e-commerce development, strive to integrate online and offline retail resources through big data empowerment, optimize resource allocation, and guide enterprises to carry out value discovery, value creation, value realization and value transmission. This has positive significance and value for the cultivation of modern industrial system.

The digital transformation driven by big data helps to promote the competitiveness of traditional industries and better participate in the opening-up. For a long time, although the industrial system of developing countries has created great wealth in the wave of globalization, the division of labor in the global value chain has been at the middle and low end, lack of sufficient competitiveness, and the problem of core and key technologies is still serious.

At present, information technology represented by cloud computing, Internet of things, blockchain, artificial intelligence and big data is reconstructing the global value chain. Facing the blockade of developed countries in core technology and human resources, enterprises in developing countries should seize the opportunities brought by the new round of scientific and technological revolution, make full use of big data to enable digital transformation, connect and integrate global resources, develop digital business, and accelerate the commercial application of digital technology in real scenes. At the same time, enterprises should establish a new business ecosystem and realize the agglomeration effect and multiplier effect of industrial development by constantly promoting the innovative combination of industrial cooperation network, industrial chain and value chain.

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