

How does JD stand out in China's e-commerce market?

Zefan Wu*

College of Traffic Engineering, Dalian Maritime University, Dalian, Liaoning, 116026, China

*Corresponding author. Email: ericwu@dlmu.edu.cn

Abstract. With the rapid development of e-commerce in China, JD has encountered different rivals. How does JD use its differentiated competition strategy to reduce costs, increase revenue and increase profits? Based on the research and expansion of previous literature, and based on the database published by JD on the Internet in March 2018, this paper gives strategic suggestions to JD, hoping to make it stand out among its competitors. It is found that JD should focus on improving logistics efficiency, commodity quality, and bundle discount, so as to increase its sales volume. In addition, big data can be used to collect discount, direct discount, gift item ;marital status; attribute1,type, so as to make predictions, which can more reasonably allocate the storage of various types of cargo in local cabins; Finally, JD should appropriately increase the quantity of its self-operated products to observe whether the sales volume will change, and then take corresponding measures to improve it.

Keywords: JD, supply chain management, cost control, integrated supply chain.

1. Introduction

1.1 Background

With the rise of the Internet, the Chinese e-commerce industry develops rapidly. Online shopping quickly attracts a large number of consumers under its convenience, speed, time-saving and preferential features. At the same time, the market scale of the e-commerce industry continues to expand, and people have become increasingly inseparable from online shopping. Nowadays, China's e-commerce industry presents a three-pillar situation, with the three e-commerce giants (Alibaba, JD, PDD) a higher monopoly competition pattern has been roughly formed. JD is one of the most popular shopping platforms in China, known for its high-quality user experiences and user-friendly services which is caused by its integrated supply chain. However, JD Logistics (HK: 02618) has seen its share price continue to decline since its listing on Hong Kong Stock Exchange one and a half years ago, and it did not recover until the end of 2022, but still lost half of its high, staying in the downturn. What differentiates JD from other shopping platforms is its integrated supply chain which provides customers with a faster delivery speed, higher quality products, and humanized after-sales services, however, it still causes the high cost of JD and does not lead it to a big profit.

1.2 Related Research

In 2022, Alan Amiling, and Patricia J. Daugherty used an Experience-based thought piece that concentrates on specific Chinese logistics innovations centering on speed, adaptability, and new business models proposing that logistics innovations related to e-commerce and urbanization in China can be grouped into three categories: speed of delivery, adaptability and new business models[1]. In the same year, Qiaoqian, Xie, analyzed the current situation of JD's strategic cost management from the perspectives of strategic positioning, value chain, and strategic cost motivation and proposed that JD Group duly seized the opportunity of the booming development of e-commerce, but also through a series of innovation and optimization measures, with a new cost management model to meet the challenges[2]. China Business Daily online reported that the boss of JD, Qiangdong, Liu said that both cost reduction and efficiency improvement are which will devote more energy in the next year or two in 2022. In 2022, Liu Yang mixed the quality and price of an enterprise's products which are closely related to the sustainable development of enterprises, and concluded that for Enterprises to get better development prospects, it should be based on the information perspective, the company

supply chain control cost optimization, by optimizing the cost control can effectively reduce the enterprise production cost, so that the enterprise has more capital support development, to achieve the goal of improving enterprise core competitiveness(Liu Yang;2022)[3]. Through the use of big data for supply chain cost control case analysis, Jinshan Wu, the effectiveness of big data technology in cost control was tested, and specific implementation optimization strategies were proposed for specific problems in particular, so as to provide a reference for related enterprises to use big data for supply chain cost control(Jinshan Wu;2021)[4]. Under the guidance of lean principles, Ping Zhou and Xu Zhang summarize the lean management mode of supply chain cost, which is suitable for e-commerce enterprises and provides a reference for the long-term and stable development of e-commerce enterprises (Pin Zhou & Xu Zhang;2022)[5]. With big data technology as the background, Jun Yang discussed the enterprise supply chain cost management, points, analyzed the big data of the mechanism of the supply chain, for, supply chain cost management problem analysis, and conducted a comprehensive analysis of the problems, from two aspects of internal factors and external factors put forward the supply chain cost, management optimization Suggestions, boosted the optimization of enterprise supply chain cost management development(Jun Yang;2023)[6]. With supply chain cost management as the center, Jiawen Luo compared the traditional logistics enterprises to the development of the supply chain logistics enterprise transformation, summarized the current A problems in the process of cost management, and further analyzes the causes, finally put forward the corresponding suggestions to improve the cost management, in order to promote its sustainable and stable development(Jiawen Luo;2022)[7].

1.3 Objective

This paper aims to study how to improve the profit by reducing the costs or improving the income in various steps in JD's integrated supply chain with the basics of supply chain management and supply chain cost control by comparing JD with other shopping platforms including Amazon, TB and so on in order to promote the realization of enterprise strategic development goals.

2. Review

JD Logistics developed the warehouse distribution integration concept by starting with JD Mall's independently run commodities distribution (Li Juan; 2019)[8]. The uniqueness of self-established logistics ensures tight control over all supply chain linkages, effectively shortening the process and lowering operating expenses, allowing customers to receive more benefits, and increasing the consumer experience (Li Juan; 2019)[8]. By advancing Internet technology and utilizing more intelligent technology to address and resolve logistics issues (Juan Li;2019) [8]. By using information management to the completion of warehousing and distribution, the information technology products independently created by JD Logistics complete an essential stage in supply chain optimization (Juan Li; 2019)[8]. The "visible package tracking system," which allows customers to track the whereabouts of shipments in real-time through the map and adds points to the user experience in the final kilometer, was pioneered by JD Logistics and debuted in JD Mall (Juan Li; 2019)[8]. According to Juan Li (2019)[8], the information technology products independently created by JD Logistics use information management to finish warehousing and distribution, which completes a crucial phase in supply chain optimization. According to Juan Li (2019)[8], JD Logistics took the initiative to pioneer the introduction of the "visible package tracking system" at JD Mall, which allows customers to track the location of goods in real time through a map.

Making a play for delivery boxes by e-commerce enterprises is not a novel strategy (Yingzhao Wu; 2019)[9]. Odorous delivery boxes were previously offered by NetEase Yanxuan and were well-received (Yingzhao Wu;2019) [9]. On the one hand, it functions as a floating outdoor billboard; on the other hand, it also embodies public welfare, educates the public about environmental conservation, and builds a positive brand image for JD Logistics and Tencent in terms of their social responsibility (Yingzhao Wu;2019) [9].

JD's logistics approach has both benefits and drawbacks, including high risk in the early stages and high return in the latter stages as well as a high degree of brand connection, good luck, and bad luck interdependence (Kang Zhou; 2019)[10].

3. Discussion

3.1 Differentiation strategy

JD is an e-commerce logistics operation mode with warehouse distribution integration as the main body of self-operated logistics(Lijun Chang;2014)[11]. Its core concept is to reduce the flow links of goods, make goods closer to consumers, reduce the handling times, and improve the efficiency of the whole industrial chain(Lijun Chang;2014)[11]. The advantages of this mode are as follows: first, it is beneficial to control and optimize its own logistics operation system, realize good inventory management and inventory decision-making, and create accurate logistics distribution (Xueying Tian;2017)[12]; Second, it is conducive to grasp the individual needs of consumers in the first time, improve customer experience and logistics service level (Xueying Tian;2017)[12]; Third, it is beneficial to establish and maintain the enterprise brand image, and constantly create value and deliver value through the power of brand promotion, to win more customers (Xueying Tian;2017)[12].

The JD PLUS membership system started in early 2016. As the leader in the industry, the initial rights and interests of the PLUS membership system are "shopping", including special prices and even specific products for members(Liting Ma & Zewen Luo;2020[13]. Both bronze and diamond members, and both low and high-level members, can enjoy five of JD's privileges, including free access to e-books, 24-hour VIP customer service, free return and exchange of goods, cash back on purchases, and five self-run free shipping coupons per month[13]. Jd.com PLUS members have significantly improved customer loyalty to JD.com and promoted the development of the paid membership system in the e-commerce industry(Liting Ma & Zewen Luo;2020)[13]. Moreover, in April 2018, JD PLUS announced its cooperation with iQiyi, opening up the rights and interests of members and starting the first step of cross-border cooperation. At present, JD PLUS members have reached cooperation with more than 600 brands in different industries, covering film, travel, delivery, catering, hotel, health, fitness, and entertainment.

3.2 Analysis of Integrated Supply Chain Model

According to JD Logistics prospectus, the integrated supply chain model is a comprehensive range of logistics services provided by a third-party service provider (JD Logistics). Customers receive integrated solutions in the form of express delivery, vehicle and sub-load transportation, last-mile delivery, warehousing, and other value-added services (such on-site installation and after-sales servicing). Simply put, an integrated supply chain is the integration of supply chain, logistics, and consumer logistics, even including on-site installation and after-sales service. The integration steps of JD can be subdivided into four parts: 1)production (domestic) and procurement (foreign); 2)from the factory or foreign suppliers to the warehouse; 3)from factory or warehouse transporting to the end customer and 4)customer returns which are shown in picture 1, JD Logistics is responsible for all the blue arrows and lines.

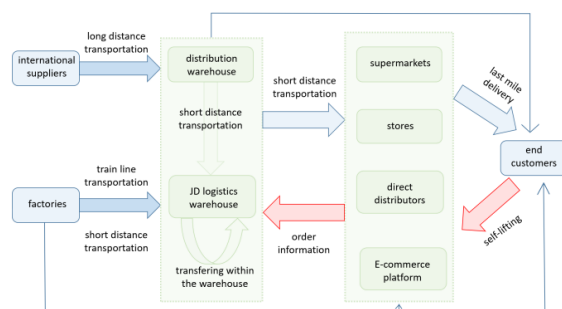


Figure 1 The process of integrating supply chains

3.2.1 Production and Procurement

According to picture 1, the procurement link is divided into two parts, including factories (production) and international suppliers (procurement). Initially, in contrast with other shopping platform such as Amazon or TB, JD is famous for its C2M intelligent factory, which takes the value demand of the client as the starting point of the whole industry chain. These intelligent factories that can self-perceive, self-govern and self-evolve make flexible, intelligent, and personalized manufacturing modes possible. However, compared with Amazon, JD spends more on purchasing overseas suppliers. The reason is that Amazon can obtain a higher tax exemption, and the suppliers of Amazon in China are directly its overseas companies. And this disadvantage is inevitable for JD.

By vigorously developing its smart factories, JD can improve its own product manufacturing capacity, and at the same time, try to establish partnerships with foreign brand-name companies, aiming to obtain a more stable source of goods and reduce its procurement costs.

3.2.2 Transportation (including part2,3)

In the process of transporting goods from factory to warehouse, warehouse to customer, and factory direct to the customer, JD adopts its own JD Logistics to reduce costs and provide customers with high-quality transportation services, so that they can receive goods in a short time. Yet, JD Logistics reduces the number of handlings and saves a significant amount of money by moving items straight from the warehouse to the hands of clients. The majority of the time, JD Logistics must transport the package straight to the client rather than picking it up at the delivery location, and there is no freight for customers to return the package for an exchange or after-sales repair. Due to its pursuit of a high level of service quality and excellent customer experience, the price of JD Express is generally higher than that of another ordinary express. Moreover, the layout of the transportation network in remote areas is not perfect. For example, goods sent to remote towns usually need to be transferred by JD Express to EMS or local express, so as to transfer the goods to customers.

JD should first continue to develop JD Logistics. Although it is impossible to be like China Post and other companies specializing in express delivery, it can try to deliver goods in remote areas by improving science and technology, such as using drones. In addition, JD can balance the price of goods, the quantity sold, and the logistics cost to appropriately reduce the logistics cost.

3.2.3 Warehouse

As of June 30, 2022, JD Logistics operates about 1,200 warehouses, and the total management area of the warehouse network is about 23 million square meters (including the management area of the Yuncang ecological platform). In the past year, JD Logistics added 450 new warehouses, equal to the total warehouse growth from 2007 to 2022. Based on its first-mover advantage, JD Logistics has a leading advantage in site selection and other aspects. In order to provide integrated supply chain services and give customers access to high-quality service, it has created six primary networks, including a warehousing network, extensive transportation network, distribution network, bulk network, cold chain network, and cross-border network.

JD delivers goods door-to-door from warehouses to consumers' homes. In addition, the model of warehouse distribution integration is used, which forms the demarcation point. With its original warehouse distribution approach, JD Logistics has established its own advantages in supply chain services since its foundation. As a result, experience and efficiency have been the fundamental competitiveness of JD Logistics, with an emphasis on customer experience for network, service model, and product design. When it comes to operational effectiveness, dual-wheel driving of intelligent data from a channel network of "global," "panoramic," and "whole chain" is achieved. In terms of financial efficiency, it gives management and investors forward-looking insights on the business, market, and strategy by developing an online, real-time, and forward-looking financial system to ensure the swift flow of settlement, capital, and financial data. JD Logistics will help merchants optimize inventory, improve efficiency, enhance customer experience, increase sales, maximize value, and create supply chain solutions that cater to all customer needs in order to improve

the comprehensive supply chain service capability. This will be done on the basis of the service advantages of supply chain integration.

JD has set up local warehouses all over China and arranges the reserves of different goods in local warehouses in different cities through big data observation and prediction. Compared with other e-commerce platforms that only have central warehouses, JD has a big advantage in inventory cost. However, due to the deviation of big data prediction, part of the out-of-stock cost may be caused. Building local warehouses in different places is an extremely costly exercise, not only in terms of the cost of building the warehouses but also in terms of the cost of the Courier industry (couriers' wages, etc.) to run the entire transportation chain.

JD should strengthen its big data observation of user data, commodity, and customer data, based on long-term data analysis and prediction to reduce the error of prediction, so as to reduce inventory costs; In addition, in addition to several fixed times for giving discounts to users in China, JD should try its best to maintain the stability of commodity prices at other times, so as to reduce the number of users' purchases that are inconsistent with the overall forecast trend due to discounts.

3.3 Customer Feedback

Compared with other e-commerce platforms, JD has a large number of self-operated shops, which are its own suppliers, which means that JD can more effectively supervise these shops, so that their commodity quality and service level are higher than other shops, including better express service and after-sales service. According to JD.com's website, JD.com uses this to demand its own business: According to relevant laws and regulations and consumer and other public perceptions, fake goods include the following situations: 1) The commodity infringes or improperly uses others' trademark rights, copyright, patent rights, portrait rights, and other rights; 2) the description of the material and composition of the commodity is fake, which is completely inconsistent with the actual situation; 3) the three notes, fake certification certificates, and the quality of the commodity do not conform to the provisions of national laws and regulations. Due to the existence of a large number of self-operated stores, JD rarely suffers from users' inability to timely feedback and "difficulty in after-sales service". JD can easily arrange after-sales service for users, and its own suppliers will feed the information of products purchased by users back to the decision-making department of JD so that they can more accurately arrange the inventory in the warehouse, so as to reduce costs.

At the same time, there are stricter regulations on all commodities. In the process of operation, JD is constantly building an internal commodity quality monitoring system, which is completed jointly by the operation department and the research and Development Department. The so-called commodity quality monitoring system is to screen the massive commodities and customer comments through JD's big data platform, including the good and bad comments given by customers on the web page and the keywords reflected in the comments. The system will capture them. If a certain type of product or SKU consistently shows up in customer reviews with negative information, the system will show it from the big data, and specialized personnel will follow up and investigate further.

3.4 PLUS Membership

According to the introduction of PLUS membership of JD, JD launched JD PLUS members specifically to give core customers a better online shopping experience. JD PLUS members receive benefits like shopping feedback, self-operated free shipping, free return and exchange, exclusive customer service, and exclusive goods, all of which enhance and improve users' online shopping privileges. JD hopes to establish a long-term win-win relationship with you through PLUS. Meanwhile, JD will continue to enrich PLUS member rights and interests and provide more perfect services for users.

Factors influencing the loyalty and honesty of e-commerce payment committee members can be divided into two levels, namely "users' own factors" and "enterprises' own factors"[13]. Among them, the user's own factors include risk preference and self-image; The enterprise's own factors include product quality, paying member rights, customer care, and convenience[13].

4. Methodology

According to <https://connect.informs.org/msom/events/datadriven2020>, a "complete customer experience cycle" is said to start as soon as a consumer starts browsing on the site and stop when the customer receives the delivered goods. The data set describes 2.5 million customers (457,298 made purchases) and 30,000 SKUs (from one product category) during March 2018. All this data is about one type of product and it records the data for March which there were no major holidays or promotions. In order to find what variables significantly influence the quantity of the sales, using multiple linear regression, it is obvious that quantity discount, bundle discount, gift item; the user's education level; the second attributes of the product, and the expected delivery time which are significant to the quantity respectively in three aspects including discount, users, and services. The results are shown in Table 1, P-value of all of them are smaller than 0.05.

Table 1. The results of multiple linear regression of all users

Variables	P-value
quantity_discount	3.9439E-08
bundle_discount	1.27054E-05
gift_item	1.05102E-05
education	0.036518498
attribute2	0.005780103
promise	1.53549E-61

Additionally, so as to research how can JD predict its quantity of sales to reduce the cost of inventory and out-of-stock, using random forest regression to work on the database and the results are shown in Table 2.

Table 2. The results of random forest regression of all users

Variables	Significance
promise	23.30%
bundle_discount	19.30%
direct_discount	7.50%
final_price	6.70%
user_level	6.40%

According to Table 2, it shows the top five variables that have the biggest impact among all the variables that affect the forecast results. That is to say, if JD wants to forecast its sales volume and thus allocate different quantities of goods to different places, it should pay the most attention to these five variables.

In addition, the same method is used to study the PLUS members of JD, trying to find the difference between PLUS users and other users, so as to determine the strategy of JD for this kind of customers. The regression results are shown in Table 3.

Table 3. The results of multiple linear regression of PLUS users

Variables	P-value
education	0.040741416
attribute2	0.009254717
promise	2.06963E-38

As shown in Table 3, it is clear that compared with ordinary users, PLUS users pay more attention to the second feature of the product and are more inclined to buy the product with a higher score on the second feature, which means PLUS users attach more importance to the quality of the product.

Similarly, the results of random forest regression of PLUS users are shown in Table 4.

Table 4. The results of random forest regression of PLUS users

Variables	significance
bundle_discount	25.5%
promise	21.8%
direct_discount	7.9%
final price	7.3%
gender	5.2%

As shown in Table 4, it is easy to find that the purchase volume of PLUS users is more predictable than that of other ordinary users. Only by controlling the two variables bundle_discount and promise, 45% of the data can be accurately predicted.

5. Results

Bundle discount, direct discount, promise, and attribute 2 are significant in discount and service aspects. So in order to increase JD's sales volume, it firstly should weigh the price and sales volume and make preferential policies, especially bundle discount. Secondly, they need vigorously develop JD logistics, and reduce transportation time. Thirdly, they can improve the attribute 2 of the product. So as to decrease its inventory cost or out-of-stock cost, it should put more emphasis on bundle discount, direct discount, gift item; marital status; attribute1, type in three parts respectfully. They can use big data to collect on these variables; Secondly, JD can appropriately increase the number of self-operated commodities, because, in this data set, the number of self-operated commodities is relatively small. If the number of such commodities is similar to that of third-party commodities, better forecast results may be obtained.

6. Conclusions

By reviewing the articles of previous scholars, this paper makes an in-depth analysis of the differentiated competition strategy of JD, especially expounds on the integrated supply chain adopted by JD from five aspects: product and purchase, transportation, warehouse, user feedback, and PLUS members, finds a series of problems, and gives strategic suggestions for these problems. In terms of products and procurement, JD.com should try to cooperate with foreign enterprises while developing its smart factories, so as to reduce costs and improve competitiveness. In terms of transportation, we should properly improve science and technology to carry out logistics distribution, and at the same time, from the perspective of users, we should appropriately reduce freight under the condition of ensuring profitability. In terms of warehousing, JD's top priority is to reduce its inventory and shortage costs. The more feasible method is to combine big data and long-term prediction to improve the accuracy of prediction.

Meanwhile, by analyzing the data of JD.com in March 2018, this paper analyzes the data from the three dimensions of discount, users, and service, and compares the difference in purchasing behavior

between PLUS users and all users. Both the delivery time and bundle discount of goods obtained by all users and PLUS users have a significant impact on sales. Therefore, JD should continue to vigorously develop JD logistics, improve logistics efficiency and reduce transportation time, so as to increase sales. In addition, it balances the price and sales volume and provides an appropriate bundle discount to obtain the maximum profit.

In addition, in terms of prediction, JD should also focus on monitoring promise and bundle discount variables. At the same time, JD should adjust the quantity ratio between its own products and third-party products to better predict users' preferences.

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This study puts forward some suggestions on the future development of JD from the strategic level, hoping that JD can develop its strengths and avoid its weaknesses. In this era of big data, by collecting all kinds of data about users, JD can provide users with the services they want most and gain a foothold in the Chinese market.

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