

Coopetition Analysis Between JD and Tmall in China's E-Commerce Landscape: A Hybrid Thematic-Latent Dirichlet Allocation Approach

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Abstract

JD and Tmall ended restricted models of their ecosystems in 2024 with a new collaborative approach that opened previously isolated spaces or referred as 'walled gardens.' This study explores the key drivers of this shift and how these major e-commerce platforms coordinate logistics and payment systems amidst intense market competition. We adopted a hybrid approach to collect data through word cloud analysis, followed by thematic analysis with verification by Latent Dirichlet Allocation (LDA) modeling, which minimizes coder bias. Our study results show that, while regulatory pressure, including antitrust policies, played a role, several non-regulatory factors were equally or more influential. These include shifting consumer expectations for faster delivery, growing demand for secure and flexible payment options, and competitive pressure from pricing strategies and brand positioning. Through strategic competition initiatives, JD and Tmall achieved balanced collaboration and competition to enhance market efficiency and operational resilience. Firms successfully navigated competitive risks toward maximizing coopetition benefits because of their strong absorptive capacity and agile supply chains. Results indicated that technological turbulence had a minimal effect, and thus market structure and strategic alignment became more critical for their strategic actions. Cooperation advantages are applicable across various levels of market intensity and dynamism, as seen in the JD-Tmall partnership. These companies demonstrate how e-commerce businesses can move past mandatory compliance through open business models, which create superior efficiency and better customer experiences. Through this study, we validate a combined thematic and LDA topic modeling-based approach to analyze coopetition activities in digital ecosystems.

Keywords: Coopetition, LDA Topic Modeling, E-Commerce, JD, Tmall, Thematic Analysis

1. INTRODUCTION

JD, one of the largest B2C e-commerce platforms in China, has gained its reputation for seamless logistics and fast delivery. The company has over 1,500 warehouses across country and has fulfilled 90% of orders within 24 hours, a capability enhanced by technologies such as autonomous delivery vehicles and data-driven inventory systems [1, 2]. However, general perception of JD is that it focuses on electronics and luxury products [3].

On the other hand, Tmall which is premium B2C under Alibaba, focuses on brand authenticity and frequent promotions like an annual 'Double 11' festival [4]. It has developed into a hub for premium shopping which has been recognized by consumers [5].

The 2024 partnership between JD and Tmall is an attempt to break down with longstanding 'walled garden' approach of two e-commerce companies, a significant change [6]. Traditionally, these platforms have limited use of services like payment and logistics to their own registered users thus creating closed loops [7]. The media has attributed this cooperation to antitrust regulations [8], but this study disputes the idea that regulatory pressure was primary factor for the change. However, there are other factors that affect the change such as shifting consumer behavior, post-COVID-19 market trends, and increased price competition.

There are some literatures focusing on the comparative study of competition and strategy between JD and Alibaba, including Tmall, which provide common points and shortcomings for JD and Alibaba's strategic models as the two major e-commerce platforms in China. One most important point for both platforms in competition is logistics, where JD has the most strength, while in Alibaba's part, the strength is cost advantage. This is a vivid opposite from JD, whose weakness is high cost due to logistic operations, but Alibaba's weakness is customer service where logistics is one of the important keys that affect customer service performance in customer perception [9]. In the work of Zhang et al. (2018) [10], it is also stressed that logistics is JD's strength, and Alibaba still lags behind. This is important to the quality of service, and is the reason why Alibaba has tried to build its own Cainiao logistics service and works with third-party logistics companies, initially without direct involvement in distribution operations. Their analysis also showed that while Alibaba earlier set up its own payment system, Alipay, in 2004, JD's competitive strategy was not to create its own payment system but to cooperate with Tencent WeChat, an existing system which is the competitor of Alipay. This shows JD's cooperation strategy, which impacts the competition with Alibaba, including Tmall, especially in 2024 when the restriction on payment and logistics was opened up.

In the aspect of Chinese consumer satisfaction analysis, JD and Alibaba are studied as the country's most popular e-commerce platforms. Platforms under Alibaba, like Taobao, are well-known and recognized for technological innovations such as AI-driven recommendations, while Jingdong focuses on enhancing customer satisfaction [11]. However, existing literature mostly focuses on domestic competition and not on overseas or cross-border e-commerce, and lacks a comprehensive study of the breakdown of 'walled gardens' between JD and Tmall (and other platforms under Alibaba), which is stated in our study.

Our study uses cooperation theory to examine the collaboration and competition between firms [12], covers the period from 2012 to 2024 to explain the evolution of e-commerce in China. Research

design of the present study is a mixed methods approach that comprises word cloud analysis, thematic coding, and Latent Dirichlet Allocation (LDA) topic modeling of academic literature, media reports, and corporate statements. This timeframe includes the pre-and post-COVID-19 era as well as the 2012 price wars that changed the competitive strategies.

Two more concepts that are used in analysis are absorptive capacity and open innovation. The ability of a firm to integrate external knowledge is crucial in reducing partnership risks [13]. For instance, cooperation between Apple and IBM in development of enterprise applications shows that partners can exchange knowledge and still conserve their key competitiveness. Another one is supply chain agility. It is important to have a quick response to changes in the market to enhance profitability in a competitive market [14]. JD's AI-driven logistics network is an example of this, allowing for same-day delivery even during peak demand.

This study addresses three questions as follows:

- Research Question 1: To what extent have COVID-19 and price wars influenced cooperative strategies in Chinese e-commerce?
- Research Question 2: How do absorptive capacity and supply chain agility contribute to sustainability of cooperative partnerships?
- Research Question 3: How can platforms manage competition and cooperation with respect to technological advances?

The main novelty of this work are:

1. First comprehensive analysis of JD and Tmall's, including other platforms under Alibaba, partnership in the context of cooperation by using cooperation theory, which includes regulatory and non-regulatory drivers, including market and consumer behaviour trends.
2. Proposing a hybrid approach for qualitative research with quantitative, as Thematic and Latent Dirichlet Allocation topic modeling, which is a machine learning technique that is possible to be a guideline for researchers in the present, which is the digital era.

2. RESEARCH METHODOLOGY

2.1 Data Sources

We gathered 2,000 sources for analysis in this study. There are three types of sources as follows:

1. Academic literature 1,200 sources
This includes research studies and journal articles that are related to Chinese e-commerce and regulatory frameworks.

2. Media reports 700 sources

This includes news, online articles and expert commentaries on JD, Tmall, and the e-commerce industry.

3. Official sources 100 sources

This includes the statements, reports and strategic documents of JD and Tmall.

This combination offers a comprehensive view of both platforms' perspectives as well as external factors that may be influencing their actions. We collected data according to the three categories described above as systematic keyword-based search strategy was employed to identify relevant literature related to Chinese e-commerce platforms.

The process was carried out in two stages, as outlined below:

1. Broad Keyword Search

First, we conducted the search using general terms in order to include a wide range of sources on Chinese e-commerce and consumer behavior. The broad keywords included:

"Chinese e-commerce"

"China e-commerce"

"China online shopping"

"China online shopping behaviour"

"China consumer behaviour"

These keywords were combined and adjusted using Boolean operators (e.g., AND, OR) to make sure that search results included not only academic, media and official content but also other relevant materials.

2. Platform-Specific Keyword Search

Additional searches were also conducted using platform-specific keywords such as;

"Tmall"

"JD"

"Jingdong"

"Alibaba"

This step included variations of platform names to capture a more expanded dataset, especially for JD (e.g. "JD," "Jingdong"). Search was also conducted on Alibaba because it is owner of Tmall and Taobao which are central to cooperation discussed in this study.

2.2 Timeframe

The study covers e-commerce landscape from 2012 to 2024 which includes several crucial phases. The year 2012 is characterized by price wars that revolutionized strategies of major e-commerce sites.

2.3 Methods

2.3.1 Word cloud analysis

Word cloud analysis is a text analysis method that converts rich textual data into a visual format by emphasizing the most frequently appearing words [15]. This approach helps depict significant keywords that may reflect underlying patterns or hidden insights in the documents, and it can be used together with thematic analysis to support the identification of initial themes [16].

The word cloud in this study was created in English using Python programming for the analysis. The input for word cloud was taken from data sources that were identified in the course of keyword search. This included the broad keyword search and platform specific keyword search. We collected 2,000 sources from all three sources and most of them were from academic papers. The word cloud was then analyzed to determine the most used keywords and they were used to search for more articles that could be used in thematic analysis.

2.3.2 Thematic analysis

Since the data sources used in this study are considered qualitative, providing rich information and textual insights, thematic analysis is used as the main tool to analyze them and answer the research questions. This approach helps explore the cooperation between JD and Tmall, including the mutually competitive dynamics that shape their relationship.

Thematic analysis is a qualitative research method that involves looking for recurring ideas, or themes, in the data [17]. We followed the steps of thematic analysis described by Braun and Clarke (2006) [18], starting with familiarizing ourselves with the data by reading and re-reading the content to get a full understanding. Then we generated initial codes by systematically marking important points across all data. After that, we searched for themes by grouping similar codes together and gathering the related data for each theme. We reviewed the themes to check if they matched both the coded parts and the whole dataset. Next, we defined and named the themes clearly to reflect their meaning. The last step was to produce the report by putting together the analysis and using examples from the data to support each theme. When new themes came up, we compared them with what we had already found to make sure they fit. We stopped the process when no new themes appeared and confirmed the findings with our hypotheses and the existing literature.

2.3.3 Theme validation through LDA topic modeling

After examining the themes and sub themes from thematic analysis, we then employed LDA topic modeling to confirm our thematic analysis results [19]. LDA is a topic modeling technique that focuses on the frequency of word occurrences in the data and assigns them to topics. Each topic consists of a group of words that appear together and the idea is that these clusters reflect some underlying concept which is especially useful for extracting underlying topics and patterns in textual data, thereby confirming the consistency of the identified themes across data sources. In this study, LDA was used to reveal hidden patterns and ensure that no significant themes were overlooked. These methods were selected to combine with the qualitative approach in order not to miss any important information. They also offered extra check for the themes discovered through the thematic analysis. In their recent studies, researchers have highlighted how applying techniques such as LDA and word cloud analysis can strengthen the credibility and richness of qualitative research [20].

We narrowed down the data sources from 2,000 to 50 sources. The word cloud helped to reveal the most frequent keywords. We used a systematic approach to minimize coder bias in thematic analysis. Instead of selecting themes based on our own ideas, we used significant keywords from the word cloud as the main themes, in order to capture real data trends and avoid authors' bias. Thematic validation was also done using the Latent Dirichlet Allocation (LDA) topic model to check the coherence of the hand-coded themes with patterns that were derived from the model, following the above mechanism to minimize potential coder bias and obtain a rigorous and accurate thematic classification.

3. WORD CLOUD ANALYSIS

After collecting data according to the process described in the previous section, a word cloud is generated in English utilizing Python programming for analysis.

The findings of word cloud analysis are illustrated in FIGURE 1, and describe six key factors as follows:

1. Payment support

The word cloud analysis reveals payment as a one of significant terms.

2. Logistics and delivery

Terms such as "delivery" and "delivery-quality" are among the most significant, and they are grouped together as logistic and delivery.

3. Long-term sustainability of the business

Terms such as trust, quality, and others related to them are frequently presented in word cloud analysis. Implementing these factors into the e-commerce service model may go a long way in improving its sustainability.

4. Pricing

Price is a frequently mentioned term.



Figure 1: Word cloud of mentioned words related to customer satisfaction in E-commerce

5. Variety of products

Terms like product and product variety are among the most frequent in the word cloud and are grouped to the Term “variety of products”.

6. Quality of products

The most frequent term in word cloud is information quality.

4. THEMATIC ANALYSIS

We analyzed data sources using main themes from significant keywords in word cloud analysis which systematically coded data to identify key themes. We compared new themes to ensure the reliability of the existing data. When the emerging themes were similar or identical to the existing themes, the researchers indicated that they had found complete data. The thematic analysis was then stopped, and the main findings are presented in TABLE 1.

Table 1: Thematic analysis: themes, sub-theme, and codes

Theme	Sub-Theme	Codes
Long-Term Sustainability	JD: Logistics as Core Competence	Self-operated warehouses, rapid delivery, supply chain investment
Long-Term Sustainability	JD: Technology-Driven Innovation	Blockchain, AI-driven transparency, risk mitigation
Long-Term Sustainability	JD: Quality as a Trust Driver	First-party supply chain, strict quality control, customer trust

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Table 1: Continued

Theme	Sub-Theme	Codes
Long-Term Sustainability	Tmall: Brand Verification & Merchant Reputation	Merchant verification, brand partnerships, authenticity assurance
Long-Term Sustainability	Tmall: Interactive Customer Engagement	AR shopping, 3D product previews, live-streaming commerce
Long-Term Sustainability	Tmall: Price War Dependency & Profitability Risks	Discount-driven strategy, reliance on promotions, profit margin pressure
Pricing Strategy	JD: Aggressive Market Penetration	Lowest-price campaigns, price-match guarantees, new user acquisition
Pricing Strategy	JD: Premium Pricing for Value Perception	Luxury product positioning, brand value, high-quality pricing
Pricing Strategy	Tmall: Affordable Premium Strategy	Premium product discounts, flexible pricing, promotional offers
Pricing Strategy	Tmall: Price War Dependency & Profitability Risks	Competitive pricing pressure, risk of price saturation, reduced profitability
Variety of Products	JD: Electronics & Luxury Specialization	High-end electronics, curated product categories, premium inventory
Variety of Products	JD: Dual-Model Strategy (1P & 3P)	First-party product control, marketplace expansion, SKU diversification
Variety of Products	Tmall: Curated Selection of Global Brands	Global brand partnerships, merchant regulation, selective product range
Quality of Products	JD: Authenticity & Reliability	Blockchain tracking, zero-counterfeit policy, transparency
Quality of Products	JD: Customer Loyalty Through Quality	Repeat purchase drivers, verified authenticity, trust-based retention
Quality of Products	Tmall: Struggles with Counterfeit Control	Third-party merchant issues, brand dilution, counterfeit risks
Payment Support	JD: Diverse Payment Options	Multi-platform payment integration, WeChat Pay, Apple Pay, installment plans
Payment Support	JD: Installment Payments for Luxury Goods	High-ticket affordability, flexible finance options, premium segment targeting
Payment Support	Tmall: Alipay Dominance & Limited Payment Flexibility	Alipay exclusivity, restricted payment choices, ecosystem control
Logistics and Delivery	JD: Industry-Leading Logistics	Proprietary infrastructure, AI-based delivery optimization, supply chain agility
Logistics and Delivery	JD: Proprietary Supply Chain for Reliability	In-house logistics control, reduced third-party reliance, delivery speed assurance
Logistics and Delivery	Tmall: Reliance on Cainiao Network	Third-party logistics partnerships, outsourcing risk, delivery cost reduction
Logistics and Delivery	Tmall: Inconsistent Last-Mile Delivery & Consumer Frustration	Pickup station issues, delayed deliveries, inconsistent service quality

From Table 1, each theme can be described as follows:

1. Long-term sustainability

JD has built its delivery strength by using its automated delivery platform. Same-day or next-day delivery is available to 99% of Chinese population [21, 22], and has strengthened customer trust [23, 24]. Brand authenticity assurance is a key differentiator [25].

On the other hand, Tmall has developed its brand to ensure brand authenticity and authenticity [26]. In addition, Tmall has launched a brand integration strategy using 3D models, including self-service marketing for marking. And relying on discounts for Chinese products from Tmall creates a risk of increasing profits while consumer demand is shifting towards better quality [27, 28].

2. Pricing strategy

To enter the market, JD adopts a strong market penetration strategy where it sets low prices or competitive prices to pull in new users [9]. However, JD sets luxury prices for electronics and accessories, but these are affordable), which is in line with quality of these models and in the works of [3, 29] also agree with this as they indicate that luxury products are priced highly but are still affordable.

Vice versa, Tmall is aimed at low-priced products, from low-cost products to the reduced purchase prices in order to attract price-sensitive consumers [30]. This is a problem, however, as in the case of JD, the focus on growth is a cause for concern as an economic downturn may affect the profits in the long run as compared to JD's performance and financial status [31].

3. Wide product range

JD is an online retail shop that mainly deals with electronics and luxury goods. It is a dual model that incorporates first-party (1P) control as well as third-party (3P) sales [32], thus enabling JD to have a better understanding of its customers in order to come up with sales strategies that are different from the competitors [22].

Tmall, on the other hand, oversees brands across the world and ensures that brands are certified and meet strict certification criteria [4]. However, this new feature only enhances the company's supermarket position but the company has a weak infrastructure compared to its competitors such as Taobao which have a different strategy [33].

4. Product quality

Through strict verification measures, such as blockchain identity verification and AI-based fraud detection, JD guarantees that all products are 100% authentic [25, 34]. This process promotes customer loyalty as customers have confidence in JD for quality and delivery [35].

This paper finds that although Tmall has enforcement measures to prevent businesses from infringing on copyrights, it remains a challenge for consumers [26]. No matter how hard they try to improve security, suppliers will always bear the risk of product quality control.

5. Payment support

JD offers a variety of payment options, including WeChat Pay, Apple Pay, credit cards, and the ability to integrate payments with other devices [9, 21]. This is particularly important in the luxury sector, which is why insurance payments are a key value-add [9]

On the other hand, Tmall’s heavy reliance on Alipay reduces people’s flexibility, as it is not integrated with WeChat Pay, preventing users from accessing it [31]

6. Logistics and delivery

JD is one of the most developed platforms in China. AI-led fulfillment models can achieve order fulfillment of up to 90% on the same day [2, 36], indicating that automated fulfillment can reduce dependence on third parties, ensuring sustainability [21]. In contrast, Tmall relies on Alibaba’s logistics platform Cainiao, which is characterized by a high level of redundancy [37]. Some studies have found that long waiting times at Cainiao stations are directly associated with reduced customer satisfaction, highlighting the need for improvements in last-mile service efficiency [38–40].

5. VALIDATION BY LDA

The optimal number of topics in LDA analysis is determined by examining perplexity and coherence indices because they are vital for evaluating topic model performance [41, 42]. Perplexity quantifies how well a model can predict data by measuring its predictive capability and lower scores indicate better generalization of new and unseen data. Coherence is a different assessment from semantic consistency of words in topics which coherence values increase when topics become more interpretable and meaningful.

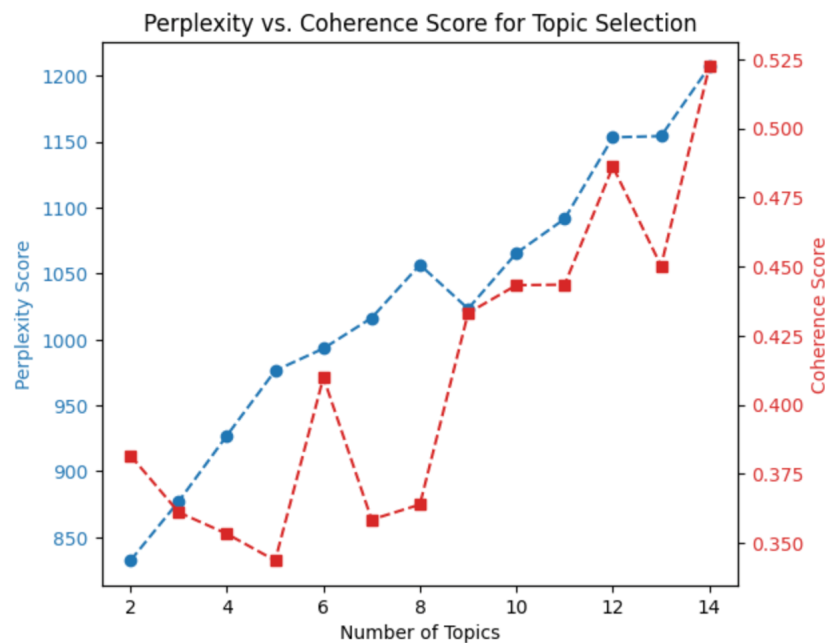


Figure 2: Coherence and perplexity score according to the number of topics

The perplexity score for 14 topics is 1206.6959, and the coherence score is 0.5223, as shown in FIGURE 2. We chose 14 topics based on these two important indicators to achieve strong predictive performance and well-separated meaningful topics. The optimal trade-off between lower

perplexity and higher coherence was achieved using 14 topics that effectively identified distinct and interpretable themes within the dataset. Then we performed LDA with 14 topics and extracted the top 10 keywords for each topic.

The topics were then labeled based on their dominant keywords and compared with the manually derived themes from thematic analysis, as shown in Table 2. The integrated approach confirms our manual thematic results using computational topic modeling to reinforce the robustness of the findings.

Table 2: LDA Topic Modeling Results and Thematic Alignment

Topic Number	Topic Label	Top 10 Keywords	Themes
Topic 1	Payment Systems and Market Strategy	pay, wechat, com, tmall, long, offer, channel, primarily, alibaba, time	Payment Support
Topic 2	Cainiao Logistics and Third-Party Logistics (3PL) Operations	logistics, party, cainiao, logistic, 3pl, efficiency, enhance, further, like, operations	Logistics & Delivery
Topic 3	Consumer Behavior and Business Efficiency	consumer, end, jd, system, models, manufacturers, products, consumers, efficiency, cost	Variety of Products
Topic 4	Tmall’s Platform, Pricing, and Competition with JD	tmall, quality, platform, taobao, jd, product, merchants, china, alibaba, price	Pricing Strategy
Topic 5	JD’s Product Quality, Supply Chain & Delivery Services	jd, quality, consumer, company, products, over, chain, delivery, supply, platforms	Variety of Products, Quality of Products
Topic 6	JD vs. Cainiao Logistics Competition and Pricing Strategies	jd, logistics, cainiao, significant, service, price, market, low, com, consumers	Logistics & Delivery, Pricing Strategy
Topic 7	Blockchain, Digital Payments and JD’s Payment Strategy	jd, payment, pay, com, over, quality, chinese, shift, adoption, blockchain	Payment Support
Topic 8	JD’s SKU Strategy, First-Party (1P) vs. Third-Party (3P)	jd, pricing, skus, 1p, product, strategy, term, range, broader, party	Pricing Strategy, Variety of Products
Topic 9	Tmall’s Product Quality, Branding and Consumer Perception	tmall, products, quality, com, consumers, jd, service, over, taobao, strategy	Quality of Products
Topic 10	Logistics, Customer Loyalty and Market Expansion	logistics, cainiao, further, operations, jd, products, services, loyalty, markets, product	Logistics & Delivery

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Table 2: Continued

Topic Number	Topic Label	Top 10 Keywords	Themes
Topic 11	Tmall and Cainiao’s Customer Satisfaction & Service Issues	cainiao, tmall, customer, service, satisfaction, consumers, quality, higher, pricing, customers	Logistics & Delivery
Topic 12	JD’s Long-Term Logistics Investment & Reliability	delivery, jd, long, service, services, chain, term, supply, prioritizing, reliable	Logistics & Delivery, Long-Term Sustainability
Topic 13	Luxury Market, Pricing, and JD’s Sustainability Strategy	jd, products, customers, luxury, high, strategy, prices, price, commerce, sustainability	Long-Term Sustainability, Pricing Strategy
Topic 14	Tmall’s Market Positioning and Competitive Strategy	tmall, products, quality, com, consumers, jd, service, over, taobao, strategy	Quality of Products

The comparison between the LDA topics and the six themes deduced from the manual thematic analysis is presented in Table 2. The findings show that JD, Tmall, and Cainiao are engaging in distinct competitive strategies across key business dimensions, including payment support, logistics and delivery, long-term sustainability, pricing strategy, product variety, and product quality. The LDA topics offer a systematic understanding of these strategic differences and support the main themes identified in the manual analysis. JD controls logistics, product range, and pricing efficiency based on its self-operated warehouses and vertically integrated fulfillment model [21]. While, Tmall focuses on premium branding, merchant selection, and platform control through Alipay, thus it acts as a curated marketplace for verified brands [30]. However for Cainiao, which is the logistics network of Alibaba as a third-party fulfillment manager, there is evidence that its service consistency and customer satisfaction are poor [37].

6. DISCUSSION

The results of word cloud analysis, thematic analysis, and LDA topic modeling identify major strategic issues that affect coopection between JD and Tmall. Logistics, payment systems, and product differentiation are found to be critical competitive and cooperative factors, which suggest that cooperation and competition are simultaneous in their business models [43]. This is in line with the principles of coopection theory which posits that firms can improve their performance by managing cooperation and competition in same market[43, 44].

6.1 Logistics as a Strategic Differentiator and Supply Chain Agility

The dynamics of the relationship between JD and Tmall is greatly influenced by supply chain management. The main reason for this is that JD has control over its logistics which means that it can offer same-day delivery to 90% of its orders, which enhances the brand trust, efficiency and

cost leadership [21]. This is in line with LDA Topics 6, 10, and 12 that show that JD has a better logistics system than Cainiao, which is one of the reasons why it has been able to maintain long-term profitability and customer loyalty.

On the other hand, Tmall uses the third party logistics model of Cainiao which has expanded the fulfillment of Alibaba in the rural areas but at the same time, it increases the service variability and customer satisfaction risks [37]. Topics 2 and 11 of LDA Topics confirm this, in the way that the last mile logistics of Cainiao affects the perception of the customer. While JD has a focus on control and efficiency, Cainiao is a network-based fulfillment service that seeks to meet the needs of cost-effectiveness against logistical reach.

In spite of the fact that the logistics strategies of JD and Cainiao are rather different, they are quite complementary to each other. While JD is strong in the urban areas and fast delivery, Cainiao helps to expand the logistics of Alibaba into the rural areas through third party partnerships [45]. This is a case of co-competition in logistics where two companies are competing on service quality but at the same time are indirectly cooperating by serving different market niches that the co-competition between JD and Tmall is also influenced by supply chain agility that enables both platforms to respond to changes in regulations, market trends, and logistical challenges [21]. Topic 12 of LDA highlights the long-term logistics strategy of JD while topic 10 of LDA focuses on the market expansion of Cainiao through flexible logistics [36].

6.2 Payment Systems as a Bridge for Cooperation

The other area of cooperation and competition between JD and Tmall is payment systems. This is an area of co-competition and competition between the two companies in the Chinese e-commerce market. JD accepts WeChat Pay, Apple Pay, credit cards and installment plans to enhance consumer choice and convenience [9, 46]. This is in line with Topic 1 which shows that JD has a multi-platform payment strategy as opposed to Tmall which only accepts Alipay [37].

Tmall's closed-loop payment system, which is Alipay, is a competitive advantage in control of ecosystem but it, at the same time, restricts consumer choice especially for those who prefer WeChat Pay. Topic 7 of LDA Topics shows the adoption of blockchain and digital payment solutions by JD which strengthen its tech-driven financial strategy [23].

However, there is competition in the payment systems and this has led to integration where Alipay has been opened to JD and WeChat Pay is being used more frequently on the platforms. This shows that payment system co-competition can improve market efficiency and at the same time benefit both platforms while still keeping competitive differentiation.

6.3 Product Differentiation as a Competitive Strategy

Product variety is one of the most important competitive tool for both of the platforms. JD has chosen the dual-model strategy, which includes 1P (first-party) products with quality control and 3P (third-party) marketplace extension [22]. This is in line with Topics 5 and 8 of LDA which show that JD's SKU strategy and inventory management is a key driver of its competitiveness. Its focus

on high quality electronics and luxury goods enhances the brand trust and consumer preference. On the other hand, Tmall has a more narrow selection of the marketplace, focusing on the premium global brands and merchant verification to keep high product authenticity [26]. This is supported by LDA Topics 9 and 14 which stresses that Tmall's premium brand strategy is weak in product assortment compared to JD and Taobao [33].

Instead of fighting for market share on the product range, JD and Tmall has chosen different strategies of differentiation. JD provides a high product turnover and a large number of SKUs, while Tmall concentrates on branding and curation. This is not a case of market cannibalization as both platforms are targeting different consumer segments while at the same time avoiding direct comparison.

6.4 Risks and the Role of Absorptive Capacity

Although cooperation has its advantages, it also has its disadvantages in terms of knowledge spillovers, dependency, and opportunistic behaviors. The use of big data and the external logistics partnerships increases efficiency but raises the question of how to keep the service quality [37].

These risks can be minimized by using absorptive capacity, the firm's ability to identify, acquire, and exploit external knowledge [13]. Both platforms thus enhance data analytics and AI-driven supply chain optimization to minimize inefficiencies while protecting proprietary advantages. This capacity makes certain that cooperation will not leave one or both parties vulnerable.

6.5 Pricing Strategy and Cooperation

JD's cost leadership strategy is supported by its control of logistics and supply chain management to keep prices competitive [47]. Topic 6 of LDA highlights JD's capacity to control costs through logistics, which is consistent with its pricing strategy.

On the other hand, Tmall has adopted a high-end pricing strategy which is based on the quality of merchants and branded products [30]. Topic 13 depicts JD's dual pricing strategy, which is aggressive cost leadership as well as capturing luxury market share.

This allows JD and Tmall to coexist in the market where JD's logistics driven cost efficiency is complemented by Tmall's brand driven premium positioning.

7. Conclusion, Limitations, and Future Works

Our results show that cooperation between JD and Tmall acts as a strategic game mover, affecting performance at different competition and market turbulence levels. In this case, their cooperative relationship is not affected by technological turbulence. Contextual factors like absorptive capacity and supply chain agility are more critical than the bilateral relationship in managing cooperative dynamics. The cooperation between JD and Tmall in logistics and payment systems is a good example

of how firms can use coopetition to meet the market's needs and improve business performance. These findings align with existing research that supports the concept of coopetition as a strategy for gaining competitive advantage.

In addition, this work shows that coopetition can create long-term value in volatile and competitive environments. Coopetitive strategy, which combines benefits of cooperation and competition, can decrease conflict, knowledge spillovers, and opportunistic behavior. For instance, although Cainiao, as a 3PL provider, has a difficult time working with other logistics firms due to competitive and market-related issues, its partnership with JD shows that competition can be very effective in very competitive markets if the firms in question have strong absorptive capacity and supply chain agility.

This study also places emphasis on the usefulness of the combination of word cloud analysis, thematic analysis, and LDA topic modeling in enhancing the credibility of qualitative research. The word cloud technique helped identify themes unbiasedly since it did not require the use of coders. The thematic analysis helped in a systematic way of understanding coopetition strategies. At the same time, the LDA modeling served as a computational validation technique to ensure that the patterns identified manually were also picked up by algorithmic topic modeling. This multi-method approach increases the credibility of the findings and ensures that thematic results are based not only on the authors' biases but also on qualitative and computational analyses.

Furthermore, our analysis reveals that not only regulatory drivers like antitrust policies led to the breakdown of the 'walled garden' model. Several non-regulatory drivers have also been found to play a critical role in sustaining and shaping the coopetition among JD and Tmall. These are changing consumer expectations of fast and timely delivery of goods, increasing consumer demand for flexible and secure payment methods, and competitive pressures from pricing strategies and brand differentiation. These market forces lead the platforms to collaborate operationally while maintaining strategic distinction, and hence suggest that coopetition is fueled by customer-centric and strategic reasons as much as by compliance reasons.

The following paragraphs discuss some limitations of current study and provide possible actionable future research directions.

1. Lack of Post-Coopetition Consumer Feedback

As our study is based on historical data and literature review, we do not know the customer satisfaction or service quality perception after the 2024 shift from the 'walled garden' strategies. This gap can be addressed by future research through both quantitative and qualitative methods, such as surveys, interviews, or case studies, to gather consumer feedback directly. A comparison before and after the platform integration may provide a better understanding of the actual effect on the user experience. Furthermore, future studies could also apply standard metrics such as the Likert scale questionnaire or the SERVQUAL model along with these research methods.

2. Limited to the Domestic Market Context

Despite the focus on the Chinese e-commerce market, JD and Tmall have also gone international. Coopetition dynamics in cross border e-commerce settings including how logistics or payment system integration work across national borders can be explored in future studies.

This could be attempted through comparative country case studies or analysis of cross border transaction data.

3. Narrow Focus on Service Quality

Although service quality is the key in our analysis, competition has implications for other domains, such as sustainability, financial outcomes, and technological development.

Future work could expand on these dimensions by investigating common environmental actions, joint R&D projects, or collaborative spending in the digital core. Such work would develop the understanding of how competition strategies change and develop, but not only in the operational area.

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