Research on the Value Empowerment of Reputation Mechanism for Platform Category Differentiation Operation: A Case Study of Pinduoduo

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Abstract:

The reputation mechanism plays a crucial role in major shopping platforms, making the study of its impact on sales volume of great significance. This research collects data on the number of fans and sales volume of three types of products: clothing, skincare, and health care, on the Pinduoduo platform, to explore the influence of the reputation mechanism on different types of products in low-cost shopping platforms. The study finds that the reputation mechanism significantly positively promotes the sales volume of clothing and skincare products, but has no significant correlation with the sales volume of health care products. This research provides valuable insights for improving the reputation mechanism on the Pinduoduo platform and offers theoretical support for the healthy operation of the market.

Keywords: number of followers, sales volume, reputation mechanism

1. Introduction

1.1 Research background

The development journey of Pinduoduo stands as the most dramatic comeback story in China's e-commerce industry. Founded in 2015, Pinduoduo swiftly tapped into the third, fourth, and fifth-tier markets, leveraging the social fission within the WeChat ecosystem and its ultra-low pricing strategy. Within just three years, the number of annual active buyers surpassed 418.5 million, overtaking JD.com to become the second largest e-commerce platform in China. By infinitely compressing supply chain costs to achieve ultra-low prices, Pinduoduo neglected quality control and brand building, leading consumers to form a stereotype that "cheap goods are not good." The year 2018 marked a turning point in Pinduoduo's reputation strategy. Faced with growth bottlenecks and market skepticism, Pinduoduo's management realized that relying solely on low prices could not sustain the platform's sustainable development, especially given the low per capita consumption (in 2018, GMV of 471.6 billion yuan was apportioned to 400

million users, with an average of only about 1, 127 yuan per capita). It was necessary to break through the high-net-worth user circles in first- and second-tier cities. To achieve the transition from "low-price, low-quality" to "quality upgrade," reputation mechanism has become the core engine of the platform's differentiated product category operation. Through billions of subsidies, the platform leverages high-reputation benchmark products to drive an overall trust upgrade among consumers.

However, with the increasing homogenization of products, consumers can no longer perceive the differences in product functions, making reputation the core anchor of their decision-making. The impact of reputation on sales varies significantly across different product categories. For example, in the clothing category, there is a risk of authenticity traps (ZARA was exposed for plagiarizing independent designers, resulting in a 11% decline in sales in Spain after its reputation was damaged). In the skincare category, there is a risk of ingredient fraud (a domestic essence falsely labeled as "30%" actually contained only 1.5%, leading to thousands of complaints on *Xiaohongshu*). In the health supplement category, there is a crisis of trust chain disruption (the American brand GNC filed for bankruptcy due to excessive addition of artificial synthetic agents, and lost over 600 million yuan due to slow sales through Chinese purchasing channels). In an environment of information asymmetry, consumers need trust guarantees to reduce risk, and reputation reduces consumers' decision-making costs and perceived risk. Therefore, brand equity is recognized as a key intangible asset, leading market competition to shift from product functionality to brand value. A strong brand reputation serves as a signaling mechanism and trust guarantee. It conveys a low-risk signal to consumers, thereby attracting loyal customers who are beneficial to the long-term development and profitability of the enterprise.

1.2 Literature review

The reputation mechanism, as a core institutional arrangement for addressing information asymmetry and reducing transaction uncertainty, has been widely explored for its value in the platform economy. Existing research mainly revolves around its theoretical basis, economic effects, and differentiated manifestations across different platforms and types of goods. This review will organize relevant research from the perspective of "the impact of reputation mechanisms on product transactions and sales across various platforms", and point out existing limitations and the positioning of this study.

The core of reputation theory lies in establishing trust through historical behavioral signals (such as evaluations and ratings). Li (2007) took homogenized virtual goods (World of Warcraft game cards) on Taobao as the research object, verifying that in the early stages of e-commerce development in China, reputation indicators such as seller creditworthiness and membership in business alliances can significantly increase daily average sales and click-through rates of goods, confirming the crucial role of platform reputation mechanisms in compensating for the deficiencies of public credit systems [4]. However, due to the particularity of the research object in this study, which is virtual goods, the generalizability of its conclusions to physical goods, especially those with significantly different value and risk perceptions, is questionable, suggesting that the intensity of reputation effects is significantly moderated by product attributes and platform characteristics. When studying the impact of reputation on physical goods, it is also necessary to analyze whether merchants engage in dishonest behavior in the data. Jin & Kato (2006) found that online transaction reputation systems are not flawless, with phenomena such as misleading quality propaganda and inflated prices [3]. This indicates system loopholes in the management and establishment of reputation mechanisms, and the evaluation process needs to be optimized, a point that will also be discussed in this article. Furthermore, the extremely low heterogeneity among merchants selling homogenized goods suggests that the competitiveness of these virtual goods is also low, which is significantly different from the three types of goods studied in this article, namely skincare products, clothing, and health products, which exhibit greater merchant heterogeneity. Dana & Fong (2011) pointed out in their research that there is an inverted U-shaped relationship between competition level and reputation [2]. By studying different types of virtual goods, the differentiated impact of reputation mechanisms on goods with different attributes can be clarified. Research has shown that online reputation can significantly affect transaction outcomes. Studies on online auction markets have found that seller reputation evaluations (reputation scores, positive feedback rates) not only bring price premiums but also effectively increase the probability of transaction completion, with the latter effect often being stronger, highlighting the core value of reputation as a "trust endorsement" in high information asymmetry environments - its role in facilitating transactions takes precedence over pure price advantages. Melnik & Alm (2002) also confirmed that the impact of reputation mechanisms on transaction probability is greater than their impact on price [5]. They analyzed the willingness of buyers to bid for online auction items based on seller reputation and used empirical data to reveal that seller reputation has a positive, statistically significant but small impact on the prices of their online auction items. Similarly, Zhang (2022) conducted research on platforms

such as *Dianping*, revealing a complex nonlinear relationship (such as a U-shaped pattern) between online reputation (star ratings) and consumer attention (click volume), and introduced behavioral factors such as the "herd effect" to explain this phenomenon, emphasizing the moderating role of platform type and decision-making mode on the specific forms of reputation effects [6]. In the cue utilization theory proposed by Cox (1962), when there is information asymmetry between buyers and sellers, consumers judge quality and assist in decision-making by collecting cues related to the product [1]. This indicates that when there is insufficient product information, consumers tend to rely on externally obtained product information to assist in purchasing decisions. Overall, existing research focuses on platforms such as *Taobao*, auction websites, or review platforms, with scarce discussions on the unique logic and value of reputation mechanisms in platforms like Pinduoduo, which are centered around "low prices", have significant user penetration characteristics, and face strong regulation (such as "only refunds"). Furthermore, although it is recognized that product type affects reputation effects, there is a lack of empirical research systematically comparing the impact of reputation on sales volume for experiential products (skincare products) and trust products (health care products) within the same platform.

Based on these gaps, this study focuses on the Pinduoduo platform, combining the current policy regulations (credit evaluation requirements, "only refunds") and market differentiation realities in the context of the "dual circulation" strategy and common prosperity, and selects three types of products (skincare products, clothing, and health care products) for comparative empirical analysis. The core lies in exploring: under the specific ecosystem of Pinduoduo, what significant differences exist in the impact of brand reputation signals (number of fans) on sales volume across different product categories, and what are the underlying reasons for these differences. This will reveal how the platform's reputation system empowers its differentiated product category operation strategy and achieves value reconstruction under the dual constraints of policy and market.

Therefore, focusing on skincare products, clothing, and health supplements, the following hypothesis is proposed:
Hypothesis 1: The number of followers for skincare products is directly proportional to their sales volume.
Hypothesis 2: The number of fans of clothing is directly proportional to its sales volume.
Hypothesis 3: The number of fans of health products is directly proportional to their sales volume.

1.3 Research objectives and significance

We explore the impact of reputation on brands in low-cost shopping platforms like Pinduoduo, focusing on three categories of products: skincare, clothing, and health supplements.

We also investigate the relationship between brand reputation and sales volume. Data from official flagship stores of approximately 70 brands in each category was collected, including merchant star ratings, number of followers, and sales volume. This study aims to determine whether the relationship between reputation and sales volume is significant across different types of products, and to compare the strength of the reputation effect across the three categories. The significance of this research lies in two aspects. Firstly, the findings can serve as a reference for market operations. Sellers can more effectively choose appropriate methods to boost sales, while buyers can assess the relevance of reputation based on the category of products they intend to purchase. Secondly, platforms can establish a more comprehensive evaluation and reputation system for products where the relationship between reputation and sales volume is not significant.

It's worth mentioning that there are several reasons for choosing "number of followers" as a measure of reputation: Firstly, due to the small differentiation in "star ratings", most businesses receive either 4.5 stars or 5 stars, and these ratings are easily influenced by various factors such as reviews or malicious fake orders. Therefore, they cannot be used as a measure of reputation. Additionally, the majority of followers originate from individuals who have already purchased products from the store and have a high level of approval towards various aspects of the store. They expect to receive timely updates from the store and may have a willingness to repurchase. Therefore, the number of followers can be used as a measure of reputation.

2. Data and Methodology

2.1 Data

The data for this study was sourced from the Pinduoduo platform, where we selected official flagship stores for skincare products, clothing, and health supplements. Flagship stores are generally considered to be officially authorized by the brand, and the products they offer are the most representative of the brand's offerings. This approach minimizes the impact of store reputation on the brand. From the official flagship stores on the Pinduoduo platform, we selected 90 clothing samples, 69 health supplement samples, and 61 skincare product samples, for a total of 220 samples, as shown in Table 1.

Table 1 Frequency statistics of health products, skin care products and clothing

Goods	Frequency	Percentage	Cumulative percentage
Health products	69	27.73%	27.73%
Skin care products	61	31.37%	59.1%
Clothing	90	40.90%	100%

2.2 Measurement

We select the number of store followers (independent variable) to represent brand reputation and choose sales volume as the dependent variable. Due to the large numerical values of the data, for ease of calculation, we choose to use ten thousand as the unit.

2.3 Statistical methods

Based on the data provided by the Pinduoduo platform, this study employs SPSS for descriptive statistics and bivariate analysis. Descriptive statistics facilitate the understanding of the basic characteristics and distribution of the data, providing a foundation for subsequent analysis; bivariate analysis is used to explore the correlation between variables, providing data support for the theoretical analysis of this study. The two complement each other and are indispensable in empirical research.

3. Results and Analysis

3.1 The relationship between the number of followers and sales volume of skincare products

As shown in Table 2, for skincare products, the aver-

age sales volume is 97.03, with a standard deviation of 109.67; the average number of followers is 18.32, with a standard deviation of 46.78. As shown in Table 3, the correlation coefficient between the number of followers and sales volume is (0.428, $p<0.01$), indicating a significant correlation. Therefore, for skincare products, there is a significant positive correlation between the number of followers and sales volume, and Hypothesis 1 is valid.

Due to the nature of skincare products, consumers tend to choose brands with higher recognition and better reputation for safety concerns. Consumers believe that the ingredients of so-called "big-name" (i.e., brands with higher reputation) products are safer and more reliable. Additionally, the loyalty of consumers who purchase skincare products is higher compared to other types of goods. Since everyone's situation is different, consumers often find the most suitable products and brands for themselves after trying different goods, leading to a strong willingness to repurchase and a longer-term commitment. Therefore, consumers who choose to follow the official flagship stores of certain brands are likely to make long-term purchases from that store. Hence, there is a significant positive correlation between fan base and sales volume.

Table 2 Descriptive statistics of the number of fans and sales volume of skincare products (N=61, unit: 10,000)

Variable	Average value	Standard deviation
The number of fans for skincare products	18.32	46.78
Sales of skin care products	97.03	109.67

Table 3: Correlation between the number of fans and sales volume of skincare products

Variable	1	2
1. The number of fans for skincare products	1	
2. Sales of skin care products	0.428**	1

Note: N=61

*$p<0.05$, **$p<0.01$, ***$p<0.001$ (two-tailed test)

3.2 The relationship between the number of fans and sales volume of health products

As shown in Table 4, for health products, the average sales

volume is 75.05, with a standard deviation of 146.08; the average number of followers is 2.54, with a standard deviation of 10.44. As shown in Table 5, the correlation coefficient between the number of followers and sales volume is 0.126, indicating non-significant correlation. Therefore, there is no correlation between the number of followers

and sales volume for health products, and Hypothesis 2 is not valid.

Firstly, health products are trust goods, involving significant information asymmetry. Since consumers cannot grasp too much information about the products, it is difficult to establish a trust relationship between brands and consumers. Due to the lack of trust between both parties, consumers may be influenced by various factors when choosing to purchase goods, and these factors are rela-

tively random and unpredictable. Secondly, because trust goods are a special category and their effects vary from person to person, fans' willingness to repurchase may not be strong. If fans' willingness to repurchase is not strong, then the number of fans cannot be used as the sole reference for reputation. Therefore, there is no significant correlation between the number of fans and sales volume of health products.

Table 4 Descriptive statistics of the number of fans and sales volume of health products (N=69, unit: 10,000)

Variable	Average value	Standard deviation
Sales volume	75.05	146.08
The number of fans for health products	2.54	10.44

Table 5 correlation between the number of followers and sales volume of health products

Variable	1	2
1.The number of followers for health products	1	
2.Sales volume of health care products	0.126	1

Note: N=69

*p<0.05, **p<0.01, ***p<0.001 (two-tailed test)

3.3 The relationship between the number of fans and sales volume of clothing

As shown in Table 6, for clothing, the average value of its fan count is 9.37, with a standard deviation of 113.47; the average value of sales is 76.57, with a standard deviation of 32.7. The correlation coefficient between its fan count and sales is 0.571 (P<0.01). Therefore, there is a significant positive correlation between clothing sales and fan count, and Hypothesis 3 is valid.

There are significant differences in style and quality among clothing brands. Clothing items are a type of per-

sonalized product, and consumers tend to choose brands that suit them due to consumption inertia, leading to a higher probability of repeat purchases. For consumers with different levels of spending power, there are numerous brands to choose from in the market, resulting in intense competition among brands. Therefore, compared to other products, consumers are more likely to judge the quality and credibility of a brand based on its fan base, especially for brands with similar price levels and clothing styles. Consequently, there is a significant positive correlation between the fan base and sales volume of clothing.

Table 6 Statistics of fans and sales of clothing flagship stores (N=90, unit: 10,000)

Variable	Average value	Standard deviation
The number of followers of clothing flagship store	76.56	113.48
Sales volume of clothing flagship store	258.10	32.79

Table 7 Correlation between the number of followers and sales volume of clothing

	1	2
1. The number of followers of the clothing flagship store	1	
2. Sales volume of clothing flagship store	0.571**	1

Note: N=90

*P<0.05, **P < 0.01, ***P < 0.001 (two-tailed test)

3.4 Comparison of differentiation among skin care products, health products, and clothing

Comparing Tables 3, 5, and 7, the correlation coefficient for clothing brands (0.571, p<0.01) is significantly higher than that for skincare and health products, indicating that the sales of clothing brands are more susceptible to the influence of fan base. Similarly, the correlation coefficient for skincare products (0.428, p<0.01) is second only to that of clothing brands, suggesting that their sales are also influenced by fan base. It is worth noting that there is no correlation between the sales and fan base for health products.

4. Conclusion and Prospects

4.1 Discussion

This article investigates whether the sales volume in brand flagship stores for three types of products on the Pinduoduo platform—skincare products, health products, and clothing—is influenced by reputation effects, and compares the strength of reputation effects across these three types of products. This article utilizes SPSS for data statistics and analysis, with data sourced from the fan base and sales volume of official flagship stores of certain brands on the Pinduoduo platform. Through experimental research, we have drawn the following conclusions. Firstly, the fan base of clothing and skincare products has a positive and significant impact on sales volume, while there is no correlation between the fan base and sales volume of health products. Secondly, the correlation coefficient for clothing is higher than that for skincare products, indicating that the fan base of clothing brands has the greatest impact on sales volume. For skincare products, the impact of their fan base on sales volume is relatively smaller than that of clothing brands.

It is noteworthy that there is no correlation between the follower count and sales of health products in this study. The reasons for this may be as follows.

Firstly, a disproportionately large proportion of inactive followers exists. Especially among the elderly population, they are easily lured into becoming fans of certain brands by some small perks offered in health and wellness live streaming sessions, but they are not willing to pay high prices for health products. The reason why this group of people are addicted to health product live streams is mostly due to emotional attachment rather than trust in the products. Followers who lack trust in the brand are merely numbers and do not have the intention to repurchase.

Secondly, health products are trust goods, and there is a significant information asymmetry. Many hosts in health and wellness live streaming sessions disguise themselves as experts, promoting products with half-truths and setting a very low price for the goods. However, the vast majority of health product consumers do not have much medical expertise and cannot judge the rhetoric of these "experts", which may lead to impulsive purchases. However, the effectiveness of health products needs to be verified through long-term use. Although live streaming stimulates consumption in a short period of time, the willingness to repurchase depends on actual efficacy, so sales may not be sustainable.

Additionally, the effectiveness of health products varies from person to person, which may lead to overly subjective reviews on the platform. Since consumers cannot grasp much information about the products, the influence of the "herd mentality" is more significant than for other types of products. Consumers who do not have the habit of watching live streams tend to be influenced by the evaluations of those around them. Therefore, the increase in sales may not necessarily depend on common factors such as promotional efforts, but rather on various unpredictable factors.

Lastly, followers do not equate to consumers. Followers may be health enthusiasts who enjoy watching live streams, while the actual consumers may be those who have already experienced physical problems or fear of illness. Considering various factors, there is no correlation between the follower count and sales of health products.

4.2 Research deficiencies and future directions

Firstly, the sample size of this study is relatively small. The sample size for clothing products is 90, for beauty and makeup products is 61, and for health and wellness products is 69. The sample size for each of these three categories of products is all less than 100. A small sam-

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ple size may lead to statistical results being significantly influenced by individual extreme values, or the research conclusions may not be generalizable. Future research is recommended to increase the sample size for each category of products to 300, in order to verify the generalizability of this conclusion.

Secondly, this study only examined two variables: the independent variable is the number of followers of the product, and the dependent variable is the sales volume of the product. The variables studied are relatively singular. Future research could expand the indicators for evaluating reputation in multiple dimensions, such as statistics on the merchant's service rating, positive review rate, return rate, and customer service evaluation, to facilitate a multi-dimensional exploration of the impact of reputation on sales.

Finally, the research model employed in this study is relatively simple, which may, to some extent, lead to instability in the experimental conclusions. Future research could incorporate control variables related to consumer characteristics, such as consumer age, gender, and geographical location; it could also enrich the model by introducing mediating variables. For instance, platform push streams could be selected as a mediating variable to explore its mediating effect on the relationship between reputation and sales volume.

4.3 Policy recommendations

For platforms, it is once again possible to shape a reputation crisis immunity mechanism through transparent crisis public relations. Platforms need to reconstruct their operational strategies, focusing on "evidence verifiability" and "risk elimination mechanisms". Secondly, a "zero-risk decision-making" model can be designed to safeguard consumers' rights and interests. Furthermore, a diversified participation mechanism can be activated through public testing plans or reward programs for negative reviews. Finally, "infrastructure" for brand reputation building can be provided through data cockpits, compliant content toolkits, and reputation asset securitization.

For businesses, a "reputation asset operation system" can be established to achieve breakthroughs from the follow-ing dimensions. Firstly, data-driven reputation diagnosis can be utilized to optimize indicators across different monitoring dimensions. Secondly, increasing trust and emotional resonance with consumers can be employed to build reputation assets. Businesses must have a clear understanding that consumers are not paying for "brand stories", but rather for the certainty of healthy returns. Finally, search algorithm game strategies can be employed to ensure that consumers purchase not just the material and quality, but also the "ideal self-image" that is imparted by wearing it.

For buyers, they can eliminate inferior products and crown the good ones through open-box inspection and technical anti-counterfeiting measures, transitioning from active consumption to joint construction. Secondly, buyers become the "nerve endings" of brand reputation through social media, spreading authentic content or establishing interest exchange groups, and speaking rationally in times of crisis. They should avoid false advertising and be wary of data falsification. Buyers vote with their wallets, empower with knowledge, and promote brand reputation progress through supervision.

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