

Analysis of the Influence of Online Public Opinions on Consumers' Consumption Choices

-- Taking the Mobile Phone Sales Evaluation of Jingdong Mall as an Example

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Abstract

Network public opinion, as the most active public opinion expression, not only can quickly reflect social from all walks of life present situation and development trend of public opinion, and gradually into all aspects of society, play the role of not allow to ignore, in-depth for network public opinion to multi-agent supply chain behavior of consumer choice, benign promote consumption choices of consumers, for the overall development of the national economy in our country, have the important meaning that not allow to ignore. Based on this, this article to Jingdong mall handset sales evaluation affect consumer choice, for example, in the analysis of the data mining method, the selection of 2000-3999 price range sales of the top ten mobile phone commodities of review analysis and in-depth mining, based on the analysis of evaluation of the influence of consumer choice, targeted for the e-commerce platform and put forward on the development of related businesses, to help the optimized service resource configuration, improve service quality, improve their core competitiveness.

Keywords

Network public opinion, Jingdong mall, Mobile phone sales, Goods comments.

1. Introduction

In recent years, social media has become an increasingly important channel for the enterprises to carry out marketing activities[1], and business social network media's main goal is through positive interaction with customers, to establish and maintain the relationship between the consumer and brand[2], the enterprise can interact with consumers to develop good, influence corporate profits, consumer loyalty and consumers - important variables of brand relationship[3]. And the network economy is becoming more and more developed, e-commerce site, and the third party shopping platform online review mechanism and perfecting the widespread use of mobile social media, greatly promoted the online reviews the generation of information goods, goods review is the interaction between enterprises and consumers, really reflect the e-commerce products and services[4], mainly relates to consumers and experts published about the description of the goods quality and service experience, carrying the consumer perception of a product or service concept and, to the electronic commerce and the sound and rapid development of China's national economy has a strategic role that not allow to ignore[5].Based on this, this paper takes the mobile phone sales of Jingdong mall as an example, mining consumers' consumption tendency through commodity reviews, and then exploring the main factors affecting sales, so as to help enterprises find new breakthroughs in the future development and achieve sustainable development.

2. Theoretical basis

Data mining, also known as knowledge discovery in database, is the current hot issue in research of artificial intelligence and database, is refers to a large number of data from the database to reveal the

implicit, previously unknown and potentially valuable information nontrivial process, is a kind of decision support process, it is mainly based on artificial intelligence, machine learning, pattern recognition methods, such as highly automated analysis the data of the enterprise, make the inductive reasoning, to dig out the potential patterns, help policymakers adjust the marketing strategy, reduce risk, make the right decisions[6].

3. Hypothesis of the impact of commodity evaluation on consumption choices

Before consumers in the purchase decision, I will take certain actions to understand the specific products and e-commerce platform, and the consumers want to purchase the commodity cognitive degree is directly related to a comprehensive evaluation of the product, in turn, affects the degree of judgment and adopted for commodity evaluation, will be to study our consumer evaluation of the impact on the consumer purchase decision problem. The level of consumers' cognition of goods refers to the knowledge and experience of consumers who want to buy goods or services, which are mostly derived from the comments of the goods or services[7].

Relevant studies show that consumers' cognitive ability and level of goods are negatively correlated with their efforts in searching for information. That is to say, the higher the cognitive ability and level of goods are, the less active they are in searching for comment information[8]. On the contrary, consumers with less information and knowledge of goods or services have doubts about the ability to independently choose goods or services, and they need to seek specific evaluations of goods or services from commodity reviews. To sum up, consumers with higher commodity identification ability trust their purchase decisions and seldom consult commodity reviews. However, consumers with lower ability are more dependent on commodity information provided by commodity reviews, which is one of the important factors influencing their consumption choices[9].

3.1 Comment on environmental analysis

With the high speed development of our country in recent years, the network environment is increasingly open, comment on the threshold of the commodity is low, the recognition difficulty, the real intention of many commentators can not understand, goods comments gradually emerged as a weak link of the state, leading to comment on the authenticity of a lot of goods to be fastidious, consumer's trust decline, at this point, goods online reviews compared with the traditional word of mouth, it remains to be improved[10]. But it is undeniable that, as the electronic commerce platform is becoming more and more open, transparent, have ulterior motives commentators to reduce gradually, increasing commodity comments of timeliness, authenticity, to a certain extent, reflect the real product information, is an important reference for consumers make consumption choices, as a result, delve into commodity comment on the specific impact of consumer choice is particularly important.

3.2 Question raising

In recent years, with the rapid development of electronic commerce due to its interactivity, transmission speed, strong confidentiality, strong timeliness, specific characteristics, such as more and more people are released by buying products and e-commerce platform to send comments, commodity comment has become increasingly about consumer choice and important factors influenced the development of e-commerce in the future[11]. Based on this, this paper takes the mobile phone sales of Jingdong mall as an example to deeply explore the specific impact of commodity reviews on consumption choices, so as to get the influencing factors and focus of consumers' consumption choices through analysis, and provide support and help for the future development of e-commerce.

4. Descriptive analysis

The data used in this paper are from Jingdong mall. As of February 20, 2019, the monthly sales volume and sales volume of the products in the range of 2000-3999 are taken as the criteria to select the top 10 mobile phone products for user comment mining:

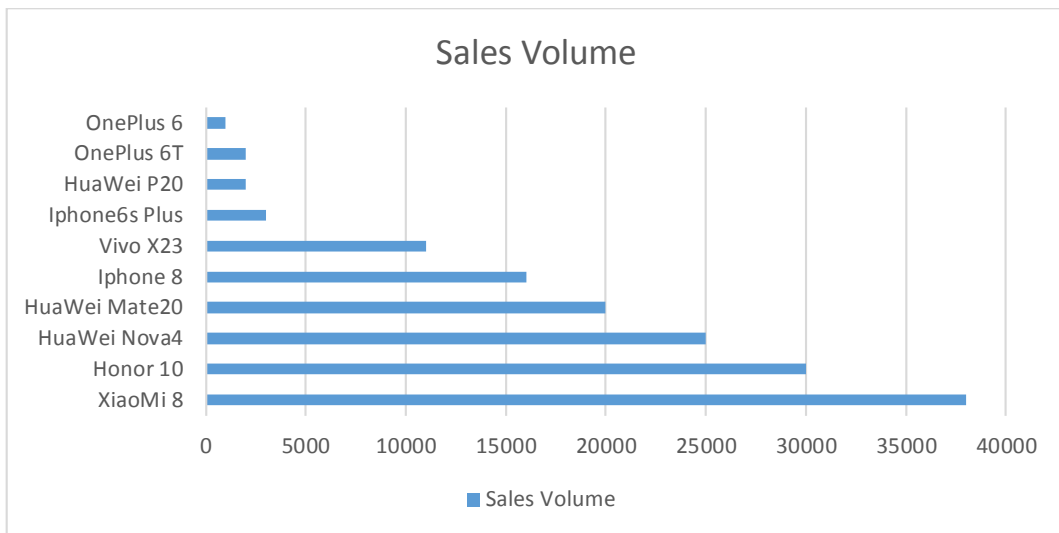


Fig. 1 Sales volume diagram

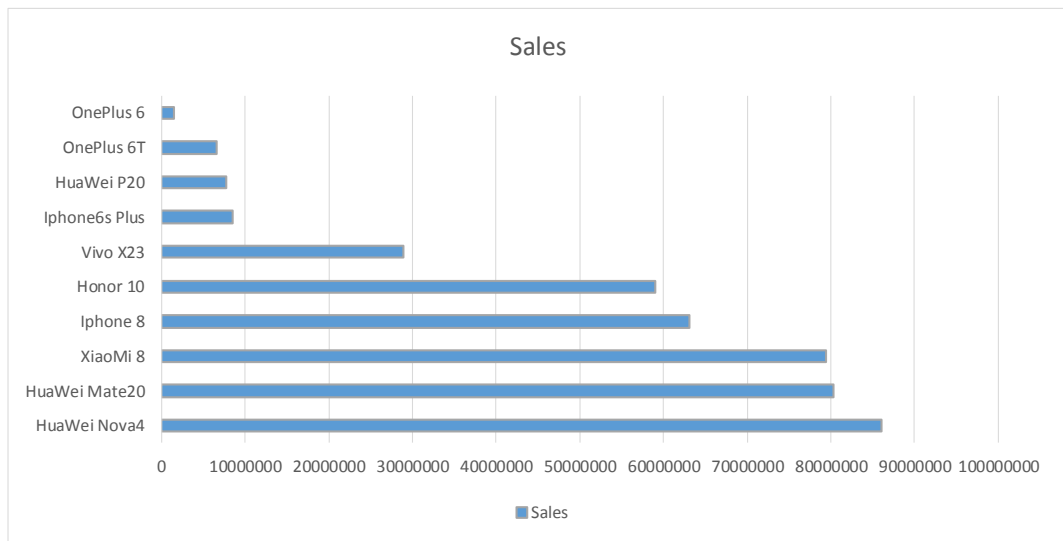


Fig.2 Sales diagram

Through the analysis of Fig.1 and Fig.2, it can be known that:

1. In terms of sales ranking, "xiaomi 8" is far ahead with sales of 38,000, while "glory 10" and "Huawei Nova4" rank second and third respectively with sales of 30,000 and 25,000.
2. In terms of sales volume, "Huawei Nova4" ranks the first with sales volume of 86.029 million yuan, "Huawei Mate20" and "xiaomi 8" rank the second and third respectively with sales volume of 80.348 million yuan and 79.453 million yuan.
3. By comparing Fig.1 and Fig.2, it can be found that "xiaomi 8" occupies the first place in sales volume, but its sales volume ranks the third place, while "Huawei Nova4" and "Huawei Mate20" rank the first and second place in sales volume although their sales volume is lower than that of "xiaomi 8".It indicates that the target customers and price setting of "mi 8" are more civilian and focus on quantity to win;Although the sales volume of "Huawei Nova4" and "Huawei Mate20" is relatively low, it is the brand advantage that wins by quality and sets higher target customers and prices.

Through the comparison of Fig.1 and Fig.2, it is an inspiration for those small and medium-sized e-commerce enterprises who want to enter the e-commerce platform but are difficult to compete with mature big brands: learn the development strategy of "mi 8", follow the low-price and people-friendly development route, win by quantity, and gradually realize seek improvement in stability through initial development.

5. Score analysis

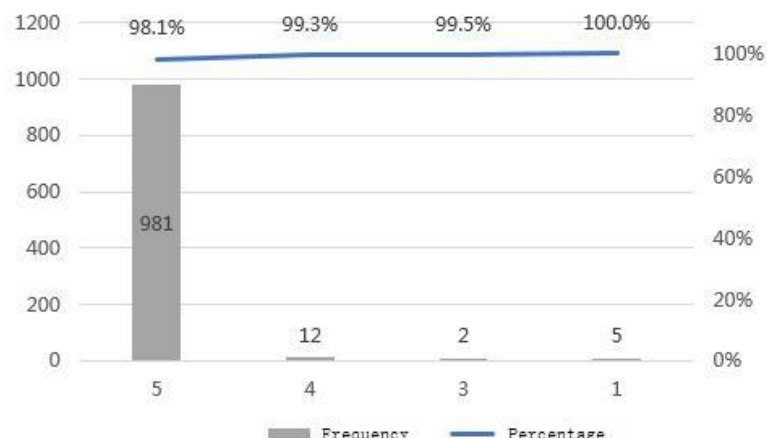


Fig.3 Schematic diagram of commodity scoring

From the perspective of the specific score of commodity evaluation, the score of 5 accounts for a relatively large proportion, which is 98.1%.Score 4 accounts for 1.2%; Score 3 accounted for 0.2%; Score 2 accounts for 0%; The score of 1 was 0.5%.Therefore, the product rating of the data selected in this paper mainly focuses on 5 points, which is the same as the relevant research. Chinese consumers are more inclined to publish positive and positive online comments[12].

6. Word frequency analysis

Table 1 word frequency analysis table

The serial number	Keywords	Word frequency
1	Good	399
2	Jingdong	295
3	Can	279
4	The screen	259
5	Huawei	253
6	System	208
7	One plus	204
8	Smooth	195
9	Apple	187
10	Like	184
11	Speed	184
12	Taking pictures	174
13	Use	168
14	The problem	162
15	Millet	157
16	Soon	142
17	Feel	134
18	Evaluation	130
19	The fingerprint	128

20	Support	127
21	Courier	126
22	Hope	122
23	Satisfied with the	121
24	Has been	120
25	Charging	118
26	Run	115
27	Experience	108
28	Received	108
29	Unlock	103
30	Logistics	103



Fig.4 Word cloud map

By analyzing the word frequency table and word cloud graph of commodity evaluation, it can be concluded that the words related to specific parameters of mobile phone are more mentioned by consumers in commodity reviews, such as "screen", "system", "picture taking" and so on. To see that when consumer is choosing mobile phone products, pay more attention to the quality of the mobile phone and configuration problems, especially in recent years, as the news revealed that e-commerce platform counterfeiting, counterfeits case gradually increase, make consumer e-commerce platform of goods sales questions more and more high[13], based on this, e-commerce platform and related enterprises should pay attention to strengthening the construction of the quality of the goods online, strengthen the marketing channel construction and maintenance, let every consumer can buy can check to the source, quality excellent product[14].

7. Word frequency analysis Document clustering and term analysis

In most cases, text clustering is mainly divided into two categories: partition method and hierarchical method, in addition to base density method and grid method. At the same time, the basic facts of online commodity comment data are not always available. Therefore, the commodity comment information in this paper is processed by text denoising, word segmentation and stop word filtering, and then most of the sparse terms are removed by feature selection method, and clustering analysis is conducted on word items and documents respectively[15].

K-means and k-medoids clustering algorithms are adopted for document clustering, and systematic clustering method is adopted for word item clustering.

7.1 Description of clustering results

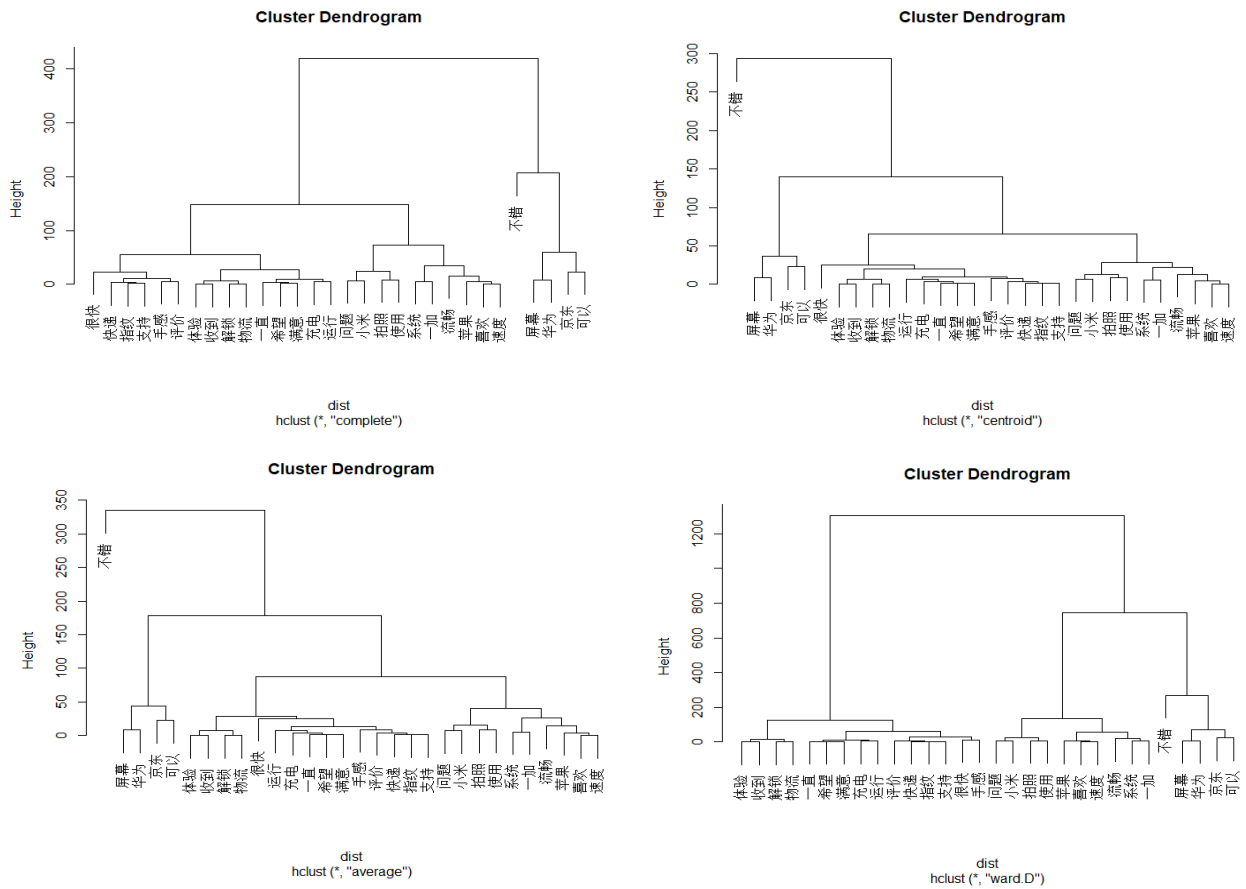


Fig.5 Term cluster diagram

For the clustering of the 30 retained feature terms after refinement, four kinds of merging methods, such as the sum of squares of deviations, the average of classes, the longest distance and the barycenter method, were adopted respectively, and the final fig.5 was obtained.

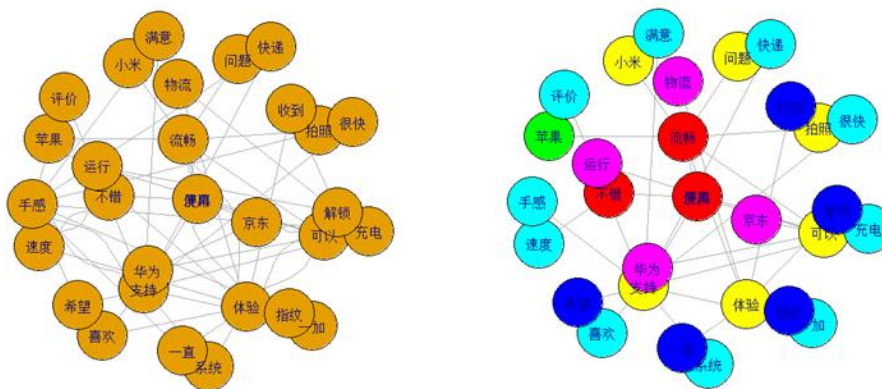


Fig.6 Results of document clustering

After the document clustering of feature words, fig.6 is obtained.

7.2 Cluster results analysis

It can be seen from FIG.6.1.1and FIG.6.1.2that the current product evaluation presents several prominent features: first, the photo performance and photo experience of xiaomi mobile phone are highly evaluated; Secondly, I am satisfied with the fluency, screen material and overall performance of Huawei's integrated system. Third, I am satisfied with the overall logistics service level of Jingdong mall. Generally speaking, the cluster analysis of commodity reviews reflects that the current

commodity evaluation mainly focuses on the quality of the commodity itself, indicating that consumers pay more attention to quality factors when making consumption choices[16].

8. Correlation analysis

Table 8.1 Correlation analysis

Correlation Analysis								
		Fluency	Photograph	Screen	Touch	Fingerprint	Sales volume	Price
Fluency	Pearson Correlation	1	0.221	0.874**	0.839**	0.757	-0.142	-0.012
	Significant double tails		0.54	0.001	0.002	0.011	0.695	0.974
	The case number	10	10	10	10	10	10	10
Photograph	Pearson Correlation	0.221	1	0.121	0.409	0.125	0.018	0.036
	Significant double tails	0.54		0.738	0.241	0.731	0.961	0.922
	The case number	10	10	10	10	10	10	10
Screen	Pearson Correlation	0.874**	0.121	1	0.777**	0.761*	-0.207	0.251
	Significant double tails	0.001	0.738		0.008	0.011	0.567	0.484
	The case number	10	10	10	10	10	10	10
Touch	Pearson Correlation	0.839**	0.409	0.777**	1	0.854**	-0.492	0.188
	Significant double tails	0.002	0.241	0.008		0.002	0.149	0.603
	The case number	10	10	10	10	10	10	10
Fingerprint	Pearson Correlation	0.757**	0.125	0.761*	0.854**	1	-0.231	0.129
	Significant double tails	0.011	0.731	0.011	0.002		0.52	0.722
	The case number	10	10	10	10	10	10	10
Sales volume	Pearson Correlation	-0.142	0.018	-0.207	-0.492	-0.231	1	-0.393
	Significant double tails	0.695	0.961	0.567	0.149	0.52		0.262
	The case number	10	10	10	10	10	10	10
Price	Pearson Correlation	-0.012	0.036	0.251	0.188	0.129	-0.393	1
	Significant double tails	0.974	0.922	0.484	0.603	0.722	0.262	
	The case number	10	10	10	10	10	10	10

**The correlation was significant at the 0.01 level(Double-tailed).

*The correlation was significant at the 0.05 level(Double-tailed).

According to the cluster analysis conducted by 7 and the word frequency analysis of commodity reviews, some factors that consumers will focus on when buying mobile products in Jingdong mall can be concluded, namely, smoothness, taking photos, screen, feel, fingerprint, price, etc. Through Pearson correlation analysis, it can be concluded that there is no significant correlation between sales volume and price and various hardware parameters of commodities. Therefore, while focusing on constantly improving product quality and optimizing product price, relevant enterprises and Jingdong mall can pay more attention to the aspects other than mobile phone price and hardware configuration to improve product sales.

9. A number of factors determining the extent to which commodity reviews affect consumption choices

9.1 Consumption tendency of consumers

The fundamental factor and necessary premise that decide consumption choice is consumer's consumption tendency, is the most fundamental factor that decide the commodity comment to consumption choice influence degree[17]. In general, when consumers have consumption desire and then consumption tendency, commodity review plays an active role in promoting consumption choice. When the consumer's consumption desire is general and the consumption tendency is not clear, the positive product reviews related to the comprehensive quality of goods have more influence on the consumption choice than the negative product reviews. When consumers are not inclined to consume, product reviews generally have no impact on consumption choices[18].

9.2 Validity of existing comments

In e-commerce platform, most consumers do not evaluate the goods or for some reason a one-sided evaluation, and according to the survey, the professional evaluation of the impact on consumers more, so, when this kind of phenomenon frequently appeared, will greatly influence the comment on the effectiveness of the goods, finally choose reverse promoting effect on consumption.[19] Therefore,

based on the analysis in this paper, when the effective evaluation of the comprehensive quality of goods is in the majority, it will promote the consumption choice, and the effective evaluation quantity is proportional to the promotion of the consumption choice[20].

9.3 Rely on the trust of the platform

At the present stage, some e-commerce platforms or merchants, due to excessive pursuit of economic interests, often take the undesirable phenomenon of publishing false information, producing and selling fake goods, and commenting on fake goods, which harms the vital interests of consumers[21]. Based on this, when the comprehensive reputation of e-commerce platform is good, it can effectively reduce the perceived risk of consumers, thus increasing consumers' trust in online shopping, the authenticity and effectiveness of commodity evaluation will be correspondingly improved, and its promoting role in consumer consumption choice will also increase[22].

10. Suggestions on the development of e-commerce platforms and related enterprises

10.1 Establish and improve the trust mechanism of commodity review system

To electronic business platform and related enterprises, establish and improve the product review system trust mechanism, according to goods to comment on the goods and the enterprise comprehensive ranking, would be more blunt, objective evaluation, in order to fundamentally contributed to various enterprises and businesses to raise their goods quality and service quality, and by strengthening supervising comments, timely exposure management platform of fake and shoddy goods or business, investigate the facts, according to the relevant provisions of the state, severe punishment, in order to realize the comments on the authenticity of commodity, the reliability of the improved steadily[23].

10.2 Establish an incentive mechanism for commodity evaluation

E-commerce platform or related enterprises through the establishment of evaluation incentive mechanism, on the maximum increase consumers' enthusiasm and comment the quality of products and services, and encourage consumers to buy goods for goods after comments, so as to enrich the content of goods comments embodied, eventually to strengthen its role in promoting consumption choices[24]; In the case of negative comments, timely communication with reviewers, understand the causes of negative comments, take appropriate measures to remedy[25].

10.3 Conduct a series of marketing activities based on product reviews

E-commerce platform or related enterprises should attach great importance to the important role of and give full play to their comments, carry out a series of marketing activities: first of all, according to one kind of goods or services, there will be a number of well-known website or personal conduct comprehensive review, to integrate and absorb the consumers for goods or services of opinions and views, platform or enterprise should focus on and sort out these opinions and point of view of consumers, and targeted to improve products and services[26]; Secondly, platforms or enterprises can invite consumers, evaluation websites or individuals to conduct trials of goods and services, and then publish trial evaluations. These evaluations are usually of high credibility and play a strong role in promoting consumption choices. Finally, the relevant network marketing strategies such as improving the product details page, adjusting the color of the web page, designing the price comparison system, increasing the promotion intensity, and improving the after-sales service should be developed efficiently according to the product comments [27].

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