

Research on Consumers' Perceived Risks and Boycott Intention in Cross-border Online Purchase of Beauty Products

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Abstract

Under the development momentum of Cross-border E-commerce, the category of cosmetic care has become a new growth point, but the frequent fake crisis has pushed it to the forefront, which has greatly affected the enthusiasm of consumers to buy. Previous studies have shown that perceived risk has a significant impact on consumers' purchase intention, so this paper analyzes consumers' focus by combing the literature and mining online comments, and based on the theory of perceived risk, construct a theoretical model of perceived risk and consumer boycott intention and put forward relevant hypotheses to conduct a questionnaire survey on Chinese Cross-border online shopping makeup users. Using SPSS software, this paper makes an empirical analysis on the relationship between Product Risk, Financial Risk, Logistics Risk, Service rights Risk, Privacy Risk and consumer boycott intention. The results show that product and financial risk have the most significant and positive influence on consumers' boycott intention, among which financial risk has the greatest influence.

Keywords

Perceived Risk; Boycott Intention; Beauty Products; Cross-border Online Shopping.

1. Introduction

China's e-commerce has entered a stage of rapid development, the scale is constantly expanding, and the product categories go deep into all aspects of clothing, food, housing and transportation. At the same time, with the further implementation of the "Belt and Road Initiative" policy, we will promote the all-round development of Cross-border E-commerce in our country. According to data from IIMEDIA, the overall transaction size of China's Cross-border E-commerce in 2019 has exceeded 10 trillion yuan, with users reaching 154 million yuan [1]. At present, the main imported Cross-border E-commerce platforms in China are occupied by the comprehensive e-commerce platforms set up by the current Internet giant companies, such as TMALL International, Taobao Global purchase, JD.com Global purchase, NetEase koala Sea purchase and so on. In addition, the turnover of imported beauty makeup at JD.com 's "Black five" overseas Shopping Carnival in 2020 increased by 140% over last year, a four-fold increase over the same period last year [2].

In the context of the rapid development of Cross-border shopping, beauty makeup e-commerce has become a new growth point of Cross-border E-commerce. In addition, the emergence of all kinds of cosmetic products under the Internet environment, the increase in the number of cosmetic bloggers in the online celebrity economy, the rise and development of short videos and live streaming platforms, and a series of factors further accelerate the development of cosmetic e-commerce, making it one of the rapidly growing Cross-border E-commerce categories in recent years.

However, at present, there are a series of problems in Cross-border E-commerce, such as the good and the bad, international big brands and fake brands; it is difficult to guarantee the

authentic goods, and the fake goods flood the market; it is difficult to return and exchange goods, and the merchant customer service shirks its responsibility. In addition, there are a series of information security problems, such as personal privacy disclosure, network fraud and so on. From the point of view of enterprises, the existence of these problems has caused Cross-border makeup e-commerce to face difficulties such as consumer mistrust, negative word-of-mouth publicity and so on. Therefore, solving these problems has become a top priority for the development of Cross-border cosmetic e-commerce enterprises.

From the consumer's point of view, on the one hand, due to the existence of these problems, consumers have a very negative impression, which makes consumers have a lot of uncertainty when shopping. the risk caused by this uncertain factor is collectively referred to as perceived risk [3]. The existence of perceived risk greatly affects consumers' shopping experience and purchase intention, so this paper uses perceived risk theory to analyze the factors that affect consumers' cosmetic intention in Cross-border online shopping. On the other hand, with regard to the research on the relationship between perceived risk and consumer intention, scholars usually think that perceived risk directly affects consumers' purchase intention, but in the actual purchase process, when consumers feel that there is a certain risk, a series of measures will be taken to avoid or reduce the risk [4]. Usually, emotional or behavioral tendencies such as aversion to this product, giving up buying, hesitating and refusing to buy again occur, which is a manifestation of consumers' boycott intention. therefore, this paper takes the perceived risk as the factor affecting consumers' boycott intention.

To sum up, the purpose of this paper is to study the relationship between consumers' perceived risk and boycott intention when purchasing cosmetic products across borders, so as to find out which risk factors will influence consumers' resistance intention when purchasing cosmetic products across borders. At the same time, in order to find out which risk factors have the strongest resistance intention to consumers, and then put forward relevant suggestions for these influencing factors. Hope to be able to put forward corresponding development suggestions and countermeasures for the development of Cross-border cosmetic e-commerce.

2. Literature Review

2.1. Research on the Relationship between Perceived Risk and Boycott Intention.

The research on perceived risk can be traced back to the proposal of perceived risk. At first, perceived risk is a concept extended from psychology by Harvard psychologist Bauer (1960). He believes that any consumer's purchasing behavior will have corresponding results, but consumers may not know exactly whether the final results meet the initial expectations, and bad results often make consumers feel unhappy. Consumers' uncertainty about the results in the process of purchase is called perceived risk [5]. Functional risk, financial risk, physical risk, psychological risk, social risk and time risk are also recognized as the six dimensions of perceived risk, with the development of Internet and e-commerce, the researchers put forward payment risk, privacy risk and delivery risk on the basis of the original theory.

From the point of view of studying the relationship between perceived risk and purchase intention, few scholars have studied the relationship between perceived risk and boycott intention. Sung (2018), Ahmadinejad (2017) believes that perceived risk affects consumers' use and purchase intention [6] [7]. They studied the Internet of things services and online discount products respectively, and concluded that the perceived risk has a significant impact on the use and purchase intention. Tho (2017) studies the relationship between perceived risk and buyback intention [8]. He believes that there is a negative correlation between them. Aldousari (2017) studies perceived risk as an intermediary variable [9]. He studies how perceived risk affects consumers' evaluation of retail brands from six dimensions: product, economic,

psychological, social risk, environment and price. Chen (2017) regards perceived risk as a moderating variable [10]. He believes that perceived risk plays an obvious moderating role between consumers' perceived orientation and purchase intention.

In addition, the research on perceived risk and purchase intention shows a certain situation. Most scholars discuss the perceived risk in a certain field, but there is little about the relationship between perceived risk and boycott intention. For example, Lu (2020) takes the perceived risk in online shopping as the research object [11]. He believes that social and functional risks have a significant reverse impact on purchase intention. Xuan (2017) locates the research object to personal cloud storage users, and discusses the perceived risk and deep use intention of personal cloud storage users [12]. He developed a new perceived risk measurement scale for personal cloud storage and studied the impact of perceived risk on users' intention to use depth. Yan (2017) studies the relationship between perceived risk of green consumption and consumers' purchase intention [13]. He believes that the way that perceived risk affects consumer purchase is mainly achieved by affecting consumer trust, and the impact of social risk is the most obvious.

In recent years, the research on consumer boycott intention has mainly focused on analyzing the impact of objective facts and corporate behavior on boycott intention. Few researchers have focused on consumers themselves to study the influence of subjective feelings on boycott intention. For example, Xie (2012) studied the factors that affect consumers' boycott intentions and boycott behaviors in the context of negative exposure events [14]. Deng and Long (2017) believe that corporate responsibility plays an important role in consumer boycott intentions and behaviors [15]. They believe that when consumers feel the greater the responsibility of a company, consumers will reduce their resistance to it.

2.2. Research on Cross-border Online Shopping

The development of e-commerce has led to the growth and development of a series of Cross-border online shopping forms, such as overseas purchasing agents, Haitao, Cross-border E-commerce platforms and so on. The relevant research on Cross-border online shopping also focuses on the analysis of Cross-border online shopping policy factors, development prospects, the influencing factors of consumers' online shopping intention and so on. For example, Shi (2014) proposed that for China's small Cross-border E-commerce, the government's regulatory system, regulations and policies still need to be improved [16]. Jiang (2016) used SWOT analysis method to analyze the prospect of overseas purchasing agents [17]. As for the research on the influencing factors of Cross-border online shopping intention, most scholars are constantly enriched on the basis of their predecessors. For example, Ying (2017) introduced perceived popularity, perceived promotion gains and cultural values into the existing theory to analyze its impact on online shopping intention [18]. Huang (2017) analyzes the purchase intention of Cross-border online shopping of maternal and infant products from five aspects: technology acceptance model, perceived risk theory and Cross-border reference group [19]. Chen (2017) takes customer trust as an intermediary variable to analyze consumers' perception of 3P (value, cost, risk) and customers' recognition of foreign culture to study customers' Cross-border online shopping intention [20].

At present, there are few studies on the relationship between Cross-border online shopping and consumer boycott intention, mainly on Cross-border online shopping and consumer purchase intention, and there are few studies on Cross-border online shopping intention of beauty products. Most scholars pay attention to the overall Cross-border online shopping intention. Therefore, this paper starts with the Cross-border cosmetic e-commerce industry, combined with perceived risk to analyze the Cross-border online shopping consumers' boycott intention of cosmetic products.

2.3. Research on Consumer Online Review

The related research on consumer online reviews mainly takes online reviews as an important factor to study consumers' purchase intention, decision-making and promote sales. Du (2017) believes that the quantity, quality, content, utility and potency of consumer online reviews all positively affect consumers' purchase intention [21]. Li (2013) discusses the impact of online reviews on consumers' perceived goods and enterprise sales by analyzing the usefulness of online reviews [22]. She believes that the online comment information attached to the product when it is displayed to consumers can positively affect the product sales of enterprises. Secondly, some scholars study online comments as an intermediary variable. Shi (2017) makes an empirical analysis on the relationship among online comments, perceived risk and purchase intention [23]. He believes that for products with different attributes, consumers will be affected by online reviews, so that different dimensions of perceived risk have varying degrees of impact on consumers' purchase intention. In addition, some scholars dig out valuable information through semantic or emotional analysis of the online comment text. Xie (2018) put forward the emotional analysis method of online comment text from the perspective of text emotion analysis and online review text analysis is helpful for businesses to further understand consumers and make better decisions [24]. At the same time, they also mentioned that the emotional analysis of online comments has some shortcomings, such as limited to opinion words, random text recognition and so on. In summary, from the research of various scholars, we can see that online reviews play a very important role in analyzing consumers' purchase intention, mining valuable information and studying how to develop more accurate marketing methods.

To sum up, by combing the relevant literature review, most researchers study perceived risk and purchase intention, rarely involve consumer boycott intention, and the research on Cross-border online shopping also defines the object as the whole background of Cross-border online shopping, and there are few for Cross-border cosmetic e-commerce, so this paper studies the consumer perceived risk and boycott intention of Cross-border cosmetic e-commerce. Secondly, for the determination of the dimension of perceived risk, most researchers add what they think are the influencing factors on the basis of previous studies. This paper believes that the factor that consumers pay most attention to is the source of risk, and only when there is something wrong with the factors that consumers care about, consumers will have uncertainty when they buy. Therefore, this paper uses the method of web crawler to get the factors that consumers pay most attention to in the online reviews of Cross-border cosmetic products.

3. Research Design and Hypothesis

3.1. Online Comment Data Mining

This paper selects three domestic Cross-border imported e-commerce platforms: TMALL International, JD.com Global Shopping and NetEase Koala Sea Shopping, and selects two kinds of Cross-border cosmetic products, such as mask and lipstick, from consumers' preference for cosmetic products. Crawl the online evaluation data from the three e-commerce platforms, and analyze the focus of cosmetic products that consumers pay attention to in the commentary text data.

Through the web crawler tool, a total of 10200 masks and lipsticks were collected from TMALL International, JD.com Global Shopping and NetEase Koala Hai Shopping, including 5200 mask reviews and 5000 lipstick comments. Because there are many redundant and invalid data in the initial data, it is necessary to filter and clean 10200 pieces of data.

3.1.1. Data Filtering to Extract Attribute Word Set

The screening of data is mainly divided into three steps: (1) to remove weight and remove invalid data. First of all, the duplicate evaluation in the data is screened out and deleted, and the invalid evaluation such as "this user is not evaluated in time, the system default praise" is selected and deleted. After preliminary screening, a total of 9143 online evaluation data were left, including 4869 mask comments and 4274 lipstick comments. (2) manual labeling. Because there are many comments that do not clearly show attribute words in the comment data, such as "order is placed in the morning, it will be delivered the next day" as "logistics" attribute. (3) screen attribute words. After the above two steps, the attribute words are screened, and the words with obvious attributes in the online comments are screened out and classified.

3.1.2. Statistical Word Frequency Analysis of Consumer Attention

After the screening of attribute words, in order to understand which factors consumers mentioned most in the evaluation, and then carry on the word frequency statistics of the selected attribute words. Mainly uses the ACCESS database technology, creates the LIKE function to carry on the fuzzy query, the SQL query sentence is as follows:

```
SELECT Sheet1.ID, Sheet1.Evaluation content  
FROM Sheet1  
WHERE (((Sheet1. Evaluation content) Like "* authentic *"));
```

After the statistics of the word frequency of the above attribute words, the consumer attention of the two types of products such as mask and lipstick is shown in figure 1. it can be seen that except for the attribute words that reflect the attitude of consumers, the most high-frequency attribute words are product attribute words. such as whether it is authentic, packaging and other attribute words. The second is the vocabulary related to finance, such as price, price, performance-to-price ratio and other attribute words, and the third is the attribute words related to logistics and service rights protection.

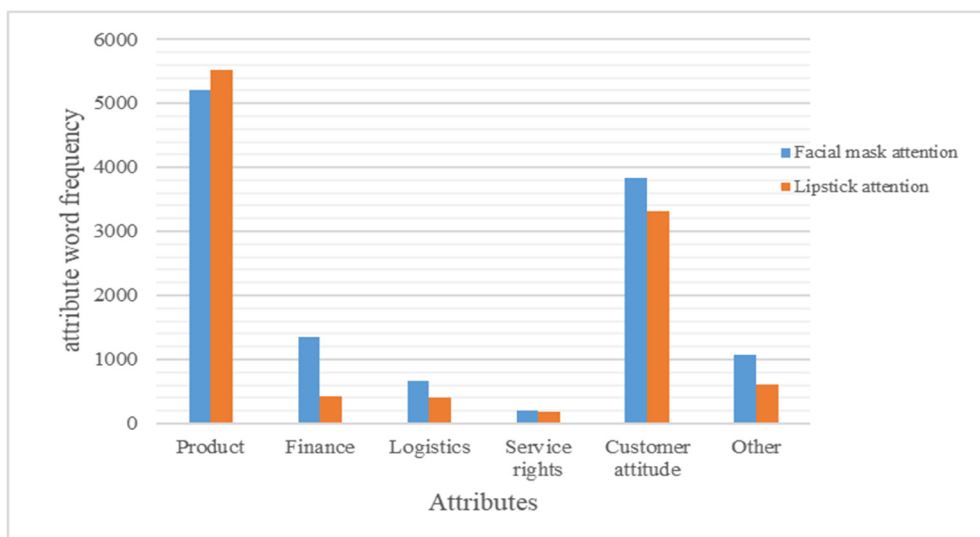


Fig 1. Statistical chart of attention (attribute word frequency) of mask lipstick

Comparing the consumer attention of facial mask and lipstick, we can see that the product factor is the most concerned factor in the eyes of consumers in the online evaluation. It shows that the value of the product that consumers pay most attention to when buying cosmetic

products across borders and the value that the product can bring to consumers themselves, such as whether the product is authentic, whether it has an effect on their own skin, and so on. The second is the financial factor, which shows that when Cross-border online shopping, consumers are concerned about whether the product price is within the price range they can accept, whether the product has an active price, whether there is a full discount, and so on. Once again, logistics, service rights protection and other factors are also factors that consumers pay more attention to in Cross-border online shopping, such as whether the logistics time is within the time expected by consumers themselves, whether customer service is patient to solve the problem, whether the return and exchange of goods is handled in a timely manner, and so on.

3.2. Perceived Risk Dimension

According to the previous statement, consumers are most concerned about product factors when shopping cosmetic products across borders, followed by financial, logistics and service rights protection factors. In addition, in recent years, the frequent leakage of information on the Internet, names, phones and other personal information have been leaked, and privacy has become the most concerned issue for consumers. Therefore, combined with the consumer concern factors and perceived risk theory obtained through online review mining, the consumer perceived risk dimension of Cross-border online shopping cosmetics products is defined as product risk, financial risk, logistics risk, service rights risk and privacy risk. On the definition of the dimension of perceived risk in online shopping, the major researchers have given their own definition and interpretation, including economic (financial) risk, functional risk, time risk, privacy risk, social risk, psychological risk, physical risk service risk, performance risk, delivery risk, payment risk, source risk (Jing [25], 2005; Dong [26], 2005; Sun [27], 2005; Yu [28], 2006). Therefore, combined with the definition of the risk dimension by various researchers, this paper defines the meaning of the five dimensions of perceived risk as shown in Table 1:

Table 1. Perceived Risk Dimension

Risk dimension	Definition
Product risk.	Cross-border online shopping products have their own problems or the risk of not meeting their expectations.
Financial risk.	Cross-border online shopping will cause currency losses or the risk that the price of the product itself is higher than that of homogeneous products.
Logistics risk.	The risk of personal loss caused by logistics when Cross-border online shopping
Service rights risk.	The risk of not being able to enjoy good after-sales service when Cross-border shopping
Privacy risk	Cross-border shopping risks the disclosure of basic personal information or the tracking of consumption records.

3.3. Models and Hypothesis

To sum up, on the basis of other scholars' research on perceived risk and Cross-border online shopping intention, the research on the resistance intention of Cross-border online shopping of beauty makeup products puts forward the following theoretical model: take the financial risk, logistics risk, privacy risk, product risk and service rights risk as independent variables in the study, and consumers' resistance intention as dependent variables.

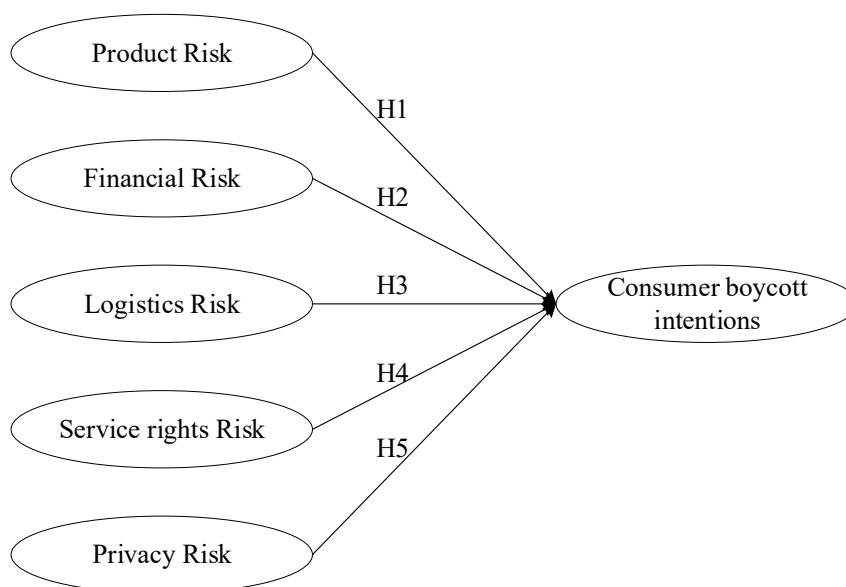


Fig 2. Theoretical Model

For any product, quality is the first element for consumers. Consumers who choose to buy make-up products value their ability to care for and beautify their own functions, and they will know the efficacy of the products they need to buy through various channels before buying them, and in the case of Cross-border online shopping for beauty products, consumers cannot have personal experience like offline stores, so they are particularly worried about whether the features of the products can meet their expectations. Therefore, this paper makes the following assumptions:

Suppose H1: product risk has a significant positive impact on consumers' boycott intention.

A series of events, such as false propaganda on Cross-border E-commerce platform, online fraud of WeChat moments purchasing agents, endless emergence of fake goods, low-quality and high-price beauty products, price reduction as soon as they buy, make consumers suffer serious economic losses. If consumers suffer financial losses in the process of Cross-border online shopping, it is likely that consumers will no longer choose to buy or focus on other products at the same price. Therefore, this paper makes the following assumptions:

Suppose H2: financial risk has a significant positive impact on consumers' boycott intention.

In the logistics and transportation process of Cross-border online shopping, a series of transport hurdles, such as long-distance transportation, complex cargo transshipment process, tedious customs inspection process and so on, make consumers face logistics risks. In addition, if there is something wrong with the goods, they need to be returned and exchanged in time, but the limitation of time and space makes the whole process very long and inefficient. Given these circumstances, consumers may give up buying or choosing other time-saving goods. Therefore, this paper makes the following assumptions:

Suppose H3: logistics risk has a significant positive impact on consumers' boycott intention.

Consumers of Cross-border online shopping for cosmetic products may not be able to contact merchants or customer service in time to deal with after-sales problems, and there is no after-sales protection. In addition, the quality of service can not be guaranteed, especially when most consumers who choose overseas purchasing agents have after-sales problems, it is difficult to get good after-sales service. Therefore, this paper makes the following assumptions:

Suppose H4: the risk of service protection has a significant positive impact on consumers' boycott intention.

In big data's era, any browsing and registration information of consumers on the Internet was recorded on the Internet, and in recent years, the problem of privacy disclosure also emerged one after another. After buying products on the Internet, merchants learned about consumers' personal information. They carry out text messages or telemarketing without permission, and even some lawbreakers use consumers' mobile phones, identity cards and other information to make loans, causing consumers to suffer losses. Therefore, this paper makes the following assumptions:

Suppose H5: privacy risk has a significant positive impact on consumers' boycott intention.

Next, in order to verify whether the hypothesis is valid, the data are collected by questionnaire survey and statistical analysis is carried out to verify the hypothesis.

4. Data Analysis

4.1. Scale Design and Data Collection

On the basis of reading a large number of literatures (Yan [13] (2017); Wang [29] (2018); Wang [30] (2020); Hu [31] (2021); Zhu [32] (2020)). Combined with personal experience, the Likert five-level scale method is adopted, and the measurement table of consumers' perceived risk and willingness to resist for Cross-border online shopping of cosmetics products is shown in Table 2:

The questionnaire collection is mainly distributed and filled out through the network, a total of 231 questionnaires were sent out, and then excluding all the topics selected the same item, contradictory and other invalid questionnaires, 200 valid questionnaires were recovered, and the questionnaire recovery rate was 86.58%. Then use SPSS software to make a preliminary analysis of the collected data.

4.2. Descriptive Statistical Analysis

According to Table 3, there are 200 people in this survey, of which 66 are male, accounting for 33%, and 134 are female, accounting for 67.0%, mainly aged between 21 and 25. Monthly disposable income is mainly concentrated in the range of 1000 to 2000 yuan, and 78 per cent of people said they had Cross-border online shopping experience as to whether they had Cross-border online shopping for cosmetic products. Among the respondents who have had Cross-border online shopping for cosmetic products, statistics on which channels they use are shown in Table 4, which shows that most consumers choose overseas purchasing agents and overseas shopping through Cross-border imported e-commerce retail platforms.

4.3. Reliability and Validity Analysis

The main measure index used in reliability analysis is Cronbach's α coefficient, when the value of α is higher than 0.8, the reliability is high; if this value is between 0.7 and 0.8, the reliability is good; if this value is between 0.6 and 0.7, the reliability is acceptable; if this value is less than 0.6, the reliability is not good. Using SPSS software to measure the reliability of each measurement index in this paper is shown in Table 5:

As can be seen from Table 5, the Cronbach's α of the population scale is greater than 0.8, and the α coefficients of other variables are greater than 0.6, which meets the requirements of the study, and the reliability of the questionnaire is good.

Table 2. Variable Measurement Scale

Variable		Item
Perceived risk	Product Risk	a1. I am worried about buying fake goods and defective products. a2. I am worried that the products I buy will make me allergic or uncomfortable. a3. I am worried about buying "foreign" products made at home. a4. I am worried that the products bought are not as good as advertised by the merchants. a5. I am worried about buying "three nots" and "expired" products. a6. I am worried that the products I bought will disappoint me.
	Financial Risk	b1. I am afraid that I will buy goods of the same quality at a higher price. b2. I'm afraid I'll buy a fake at the price of the real thing. b3. I am worried that the goods without free delivery will cost me more for logistics. b4. I am afraid that when the goods need to be returned and exchanged, I will have to bear the postage alone. b5. I am worried about the high tariff when going through customs. b6. I am worried that the unsafe payment environment will lead to the theft of credit cards and bank cards. b7. I am worried about Internet fraud.
	Logistics Risk	c1. I'm afraid the transportation process will take a long time. c2. I am worried that the goods will be swapped or lost in the course of transportation. c3. I am worried that there will be distribution errors in the process of transportation. c4. I am worried that the goods will be damaged due to long transportation process, violent transportation, etc. c5. I am worried that my choice of logistics mode will affect the speed and quality of logistics distribution.
	Privacy Risk	d1. I am worried that my personal information (name, phone number, address) will be disclosed. d2. I am worried that my personal information will be illegally used (e. G. "loaned"). d3. I am worried that my shopping information and habits will be leaked and tracked. d4. I am worried that merchants will often promote and harass them by phone, text message, e-mail, etc.
	Service Rights Risk	e1. I am worried that once the goods are damaged, it will be difficult to carry out the responsibility. e2. I am worried that I will not be able to contact the merchants when safeguarding my rights. e3. I am worried that the merchant will not return or exchange the goods for me.
Boycott intention		z1. I will not choose Cross-border online shopping for cosmetic products in the future. z2. In the future, I will reduce the online purchase of Cross-border cosmetic products. z3. I will choose to buy other domestic products.

Table 3. Distribution of demographic variables

		Number	Percentage
Sex	Male	66	33.0%
	Female	134	67.0%
Age	Under the age of 20	13	6.5%
	21 years old, 25 years old	92	46.0%
	26 years old, 30 years old	55	27.5%
	31 years old, 40 years old	32	16.0%
	Over 40 years old	8	4.0%
Monthly disposable income	Less than 1000 yuan	41	20.5%
	1000-1499 yuan	45	22.5%
	1500-1999 yuan	65	32.5%
	2000-2999 yuan	25	12.5%
	Over 3000 yuan	24	12.0%
Cross-border online shopping experience	Yes	156	78.0%
	No	44	22.0%
Total		200	100%

Table 4. Distribution of Cross-border online shopping channels

Purchase channel	Number	Percentage
Overseas purchasing agent	129	82.69%
Cross-border import e-commerce platform	115	73.72%
Self-purchase	44	28.21%

Table 5. Cronbach's α coefficient of each dimension

Variable dimension	Cronbach's α
Reliability of the total scale	0.908
Product Risk	0.757
Financial Risk	0.804
Logistics Risk	0.727
Privacy Risk	0.710
Service Rights Risk	0.696
Product Risk	0.707

Validity analysis is used to study the design rationality of quantitative data, first analyze the KMO value, if this value is higher than 0.8, then the validity is high; if this value is between 0.7 and 0.8, then the validity is good; if this value is less than 0.6, the validity is not good. Then carries on the factor analysis, the factor load corresponding to the item should be more than 0.4 effective, and the cumulative variance explanation should be more than 60% effective. Then the validity analysis is carried out according to the sample data, as shown in Table 6 and Table 7:

Table 6. The significance of the test of sphericity between the value of KMO and Bartlett

KMO		0.869
Sphericity Test of Bartlett	χ^2	1954.456
	df	351
	P	.000

Table 7. Factor load coefficients of variables

Variable dimension	Item	Factor loading
Product Risk	a1	0.773
	a2	0.517
	a3	0.474
	a4	0.583
	a5	0.630
	a6	0.471
Financial Risk	b1	0.527
	b2	0.686
	b3	0.575
	b4	0.519
	b5	0.618
	b6	0.616
	b7	0.670
Logistics Risk	c1	0.725
	c2	0.617
	c3	0.681
	c4	0.578
	c5	0.574
Privacy Risk	d1	0.807
	d2	0.491
	d3	0.590
	d4	0.742
Service Rights Risk	e1	0.617
	e2	0.676
	e3	0.651
Boycott intention	z1	0.551
	z2	0.779
	z3	0.721

As can be seen from Tables 6 and 7, the KMO value of the variable is greater than 0.8, indicating high validity; the factor load values of each variable are all greater than 0.4, and the total cumulative variance explanation degree of the variable is 67.92%. The above values meet all the indicators, so the validity of the questionnaire is good and can be analyzed in the next step.

5. Results

5.1. Average Value of Each Dimension of Perceived Risk

Through factor analysis, six common factors are extracted, namely, "product risk factor", the corresponding item is a1-a6 and "financial risk factor", the corresponding item is b1-b7 and "logistics risk factor", the corresponding item is c1-c5 and "privacy risk factor", the corresponding item is d1-d4, "service rights protection risk factor", the corresponding item is e1music e3, and the corresponding item is "consumer boycott willingness risk factor". The corresponding item is z1-z3. Next, we will conduct a more in-depth analysis of the collected data.

First of all, by calculating the average value of each item, as well as the overall average of each dimension of perceived risk. The results are shown in Table 8:

Table 8. Ranking of the mean values of each dimension of perceived risk

Variable dimension	Item	Mean value	Sort	Population mean	Sort
Product Risk	a1	3.96	1	3.79	2
	a2	3.76	15		
	a3	3.74	18		
	a4	3.56	25		
	a5	3.79	11		
	a6	3.92	2		
Financial Risk	b1	3.91	3	3.84	1
	b2	3.86	5		
	b3	3.77	14		
	b4	3.78	13		
	b5	3.84	7		
	b6	3.81	9		
	b7	3.88	4		
Logistics Risk	c1	3.75	16	3.75	3
	c2	3.79	11		
	c3	3.67	23		
	c4	3.7	21		
	c5	3.82	8		
Privacy Risk	d1	3.72	19	3.75	3
	d2	3.81	9		
	d3	3.75	16		
	d4	3.7	21		
Service Rights Risk	e1	3.64	24	3.74	5
	e2	3.72	19		
	e3	3.85	6		

The measurement score of each dimension is 1-5 points, indicating that the degree is very disagree-> very agree. From Table 8, we can see that the measurement indicators of all dimensions of perceived risk are generally greater than 3 points, indicating that the overall perceived risk of consumers is larger. In the overall average of all dimensions, the average value of financial risk is the highest, especially item b1 "worried about buying goods of the same quality at a higher price" and item b7 "fear of online fraud". This shows that consumers are more worried about their financial losses when buying cosmetic products across borders. Secondly, the overall average value of product risk dimension ranks second, among which A1 "worry about buying fake goods and defective products" and A6 "worry that the products they buy will disappoint" are higher than the two financial risk indicators that consumers are most worried about. This shows that while consumers are worried about property damage, they are more worried about the quality of their products. Logistics and privacy risk is second only to financial risk and product risk. For the service rights protection risk item e3, "worry about merchants not to return and exchange goods", its mean value is high, indicating that consumers are most worried about the return and exchange of goods in the protection of service rights. To sum up, when consumers buy cosmetic products across borders, they think that financial risks and product risks are the most likely, and the uncertainty they bring to themselves is the most obvious, followed by logistics risk, privacy risk and service rights risk.

5.2. Regression Analysis of Perceived Risk and Boycott Intention

This paper mainly uses regression analysis to determine the regression coefficient to analyze which kind of risk factors most affect consumers' boycott intention when buying. The consumer boycott intention is taken as the dependent variable of the study, and the independent variable is expressed by the common factor extracted by the previous factor analysis. By using stepwise regression analysis and gradually quoting explanatory variables, the variables that have no obvious influence on dependent variables are excluded, so as to find the perceived risk factors that most affect consumers' boycott intention.

Table 9. Model Summary

Model	R	R ²	Adjusted R ²
1	.600 ^a	.390	.385
2	.633 ^b	.411	.402

a. Forecast variable: (Constant), Financial Risk

b. Forecasting variables: (Constant), Financial Risk, Product Risk

From Table 9, we can see that the adjusted R² of model 2 is 0.402, which is significantly higher than that of model 1, which shows that the degree of fit of model 2 is better, reaching 40.2%, that is, the explanation of the model for consumer purchase boycott intention is 40.2%. Therefore, model 2 is selected for the next step of analysis.

Table 10. Multiple regression analysis and analysis of variance ^a

Model	Sum of squares	df	Mean square	F	sig.	
1	Regression	17.877	1	17.877	19.543	.000 ^b
	Residual error	181.123	198	.915		
	Total	199.000	199			
2	Regression	22.006	2	11.003	12.247	.000 ^c
	Residual error	176.994	197	.898		
	Total	199.000	199			

a. Dependent variable: Boycott Intention

b. Forecast variable: (Constant), Financial Risk

c. Forecasting variables: (Constant), Financial Risk, Product Risk

As can be seen from Table 10, under Model 2, F=12.247, significant level sig. The value is 0.000 < 0.05, so it can be considered that there is an obvious linear regression relationship between financial risk, product risk and consumers' purchase boycott intention of Cross-border online shopping cosmetic products. Logistics risk, privacy risk and service rights risk are excluded because the impact on dependent variables is not obvious.

Table 11. Regression coefficient ^a

Model	Non-standardized coefficient		Standardized coefficient	T	sig.	
	B	Standard error	Beta			
1	(Constant)	-8.902E-17	.068	.000	1.000	
	Financial Risk	.300	.068	.300	4.421	.000
2	(Constant)	-6.979E-17	.067	.000	1.000	
	Financial Risk	.192	.084	.192	2.281	.024
	Product Risk	.180	.084	.180	2.144	.033

a. Dependent variable: Boycott Intention

Table 11 shows that the standardization coefficients of financial risk and product risk are 0.192 and 0.180, respectively, and the significance levels are $0.024 < 0.05$, $0.033 < 0.05$, respectively. Therefore, the standardized regression equation can be obtained:

$$\text{Consumer Boycott Intention} = 0.192 * \text{Financial Risk} + 0.180 * \text{Product Risk}$$

The above regression equation shows that when consumers buy a foreign cosmetics product online, they will have some boycott emotions or behaviors due to the influence of financial risks and product risks. For example, consumers will have emotional tendencies such as disgust, dissatisfaction or give up purchase, re-choose the purchase target and other behavior tendencies, that is, boycott intention. This effect is positive, that is, the higher the financial risk and product risk, the stronger consumers' intention to boycott. From the regression coefficient, we can see that the regression coefficient of financial risk is greater than that of product risk, which means that the influence of financial risk on consumers' purchase boycott intention is stronger than that of product risk on consumers' purchase boycott intention. Therefore, it can be verified that the hypothesis H1 and H2 is true, and the hypothesis H3, H4 and H5 is not true.

6. Discussion

Through data mining technology, this paper finds out the factors that consumers pay most attention to when purchasing cosmetic products across borders through data mining technology, and determines the dimension of perceived risk combined with perceived risk theory. Then through questionnaire survey, data analysis, hypothesis verification and comparative analysis, the main conclusions are as follows:

Through the online evaluation data mining of Cross-border cosmetic e-commerce website products, and extracting the attribute words in the online evaluation, it is found that the major factors that consumers pay most attention to in Cross-border online shopping of cosmetic products are product factors, price factors, logistics factors and service rights protection factors. Financial risk and product risk have a significant positive impact on consumers' resistance intention of Cross-border online shopping cosmetics products, and financial factors are the most obvious factors. This shows that consumers are particularly worried about their financial losses when buying cosmetic products online across borders. In the regression equation, the regression coefficient corresponding to financial risk is 0.192, which means that when the financial risk perceived by consumers increases by one unit when other conditions remain unchanged, the purchase boycott intention generated by consumers will increase by 0.192 units accordingly.

Logistics risk, privacy risk and service rights risk have no significant impact on consumers' resistance intention when buying cosmetic products across borders. It is not difficult to explain that consumers pay more attention to factors related to their own interests, such as products, packaging, price, finance, etc., if consumers can buy authentic cosmetic products at acceptable prices through Cross-border online shopping, then even if there are other risk factors, consumers are willing to continue to buy, rather than resist the intention to give up the purchase.

Combined with the research conclusions, this paper puts forward relevant suggestions on Cross-border cosmetics e-commerce sellers and e-commerce platforms from the following aspects.

(1) Giving priority to quality and ensuring service. The first choice is to choose formal channels for procurement, it is very important to ensure a stable supply of goods, strictly supervise the quality of goods on Cross-border E-commerce platforms and customs, prohibit the import of

illegal cosmetic products, and put an end to the entry of fake goods from the source. Secondly, it is necessary to ensure good service, establish a complete after-sales service system, train customer service personnel with good attitude and good quality to create a good shopping experience for consumers, avoid unnecessary disputes, so as to reduce consumers' perceived risk.

(2) Improve efficiency and shorten transportation time. Simplify the transportation link, shorten the supply chain, improve the transportation speed, simplify the transshipment procedures, and strive to create a convenient and efficient logistics distribution process for consumers and reduce the logistics risk of consumers.

(3) Open information . The seller should publicly display the production country, production date, shelf life, function and use experience of the product to the consumers from the aspects of product information, consumption experience and true evaluation, and upload the product quality inspection certificate, authentic authorization certificate and so on. Correctly treat the evaluation of consumers, deal with the problems reflected by consumers in time, create a good seller image for consumers, and achieve transparency in the shopping process.

(4) Build word-of-mouth and improve popularity. Good word-of-mouth and high popularity can not only bring profits for enterprises to a large extent, but also increase consumers' trust in products and reduce perceived risk. Therefore, enterprises can strengthen product publicity and create hot topics to improve product awareness through online celebrities, short videos, Weibo, Wechat and so on. Through doing a good job of products to create word-of-mouth, improve services to maintain word-of-mouth, so that the image of enterprises, products deeply rooted in the hearts of consumers.

7. Limitations and Future Research Directions

First of all, in the content of the questionnaire, although referring to the mature scale of other researchers, the measurement criteria are not comprehensive and specific; secondly, this paper only considers the impact of consumers' perceived risk on resistance intention, and does not consider other influencing factors. Therefore, there are still many shortcomings in this study, and the depth and breadth of the study need to be strengthened. In the future research, we can consider introducing more influencing factors into the model that affects consumers' boycott intention, and analyze the influence on consumers' purchase intention according to each purchase channel of cosmetic products. We can also consider the distinction of consumers' personal characteristics, and consumers of different genders may have different demand levels of cosmetic care products to conduct more detailed research. In the future, we can also consider using big data programming technology to collect and analyze data, so as to make the research more in-depth.

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