

Based on Statistical Analysis and Regression Model Analysis the Influencing Factors of College Students' Online Shopping Satisfaction

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Abstract. It is popular for people to purchase goods online, the college students are the main part of the customs shopping online. This study is to figure out what factors can influence the online shopping satisfaction of college students by using a self-compiled questionnaire. Then this paper uses a regression model to analyze the data collected from college students. The results show that most college students shop online once or three times a week, and their average monthly consumption amount is around 1,000 yuan. The whole attitude presents a positive attitude among college students. What's more, the main factors affecting consumers' satisfaction with online shopping are: the product description is not expected, the sellers' services, the website information security and the convenience of the website. Only by finding out the main influencing factors can this report put forward opinions accordingly, to optimize the online shopping experience and further promote the prosperity and evolution of online shopping.

Keywords: Satisfaction; Online shopping; College students; Influencing factors.

1. Introduction

1.1 Background

Nowadays, with the blossom of the Internet, electronic shopping has been becoming more and more popular. Even in the face of the huge impact of the epidemic and the complex and severe domestic and foreign environment, China's online retail market has maintained steady growth, by 2020, the number of online shopping users in China has reached 780 million (Fig. 1). Retail sales of China's online reached 11.76 trillion yuan, up 10.9 percent from the previous year based on the National Bureau of Statistics. At the same time, college students are the main force to consume online and their satisfaction with online shopping will affect the evolution of e-commerce, so it is meaningful to find out what can affect their purchase satisfaction [1].

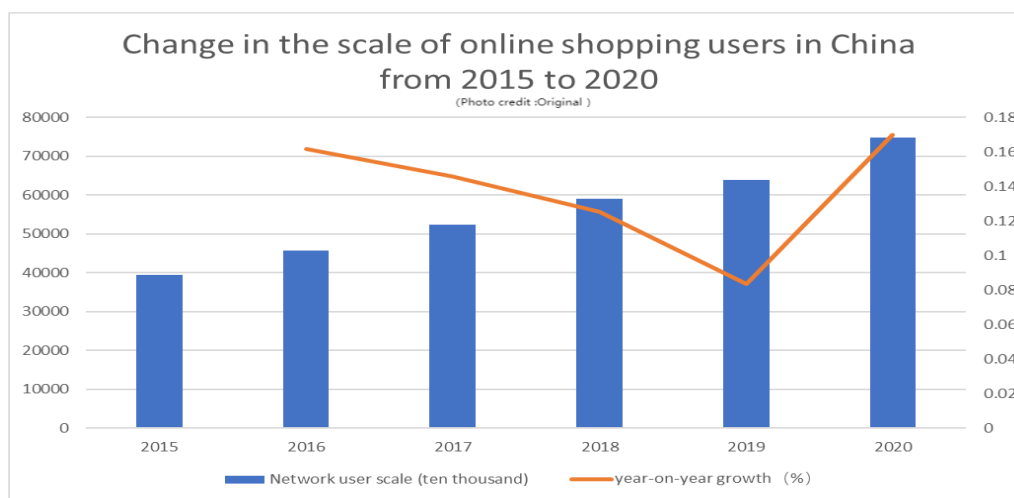


Fig.1 Change in the scale of online shopping users in China from 2015 to 2020
(Photo credit: Original)

1.2 Related research

Scholar has published lots of empirical literature about factors that can affect consumers' purchase satisfaction. According to Chong Zhong Xuan et al. (2013), customer satisfaction has the greatest impact on customers' behavior intention, which can boom the blossom of online purchasing [2]. He also mentions that college students are the main consumption force in a real and future society, and their satisfaction with shopping online will make a difference in the evolution of e-commerce. Furthermore, college students will soon go to society, which will also have a certain impact on the consumption behavior of other groups [3]. Then, there are a lot of influence factors on clients. Firstly, Chunyan Chang and Qingbiao Li (2015) analyses the logical factors, because it is a very important part of online shopping [4]. Secondly, the problem of adverse selection in online shopping is even more serious [1]. As a result, it will contribute to reducing customer satisfaction since the goods do not meet consumer expectations. In the case of serious information asymmetry between buyers and sellers, it will greatly improve consumers' quality of goods, judge the frequency of mistakes, reduce consumer satisfaction, and be more likely to produce adverse selection problems, writer adds that consumers' trust in online shopping continues to decline, and their dissatisfaction is also increasing [5]. If consumers lose their trust in sellers, they will not buy products from these online shops. Additionally, good service can raise satisfaction. The reason is that Chong Zhong Xuan and Zhen Li (2013) insist college students advocate freedom and independence and pay attention to spiritual pleasure, hoping to maintain a relaxed state and get satisfied with self-esteem in shopping [2]. Nevertheless, provided that people receive their parcels along with a free gift given by sellers, it will reduce and increase their satisfaction. The free gift along with purchasing can improve the positive online purchase experience. In spite of the expectation of the purchased product is confirmed [6]. Consumer satisfaction is an attitude assessment of a service, with a cognitive and emotional part. Yongjian Wang et al. (2010) indicate that cognitive and emotional can be affected by the color application and the commodity display mode [7]. Therefore, web aesthetics can increase cognitive and emotional ones, which leads to positive purchasing satisfaction. The quality of the website can also affect consumption along with the satisfaction of online shopping. If the page set up by the selected shopping website is simple and clear, it will directly affect the number of consumers to stay or buy [8]. Website safe is equally significant influencing satisfaction. Most of the living expenses of college students come from their parents, so they pay special attention to the safety factor of payment. If the sales website is irresponsible for personal information or even privacy that college students will leave. Once information leaked out, it will reduce college students' satisfaction with the sales network [3].

Despite the apparent maturity of the research stream, they have not conducted a comprehensive comparison of these articles about college students' s purchasing satisfaction in a single study. At the same time, the data and the conclusion from these reports are outdated. Therefore, it is necessary to update the research data to draw conclusions under the current environment. Furthermore, there is less literature about college students, but college students are the main part of online shopping consumers. Nowadays, the online shopping satisfaction questionnaire for college students is basically a questionnaire, for instance, Xuanchong Zhong et al.'s and Fnhui Meng et al.'s one-use questionnaire. So, this paper added a regression analysis on the basis of the questionnaire, so as to study the relationship between factors and satisfaction, adverse selection, and various factors [2].

1.3 Objection

This paper wants to make clear that what's the main factor that can influence college students' purchase satisfaction online. In this case, give some targeted advice to e-commerce in order to improve the environment of online shopping. In this way, it will make them good shopping experience, and the satisfaction of college students will increase leading to large customers, because when customer satisfaction is high with shopping, it is highly likely to recommend products to friends around them [9]. Also, it will increase the repurchase rate.

2. Methodology

2.1 Data sources

This paper randomly selected 230 college students aged 18-23, from different countries. Then this paper recovered 221 valid questionnaires, which this paper used as data sources.

2.2 Method process

This paper is to find out what factors can influence college students' online shopping satisfaction. The regression model is suited because the collected data is evaluated with numbers. The questionnaire was designed based on literature reading, then the regression analysis was based on recovered data. The following steps are described in detail.

Firstly, the questionnaire is designed by reading literature, there are lots of factors that can affect satisfaction, this paper gathers most of them together, and then the questionnaire is designed, including grade (big first grade), gender, monthly online shopping amount, and the degree to which various factors affect online shopping satisfaction, etc. the influencing factors include logistics factors, adverse selection (The product description does not match the expectations), the convenience of the website, website Information Security, and free gift and seller service. Then this research randomly submits the questionnaire to college students. Finally, this report has collected 221 copies and uses a regression tool to analyze these data.

The regression function (1):

$$Y = \alpha + \beta X + \varepsilon \quad (1)$$

And this report treats different factors (logistics factor, adverse selection, convenience of website, website Information Security, free gift and sellers service) as the independent variables and takes the degree of satisfaction as the dependent variable. Also, it is necessary to find out consumers' own factors, that is, whether the risk tolerance of false commodity information in online shopping can affect the impact of other factors on overall satisfaction. In this case, use the following function to find it.

$$Y = \alpha + \beta_0 \text{Factor} + \beta_1 \text{Risk tolerance} + \beta_3 \text{Risk tolerance} \times \text{Factor} + \varepsilon \quad (2)$$

In function (2), the coefficient of β_3 the interaction term is the moderating effect of information on the level of satisfaction [10]. Using function (2) to find out if risk tolerance can reduce the level of satisfaction of buyers that different factors have affected. What's more, the questionnaire sets a question, of whether will choose to have a dissatisfying experience with online shopping, this article also wants to analyze if the level of risk tolerance can influence the repurchase rate.

The function:

$$Y = \alpha + \beta_4 X + \varepsilon \quad (3)$$

In function (3), Y represents repurchase and X is the level of risk tolerance.

Finally, applying the statistical graph when necessary to illustrate some basic information, like online shopping frequency and monthly online shopping consumption, which can display intuitively.

3. Results

3.1 Analysis of questionnaire results

In this research, two hundred and twenty-two questionnaires were collected, 104 were boys (46.85%) and 118 were girls (53.15%). Monthly online shopping sales, the first one is 500Yuan, the second one is 1,000 yuan, and the third one is 200 yuan (Fig. 2).

1	500	52
2	1000	43
3	200	22

Fig. 2 Monthly online shopping amount ranking list (Photo credit: Original)

Most college students choose to purchase online once to three times a month and there are fewer college students shopping less than once, which illustrates lots of students are online shopping. The following Sheet (Fig. 3) is a statistical graph of the overall satisfaction of college students with online shopping, which shows that college students give the total satisfaction with online shopping to score 6 points (the full score is 10 points), indicating that college students show an overall trend of satisfaction with online shopping. Also, the results presented a normal distribution.

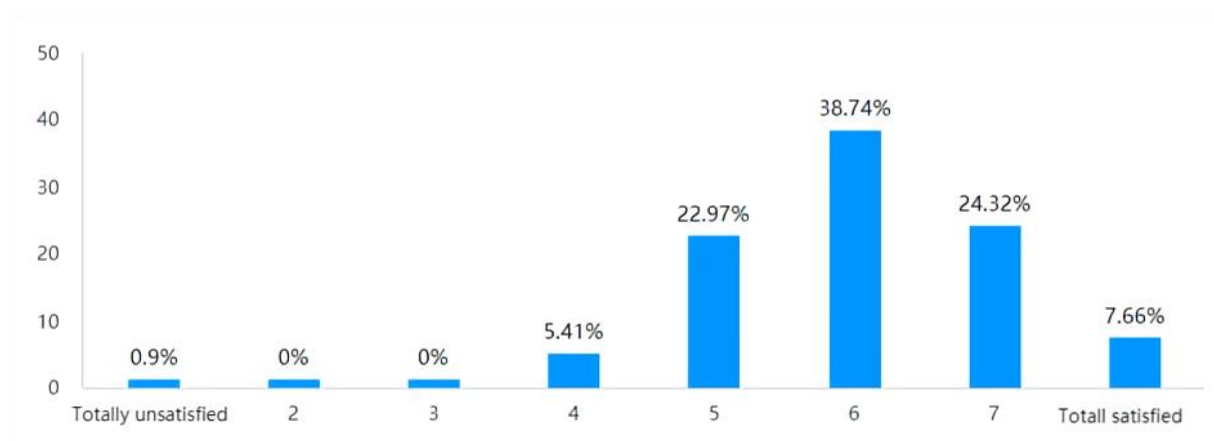


Fig. 3 The overall experience of online shopping (Photo credit: Original)

Among the 222 people who questioned, in addition to 10 people who were not sure whether to choose online shopping with a satisfactory shopping experience, 201 people were sure to choose online shopping with a satisfactory shopping experience, which shows that a good shopping experience will increase the repurchase rate of college students. Interestingly, there are about 45.95% of college students still choose to purchase goods in the online shop that they have bought something unhappily, during the regression analysis this paper will figure out whether the level of risk tolerance can affect the repurchasing. For false risk tolerance of commodity information in online shopping, the results are as Fig. 4 shows: Article definition scores that above 7 belong is type risk love, 5 - 6 is risk neutral and below 4 is risk-averse.

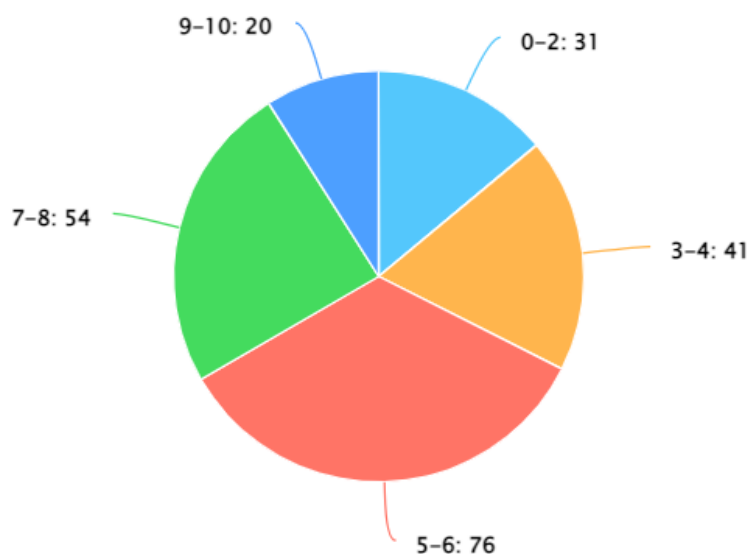


Fig. 4 The tolerance of false risk of commodity information in online shopping
(Photo credit: Original)

3.2 Regression analysis

3.2.1 Data filters

Firstly, this paper filters data that the tolerance of false risk of commodity information in online shopping and the overall experience of online shopping in order to make a regression analysis. Then it also needs to find how much these factors affect online shopping satisfaction, so various factors and satisfaction are regression separately using a function (1). What's more, making regression among risk tolerance, satisfaction, and three main influencing factors by using a function (2). Finally, including the risk tolerance and correlation of repurchase rate analysis, in the questionnaire, this analysis sets the question, "whether can choose to once have unsatisfactory experience of online shopping" and the answer sheet is "will" "will not" and " don't know ", so the last collected data for assignment processing: will-0, not-1, and screening the " don't know " related data using a function (3).

3.2.2 Return to the results and evaluate the indicator

(1) Tolerance of false risk of commodity information in online shopping and the overall experience of online shopping

The result shows the relationship between them as Table1 that they are significant because the P-Value is 0.05, which is very close to 0.05. At the same time, the coefficients intercept is 0.06, so they present a positive correlation that means the higher risk tolerance college students have, the more overall satisfaction they have.

Table 1. Risk tolerance and overall shopping experience

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5.486765	0.712973	7.695618	4.7E-13	4.081635	6.891895
X Variable 1	-0.01882	0.085129	-0.22106	0.82525	-0.18659	0.148954

(2) Influencing factors affect online shopping satisfaction

The results are as follows. This paper regression each influencing factor with their overall college satisfaction and compared P-value in the results, with P-value of 0.002 for seller's service, P-value 0.002 for the convenience of the website, and P-value0.003 for Website Information Security, so,

these three are the best fitting effect among the seven influencing factors, that is, the three smallest P-value, so these three influencing factors are the three main factors affecting the satisfaction of college students' online shopping. (The regression results are as follows. (Table 2- Table 8)

Table 2. Seller's service

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5.39463	0.211138	25.55024	9.07E-68	4.978517	5.810742
X Variable 1	0.094753	0.030339	3.12317	0.00203	0.034961	0.154545

Table 3. The product description that doesn't match the expectations

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5.207592	0.320802	16.23304	1.75E-39	4.575353	5.83983
X Variable 1	0.098848	0.038304	2.580631	0.010512	0.023359	0.174337

Table 4. The convenience of the websites

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5.374207	0.219596	24.47319	1.01E-64	4.941427	5.806987
X Variable 1	0.092702	0.030035	3.086435	0.002286	0.033508	0.151895

Table 5. Website Information Security

	Coefficients	standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5.411994	0.213426	25.35773	3.15E-67	4.991373	5.832615
X Variable 1	0.082994	0.027671	2.999337	0.003017	0.02846	0.137528

Table 6. Web aesthetics

	Coefficients	standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5.642374	0.165179	34.15906	6.47E-90	5.316837	5.967911
X Variable 1	0.068093	0.027145	2.508466	0.012847	0.014595	0.121592

Table 7. Free gift

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5.796095	0.15716	36.88025	3.73E-96	5.486364	6.105827
X Variable 1	0.041466	0.026436	1.568563	0.118187	-0.01063	0.093566

Table 8. Logistics factors

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5.665666	0.268515	21.10004	9.07E-55	5.136476	6.194856
X Variable 1	0.045318	0.033621	1.347905	0.179075	-0.02094	0.111579

(3) risk tolerance, satisfaction, and three main influencing factors

Then, this paper makes regression among them by using function. In Table 9, let risk tolerance and the convenience of the website serves as X variables, and satisfaction among college students serve as Y variables. The results showed the P-value is 0.005 and 0.140 and one of these values is bigger than 0.1, so the risk tolerance cannot influence the impact of the convenience of the website on overall satisfaction among college students.

Table 9. Risk tolerance, the convenience of the website, and satisfaction among college students

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5.184898	0.253627	20.443	1.13E-52	4.685036	5.68476
X Variable 1	0.085267	0.030373	2.807387	0.005445	0.025408	0.145127
X Variable 2	0.045108	0.030481	1.479888	0.14034	-0.01497	0.105182

In Table 10, let risk tolerance and Seller's service serves as X variables, and satisfaction among college students serve as Y variables. The results showed the P-value are 0.004 and 0.11 and one of these values is larger than 0.1, so the risk tolerance cannot influence the impact of seller's service on overall satisfaction among college students.

Table 10. risk tolerance, Seller's service, and satisfaction among college students

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5.181956	0.250127	20.71726	1.64E-53	4.688991	5.674921
X Variable 1	0.047649	0.030293	1.572937	0.117177	-0.01205	0.107352
X Variable 2	0.088406	0.030506	2.898028	0.004137	0.028284	0.148529

In Table 11, let risk tolerance and Seller's service serves as X variables, and satisfaction among college students serve as Y variables. The results showed the P-value are 0.006 and 0.114 and one of these values is bigger than 0.1, so the risk tolerance cannot influence the impact of Website Information Security on overall satisfaction among college students.

Table 11. risk tolerance, Website Information Security and satisfaction among college students

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5.197715	0.251982	20.62734	3.09E-53	4.701096	5.694335
X Variable 1	0.077151	0.027821	2.773103	0.006031	0.022319	0.131982
X Variable 2	0.048118	0.030341	1.585908	0.114203	-0.01168	0.107916

(4) The risk tolerance and correlation of the repurchase rate analysis

Following table is the result: the P-value is 0.14 which is less than 0.05, so it is no significant between risk tolerance and repurchase rate.

Table 12. The risk tolerance and correlation of the repurchase rate analysis

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.359216	0.087908	4.086249	6.41E-05	0.185837	0.532595
X Variable 1	0.022279	0.014871	1.498152	0.135719	-0.00705	0.051609

4. Discuss

4.1 Seller's service

From the above results, knowing that college students attach great importance to the service attitude of businesses, which is the most significant of the three main influencing factors. Because college students are a more sensitive social group, they are very eager to be respected by others. At the same time, no social experience is that they cannot stand the preaching of others. Once the service attitude of online shopping merchants is lower than their expectations, it is easy for college students to give up shopping without any loss, because online shopping is a process of trading through a virtual platform, and the buyers and sellers cannot see each other. In this case, if businesses want to retain more consumer groups of college students, they must optimize their service attitude. Sometimes a greeting and a smiling expression will also make college students improve their satisfaction with online shopping.

4.2 The convenience of the website

The convenience of the website also affects college students' online satisfaction, a clear classification of production can arouse people's desire to buy, which affects the efficiency of online shopping, college students in the school learning task, if the efficiency of online shopping slows down, they reduce the satisfaction of the shopping and choose another shopping site. Therefore, when designing shopping web pages, people must pay attention to the convenience of the website, such as detailing the classification index and simplifying the home page. At the same time, this paper can use science and technology means to understand the hobbies of college students and push related products to them on the simple home page.

4.3 Website Information Security

Website Information Security affects college students' online satisfaction and is one of the significant three main influencing factors, college students as no stable income group, unsafe shopping environment can make them extra cautious. If shopping websites can make sure that it is safe enough to purchase goods on their website, the college students will eventually increase their total satisfaction with online shopping, they will be in the next shopping, the first thing of the business, also improve the repurchase rate. So, the security technicians of shopping websites, must do a good job of the bottom of the situation, refuse to exist fraud or fraud risk of businesses to enter, when there are consumer complaints about safety problems, should be found out as soon as possible and timely solutions.

4.4 Risk tolerance

With the above results, we can find that the risk tolerance of college students themselves cannot affect their tolerance for various influencing factors, however, in some related studies on tolerance, it is shown that risk tolerance can affect consumer satisfaction, and why the opposite results appear to need to be investigated because this study mainly targeted the direct influencing factors. If you follow the "checklist" your paper will conform to the requirements of the publisher and facilitate a problem-free publication process.

5. Conclusion

The purpose of this article is to explore the factors that affect the satisfaction of college students in online shopping, then, to collect the data through a questionnaire, and conduct the data processing and analysis by the regression model. The results show that: among the seven influencing factors set up, the three factors that mainly affect the satisfaction of online shopping of college students are the seller's service, The convenience of the website, and Website Information Security. In addition, the results also show that risk tolerance doesn't have an impact on overall consumer satisfaction and

simultaneous risk tolerance on these three major influencing factors the satisfaction of college students cannot be improved by improving risk tolerance. This article also proposes some constructive comments, such as improving the customer service quality, ameliorating the network security factor and simplifying the home page, etc. It is hoped that these suggestions can help network operators and attract more consumers of college students in order to promote the prosperity and evolution of online shopping. However, this study was limited by the absence of why risk tolerance cannot influence College students' online shopping satisfaction, while in some studies it can affect satisfaction.

References

- [1] Hanxiao Lv. Problem Analysis and Improvement Strategy of Reverse Selection in Online Shopping. *Market Modernization*, 2021, 23: 36-38.
- [2] Chong Zhong Xuan and Zhen Li. College students' satisfaction with online shopping and its influencing factors, 2013, 5: 92-96.
- [3] Fanhui Meng. Analysis of college Students' online shopping Satisfaction, 2013, :15-18.
- [4] Chunyan Chang and Qingbiao Li, Logistics factors affecting the customer satisfaction of online shopping, 2015, 81.
- [5] Ruimin Dai. Causes and solutions of reverse selection in online shopping, 2021,14-16.
- [6] Dong Hong Zhu and Ya Ping Chang. Effects of free gifts with purchase on online purchase satisfaction: The moderating role of uncertainty, 2015, 690-706.
- [7] Yong Jian Wang, Monica D. Hernandez, Michael S. Minor. Web aesthetics effects on perceived online service quality and satisfaction in an e-tail environment: The moderating role of purchase task, 2010, 63: 935-942.
- [8] BillyBai, RobLaw, IvanWen. The impact of website quality on customer satisfaction and purchase” *International Journal of Hospitality Management*, 2008, 27: 391-402.
- [9] Yousheng He, Yumei Wen. Text mining and theme extraction of customer online shopping satisfaction, 2022, 6:147-151.
- [10] Ruomeng Cui, Jingyun Li, Meng Li, Lili Yu. Wholesale Price Discrimination in Global Sourcing. 2020, 1-22.