Research on Evaluation Index System for Information Experience of B2c E-Commerce Consumers based on Samples of Chinese Consumers

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Abstract

As e-commerce develops rapidly in different countries in recent years, the online retail market continues to expand its scale, which is particularly prominent in China. Meanwhile, as new network information technologies continue to be developed and applied, diverse contact points and experience environments are provided for online shopping of consumers. This research, based on the media richness theory, started from the essence of commercial transactions to focus on consumer experience from the perspective of information. Combined with previous research results and implications, this research proposed and designed an initial measurement scale for the evaluation indexes of consumer information experience and used the statistical analysis tool SPSS 23.0 to test the reliability and validity. Finally, it constructed the evaluation index system for information experience of B2C e-commerce consumers with five dimensions, namely information display, information interaction, information incentive, information support, and information personalization, which provides a beneficial attempt for further research on consumer experience.

Keyword: B2C e-Commerce, Consumer Experience, Evaluation Index, Information Experience

1. INTRODUCTION

As the Internet popularizes increasingly and e-commerce develops rapidly, online shopping has become an important lifestyle and one of consumption channels for people. By the end of 2018, there had been 829 million Internet users in China, which is accompanied by expanded Internet coverage, reduced Internet access fee and improved information exchange efficiency. The Bigdata [1-11] of China International Electronic Commerce Expo 2019 shows an increase in total e-commerce transactions in China from 3.14 trillion yuan in 2008 to 31.63 trillion yuan in 2018, in which online retail transactions ballooned from 0.13 trillion yuan to 9 trillion yuan, which contribute 45.2% of growth of total retail sales of consumer goods. China has been ranking the first in the world in terms of online retail for consecutive years.

According to the above definitions and research findings on consumer experience, it is an important competitive advantage to provide high-quality consumer experience, for it forms an overall impression of an enterprise, which affects and even decides the repurchase by a consumer. Consumer experience can be either specific experience of a different contact point or overall experience of interacting with a number of contact points of an enterprise over a period of time, so it is always an issue for enterprise to find key contact points.

2. THEORETICAL RESEARCH ON INFORMATION EXPERIENCE

Some Chinese and overseas research on consumer information experience of online shopping mainly focuses on the overall dimension, which explores only information display but lacks of comprehensive and in-depth analysis. First, there is not much literature on consumer information

experience. Second, only a little literature takes information experience as an independent dimension for in-depth research. Third, the research perspective of consumer experience is limited to the display mode of product information. This research focused on information functions to divide information experience of B2C e-commerce consumers into five dimensions, namely information display, information interaction, information incentive, information support, and information personalization, design and test the reliability and validity of each question on dimension measurement and built the evaluation index system for consumer information experience, so it further expanded the research perspective of online consumer experience.

3. DEVELOPMENT OF INITIAL MEASUREMENT SCALE OF EVALUATION INDEX SYSTEM

To achieve more rational and representative dimensions of information experience, clearer and simpler initial measurement questions, and more reliable and valid questionnaire, this research based on the initial measurement questions of the above dimensions contained 15 in-depth interviews over about one hour on 3 provincial e-commerce experts, 5 college e-commerce teachers, and 7 consumers with more than 10 years of online shopping experience to demonstrate and modify the evaluation dimensions and questions. After in-depth interviews and repeated modification, an initial measurement scale of the evaluation index system for consumer information experience was formed.

According to No.43 CNNIC report, the Internet users aged 20-29 account for the highest proportion, up to 26.8%, those aged 30-39 account for 23.5%, and those aged 40-49 account for 15.6%, indicating that the post-70s, post-80s and post-90s groups are the main Internet users. [12] Most of college students and teachers are in this age group, a few post-2000s people have entered universities, and Chinese and overseas scholars in the field of e-commerce have taken them as research samples and achieved representative research results, so this research took college students and teachers as the respondents and selected a typical online platform to issue and collect questionnaires.

This questionnaire used the five-point Likert Scale to measure consumer evaluation on information experience, which consisted of two parts, namely personal characteristics of consumers and evaluations on information experience of common B2C online shopping sites. A total of 327 questionnaires were issued and 279 valid questionnaires were recovered. The respondents consisted of 45.16% men and 54.84% women; 9.68% post-2000s, 75.27% post-90s, 7.53% post-80s, 7.17% post-70s, and 0.35% other groups; 3.58% doctors, 5.73% masters, 44.09% bachelors, 44.09% junior colleges, and 2.51% other educational backgrounds; 74.90% college students, 0.72% postgraduate students, 9.68%

teachers, 0.72% public institution personnel, 8.24% corporate employees, 2.51% freelancers, 1.08% entrepreneurs, and 2.15% others.

Table 1: Initial measurement scale of evaluation index system for information experience

Dimensions	Initial indexes
Information display	ID1 The platform provides simple and distinguishable product information classification ID2 The platform provides diverse forms for product information display (image-text, animation, video, etc.) ID3 The platform provides complete and detailed description of product information (sales status, transaction price, brand culture, parameter characteristics, appearance details, etc.) ID4 The platform provides clear and understandable product information display content
Information interaction	IInt1 This platform provides convenient online information interaction tools and channels IInt2 The platform provides a variety of interactive methods - intelligent self-service and online customer service IInt3 This platform can explain and reply to my questions in a timely manner. IInt4 I can decide whether to terminate the information exchange and interaction with the platform customer service.
Information incentives	IInc1 The platform/merchant provides guarantee information (genuine guarantee, ten-time compensation for the fake, guaranteed return of damaged products, payment guarantee, etc.) so that I can rest assured IInc2 The platform/merchant provides promotion information that highly matches the products I am concerned about so that I am more interested in the purchase IInc3 The platform/merchant provides vivid product information display (video demo, trial review, etc.) so that I have more expectations for the product quality. IInc4 The platform/merchant provides review information that reflects more details so that I see product

	transactions more rationally
Information support	IS1 The platform provides the mutual aid community Asks Friends and WeChat group in which friends can give me advice when I need help IS2 The platform provides the mutual aid community Asks Friends and WeChat group in which friends can give me a hand when I encounter a problem IS3 The platform provides the mutual aid community Asks Friends and WeChat group in which friends can help me analyze the problem and give me advice. IS4 Overall, I can solve some problems in online shopping through the information support and help from the platform or my friends
Information personalizatio n	IP1 The platform can generate highly relevant product display pages based on my preferences or interest. IP2 The platform can push highly relevant promotional advertisements based on my preferences or interest. IP3 The platform can provide relatively appropriate information and browsing methods based on my preferences or interest. IP4 Overall, the platform can provide highly relevant personalized information based on my preferences or interest.

4. EXPLORATORY FACTOR ANALYSIS

In this research, SPSS 23.0 was used as a statistical analysis tool. Before the exploratory factor analysis, KMO and Bartlett's test were carried out to determine whether the results are suitable for the factor analysis. According to the research specification, KMO was used to test the correlation and partial correlation between variables, with the value 0-1. The KMO statistic closer to 0 means weaker correlation and stronger the partial correlation between variables and worse effects of factor analysis, while the KMO statistic closer to 1 means stronger correlation and weaker partial correlation between variables and better effects of factor analysis. In the actual analysis, the KMO statistic above 0.7 has better effects, but when the KMO statistic is below 0.5, it is not suitable to apply the factor analysis method. The results of KMO and Bartlett's test in this research indicated that it was suitable to carry out the exploratory factor analysis, as shown in Table 2.

Table 2: KMO and Bartlett's test results

Kaiser-Meyer-Olkin measure of sampling adequacy		0 .897
Bartlett's test of sphericity	Approx. Chi-Square	2727.926
	df	190
	Sig.	0.000

Principal component analysis and maximum variance method were mainly used for the exploratory factor analysis, and the eigenvalue (>1) was taken as the criterion to select factors. Only when the load of the question on the factor is greater than 0.5 and close to 1, it has convergence validity, or it should be discarded; if the load of the question on other factors is also greater than 0.5 at the same time, it should also be discarded. After the initial exploratory factor analysis, the load of the question on the factor was obtained, as shown in Table 3. The load of IInt4 and IInc3 on the common factor is less than 0.5, so these two questions are discarded. After IInt4 and IInc3 are deleted, the exploratory factor analysis on the remaining 18 questions shows that the eigenvalues of the five principal component factors are all greater than 1, and the five principal component factors have a significant inflection point (Fig. 1), so the five principal component factors are maintained. The cumulative contribution rates of the five principal component factors are respectively 40.372%, 50.501%, 58.340%, 65.250% and 71.203% (Table 4). See Table 5 for the loads corresponding to the five principal component factors (dimensions).

Table 3: Rotated component matrix

component multi-item	1	2	3	4	5
ID1	.131	.705	.170	.184	.146
ID2	-.024	.716	.209	.161	.269
ID3	.163	.766	.110	.175	.072
ID4	.178	.808	.144	.109	.099
IInt1	.217	.235	.290	.167	.740
IInt2	.128	.288	.168	.232	.731
IInt3	.242	.093	.202	.263	.751
IInt4	-.266	-.022	.368	.252	-.312
IInc1	.081	.274	.040	.757	.197
IInc2	.197	.148	.223	.786	.107
IInc3	.254	.247	.185	.460	.334
IInc4	.231	.141	.142	.754	.163
IS1	.764	.091	.211	.158	.179
IS2	.782	.152	.157	.149	.159
IS3	.846	.087	.151	.132	.115
IS4	.794	.155	.130	.178	.138
IP1	.193	.093	.744	.206	.161
IP2	.118	.185	.778	.068	.156
IP3	.269	.243	.676	.133	.147
IP4	.210	.208	.725	.078	.211
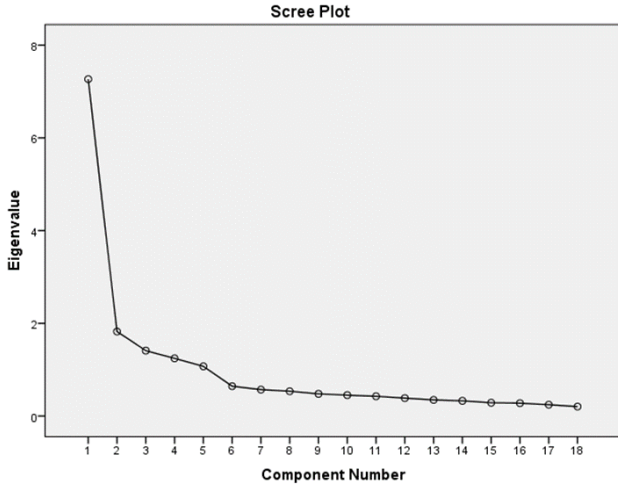
Figure 1: Scree plot

Table 4: Total variance explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	7.267	40.372	40.372
2	1.823	10.129	50.501
3	1.411	7.839	58.340
4	1.244	6.910	65.250
5	1.072	5.954	71.203
6	.644	3.580	74.783
7	.570	3.165	77.948
8	.535	2.975	80.923
9	.478	2.657	83.580
10	.451	2.505	86.085
11	.427	2.371	88.456
12	.387	2.151	90.606
13	.348	1.934	92.540
14	.329	1.825	94.365
15	.287	1.597	95.962
16	.278	1.544	97.506
17	.245	1.361	98.867
18	.204	1.133	100.000

Table 5: Factor load matrix

Indicator label	Common factor				
	1	2	3	4	5
ID1	0.701				
ID2	0.715				
ID2	0.771				
ID3	0.801				
IInt1		0.750			
IInt2		0.791			
IInt3		0.756			
IInc1			0.760		
IInc2			0.802		
IInc4			0.786		
IS1				0.765	
IS2				0.801	
IS3				0.850	
IS4				0.800	
IP1					0.769
IP2					0.786
IP3					0.694
IP4					0.761

5. CONCLUSION

Information has a self-evident status and plays an important role in any field, especially in the field of e-commerce, where online shopping platforms and merchants pay more and more attention to consumer experience, but its acquisition and utilization have not been studied in depth. Based on the previous research on consumer experience, this research further expands the connotations of consumer experience from the perspective of information functions and constructs an evaluation index system for information experience of B2C e-commerce consumers with 5 dimensions and 18 indexes. This evaluation system further enriches the research perspective of consumer experience and classifies information into 5 categories, namely information display, information interaction, information incentives, information support, and information personalization, each of which forms a single dimension. This classification is not static information browse, but comprehensive experience of real-time acquisition, interaction, comparison and utilization, so it is an important reference for online shopping of consumers and the key to successful transactions. According to the results of the questionnaire analysis, the index system effectively summarizes the possible contact points of information for consumers during shopping and can comprehensively and systematically evaluate the information experience of B2C e-commerce consumers.

Despite certain research findings and expanded dimensions and connotations of consumer information experience, there are still some limitations and shortcomings to be future researched due to the limitations of objective conditions such as time and material resources, which are mainly reflected in the following two aspects. First, despite the respondents aged 20-49 selected for this research, the recovered questionnaires show that nearly 75% of the samples are college students, and other occupational samples account for a low proportion. Second, the information factors other than online shopping sites are not included into the index system in this research, such as information of the macro development environment for B2C e-commerce, and information reserves of consumers, which may also be the dimensions and contents affecting consumer information experience.

REFERENCES

1. S. Park, J.S. Hwang, and S. Lee, **A Study on the Link Server Development Using B-Tree Structure in the Bigdata Environment**, Journal of Internet Computing and Services, Vol. 16. No. 1. pp. 75-82, 2015.

2. S.B. Park, S. Lee, S.W. Chae, and H. Zo, **An Empirical Study of the Factors Influencing the Task Performances of SaaS Users**, Asia Pacific Journal of Information Systems, Vol. 25. No. 2. pp. 265-288, 2015.

3. S. Park, and S. Lee, **Big Data-oriented Analysis on Issues of the Hyper-connected Society**, The E-Business Studies, Vol. 16. No. 5. pp. 3-18, 2015.

4. Jumin Lee, S.B. Park, and S. Lee, **Are Negative Online Consumer Reviews Always Bad? A Two-Sided Message Perspective**, Asia Pacific Journal of Information Systems, Vol. 25. No. 4. pp. 784-804, 2015.

5. J.K. Kim, S.W. Lee, and D.O. Choi, **Relevance Analysis Online Advertisement and e-Commerce Sales**, Journal of the Korea Entertainment Industry Association, Vol. 10. No. 2. pp. 27-35, 2016.

6. S.W. Lee, and S.H. Kim, **Finding Industries for Bigdata Usage on the Basis of AHP**, Journal of Digital Convergence, Vol. 14. No. 7. pp. 21-27, 2016.

7. S. Lee, and S.Y. Shin, **Design of Health Warning Model on the Basis of CRM by use of Health Big Data**, Journal of the Korea Institute of Information and Communication Engineering, Vol. 20. No. 4. pp. 1460-1465, 2016.

8. M. Nam, and S. Lee, **Bigdata as a Solution to Shrinking the Shadow Economy**, The E-Business Studies, Vol. 17. No. 5. pp. 107-116, 2016.

9. S.H. Kim, S. Chang, and S.W. Lee, **Consumer Trend Platform Development for Combination Analysis of Structured and Unstructured Big Data**, Journal of Digital Convergence, Vol. 15. No. 6. pp. 133-143, 2017.

10. Y. Kang, S. Kim, J. Kim, and S. Lee, **Examining the Impact of Weather Factors on Yield Industry Vitalization on Bigdata Foundation Technique**, Journal of the Korea Entertainment Industry Association, Vol. 11. No. 4. pp. 329-340, 2017.

11. S. Kim, H. Hwang, J. Lee, J. Choi, J. Kang, and S. Lee, **Design of Prevention Method Against Infectious Diseases based on Mobile Bigdata and Rule to Select Subjects Using Artificial Intelligence Concept**, International Journal of Engineering and Technology, Vol. 7. No. 3. pp. 174-178, 2018.

12. http://www.cnnic.cn/hlwfzyj/hlwxzbg/hlwtjbg/201808/t20180820_70488.htm