Research on Consumer Behavior of Local Life App Under O2O Model

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Abstract. O2O model of local life services app came into being, mainly in the field of food and beverage, travel, etc., which is increasingly popular among consumers. In this paper, we study consumer behavior in the O2O model of local life service apps, and construct a new research model based on the theoretical model of technology acceptance with the addition of three variables: Social impact, usage experience, and perceived risk. The questionnaire research and empirical analysis revealed that consumer behavior is influenced by the social environment and consumer's own experience, while the social environment factors have less influence on consumer behavior than the consumer's own factors.

Keywords: O2O model; Technology acceptance theory model; consumer behavior

1   Introduction

O2O e-commerce refers to an e-commerce model that combines the traditional physical industry with the emerging Internet industry from online to offline. The main way is for sellers to conduct sales and marketing online, and consumers to purchase goods or services online, and then go to offline stores to pick up the purchased goods or enjoy the services. The earliest O2O e-commerce model in China is Ctrip, which mainly releases relevant information on the Internet and delivers it to consumers in the form of the Internet, attracting them to consume offline [1]. Later, with the development of online payment methods, the O2O model was accepted by more consumers. After the "Thousand Group War" brought about the destruction of group buying, local life service apps came into being.

Local life service refers to the display of offline business service information of "food, clothing, housing, travel, entertainment, and play" in the region to consumers through online "online stores". At present, China's local life service O2O model industries mainly include Meituan, ELEME, Dianping and other catering industries; Didi, Haluo, Caocao and other transportation industries; Ctrip, Qunar and other tourism industries; in addition, beauty, photography, medicine, maternal and child, leisure

and entertainment industries have also opened their own O2O models one after an-
other.

Based on the current development of Internet technology, under the O2O
e-commerce model, consumers' consumer behavior and consumer demand are under-
going changes. Comparing with traditional industries, it is obvious that consumers'
access to information has become more convenient and transactions have become
faster under the O2O model. Regarding the research on consumer behavior, scholars
at home and abroad have achieved rich research results. For example, foreign scholars
Thanatchaphan Petcharat, Adisorn Leelasantidam (2021) [2][3] combined the technol-
ogy acceptance model with the factors in the decision-making process, and found that
perceived trust, perceived quality, perceived usefulness, and perceived ease of use
have a positive impact on the search process when consumers use online platforms.
The model can evaluate the user behavior of consumers using e-commerce platforms
for online shopping. Domestic scholars such as Guo Yingzhi (2018) [4] believe that
consumers' consumption behavior will be directly affected by differences in perceived
risks. Consumers will be affected by economic risks, social risks, functional risks and
practical risks in online shopping. Among them, the most significant impact is social
risks, and other risks can also have interactive effects. Based on the previous research
results, this paper adds three variables, namely Social impact, usage experience, and
perceived risk, to the technology acceptance model to construct a new research model
in order to provide another perspective on the study of consumer behavior of life ser-
vice apps.

2   Theoretical basis and hypothesis proposed

2.1   Technical acceptance theory model

In 1989, when Davis was studying information systems, he proposed the technology
acceptance model, which was mainly to study the key factors that people can widely
accept computers [5].This model proposes two new factors that affect the behavioral
Willingness, namely perceived usefulness and perceived ease of use.

This theory holds that human behavior is determined by people's own behavioral
will. The usefulness of perception and the ease of perception jointly affect the
behavioral Willingness. At the same time, the ease of perception also affects the
usefulness of perception, which is determined by external variables [6]. External
variables play an important role in the connection between attitudes, content, ideas,
environmental factors, and interfering factors that exist in the model.The model is
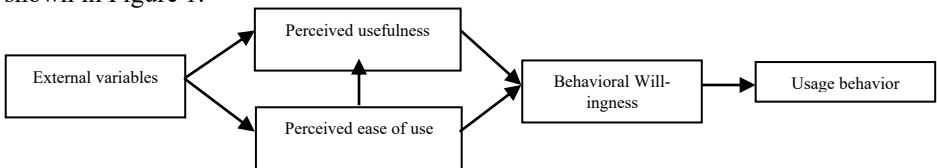shown in Figure 1.

Fig. 1. Technical Acceptance Theory Model

In 2003, Venkatesh, Morris and other scholars conducted a comprehensive analysis on the basis of the original model, and then proposed the integration theory of technology acceptance and use [7]. This theoretical model re-integrates four core variables that affect behavioral willingness, namely performance expectations, effort expectations, Social impact, and convenience conditions. At the same time, gender, age, experience, and willingness have also been added as the adjustment variables of the model [8]. The specific model is shown in Figure 2.
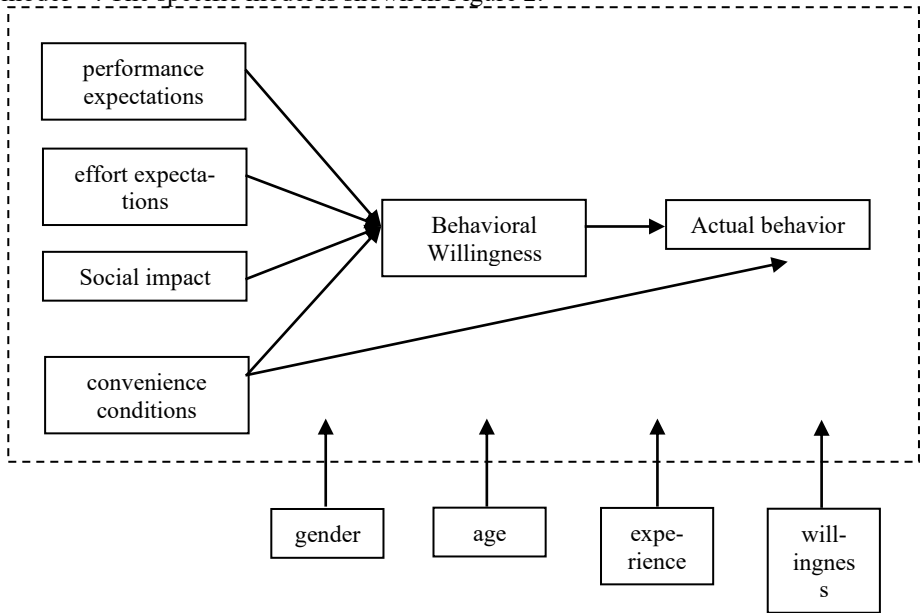

Fig. 2. Technical acceptance and Use Integration theoretical model

The technology acceptance model is widely used in the research of users' acceptance of technology adoption, and it has been proved by many previous scholars that the model can be better used to explain users' willingness to adopt. However, with the advent of the Internet era, consumers' consumption behavior is not only affected by their own wishes, but also changes in their own consumption behavior due to changes in the surrounding environment, which has a greater impact on society than in previous eras. In the O2O model, consumers will refer more to their previous consumption process, consumption experience and their own satisfaction when using products when choosing products. However, when consumers consume online, they often cannot experience and then consume like in physical stores. There are often certain unknown risks. This also directly leads to consumers considering more possible results when making consumer behaviors, and only after comprehensive consideration will they make a decision.

Based on the above related analysis, this paper believes that in the O2O model, the actual behavior of consumers will be affected by their behavioral Willingness, while the behavioral Willingness is affected by the perceived usefulness and perceived ease of use. At the same time, consumers' previous experience will directly affect their

behavioral Willingness. In addition, the two factors of Social impact and perceived risk will also have a direct impact on their behavioral Willingness. Moreover, perceived usefulness will be affected by Social impact and perceived ease of use, while perceived ease of use is affected by experience. Therefore, based on the technology acceptance model, this paper adds three factors: Social impact, usage experience, and perceived risk, and constructs a new research model for studying consumer behavior. The research model of this paper is shown in Figure 3.
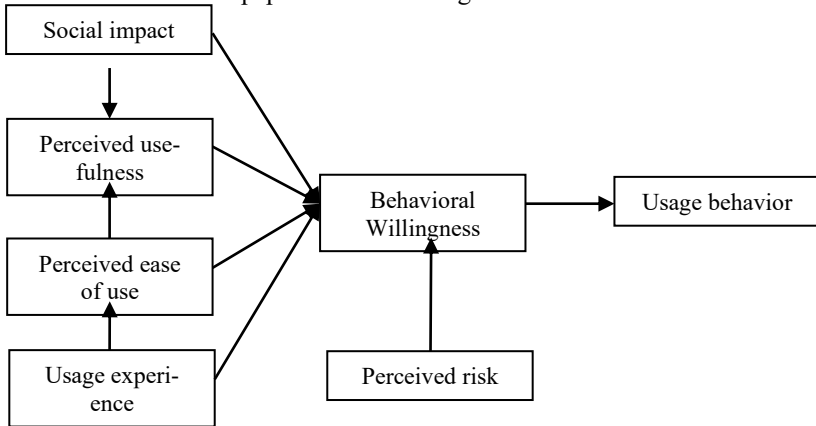

Fig. 3. Research model of consumer behavior under O2O e-commerce model

2.2   Hypothesis proposed

Based on the above research model, finally, social impact, perceived usefulness, perceived ease of use, usage experience, perceived risk, behavioral willingness, and usage behavior are used as measurement indicators, as follows:

1. Social impact and perceived usefulness

People cannot exist independently of the society, everyone is more or less influenced by the society. The O2O e-commerce model, as a new model combining traditional industry and Internet industry, often needs the recognition of the whole society to survive. When the information transmitted by the social environment is that the degree of utility of the product or service is high, consumers will first have a good impression of the product or service and think that the product or service is useful; and when the degree of utility transmitted is low, consumers will have a bad impact and think that the product or service is useless. Therefore, this article proposes assumptions:

Hypothesis H1: Social impact positively affects perceived usefulness.

2. Social impact and Behavioral Willingness

When consumers make consumer behaviors and enjoy goods or services, they will be affected by the surrounding environment, people, and things. When consumers feel that people around them are basically using O2O application software, or are enjoying the convenience brought by O2O, they will also want to use the same products or

enjoy the same services. This Social impact will affect consumers' willingness to behave. Therefore, this article proposes assumptions:

Hypothesis H2: Social impact positively affects behavioral Willingness.

3.Perceived usefulness and behavioral Willingness

When consumers carry out consumer behavior in the O2O model, the first consideration is whether the goods and services purchased through this method provide help for personal life and work. If consumers believe that using the services in the O2O model saves them time and money, helps them find goods or services that meet their needs, and get a good experience in the consumption process, consumers will be willing to continue to use the service in the future. Therefore, this article proposes assumptions:

Hypothesis H3: Perceived usefulness positively affects behavioral willingness.

4.Perceived ease of use and perceived usefulness

In the O2O model, if consumers do not need to spend a lot of effort to purchase goods or services, and it is easy to operate, consumers will think that this is more helpful to themselves, and it will directly lead consumers to think that the purchase of goods or services in the O2O model is more effective, and the role of using the services in the O2O model will be further enhanced. Therefore, this article proposes assumptions:

Hypothesis H4: Perceived ease of use positively affects perceived usefulness.

5. Perceived ease of use and behavioral Willingness

In the context of the Internet, the premise for consumers to use O2O model services is to have basic equipment, such as mobile phones, computers, etc., Whether the process of learning to use basic equipment to carry out consumer behavior is easier will affect consumers' behavioral Willingness. At the same time, whether the requirements, rules, methods, etc. of using O2O services will cost consumers too much time will also have a decisive effect on consumers' willingness to spend. If consumers think that using O2O services is simple and easy to master, they will be willing to use this service. Therefore, this article proposes assumptions:

Hypothesis H5: Perceived ease of use positively affects behavioral willingness.

6. Usage experience and perceived ease of use

The experience of consumers in the O2O model often comes from a free experience or discount activity by the merchant. Generally, this kind of activity will attract new and old users to participate to a large extent, and this first experience directly determines whether the service will be used again in the future. Once consumers have a user experience and can easily obtain services during this use process, it means that consumers' perceived ease of use has improved. Therefore, this article proposes assumptions:

Hypothesis H6: usage experience positively affects perceived ease of use.

7.Usage experience and behavioral Willingness

The consumer's experience will have an impact on whether he will continue to use the same service in the future. If the consumer brings him a good sense of experience during the first consumption process in the O2O mode, and this consumption experience has an effect on his life, work, etc. Then consumers will quickly develop the

willingness to use the same goods or services the next time they choose them. Therefore, this paper proposes the hypothesis that:

Hypothesis H7: Usage experience positively affects the behavioral Willingness.

8.Perceived risk and behavioral Willingness

Under the O2O e-commerce model, consumers need to pay for goods or services online before picking up the goods or enjoying the services offline. Since consumers are not sure whether the goods or services they purchase will be available offline, whether the physical goods are the same as the online pictures and descriptions, etc., and whether their personal information will be disclosed through this method, these issues can pose risks to consumers. Once consumers perceive that the considered risks are too great, they will not be willing to make consumption. Therefore, this paper proposes the hypothesis that

Hypothesis H8: Perceived risk inversely affects behavioral Willingness.

9.behavioral Willingness and usage behavior

Consumers often produce consumption behavior because they are willing to consume and want to buy a certain product or service. The higher the consumer's own willingness to consume, the greater the likelihood of consumer behavior, and vice versa, it will not. Therefore, this article proposes assumptions:

Hypothesis H9: The behavioral Willingness positively affects the usage behavior.

2.3   Research design

The respondents of this paper should meet two conditions, namely, they have experience in using local lifestyle apps and have certain knowledge about them. This research follows the principle of randomization, using "Questionnaire Star" to distribute and collect questionnaires, a total of 120 questionnaires were collected, 107 valid questionnaires.

The questionnaire design is divided into two parts, the first part contains basic personal information, and the second part contains the main content of the study, consisting of seven measures and 21 questions (due to space issues, please contact the corresponding author of this paper for details). Respondents were 35.5% male and 64.5% female; 81% of the respondents were aged 20-30 years old, with the majority of young people; the majority of the respondents were school students and corporate employees in terms of occupation, and the majority of the respondents were educated from high school to graduate school.

3   Empirical analysis

3.1   Reliability analysis

Reliability analysis refers to the reliability analysis of the questionnaire to reflect whether the people participating in the questionnaire fill in the questionnaire questions truthfully. The overall Cronbach's alpha coefficient of this questionnaire is 0.884, which proves that the overall reliability of the questionnaire is high, and the authenticity and consistency are good. There are a total of 7 variables in this ques-

tionnaire. The Cronbach's alpha coefficient of each variable is higher than 0.6, and it is not higher than the overall reliability coefficient of 0.884. This shows that the design of each question item in the questionnaire is acceptable, and the confidence level of each variable is high, which meets the requirements. The details are shown in Table 1.

Table 1. Reliability Table of each variable

Variable	Question item	Scale average value after deleting entry	Scale variance after deleting entry	CITC value	Squared Multiple Correlation	Cronbach's Alpha after deleting entry	Cronbach's Alpha of each variable
Social impact	SI1	5.0000	2.226	.315	.099	.643	.611
	SI2	4.2710	1.501	.477	.244	.422	
	SI3	4.0187	1.509	.487	.250	.405	
Perceived usefulness	PU1	6.3738	3.765	.683	.478	.798	.842
	PU2	6.3832	3.842	.639	.454	.817	
	PU3	6.3925	3.675	.665	.469	.806	
	PU4	6.5607	3.871	.729	.543	.781	
Perceived ease of use	PEU1	4.1308	1.681	.811	.681	.800	.880
	PEU2	4.0280	1.443	.800	.675	.802	
	PEU3	3.9720	1.631	.705	.498	.885	
Usage experience	E1	2.1776	.563	.637	.405	.	.778
	E2	1.9065	.557	.637	.405	.	
Perceived risk	PR1	4.8692	2.436	.616	.402	.726	.788
	PR1	4.5234	2.516	.582	.350	.762	
	PR3	4.4766	2.290	.690	.478	.645	
behavioral Willingness	BI1	4.4953	1.498	.754	.641	.759	.850
	BI2	4.1963	1.537	.626	.396	.885	
	BI3	4.4486	1.457	.790	.668	.725	

Usage behavior	UB1	4.7196	2.072	.811	.668	.623	
	UB2	4.3364	1.886	.637	.478	.829	.822
	UB3	4.8505	2.600	.633	.508	.807	

Data source: Questionnaire survey

3.2   Validity analysis

Validity analysis refers to the validity analysis of questionnaires. According to Table 2 below, it can be seen that the KMO value of the overall variable is 0.898, which is greater than 0.6, indicating that the correlation between the samples is very high, and the significance is also less than 0.05, which shows that the validity level of the overall variable is very high. As shown in Table 2.

Table 2. The KMO value of the overall variable and Bartlett's test table

The number of KMO sampling suitability.		.898
Bartlett's test	Approximate Chi-square	1655.917
	Degree of freedom	210
	Significance	0.000

Data source: Questionnaire survey

3.3   Related analysis

(1) Analysis of perceived usefulness and related variables.

The variable factors that affect the usefulness of perception are Social impact and perceived ease of use. According to Table 3 below, it can be seen that the correlation coefficients between the two variables of Social impact and perceived ease of use and perceived usefulness are 0.614 and 0.781, both greater than 0.01, the correlation is high, showing a positive correlation. As shown in Table 3.

Table 3. Table of correlation coefficients between perceived usefulness and related variables

Variable	Social impact	Perceived ease of use	Perceived usefulness
Social impact	1		
Perceived ease of use	.608**	1	
Perceived usefulness	.614**	781**	1

Data source: Questionnaire survey

(2) Analysis of perceived ease of use and related variables.

The variable factor that affects the perceived ease of use is the usage experience. According to Table 4 below, it can be seen that the correlation coefficient between the perceived ease of use and the usage experience is 0.807, which is greater than 0.01, and the correlation is high, showing a positive correlation. As shown in Table 4.

Table 4. Table of correlation coefficients between perceived usefulness and related variables

Variable	Usage experience	Perceived ease of use
Usage experience	1	
Perceived ease of use	.807*	1

Data source: Questionnaire survey

(3) Analysis of behavioral Willingness and related variables.

The variable factors that affect the behavioral willingness are Social impact, perceived usefulness, perceived ease of use, usage experience, and perceived risk. According to Table 5 below, it can be seen that except for the correlation coefficient between behavioral willingness and perceived risk is -0.440, which shows a negative correlation, the correlation coefficients of the other variables are all positive, and greater than 0.01, which shows a positive correlation. As shown in Table 5.

Table 5. Table of correlation coefficients between behavioral willingness and related variables

Variable	Social impact	Perceived usefulness	Perceived ease of use	Usage experience	Perceived risk	behavioral Willingness
Social impact	1					
Perceived usefulness	.614**	1				
Perceived ease of use	.608**	.781**	1			
Usage experience	.608**	.763**	.807**	1		
Perceived risk	-.314**	-.485**	-.498**	-.335**	1	
behavioral Willingness	.587**	.784**	.732**	.720**	-.440**	1

Data source: Questionnaire survey

(4) Analysis of usage behavior and related variables.

The variable factor that affects the behavior of use is only the behavioral Willingness. According to Table 6 below, it can be seen that the correlation coefficient between behavioral willingness and usage behavior is 0.794, which is greater than 0.01, and the correlation is high, showing a positive correlation. As shown in Table 6.

Table 6. Table of correlation coefficients between usage behavior and related variables

Variable	behavioral Willingness	Usage behavior
behavioral Willingness	1	

| Usage behavior | .794** | 1 |

Data source: Questionnaire survey

3.4   Regression analysis

(1) Regression analysis of perceived usefulness.
According to Table 7 below, it can be seen that the adjusted R square is 0.634, indicating that the degree of interpretation of the perceived usefulness of the relevant variables is 63.4%, and the degree of interpretation is better. The significance of social impact and perceived usefulness is less than 0.05, and the standardization coefficients of these two variables are 0.221 and 0.646, which shows that there is a significant correlation between perceived usefulness and these two variables, and it shows a linear positive correlation. As shown in Table 7.

Based on the above analysis results, it can be seen that H1 and H4 are assumed to be true.

Table 7. Perceived Usefulness Regression Analysis Table

Variable	Non-standardized coefficient		Standardized coefficient	t	Significance
	B	Standard error	Beta		
(Constant)	.278	.150		1.857	.066
Social impact	.231	.078	.221	2.983	.004
Perceived ease of use	.669	.077	.646	8.726	.000
F value			92.672		
R square			.641		
Adjusted R square			.634		

Data source: Questionnaire survey

(2) Regression analysis of perceived ease of use.
According to Table 8 below, it can be seen that the adjusted R square is 0.648, indicating that the degree of interpretation of perceived ease of use by usage experience is 64.8%, and the degree of interpretation is better. The significance of use experience is less than 0.05, and the standardized coefficient is 0.807, which indicates that there is a significant correlation between perceived ease of use and usage experience, and it shows a linear positive correlation. As shown in Table 8.

Based on the above analysis results, it can be seen that the hypothesis H6 is true.

Table 8. Perceived ease of use Regression analysis Table

Variable	Non-standardized coefficient	Standardized coefficient	t	Significance

	B	Standard error	Beta		
(Constant)	.533	.112		4.764	.000
Usage experience	.729	.052	.807	14.010	.000
F value			196.271		
R square			.651		
Adjusted R square			.648		

Data source: Questionnaire survey

(3) Regression analysis of behavioral willingness.

According to Table 9 below, it can be seen that the adjusted R square is 0.610, indicating that the degree of interpretation of behavioral will by the relevant variables is 61.0%, and the degree of interpretation is better. The significance of the five variables is less than 0.05, and the standardized coefficients of social impact, perceived usefulness, perceived ease of use, and experience are 0.202, 0.544, 0.307, and 0.530, respectively. This shows that these four variables have a significant correlation with behavioral willingness, and show a linear positive correlation. The standardized coefficient of perceived risk is -0.199, which shows that there is a linear negative correlation between perceived risk and behavioral willingness. As shown in Table 9.

Based on the above analysis results, it can be seen that the assumptions H2, H3, H5, H7, and H8 are all true.

Table 9. Behavioral Willingness Regression Analysis Table

Variable	Non-standardized coefficient		Standardized coefficient	t	Significance
	B	Standard error	Beta		
(Constant)	.949	.210		4.380	.000
Social impact	.197	.079	.202	2.505	.014
Perceived usefulness	.508	.086	.544	5.875	.000
Perceived ease of use	.297	.089	.307	3.316	.001
Usage experience	.462	.071	.530	6.534	.000
Perceived risk	-.159	.054	-.199	-2.932	.004
F value			73.140		
R square			.620		
Adjusted R square			.610		

Data source: Questionnaire survey

(4) Regression analysis of usage behavior.

As above, the adjusted R square is 0.628, indicating that the degree of interpretation of behavioral Willingness by the relevant variables is 62.8%, and the degree of inter-

pretation is better. The significance of the behavioral Willingness is less than 0.05, and the standardization coefficient is 0.794, which shows that there is a significant correlation between the use behavior and the behavioral Willingness, and it shows a linear positive correlation. From the analysis results, it can be seen that the hypothesis H9 is true.

4   Conclusions and recommendations

4.1   Research conclusions

On the basis of the technology acceptance theory model, this paper adds three other variables, social impact, use experience and perceived risk, to construct a new research model, and uses the newly constructed model to study the consumer behavior under the local life service O2O model. The results of empirical analysis show that perceived usefulness is positively affected by Social impact and perceived ease of use; perceived ease of use is positively affected by usage experience; in addition to perceived risk has a negative impact on the behavioral Willingness, Social impact, perceived usefulness, perceived ease of use and usage experience all have a positive impact on the behavioral Willingness, and the usage behavior is also positively affected by the behavioral Willingness. This shows that in the use of local life service app, consumers' behavior is affected by social environment and consumers' own experience, while the impact of social environment factors on consumers' behavior is less than that of consumers' own factors.

4.2   Recommendations

1.Recommendations to consumers.

In the modern Internet era, the consumer demand of consumers has shown a variety of changes, and there are more and more kinds of goods and services for consumers to choose from. In this case, consumers will be more susceptible to external or internal factors, and the consumption choices they make may not be theoretical. Therefore, under the O2O e-commerce model, consumers must learn to consume rationally and choose goods or services that meet their own needs, rather than blindly following the crowd or being susceptible to other factors and produce unreasonable consumption behavior. Secondly, we must learn to defend our own rights and interests. When we encounter bad behaviors that infringe on the rights and interests of consumers, we must learn to use legal weapons to defend our own consumer rights and interests, and not let unscrupulous businesses have the opportunity to take advantage of them. Finally, to have safety awareness, consumers may have a variety of unsafe behaviors in the process of consumption, such as information security, property security, life security, etc., so consumers should learn to protect their own safety and reduce the occurrence of risks.

2.Recommendations for merchants.

First of all, businesses must understand the factors that affect consumer behavior, adjust their business strategies according to relevant influencing factors, and learn to grasp consumers' consumer psychology. Secondly, it is necessary to understand the needs of consumers, upgrade products and improve services according to the needs of the company's target customer base, in order to improve customer satisfaction. Finally, to operate honestly, companies must seek truth from facts when promoting goods or services online, conform to the real quality of goods or services offline, and do not make false propaganda.

Acknowledgement

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