Research on the Influence of Customer Engagement on Their Loyalty in Online Supermarket: A Case Study of Tmall

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Abstract

With the development of the Internet, online supermarkets have won a considerable market share. This article explores the factors affecting online supermarket customer loyalty from the perspective of customer engagement. Through questionnaire survey, we considered and measured the five impact factors on customer loyalty: customer involvement, customer participation, information seeking, their affections, and services. This article also gave some suggestions to help online supermarkets improve customer experience and increase customer loyalty from these aspects.

Key words: Customer engagement; Tmall; Loyalty

The development of the internet has nurtured the online supermarkets. The emergence of online supermarkets has made shopping more convenient for customers. For these online supermarkets, repurchases made by customers and their loyalty become particularly important. In 1979, Lovelock and Young pointed out that companies can "turn to consumers to increase their productivity". There are many factors that affect customer loyalty. From the perspective of customer engagement, domestic and foreign scholars believe that it can attract and retain customers by interacting with customers, sharing values, and rewarding the customers. Most of the customer engagement researches are based on the traditional service industry, and the emergence of online supermarkets has changed the situation completely. There lacks empirical research and support of online supermarkets. Based on the theory of customer engagement, this article explores the factors that influence customers' loyalty to supermarkets and their levels of impact. Studying the factors that influence the customers' loyalty to online supermarket will help managers increase their customers' loyalty from the perspective of customer engagement, thus increasing repurchases made by customers.

1. LITERATURE REVIEW AND THEORY

Customer engagement theory. Customer engagement is a customer's investment in a product or service and is a concept of behavior (Zhang Hui, 1994). It is the specific behavior of the psychological and material aspects associated with the production and delivery of services, as well as the level of customer effort and involvement (Cermak. etc, 1994). Kumar (2010) argued that customer engagement includes a variety of customers' activities that can affect a company's performance, including their purchases, recommendations, sharing about the brands on social media, and feedbacks. Vivek (2012) suggested that customer engagement is the strength of customer engagement with the companies. Brodie (2011) proposed the idea that customer engagement is a psychological state of the customers in a particular situation. This article believes that customer engagement refers to the customer's perceptional and behavioral attitude towards the products or services provided by the company, and the effort and involvement of the customers in communicating with the company. Whether it is a psychological state or a behavior, it is related to the customer's physical and

psychological engagement to a brand or enterprise.

The academic community has studied the customer engagement from a different view. From the perspective of customer investment, customers will invest into the brands intellectually, physically, and emotionally when engaging in customer services. Customer engagement includes three broad areas: information sharing, liability behavior, and interpersonal interaction. Among them, the interpersonal interaction includes interpersonal relationships such as trust, reliability, support, cooperation, commitment, etc. (Jiabao Zhai and Yang Xu, 2009). Alison, however, has proposed three aspects of customer engagement: perception efforts, task definition, and information seeking (Yanjun Peng, 2010).

There are many studies and theories on customer engagement by foreign scientists. Various types of scalogram have been developed since the first quantitative study on customer engagement was conducted by Cermak back in 1944. The scalograms focus on and take measurements in different aspects of customer engagements due to the different understandings that scholars have. The traditional implementation of customer engagement mainly focuses on service industry, and these scalograms are based on the service industry, which provide service to the offline service industry. Foreign scholars Leckie, Nyadzayo, and Johnson (2016) considered six aspects in the empirical analysis of Australian carrier brand satisfaction: consumer involvement, consumer engagement, affection, motivation, self-expression brand, recognition processing to analyze factors that influence customer brand loyalty. The three scholars conducted empirical research to prove that the five aspects including consumer involvement, consumer participation, affection, motivation, and self-expression brand have positive effects on customer loyalty, while recognition processing has a negative effect on customer loyalty. Hongwei Hou (2016) explored the relationship between customer participation, relationship quality, and repurchase intentions in the online shopping industry. He took the online shopping customers as the research object to conduct a questionnaire survey and used SPSS to collect and to analyze the questionnaires in order to verify the relationship between customer participation, relationship quality, and repurchase intention in the online shopping situation. It is concluded that customer participation has a significant positive impact on repurchase intentions and relationship quality satisfaction and trust in online shopping. The relationship quality has a significant positive impact on repurchase intentions, and it serves as the mediate between customer participation and repurchase intentions.

Ying Hua, Jin Chen, and Xianbin Wu (2013) focused on the perspective of relationship, taking the e-commerce industry as the research object, tested the formation mechanism of customer loyalty based on customer participation both theoretically and empirically, constructed the theoretical model using relationship quality as the media and variables, and proved that customer participation has an indirect effect on the formation and maintenance of customer loyalty through relationship quality. The liability behavior has the greatest indirect impact, and customer participation has a significant direct impact on trust in relationship quality. However, only the liability behavior and the interpersonal interaction have significant impacts on the commitment.

In summary, this paper, under the enlightenment of previous studies, selects, organizes, modifies, and constructs new models, and conducts the following research in combination with the online supermarket situation.

2. RESEARCH DESIGN

Customer engagement involves many factors. In the theoretical framework below, the factors involved are related to customer engagement. However, in foreign literatures, there are many concepts related to customer engagement, and different scholars translate different terms into "customer engagement". Such as customer involvement and customer participation. However, online supermarket differs from traditional service in aspects of information sharing, interpersonal interaction, lability behavior, and intellectual and physical investment. First, the nature of online supermarkets is supermarkets over the internet, and there is no substantial physical contact between customers and businesses. Employees generally perform marketing on customers only when they are in contact with the customer during service. The interaction time between employees and customers is not coordinated. Only when customers are highly involved can employees communicate with customers in real time. Therefore, it is necessary for the operator of the online supermarket to improve the operation of the website and the experience of the customer before and when the they are using the online supermarket service to make purchases, and thereby creating value for the customer and increasing the possibility of repurchase.

Framework. This article draws on the second part of the literature research, adjusts and modifies the factors that are not suitable for the online supermarket situation, retains the original factors suitable for the analysis of this article, taking the customer's loyalty to Tmall supermarket as an example, and proposes the influence based on customer engagement. The factors of customer loyalty to online supermarkets include customer involvement, customer participation, information seeking, affection, and service. The framework of the model is shown here:

Research on the Influence of Customer Engagement on
Their Loyalty in Online Supermarket: A Case Study of
Tmall
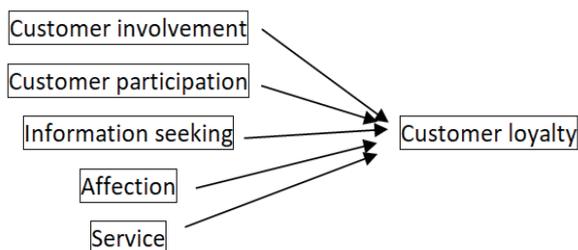
Figure 1
The Influence Mode of Customer Engagement on Customer Loyalty

Customer involvement refers to the degree of importance of an object to the subject, or the importance of the object to the subject itself (Russell-Bennett, R., McColl-Kennedy, J. R., & Coote, L. V, 2007). If the product or service provided by the company is more valuable to the customer, and the higher the correlation with the customer demand is, the higher the customer involvement will be. Customers who maintain high levels of involvement will want to know more about the products or services and make purchases. In the context of this study, customer involvement refers to the degree of importance of online supermarkets to customers or their importance to customers themselves. The customers will be questioned from the aspects of suitability, value, availability, and importance of the products of the Tmall supermarket. If the customers think that Tmall Supermarket is more suitable for them, Tmall Supermarket has a certain value to them, its products can be truly obtained and psychologically recognized for its importance and can be considered to have high customer involvement. This paper argues that customer involvement has an impact on customer loyalty and proposes hypothesis #1: customer involvement is positively correlated with customer loyalty.

Customer participation. Customer involvement refers to the customer's psychological feelings about the company, and customer participation refers to the performance of the customer, and to what extent can they provide constructive feedback and useful suggestions. Customers can give feedback and improvement suggestions to the company's products or services, which can help companies improve their operations (Eisingerich, A. B., Auh, S., & Merlo, O, 2014). Maintaining high customers participation helps companies develop customer groups, which become "free employees". High-participating customers help companies discover innovations and meet customer needs better. At the same time, this kind of participation brings customers benefit, as well. The customer participation in this paper is defined as the extent to which customers provide constructive feedback and effective advice to online supermarkets. In the case of online supermarkets, website operations are very important, and will directly affect the customer experience. High customer engagement will lead to high customer loyalty. This paper proposes hypothesis #2: the of customer engagement has a positive impact

on customer loyalty. In the traditional service industry, although the consumer environment to customers is important, it is not as important as the online supermarkets. This article measures customer participation from five aspects: the audience's product review, operational review, advices on experience improvement, communication, and other aspects of recognition.

Information seeking refers to the extent to which a customer's efforts to search for information in order to obtain the true value of a product or service. The difficulty of information gathering will be directly related to the customer experience. If customers can easily find the information they want, it is more likely to bring better customer experience and even higher level of loyalty. This article measures the customer information seeking on Tmall supermarket from four aspects: whether the product is easy to find, whether the recommendation information is easy to find, the provision of preferential information, and whether the product information is complete. We propose hypothesis #3: information seeking has a positive impact on customer loyalty.

Affection. The degree of affection refers to the degree of positive effect of the customer's connection with the brand in the customer-specific interaction with the brand. The connection generated by the customer in the process of interacting with the brand can have both positive and negative effects, and the positive effect represents the customer's preference for the brand. If the customer likes the brand, their affection of that brand is higher. In the context of this study, the degree of affection is defined as the degree of positive effect of the emotional connection between the customer and the online supermarket; that is, the intensity of the positive effect of the customer has on the online supermarket. The customer's preference for online supermarkets is measured in three ways: the pleasure during the shopping process, the overall customer experience, and the level of satisfaction. Hence, hypothesis #4 is proposed: the influence of customer's preference and customer loyalty are positively correlated.

Service. It refers to the behavior of online supermarkets to better meet customer needs and to deliver more value to customers at possible points of contact. This article refers to the customer's perceived interaction with the online supermarket. The higher the customer's evaluation of the service, the higher the customer loyalty will be. We propose hypothesis #5: the impact of the quality of service and customer loyalty are positively correlated.

Loyalty. In the academic world, customer loyalty is generally divided into two categories: loyalty in behavior and in attitude. In this article, customer loyalty focuses on customer loyalty in their behaviors. Therefore, customer loyalty refers to the extent to which a customer is willing to repurchase a company's products or services.

This paper believes that online supermarket loyalty measurement can be measured by the customer's willingness to repurchase. If the customer has a

repurchase intention, the customer's repurchase behavior is likely to occur. Therefore, the questionnaire asks the customer to consider the statement "I will also shop at Tmall supermarket in the future", and customers can rate their intentions on a scale from 1 to 5.

Questionnaire design and distribution. In this study, the questionnaire was made available online. It was designed using the wjx and was used in the highly active WeChat system. The questionnaire was in the form of a Likert five-point scale: 1 means strongly disagree, 2 means disagree, 3 means neutral, 4 means agree, and 5 means strongly agree. The measurement of the variables is shown in the table below:

Table 1
Measurement of the Variables

Variable	Measurements	Question
Customer involvement	Suitability（INV1）	Comparing with other online market, I prefer Tmall
	Value（INV2）	I think Tmall is very valuable to me
	Availability（INV3）	I can buy what I want through Tmall
	Importance（INV4）	I think Tmall is very important
Customer participation	Product review（PAR1）	I would like to write review for products on Tmall
	Operational review（PAR2）	I would like to write operational review for Tmall
	Suggestions to improve experience（PAR3）	I would like to help improve customer experience on Tmall
	Communication (PAR4）	I would like to provide feedbacks to Tmall if it needs to improve its service.
	Recognition of advice（PAR5）	I believe my feedback can help improve Tmall and it is beneficial for me, as well
Information seeking	Easy to find products（INF1）	I can easily find the products I want
	Easy to find review（INF2）	I can find information on recommended or related products
	Coupons（INF3）	I can use coupons easily
	Complete information on products（INF4）	I think information on products is complete
Affection	Good shopping experience（AFF1）	I feel happy shopping on Tmall
	Overall customer experience（AFF2）	The overall customer experience on Tmall is good
	Leve of satisfaction（AFF3）	Tmall can satisfy my need
Services	logistics（SER1）	The delivery by Tmall is on time
	Product is intact（SER2）	The product delivered by Tmall is intact
	Return and exchange（SER3）	Return and exchange on Tmall is easy
	Recommendation for repurchase（SER4）	Tmall can make good recommendations for my future purchase
	Customer service（SER5）	Overall, the customer service of Tmall is very good
loyalty	Repurchase intention（Loy）	I will shop on Tmall again

In addition, the questionnaire also collected information from other aspects of the customers, such as gender and age. Once the questionnaire is completed, it is pre-investigated. After distributing the questionnaire to 15 college students, the sentences with vague expressions in the questionnaire were revised, and the questionnaire was finally decided and distributed.

3. ANALYSIS

Data collection and implementation. The questionnaire is forwarded by WeChat group and by WeChat friends circle, and the filling rate of the questionnaire is improved by certain incentives such as cash. A total of 259 questionnaires were collected in this survey, of which 245 were valid.

Data analysis. This study used SPSS 19 software for data analysis. It mainly includes verification and validity analysis, and correlation analysis and regression analysis. It processes data, draws conclusions, and verifies our hypotheses.

Descriptive statistical analysis. Among the 245 valid questionnaires, 71 were completed by males, accounting for 29%, and 174 were completed by females, accounting for 71%. The number of males filling out this questionnaire is significantly less than the number of females, and women in general are more experienced in online shopping than men.

3.1 Analysis On Reliability

The level of customer involvement, customer participation, information seeking, affection, and service are measured by 4, 5, 4, 3, and 5 questions in the questionnaire respectively. According to the results, the alpha value of customer participation is above 0.9 indicates that the questionnaire design of this variable is very reliable; if the alpha value of customer involvement, affection, and service is between 0.8 and 0.9, it indicates that the reliability is good; the alpha value of the information seeking is 0.79, meaning the level of reliability is

Research on the Influence of Customer Engagement on
Their Loyalty in Online Supermarket: A Case Study of
Tmall

acceptable. Overall, the reliability of the questionnaire is acceptable. The validity of the questionnaire refers to its ability in measuring the variables. In terms of structural validity, this paper uses the factor analysis method to test the structural validity of the questionnaire. Therefore, in the SPSS software, the obtained valid data is subjected to KMO and Bartlett sphericity test, and the obtained KMO value is 0.918. Since it is greater than 0.9, the scalogram is suitable for factor analysis. In the following paragraph, factor analysis is performed on the scalogram.

Factor analysis was performed on all the data in the questionnaire involving factors affecting loyalty. KMO was greater than 0.9 and Sig. value was less than 0.001. Bartlett's sphericity test approximated the chi-square with a value of 3412.292. The resulting scree plot is shown here:
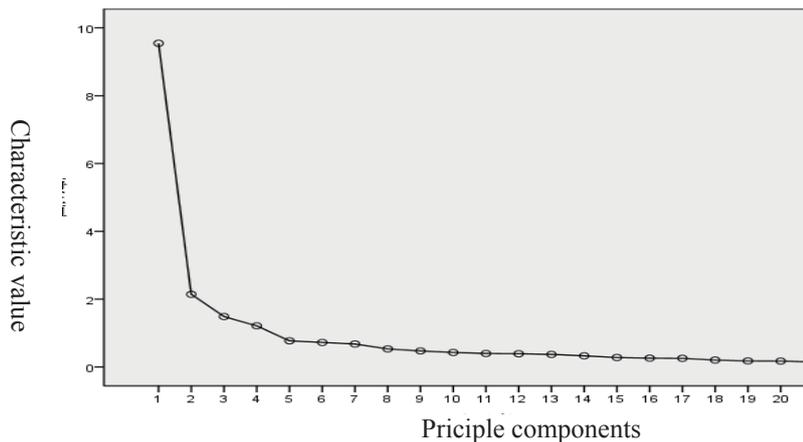
Figure 2
Scree Plot

As a result, a total of four components were extracted. According to the reality of the component matrix after rotation, the component for measuring the degree of affection cannot be counted as one of the effective factors because the component factor is too low, and it needs to be deleted. It may be that the degree of affection is a relatively subjective evaluation, and the customer is not able to give such a fair answer as they do to other questions. Thus, the factor cannot be extracted. In conclusion, the obtained component matrix after rotation is as follows, and the extracted factors are named after the influence factors in the model, which is a good proof for part of the model:

Table 4
Rotating Component Matrix

		Components			
		1	2	3	4
Customer involvement	INV1			0.766	
	INV2			0.849	
	INV3			0.702	
	INV4			0.787	
Customer participation	PAR1		0.82		
	PAR2		0.83		
	PAR3		0.814		
	PAR4		0.803		
	PAR5		0.75		
Information seeking	INF1				0.793
	INF2				0.734
	INF3				0.668
	INF4				0.664
Service	SER1	0.741			
	SER2	0.801			
	SER3	0.749			
	SER4	0.601			
	SER5	0.765			

3.2 Correlation Analysis

According to the component analysis results, the correlation between the extracted components and loyalty is analyzed. In the SPSS software, correlation tests of loyalty and items included in each component are performed.

Correlation analysis between customer involvement and customer loyalty. As shown in Table 5, using the Pearson product difference correlation coefficient analysis method, the correlation between the components of customer involvement and loyalty can be obtained. The absolute values are between 0.5 and 0.6, indicating a moderate positive relationship. Therefore, the hypothesis that customer involvement is an influential factor in customer loyalty is accepted.

Table 5
Correlation Between the Factors and the Loyalty of the Customer's Involvement

	Loyalty	inv1	inv2	inv3	inv4
Pearson correlation	1	.585**	.534**	.545**	.559**
Significance level (two-sided test)		.000	.000	.000	.000
N	245	245	245	245	245

Note: ** indicates that the two-sided test is significant at $\alpha = 0.01$.

Correlation analysis between customer particpation and customer loyalty. Similarly, the correlation between components involved in customer participation and loyalty are tested. The results are shown in Table 6. Obviously, there is a moderately weak positive correlation between the components of customer participation and loyalty. The absolute correlation coefficient of item 2 (Participation 2: I am willing to give some suggestions on the operation of Tmall Supermarket website) is very small. The reason for this may be that for the factor of Tmall supermarket website operation, it cannot be used to explain the level of loyalty particularly; that is, it is unlikely to be a source of loyalty comparing with other participation factors. Therefore, the hypothesis that the influence of customer engagement on customer loyalty is positively correlated is accepted.

Table 6
Correlation Analysis Between Customer Particpation and Customer Loyalty

	Loyalty	par1	par2	par3	par4	par5
Pearson correlation	1	0.326**	0.241**	0.359**	0.345**	0.412**
Significance level (two-sided test)		.000	.000	.000	.000	.000
N	245	245	245	245	245	245

Note: ** indicates that the two-sided test is significant at $\alpha = 0.01$.

Correlation analysis between information seeking and customer loyalty. As shown in Table 7, the absolute correlation coefficients of the first, second, and fourth factors and loyalty of information seeking are between 0.4 and 0.5, indicating that there is a moderate positive correlation between them and customer loyalty. The factor (I can easily know the information such as coupons, offers, etc.) and the loyalty correlation coefficient is less than 0.3, and it can be considered to have a weak linear correlation with loyalty. This may be because the coupon system may not be a factor that customers value much when considering whether they have a repurchase intention. Therefore, the hypothesis that the influence of information seeking on customer loyalty is positively correlated is accepted.

Table 7
Correlation Analysis Between Information Seeking and Customer Loyalty

	Loyalty	inf1	inf2	inf3	inf4
Pearson correlation	1	0.427**	0.468**	0.285**	0.462**
Significance level (two-sided test)		.000	.000	.000	.000
N	245	245	245	245	245

Note: ** indicates that the two-sided test is significant at $\alpha = 0.01$.

Correlation analysis of service and customer loyalty. As shown in Table 8, from the perspective of service, the five factors that measure the quality of service contact have a moderate positive correlation with loyalty. Therefore, the impact of service engagement on customer loyalty is positively related.

Table 8
Correlation Analysis Of Service and Customer Loyalty

	Loyalty	ser1	ser2	ser3	ser4	ser5
Pearson correlation	1	0.554**	0.574**	0.479**	0.569**	0.574**
Significance level (two-sided test)		.000	.000	.000	.000	.000
N	245	245	245	245	245	245

Note: ** indicates that the two-sided test is significant at $\alpha = 0.01$.

Regression analysis. In the regression analysis, the regression equations of customer involvement, customer participation, information seeking, service and loyalty are obtained. The linear regression equation is established in SPSS, and the results of the operation using the entry method are as follows.

*Research on the Influence of Customer Engagement on
Their Loyalty in Online Supermarket: A Case Study of
Tmall*

The impact of customer involvement on loyalty. Loyalty is used as the dependent variable, and the four components of involvement (INF1, INF2, INF3, INF4) are used as independent variables. The table of ANOVA is shown in Table 9. This table shows that the R Square value of the regression equation is 55.686, and the Sig. value is less than 0.001, indicating that the regression equation has a good goodness of fit. Table 10 contains coefficients obtained from the regression equation. The Sig. value of INV2 is too large. The coefficient does not pass the significance test, and the original hypothesis cannot be rejected. The other coefficients are all significant at the α=0.01. Therefore, for the impact of customer involvement on loyalty, INV1, INV3, INV3, and INV4 are all included in the regression equation model to explain the impact of customer participation on customer loyalty. The normalized coefficients are all positive, indicating that the three independent variables have a positive correlation on loyalty. The regression equation is: Loyalty=suitability* 0.304+availability*0.171+importance *0.222. According to the regression equation, in the analysis of the degree of involvement, the flexibility of the Tmall supermarket of the sample is the most important independent variable that affects the customer loyalty. The fact that the online supermarket is suitable for the customer's habits and personality may be the reason for them to choose a certain online supermarket and to maintain high loyalty; and the impact of value and availability on loyalty is not as high as suitability, which may be because online supermarkets are only used to meet the different needs of customers, as well as the fact that online goods are almost always available in the Internet environment.

Table 9
Anova

Model	Sum of squares	df	Mean of Squares	f	Sig.
Regression	55.686	4	13.921	43.396	.000
Residual	76.992	240	.321		
Sum	132.678	244			

Table 10
Coefficients

Model	Unstandardized coefficients		Standardized coefficient	t	Sig.
	B	Standard error	Trial		
Constant	1.518	.173		8.763	.000
INV1	.258	.066	.304	3.919	.000
INV2	.039	.071	.045	.550	.583
INV3	.151	.064	.171	2.339	.020
INV4	.200	.068	.222	2.942	.004

Exploring the impact of customer participation on loyalty. Similarly, the four components of customer participation are set as independent variables, and customer loyalty is set as the dependent variable to establish a linear regression equation. In the Table Anova, the regression equation model passed the significance test. However, in Table coefficients, only Par 5, "I think the advice provided helps to improve the operation of Tmall supermarket, and this is also beneficial to me" is significant at the α=0.01 and can be considered in the model. Therefore, we can derive the regression equation as follows: Loyalty = recognition of recommendation* 0.261. The recognition of recommendation better explains the impact of customer participation on customer loyalty. The reason why other aspects are not significant may because that under normal circumstances, the possibility of active participation by customers is not high, and it is not a good source of customer loyalty.

The impact of information seeking on loyalty. As described above, a regression equation is established between the independent variable of the impact that information seeking has on loyalty and the level of loyalty. The obtained Anova and coefficients are shown. The regression equation model is significant at the level of 0.01, and two of the four independent variables are considered in the model. These two independent variables explain the impact of information seeking on loyalty better, and the impact is positive. The INF1 and INF3 components that are not considered in the model are the product discount information and the difficulty of information seeking. This may be because the product preferential information is very obvious to the customers who browse the online supermarket, and the coupon may be not an important factor for customers to consider. The regression equation established is as follows: Loyalty=Recommended information*0.264+Product information completeness*0.260.

Therefore, among the several independent variables of information seeking, the coefficients of INF2 and INF4 are relatively large. The recommendation information of the product is more important to the customer, and they are likely to affect the customer's willingness to repurchase. Due to the recommendation of products, the customer can shop at online supermarkets better. On the

other hand, whether it is intuitive or theoretically, the completeness of product information is very important for online supermarkets, which is likely to affect customers' willingness to repurchase. And, both of these effects are positive.

The impact of service on loyalty. As shown in the Anova table, the Sig. value of the regression equation model is less than 0.01, which proves that the regression equation is significant at the level of 0.01. The four variables all explain the impact of service engagement on customer loyalty well. The variable that is not considered in the model is SER3: Tmall supermarket's return service is convenient. This may be because Tmall supermarket is an online supermarket. The quality and reliability of the product are high. There might not many return and exchange, and the quality management is better. The customer does not have much contact with the return service, so the impact of the return on the loyalty is not significant compared to other factors. The resulting regression equation is as follows:

Loyalty=delivery in time*0.17+good product condition*0.219+repurchase recommendation*0.250+customer service*0.192

In the regression equation, the standardization coefficients of product condition and repurchase recommendation are higher, and it can be concluded that the impacts of these two components on customer loyalty are relatively important.

Data analysis conclusions. The results obtained by data analysis can basically explain the influence of customer involvement, customer participation, information seeking, and service on customer loyalty. However, the degree of customer affection cannot be factored out in factor analysis, so it was not analyzed in the analysis. This may be because the validity of the questionnaire design is insufficient, and the questionnaire cannot extract the hypothesis factor and thus cannot explain the source of customer loyalty. At the same time, the "degree of affection", as a more subjective attitude, may not be easy to measure, and the customer's consideration of this answer is influenced by too many subjective factors.

CONCLUSION AND DISCUSSION

This paper analyzes the factors affecting customer loyalty to online supermarkets based on customer participation theory through questionnaire and data analysis. Taking the customer's loyalty analysis of Tmall supermarket as an example, the hypothesis was tested using correlation analysis.

Improve customer engagement. First of all, in the correlation analysis and regression analysis, the results show that the customer involvement is positively related to customer loyalty. The suibility of online supermarket for the customer's habits and experiences, the availability of products, and the importance of products have

positively affects on customer loyalty. The price has a certain degree of positive impact on customer loyalty. Customer engagement is positively correlated with customer loyalty. The recognition of the recommendation significantly affects loyalty positively, while the tendency of product recommendation, assistance in improving experience, and communication positively affect loyalty to a certain extent. In addition, the positive effect of the operational recommendation has not been proved.

Information seeking has a positive correlation with customer loyalty. The easiness of finding recommendation information and the completeness of product information have a significant positive effects on loyalty. The availability of merchandise and the provision of preferential information positively affect loyalty to a certain extent.

Because the structural validity of measuring the customer's affection in the questionnaire is not enough, even if the measurement is based on the scalogram developed by foreign scholars, it does not show good structural validity in this study, and the impact of customer affection on loyalty has not been verified.

Service is positively related to customer loyalty. Logistics activities, product condition, repurchase recommendation, and customer service significantly and positively affect customer loyalty. The return service has little effect on loyalty.

Suggestion: Create the ultimate customer experience.

We should focus on improving brand image and increasing the value of online supermarkets to customers. With the continuous development of internet, online supermarkets are becoming more and more similar. They should deliver brand values to their customers that are distinct from others by establishing their own brand image.

We should strengthen communication with customers and let customers participate in the improvement of online supermarkets. Customer communication and feedback affect the improvement of online supermarkets. Since customers are likely to be passively involved, online supermarkets should initiate the communication to strengthen the relationship with customers and use customer feedback to make adjustments to the operation of online supermarkets.

We should reduce the difficulty of information seeking and broaden the channels for transmitting information. In the age of internet, customers are less tolerant in information seeking, and customers want to find the information they want faster and more comprehensively. Online supermarkets should pay attention to the effective delivery of information such as coupons and recommendations, and prevent customers from having to search hard to obtain information. At the same time, building a multi-channel information search platform for customers will help increase customer loyalty.

Research on the Influence of Customer Engagement on
Their Loyalty in Online Supermarket: A Case Study of
Tmall

We should strengthen service delivery and pay attention to the repurchase experience. Most of the consumer activities carried out by customers in online supermarkets are not a one-time consumption. Online supermarkets can make repurchase recommendations, provide good customer service, and provide customers with more customized products recommendation or information.

Research limitations and future work. The data collection method used in this study is relatively simple, and the sample differences are not reflected. Individual differences are ignored in the process of data collection. At the same time, due to changes in online context and national culture, existing domestic and international scalograms need to be improved before they can be applied to the selected research studies.

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