

Impact of Consumer Emotion's on Consumer Behavior During the Double Eleven Online Shopping Festivals

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Abstract: This study analyzes the factor analysis of consumers participating in the Double Eleven online shopping festival, and studies the role of different emotions in consumption behavior. This study uses the Stimulus - Organism - Response (SOR) theory as the basis, and conducts research through the key factors affecting consumer behavior including, Price discount, Festival atmosphere, Social interaction, Convenience; affecting consumer sentiment including: Pleasure, Arousal, Urgency. In this paper, 613 valid data were analyzed by partial least squares structural equation modeling (PLS-SEM) by means of an online questionnaire. The research shows that the key factors and emotions selected in this paper have a positive effect on consumers, and among the key factors, Price discount has the most obvious positive effect, and among emotions, Urgency can play the most effective role.

Keywords: *online shopping festival, consumer behavior, pleasure, arousal, urgency*

I. INTRODUCTION

Online shopping festival refers to a marketing activity in which merchants comprehensively use various stimulus factors to promote large-scale merchandise in a specific context to attract consumers to actively participate in shopping. Today, the online shopping festival has become an indispensable marketing activity for major e-commerce websites. Because there are many regional differences and different companies, now you can find different online shopping festivals on the Internet every month, using the concept of creating online shopping festivals. For example, the birthday promotion of Lazada, a highly influential shopping website in Southeast Asia, the 4.4 shopping festival of Shopee, the 6.18 shopping festival of JD.com, the overseas shopping festival of Amazon on November 28, etc. Due to the convenience of online shopping, cross-regional competition is required. Resulting in online shopping festivals with different sources almost every month. Among the many online shopping festivals, the most influential, the highest sales is "Double Eleven", which refers to November 11 each year.

Table 1: Alibaba's sales over the years (Alibaba company report)

Year	Sales (millions of RMB)	Change
2014	57,100	+63.05%
2015	91,200	+59.72%
2016	120,700	+32.35%
2017	168,700	+39.77%
2018	213,500	+26.56%
2019	268,400	+25.71%
2020	498,200	+85.62%
2021	540,300	+8.45%

II. LITERATURE REVIEW

The Stimulus-Organism-Response (S-O-R) environmental psychology model was first proposed by Mehrabian and Russell (1974) to explore the impact of the environment on human behavior. This model explains how the physical environment affects people's internal states and behaviors. Many scholars (Song, 2013; Faryabi, 2015; Wu, 2014) have widely used this model in many consumers behavior studies. This framework provides a Structure, used to identify the relationship between environmental stimuli (stimuli), organisms and their responses. In the context of online shopping, the stimulus can be the influence of various elements in the online shopping user interaction process (such as product presentation, website aesthetic design, and interactive technology) on consumer behavior, and emotional state is the mediating variable.

1) Price Discount Factors

In order to increase sales and profits in the online shopping festival, most of the merchants on the e-commerce platform use large-scale discount promotions to attract consumers to buy goods. As a tempting mechanism, price promotion can make consumers feel happy emotions, which can touch their emotions. However, at the same time, discount promotion can reduce consumer self-control, prompting consumers to produce impulsive buying behavior.

Studies have shown that special prices can increase the value consumers obtain from transactions and, at the same time, have an impact on consumer sentiment and shopping experience (Petrescu and Murphy, 2013).

2) Festival Atmosphere Factors

In contemporary times, consumers have transformed from product satisfaction to spiritual satisfaction when purchasing products, and they expect more emotional pleasure from product consumption. The online shopping festival creates a festival atmosphere through large-scale publicity and even professional methods. This festival atmosphere can bring higher emotional pleasure and awaken consumers, making them more likely to be emotionally attracted and have impulse shopping (Han Jun 2014).

3) Social Interaction Factors

The online shopping festival attracts many consumers to participate actively. Consumers form solid social interaction by sharing promotional information and shopping decisions with their relatives and friends. Numerous studies have shown that when the community has frequent social interactions, an effective social atmosphere can be generated, promoting members to have fun and pleasure (Sun Yi, Lu Yaobin, & Wei Guoji. 2016). RuanYanya and Li Qi (2017) also found that when consumers are in an interactive and positive social atmosphere, it is easier to obtain hedonic value, bringing higher trust and a more pleasant browsing experience, thereby increasing the possibility of purchasing.

4) Convenience factor

Online shopping has different characteristics than offline shopping. Because there are no time and place restrictions, online shopping has a substantial convenience, and because the Internet can provide more information, consumers can also have more choices. These convenient conditions can increase consumer consumption possibilities (Li Sheqiu and Tang Dingna, 2017).

5) Emotions and consumer behavior

Emotion is the subjective state of an individual's emotional response to the object stimulus encountered. It has an evident and systematic influence on the individual's psychological process and behavior. A potential internal stimulus triggers purchase (Sherman, E., Mathur, A., & Smith, R.B.1997).

Through discounts and creating a festival atmosphere, the shopping festival can arouse consumers and effectively promote consumers' purchase behavior. Consumers who include many impulse shopping behaviors also say that they feel happy during the shopping process, and this emotion motivates them to make purchase behaviors (Zhang Chubing et al., 2017). Studies have also shown that in limited decision-making, when the promotion cut-off point is approaching, negative emotions will prevail and positively impact consumer decision-making (Peng Jing and Lu Changbao, 2017).

6) The mediating effect of consumer emotions

Research shows that consumer behavior is affected by both emotional and cognitive responses, and emotional responses play a partial mediating effect in the relationship between the external environment and purchase intention (Gao Lin et al., 2017). Wang Qiuzhen et al. (2014) verified this point of view under the online group-buying model. The study found that price discounts and the number of purchasers affect consumer emotions (pleasure and arousal) and impulse purchase intentions. Liu Jianxin and Li Dongjin (2017) also found that psychological ownership and

psychological resistance will jointly mediate the effect of product scarcity appeal on purchase intention. In addition, expected regret will further partially mediate their effect on purchase intention, enhancing consumer urgency to buy behavior. Finally, Yang Qiang and Shen Aachen (2017) studied the influence mechanism of new product pre-release content on consumer behavior. Also, they found the relationship between pleasure and arousal in new product pre-release content (price and innovation) and consumer behavior play a mediating effect. From previous studies, it can be seen that emotion plays a vital role in the relationship between online stimulation and consumer behavior.

In this study, Price discount, Festival atmosphere, Social interaction, Convenience are used as independent variables, and consumer sentiment Pleasure, Arousal, and Urgency are used as mediator variables, and the consumer purchase intention is used as the result to set the model.

III. THE RESEARCH OBJECTIVES

The research objectives of this paper include:

1. To understand the behavior of consumers during the online shopping festival.
2. To determine the key factors that impact consumer behavior.
3. To find the key emotions that impact consumer behavior.
4. To find the critical path to impact on consumer behavior.

IV. CONCEPTUAL AND THEORETICAL FRAMEWORK

This study analyzes the factor analysis of consumers participating in the Double Eleven online shopping festival, and studies the role of different emotions in consumption behavior. we present the research model with hypothesis in Figure.

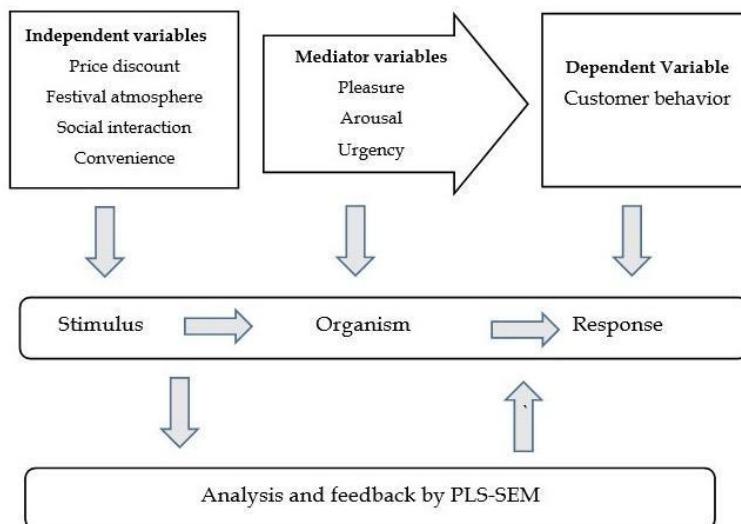


Figure 1 Conceptual Framework and SOR Diagram

V. THE RESEARCH HYPOTHESIS

The hypotheses of this research include:

- H1: Independent variables have a positive impact on consumer emotions.
- H2: Consumer emotions have a positive impact on consumer behavior.
- H3: Consumer emotions have a mediating effect on the influence of independent variables on consumer behavior.

VI. THE SCOPE OF THE RESEARCH

The main research scope of this paper is as follows:

1. The main research object of this paper is the consumers who participated in the Double Eleven Shopping

Festival.

2. The primary influence of the Double Eleven Shopping Festival is in China, so the research object of this paper is mainly in China
3. Double Eleven is an informal festival popular among college students, so the research objects are mainly composed of young people with a bachelor's degree or above.

VII. RESEARCH METHODOLOGY AND COLLECTION

Considering the relatively small sample size of this study and the non-normality of the sample distribution, the structural equation modeling method (PLS-SEM) based on partial least squares estimation was used for model fitting. Compared with the structural equation model (CB-SEM) based on analysis of covariance, PLS-SEM is more suitable for exploring causal relationships between variables. At the same time, to ensure the validity of the questionnaire, this study conducted a small-scale prediction before the official questionnaire was released. Then, the reliability analysis and validity analysis of the sample data is carried out to confirm that the reliability and validity of the scale meet the evaluation requirements.

VIII. POPULATION AND SAMPLING METHOD

This study explores the influence mechanism of the online shopping festival atmosphere on consumer behavior. Therefore, the selected respondents are all consumers who have participated in the online shopping festival. During the data collection phase, no specific population will be targeted.

We analyze and classify consumers through data collection and analysis of all consumers, analyzing consumer behavior, especially the point of action of consumer emotions in consumer behavior. Then through the differences in the behavior and emotions of different consumers, analyze the reasons, and put forward reasonable suggestions to consumers and businesses.

Sampling Methods

This study collects consumer data from the Double Eleven online shopping festival, mainly uses questionnaires to make consumer behavior and consumer sentiment variables and tries to find the differences between different consumers and the impact on consumer behavior and sentiment - Correlation Analysis.

This study chooses pleasure, arousal, and urgency as the intermediate states. Among them, pleasure and arousal are positive emotions, urgency is negative, and consumer behavior is used as the response variable using the intelligent PLS test model.

IX. DATA COLLECTION

In China, the people who mainly use English are those with higher education levels. Due to the Double Eleven online shopping festival, the primary shopping influence is in China. In order to avoid errors, this questionnaire will be conducted in China in Chinese.

This questionnaire will collect data through an open online questionnaire. There are many different survey websites in China. To avoid errors, this questionnaire will find two or more different websites (www.wenjuan.com and www.wjx.com) for data collection.

X. DATA ANALYSIS AND RESULT

1. Survey sample distribution

The analysis results are shown in table 2. Men accounted for 42.06%, and women accounted for 57.94%. Regarding age, the consumers surveyed were mainly distributed in the range of 22-35 years old, accounting for 63.84% of the total, and other ages accounted for 36.16%. In terms of online shopping frequency, 89.78% of consumers have less than six times, and the total proportion of more than 10.22%. Among the annual income options, consumers with an annual income of less than 150,000 (RMB) account for the most significant proportion of the total, 87.42%. On the other hand, the proportion of consumers with more than 150,001 was 12.58%. In terms of educational background, the surveyed consumers were mainly undergraduates, accounting for 75.16%, and other options totaled 24.84%. Specific to the last Double Eleven Online Shopping Festival, 85.22% of consumers purchased 2 to 10 different items, and 14.78% of consumers who only purchased one item and more than ten items. The complete statistics are as follows in Table 2.

2. Reliability Test of Independent Variables

The Cronbach's α values of Price Discount, Festival Atmosphere, Social Interaction, and Convenience are 0.754, 0.707, 0.708, and 0.793, respectively. All of which meet the evaluation criteria recommended by Hulland (1999), indicating that the items of each dimension of the atmosphere of the online shopping festival are satisfied and have high reliability. Moreover, the combined reliability (C.R.) of Price Discount, Festival Atmosphere, Social Interaction, and Convenience are all greater than 0.8, which is in line with the evaluation standard of $C.R. \geq 0.7$ suggested by Bagozzi and Yi (1988), indicating that each dimension of the independent variable also has high internal consistency reliability.

3. Convergent validity test

The convergent validity test results of all variables are shown in table 3. It can be found that the factor loading values of Price Discount, Festival Atmosphere, Social Interaction, and Convenience are all greater than 0.7, and the measurement item factor loadings of Pleasure, Arousal, Urgency, and Customer Behavior are also all greater than 0.7, indicating that the measurement items of these variables have high factor loadings. Therefore, the validity of the measurement items of each variable meets the requirements. At the same time, the average extraction variance (AVE) of these variables is more significant than 0.5, which meets the standard of $AVE \geq 0.5$ suggested by Bagozzi and Yi (1988), indicating that the measurement model has good convergent validity.

Table 2: Survey sample distribution

Questionnaire	Options	Quantit y	Percentag e
Gender	Male	270	42.45%
	Female	366	57.55%
Age	Under 21 years old	89	13.99%
	22 to 26	184	28.93%
	27 to 35	222	34.91%
	35 to 45	111	17.45%
	Over 45 years old	30	4.72%
Monthly online purchase frequency	1 to 3 times	394	61.95%
	4 to 6 times	177	27.83%
	7 to 9 times	52	8.18%
	10 times or more	13	2.04%
Annual Income	Less than 70,000	331	52.04%
	70001 to 150000	225	35.38%
	150001 to 350000	39	6.13%
	350001 to 500000	27	4.25%
	500001 or more	14	2.20%
Education	High School	38	5.97%
	Bachelor	478	75.16%
	Master	112	17.61%
	Doctoral degree and above	8	1.26%
Last Double Eleven shopping festival, how many different items did you buy?	One piece	48	7.55%
	Two to five pieces	351	55.19%
	Six to ten pieces	191	30.03%
	More than ten pieces	46	7.23%

Table 3: Convergent validity test

Variable	Factor Loading	AVE
Price Discount	0.717	0.571

	0.797	
	0.726	
	0.776	
Festival Atmosphere	0.797	0.630
	0.796	
	0.774	
	0.786	
Social Interaction	0.819	0.631
	0.774	
	0.763	
	0.790	
Convenience	0.830	0.617
	0.716	
	0.819	
	0.790	
Pleasure	0.777	0.571
	0.733	
Arousal	0.773	0.644
	0.831	
Urgency	0.821	0.637
	0.775	
Customer Behavior	0.770	0.593
	0.799	

4. Discriminant validity test

The discriminant validity test results of all variables are shown in table 4, where the values on the diagonal of the correlation coefficient matrix of these variables are the square root values of AVE. It can be seen from the analysis results that the square root value of AVE of all variables is greater than the correlation coefficient with other variables, which meets the criterion of discriminant validity test, that is, $AVE \geq 0.5$, indicating that each variable in the measurement model has good discriminant validity.

Table 4: Discriminant validity test

Variable	$\Phi 1$	$\Phi 2$	$\Phi 3$	$\Phi 4$	$\Phi 5$	$\Phi 6$	$\Phi 7$	$\Phi 8$
Price Discount ($\Phi 1$)	0.755							
Festival Atmosphere ($\Phi 2$)	0.441	0.793						
Social Interaction ($\Phi 3$)	0.391	0.513	0.794					
Convenience ($\Phi 4$)	0.227	0.250	0.342	0.785				
Pleasure ($\Phi 5$)	0.454	0.452	0.450	0.394	0.755			
Arousal ($\Phi 6$)	0.436	0.390	0.403	0.362	0.623	0.802		
Urgency ($\Phi 7$)	0.298	0.363	0.351	0.243	0.382	0.516	0.798	
Customer Behavior ($\Phi 8$)	0.375	0.512	0.437	0.296	0.528	0.581	0.679	0.770

5. Analysis of the Influence of Independent Variables on Consumer Emotions

In order to explore the influence of Independent Variables on pleasure, this paper estimates the influence of four Independent Variables on emotions and conducts a significant test, and the analysis results are shown in table 5.

From the table, we can find that the significance level (P-value) is less than 0.05, and these data are consistent with the detection target and meet the model requirements.

Table 5: The influence of independent variables on emotions

Action Path	Path Coefficien t	t	VIF	P-value	R ²
Price Discount → Pleasure	0.248	6.16 6	1.30 9	0.000	0.36 3
Festival Atmosphere → Pleasure	0.195	3.75 8	1.50 2	0.000	
Social Interaction → Pleasure	0.175	3.80 5	1.50 7	0.000	
Convenience → Pleasure	0.229	4.89 4	1.15 1	0.000	
Price Discount → Arousal	0.265	5.52 8	1.30 9	0.000	0.30 3
Festival Atmosphere → Arousal	0.140	2.59 2	1.50 2	0.010	
Social Interaction → Arousal	0.155	3.20 2	1.50 7	0.001	
Convenience → Arousal	0.213	4.87 6	1.15 1	0.000	
Price Discount → Urgency	0.122	2.38 1	1.30 9	0.018	0.18 5
Festival Atmosphere → Urgency	0.197	3.88 8	1.50 2	0.010	
Social Interaction → Urgency	0.165	3.23 4	1.50 7	0.001	
Convenience → Urgency	0.109	2.19 4	1.15 1	0.029	

Through table 5 and the above data analysis description, we verified and passed Hypothesis 1: Independent variables have a positive impact on consumer emotions.

6. Analysis of the influence of emotions on customer behavior

In order to explore the influence of pleasure, arousal, and urgency on Customer Behavior, this paper also estimates the influence of pleasure, arousal, and urgency on Customer Behavior and conducts a significant test. The analysis results are shown in table 6.

From the table, we can find that the significance level (P-value) is less than 0.05, and these data are consistent with the detection target and meet the model requirements.

Table 6 The influence of emotions on customer behavior

Action path	Path Coefficien t	t	VIF	P-value	R ²
Pleasure → Customer Behavior	0.221	5.126	1.64 8	0.000	0.56 0
Arousal → Customer Behavior	0.186	3.994	1.91 7	0.010	
Urgency → Customer Behavior	0.498	12.38 1	1.37 4	0.000	

Through table 6 and subsequent data analysis, we verified and passed Hypothesis 2: Consumer emotions have a positive impact on consumer behavior.

7. Analysis of the influence of independent variables on consumer behavior

In order to explore the influence of Independent Variables on consumer behavior, the influence of four Independent Variables on consumer behavior was also estimated and tested for significance. The results are shown in table 7.

From the table, we can find that the significance level (P-value) is less than 0.05, and these data are consistent with the detection target and meet the model requirements.

Table 7The influence of independent variables on consumer behavior

Action path	Total Effect	Indirect Effect	t	P-value
Price Discount → Customer Behavior	0.165	0.165	5.008	0.000
Festival atmosphere → Customer Behavior	0.167	0.167	4.294	0.000
Social Interaction → Customer Behavior	0.150	0.150	4.663	0.000
Convenience → Customer Behavior	0.145	0.145	4.405	0.000

Through table 3 and subsequent data analysis, we verified and passed Hypothesis 3:Consumer emotions have a mediating effect on the influence of independent variables on consumer behavior.

8. Test Results and Final Results

Through the above analysis, various hypotheses proposed in this research were tested, and the summary results are shown in table 8:

Table 8: Hypothesis test results

Research Hypothesis	Result
H1: Independent variables have a positive impact on consumer emotions.	Pass
H2: Consumer emotions have a positive impact on consumer behavior.	Pass
H3: Consumer emotions have a mediating effect on the influence of independent variables on consumer behavior.	Pass

According to the hypothesis test results, each path of this paper's structural model is tested, and the final model is shown in table 9.

Table 9: Final Results

Stimulus	Path coefficient	Organism	Path coefficient	Response	Total
Price Discount	0.248	Pleasure	0.221	Customer Behavior	0.469
Festival Atmosphere	0.195				0.416
Social Interaction	0.175				0.396
Convenience	0.229				0.450
Price Discount	0.265	Arousal	0.186	Customer Behavior	0.451
Festival Atmosphere	0.140				0.326
Social Interaction	0.155				0.341
Convenience	0.213				0.399
Price Discount	0.122	Urgency	0.498		0.620
Festival Atmosphere	0.197				0.695
Social Interaction	0.165				0.665

Convenience	0.109			0.607
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VII: CONCLUSIONS

From our data collection and analysis, we can draw the following conclusions:

1) Among the four factors that affect consumer behavior analyzed in this research, Price Discount has the greatest positive impact on consumer sentiment, followed by, from the previous research, it can be pointed out that each dimension of the online shopping festival has a significant positive impact on pleasure, and the impact from strong to weak is Price Discount, Festival Atmosphere, Convenience, and Social Interaction.

2) This study found that consumers' pleasure, arousal, urgency can significantly and positively affect purchase intention. The urgency has the most obvious influence on consumer purchase intention. The possible explanation is that due to the number of goods and time constraints during the shopping festival, there may be an "opportunity cost" among consumers. Therefore, perception increases the possibility of purchase. In other words, consumers will regret missing the golden period of shopping online shopping festival, so the impact of consumer's urgency on consumer purchase intention is more prominent.

3) According to the previous analysis, consumer pleasure and arousal mediate to varying degrees between independent variables and consumer purchase intention. That is, the influence of independent variables on consumer purchase intention is partly realized through the internal state of consumers.

The most attractive path to consumer behavior is stimulating consumer urgency through a festival atmosphere the path that is least attractive to consumer behavior is stimulating consumer arousal through a festival atmosphere.

VIII: RESEARCH SUGGESTIONS

Based on various limitations, the research in this paper has limitations to a certain extent. Combined with the shortcomings of this study, this paper also puts forward some suggestions:

1) Although the interpretation effect of the "SOR" model established in this study is equal to or higher than that of the general structural equation model, there is still room for improvement. In addition, the intervening variable in this study mainly studies the effect of emotion (pleasure, arousal, and urgency) on the impact of consumer behavior without variables involving the perception dimension. Therefore, more intervening variables can be included in future research to make the model more comprehensive.

2) The educational background distribution of the subjects in this study is relatively concentrated. To make the study more convincing, the number and scope of the study samples can be further expanded in future research to make the sample characteristics more dispersed.

3) In this study, Price Discount, Festival Atmosphere, Social Interaction, and Convenience are placed in the same dimension for research, and the interaction between factors is not considered. Future research can add moderating variables such as online word of mouth, the number of purchasers, and other factors for discussion, and can also classify different factors to study the interaction between different levels of factors on purchase intention.

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