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Exploring Determinants of Consumers' Platform Usage in "Double Eleven" Shopping Carnival in China: Cognition and Emotion from an Integrated Perspective

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Abstract: There is a great deal of interest concerning how e-commerce in China can be developed in sustainable ways. Answering this question requires not only the strategic management at the aggregate level, but also developing a micro framework that can effectively understand the cognitive-behavioral pathway of consumers in various online contexts. This paper focuses on the "Double Eleven" Global Online Shopping Carnival (GOSC) in China and attempts to investigate the determinants of consumers' behaviors of shopping platform usage. The distinguishing feature of this study is that we define GOSC as a unique scenario compared to normal online shopping context, where consumers' emotional state towards such an event plays a larger role in determining behaviors. Based on Cognitive Emotion Theory (CET), the main findings of this paper suggest that (1) consumers' behaviors of online platform usage can be affected by both cognitions related factors, including price value, gamification and personalized services, and by emotional state such as having arousal and being pleased; (2) cognition has an effect on emotional state, such as the positive effect of price value on arousal and pleasure or gamification on arousal. Our study, therefore, has highlighted a number of key points to the sustainable development of GOSC. Limitations and further research directions are also discussed.

Keywords: Global Online Shopping Carnival; Cognitive Emotion Theory (CET); emotional state

1. Introduction

It is not surprising to see that the rapid growth of e-commerce, similarly to many other countries in the world, has contributed significantly to the sustainable growth of China's economy. However, a notable feature of the development of e-commerce in China is that organizing and managing online shopping carnival has been increasingly dominant in determining the annual performance of such a lucrative digit economy. Among these artificial, non-holiday-based events, Single's Day (i.e., "Double Eleven") seems to be the most influential one. Its popularity rapidly spreads among online shoppers and finally into the mainstream Chinese community. For example, Alibaba Group generated RMB 268.4 billion (US\$38.4 billion) of GMV (Gross Merchandise Volume) during the Global Online Shopping Carnival (GOSC) on 11th November 2019, which has increased 5368 times more since 2009 (50 million). This intriguing phenomenon featuring online technologies and carnival excitement has attracted GOSC participants from 235 countries and regions worldwide [1], and the number of associated enterprises, logistics service providers and consumers have dramatically increased year by year.

It appears that a GOSC event has notable “emotional” features: First, GOSC uses time-limited low prices to gratify consumers’ utilitarian needs, stimulates people’s excitement and desire to purchase. For example, slogans, such as “the lowest price of the year” and “if you miss the opportunity this time, you have to wait for a year” were promoted. Second, various gamification marketing strategies were applied to increase the entertainment and pleasure of GOSC experience, such as “whack the mole get red envelopes”. Third, personalized services were provided to consumers dynamically based on the data from both regular shopping habits, and customers’ preferences in the warm-up stage, simmering stage, and booming stage. The personalized stage empowered GOSC consumers to enjoy the shopping process, such as complete shopping tasks efficiently and explore novel environments presented based on their preferences. As a result, this uniqueness of GOSC has created an exciting atmosphere to evoke consumers’ positive emotions and shopping desire. Consumers’ decision-making process is more likely to be directed by emotional states in this particular context, which is quite different compared to normal online shopping contexts where the recognition of product features or quality plays a larger role.

Through changing consumers’ shopping behaviors, promoting mini and micro firms and most importantly, stimulating consumption, the emergence of GOSC not only provides a viable direction for policymakers in China to realize the sustainable economic growth, but also has attracted the attention of scholars in the field of psychology and consumer behaviors. The existing research mainly concentrates on two aspects: (1) From the institutional perspective, the organization strategy and establishment process of e-commerce platform have been investigated [2]; (2) exploring the mechanistic relationship between socio-economic or psychological factors and particular consumer behaviors in a GOSC, including informational incentives [3], utilitarian and hedonic motivations [4], etc. However, this strand of literature only applied the existing theoretical framework that has been commonly used to the general e-commerce studies, and has yet highlighted the notable “emotional” features of GOSC. Therefore, the role of the emotional state in determining consumers’ behaviors has not been thoroughly explored, and the decision-making process of consumers, particularly in the context of GOSC remains unclear.

In addressing this shortcoming, two research questions are proposed in the present study: (1) What are the determinants of the consumers’ emotional state in GOSC? (2) what are the antecedents of GOSC consumers’ platform usage behaviors? We believe the findings of the present study, from a psychological perspective, contribute to a better understanding of how consumers would behave towards this particular online context. If the socio-economic sustainability in the e-commerce context is defined as an economic performance that can be retained in the long term based on reciprocal relationships between consumers and producers, logistics companies or regulators [5]. We also expect this study sheds some new light on which aspects and particulars such a relationship can be established. In doing so, we explicitly model consumer’s usage behaviors as a structure of relationships between the key variables at both the cognitive and emotional stages based on cognitive emotion theory (CET), and provide two main contributions to the current literature in the context of China. On the one hand, the CET theory indicates that emotions are integral to action control [6], and are intimately related to action [7], thus, emotions are “products of” beliefs and desires [8]. With this in mind, the scholarly literature has applied this theory to explain consumer behaviors from various perspectives, such as impulsive buying in online shopping [9], and esteem support in interpersonal relationships [10]. However, there is scarcity in empirical studies that adopt CET to investigate online shopping behaviors, particularly in the context of GOSC [11]. Therefore, this study adds meaningful references and materials for policymakers for understanding the impulsive mechanism of online consumers’ behaviors.

On the other hand, this study further adopts use and gratification theory (U&G) and theory of pleasure-arousal-dominance (PAD), together with CET theory, to develop the hypothesized factors that could affect consumer behaviors in a GOSC context; thus, enriching our understanding on how the interaction of multiple factors can serve as determinants of consumers’ online purchase behaviors.

At this point, our study expands the application of cognitive emotion theory and demonstrates an example of how this theory can be applied in a broader context of socio-economic development.

The remainder of this paper is structured as follows. Section 2 thoroughly introduces the relevant theories involved in the study, including CET, U&G, and PAD, and presents hypotheses development. Section 3 analyzes the results. Conclusions, implications and research limitations are provided in Section 4.

2. Theoretical Background

2.1. Research Background of GOSC

The Singles' Day on November 11, as the most influential and successful online shopping event, has widely attracted the attention of scholars. A number of studies, based on the different perspectives or contexts, have investigated how firms or organizations can improve economic performance through the process of event participation. For instance, Wu et al. (2016) [2] used in-depth interviews to explore the critical strategies Alibaba applied to organize this event from the institutional perspective. Khanna and Sampat (2015) [12] adopted a case study approach to investigate the positive and negative factors influencing the online shopping festival in India. In comparison, many studies also applied quantitative methods using empirical survey data. Xu et al. (2017) [3] explored the determinants of consumers' herd behaviors and typical carnival behaviors. Xu et al. (2015) [13] investigated how perceived benefits, risks and trust influence Chinese consumers' attitudes and intentions in GOSC. Yang et al. (2018) [14] applied the traditional theory of planned behavior to explain GOSC consumers' behaviors from a rational perspective. In summary, prior studies mainly interpreted the GOSC consumers' decision-making process from the cognitive and rational perspective and indicated that consumers are likely to carefully evaluate risks and benefits of consumption in GOSC. In addition, these findings also suggested that the festival atmosphere of GOSC usually arouse people's emotion of excitement and pleasure, and such an emotion determined consumers' shopping decisions [15–17]. However, this strand of literature is scarce, and few studies have explored the roles of cognition and emotional state within the decision-making process of consumers based on an integrated theoretical framework. Therefore, we expect the present study sheds new light on understanding how consumers' behaviors can be predicted and managed in the mega-event context.

2.2. Cognitive Emotion Theory (CET)

Cognitive Emotion Theory (CET) is a theoretical framework to study how individual cognition affects emotion and subsequent behaviors. CET indicates that beliefs and desires are taken to be basic kinds of mental states, and suggests that people's decision-making process is proceeded by three sub-processes: Cognition, emotion, and behavior [11]. The cognitive stage refers to an individual's mental state of information processing through a series of cognitive activities [4]. In the emotional perception stage, an individual's mental state results from the cognitive evaluation of events or thoughts. In other words, observing a stimulus and the consequent formation of evaluative perceptions causes emotions; thus, emotions are the product of cognitions (beliefs) and motives (desires) and beliefs can be assumed to precede emotions [8]. Verhagen and van Dolen (2011) [11] proposed an emotion–action tendency link and showed that emotions led to consumption action tendencies. This structure has been shown to be robust in many consumer emotions studies [7,8], such as has its impact on user purchasing decisions [4], and loyalty [18]. Over the past two decades, cognitive emotion theory has become an important research framework that underlies most existing models of investigating emotion. In this study, GOSC has been designed as a carnival activity, aiming to provide consumers with an exciting and entertaining experience, and further evoke shopping desires. As many cognitive (i.e., information received) and emotional (i.e., experience) factors are involved, the application of CET is plausible for explaining consumer's online behaviors based on this context.

2.3. Use and Gratification Theory

CET indicated that emotions are the product of cognitions (beliefs) and motives (desires) [8,11]. In comparison, uses and gratifications theory (U&G) is a classic motivational theory, and it provides an appropriate theoretical basis for identifying cognitions (beliefs) and motives (desires) in CET. U&G explains why people use media and how they could obtain gratifications from media usage. Gratifications are the main motivations that influence the usage of media, which guides users' cognitive, emotional and behavioral activities [19]. U&G theory has been generally applied to various contexts, such as traditional media (e.g., newspapers and interactive media) and internet media (e.g., business websites, service websites, social media, etc.), and revealed that people use media to obtain a variety of gratifications, such as hedonic gratification (i.e., entertainment) and utilitarian gratification (i.e., information and user experience) [20,21], and desire and motivation at the cognitive stage can influence emotional state [22], and intention to use media [23,24]. In addition, hedonic gratification and utilitarian gratification were identified as the key gratifications of consumption [23]. Along this line of thought, consumers usually pursue a highly discounted, cost-effective product or service experience to gratify their utilitarian gratification in a GOSC context, and expect to experience novelty and pleasure through browsing and engaging in a variety of activities. Therefore, it is plausible to adopt utilitarian gratification and hedonic gratification as the two dimensions in the cognitive stage of CET in this study, and we further define: (1) price value and personalization as the valid proxies of utilitarian gratification; (2) and use gamification as the valid proxy of hedonic gratification [23].

2.4. Theory of Pleasure-Arousal-Dominance (PAD)

The PAD model is initially proposed to adequately capture the emotional states of individuals. The early studies refer to Mehrabian and Russell (1974) [25], who claimed that pleasure is a mood state that ranges from extreme pain or unhappiness to extreme happiness or ecstasy. In this sense, arousal refers to one's degree of excitement, alert, and stimulation. Dominance is the extent to which one feels he or she can control events rather than be controlled [25]. The PAD model assumes that people's perceptions regarding an environment, such as stimuli, can affect users' emotions in different ways, which in turn acts on their experiences towards this environment. With the development of e-commerce [26,27], studies have extensively investigated the effect of emotion on consumption behaviors, such as impulsive buying and usage of e-commerce websites [28]. For example, Zheng et al. (2019) [29] investigated the mediating effect of customer emotion on the relationship between situational factors and impulse buying behavior in a retailing context. Similarly, this study also acknowledges the importance of the emotional state to platform sustainable usage, and adopts the widely applied theory of PAD. It is worth mentioning that only the construct of pleasure and arousal is adopted in this study, the reason is twofold: (1) A notable feature of GOSC is to promote festival atmosphere, playful stimulation, and enjoyment of life, and consumers actively participate into a GOSC for sharing happiness and celebrating [3]. Thus, comparing to dominance, it is believed that pleasure and arousal are more critical to capture consumers' emotional experience in this particular context; (2) the effect of dominance on users' behaviors, such as engagement, has been proved not to be always significant (e.g., Reference [30]). For instance, Reisenzein (1994) [31] indicated that pleasure and arousal are the "affective core" of the quality of emotion and further suggested a refined pleasure-arousal framework. Therefore, a number of recent studies only prefer to use the construct of pleasure and arousal, as it can better present emotional responses in hedonic contexts and online shopping scenarios (e.g., References [32,33]).

In summary, based on one cognitive emotion theory, this study constructs a three-stage model to investigate consumer behavior in GOSC. Specifically, consumers' cognition (stage 1) is measured by two dimensions, i.e., utilitarian gratification measured by price value and personalized service and hedonic satisfaction measured by gamification; this is based on the U&G theory. The emotional reaction of consumers is measured by pleasure and arousal at stage 2, according to the PAD theory. In addition, we also include the variable of habit as another determinant of consumption behavior.

In general, this study investigates how three types of gratifications affect consumers' pleasure and arousal, which in turn acts on consumers' using behaviors of online shopping platforms in the GOSC context. The theoretical model and hypothesized relationships for this study are outlined in Figure 1. Instead of pre-determining the possible path of decision making, the present analytical framework allows us to use CET as the overall theoretical framework and test the independent effects of U&G and PAD theory related variables on consumers' purchase intentions/behaviors (i.e., sustainable usage), such as pleasure and arousal. It also enables us to evaluate the effects of latent factors, such as price value, personalization, and gamification.

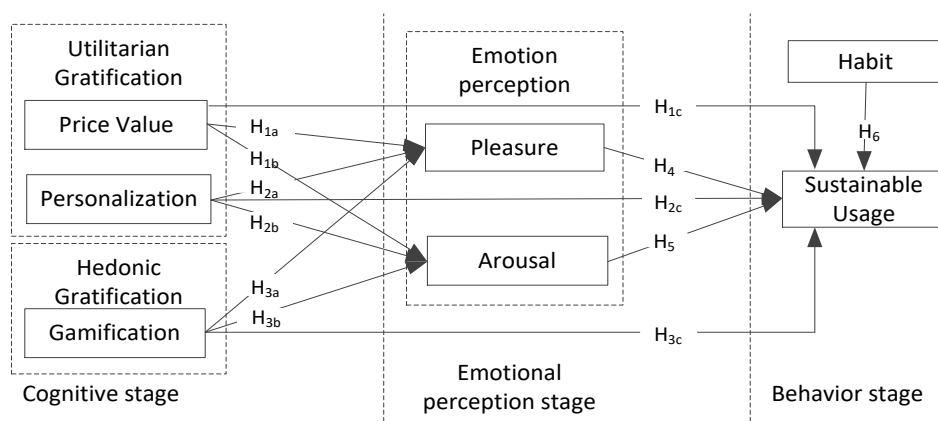


Figure 1. Research model.

2.5. Hypotheses Development

With solid theoretical foundations, each of the hypothesized relationships outlined in Figure 1 is thoroughly discussed in this section, including: (1) The relationships of price value, personalization and gamification with pleasure and arousal, and with sustainable usage directly; (2) the relationships of pleasure and arousal with sustainable usage; (2) the relationship between habit and sustainable usage. Here, we define the concept of sustainable usage from two perspectives: (1) First, online business development never deviates from ethics. As the rapid expansion of GOSC is inevitably accompanied with potential issues, such as fraudulency, privacy disclose, information asymmetry, etc., there is need to manage consumer's usage of GOSC in a socially sustainable way. As Lehtonen (2004) [34] defined, social sustainability aims to establish a favorable relationship between people in terms of reciprocity, patience, harmonies, cooperation, honesty and ethics. Therefore, through the continuous participation of GOSC event and usage of e-commerce platforms, the possibility for GOSC consumers to develop harmony relationships with platforms, other consumers, and referee groups is significantly increased. For example, with the increasingly sophisticated GOSC functionalities (e.g., review system, third party certification, and personalized services), trust, reciprocity, transparency, value co-creation, and platform synergies are likely to be naturally developed between sellers and buyers, which is the fundamental aspect of business ethics and social sustainability (2) second, economic sustainability is the direct result of social sustainability, as the sustainable growth of GOSC largely depends on the high and efficient participation rate of consumers. If the sustainable economic growth of a GOSC is defined as a process that can be sustained in the long term and is without sacrificing many resources [35], a stable consumer base would not only constantly contribute to its revenue growth, but also significantly reduce the operation cost and social resource consumption.

2.5.1. Price Value with Pleasure, Arousal and Sustainable Usage

The cost and expected benefit of using online shopping platforms have a significant impact on consumers' behaviors [11]. The cost usually includes time cost and currency cost of using a shopping platform and expected benefit is often determined by perceived values. It is widely accepted that

shopping costs and benefits play important roles in determining consumers' intentions to use a platform. For instance, Zeithaml (1988) [36] conceptualized product price and service quality as the perceived value of a product or service, which can be seen similarly as utilities and benefits that a consumer perceived through the use of an online shopping platform. Hence, following the definition of Venkatesh (2012) [23], we define price value as the cognitive trade-off between perceived benefit and cost of using an online shopping platform in GOSC, and GOSC consumers' usage of a shopping platform is assumed to be influenced by such a cost-benefit evaluation.

As mentioned earlier, CET has indicated that the emotional state results from the cognitive evaluation of an event [8,11]. A number of studies have connected shopping motives (e.g., product, price, and experiential) with consumers' emotion and various behavioral outcomes [37], and have particularly highlighted that price perception can arouse hedonic shopping experience, as customers can potentially receive entertainment and emotional worth through the process of obtaining shopping benefits [38]. Similarly, GOSC organizers have used a variety of strategies to increase price value and attract potential consumers, such as flash sales, red-envelopes, and free shipping, expecting consumers' intuitive feelings towards scenarios, such as "saving money", "cost-effective" and "value for money" can effectively enhance consumers' sense of pleasure in shopping experience. Moreover, various pricing strategies in GOSC are also likely to arouse consumers' exciting mood and enthusiastic shopping desire, as consumers may believe they can receive high shopping benefits with relatively low economic costs. Finally, as one of the utilitarian gratifications, price value is likely to directly drive consumers' behaviors of using a shopping platform. According to U&G, consumers are aware of their own demands and needs of price value; they could actively use GOSC as a media and a channel to satisfy their utilitarian gratification [39,40]. Taking all these into account, it appears that price value is important in determining consumers' emotional states and behaviors, thus, we adopt it as a proxy of utilitarian gratification to represent desires and beliefs of consumers at the cognitive stage, and we suggest that price value may impact on both GOSC consumers' arousal and pleasure in the shopping process and their sustainable usage of shopping platforms. The following hypotheses are proposed:

H_{1a}. *The consumers' perceived price value is positively associated with the pleasure in GOSC.*

H_{1b}. *The consumers' perceived price value is positively associated with the arousal in GOSC.*

H_{1c}. *The consumers' perceived price value is positively associated with GOSC platform sustainable usage.*

2.5.2. Personalization with Pleasure, Arousal and Sustainable Usage

It has become an important strategy of shopping platform to provide personalized service, which helps consumers to identify products and services that accurately meet their demands among a large number of others [41,42]. Personalization service aims to create user-friendly and pleasant shopping atmospheres and to make a customer feel that their needs have been satisfied and opinions have been respected. Such a pleasant atmosphere is the attribute mentioned most frequently and was brought up as a dominant facilitator of shopping pleasure [43], as GOSC consumers evaluate the quality of personalization services on a platform and develop their cognition towards it, which may, in turn, affect their emotional states [44,45]. Specifically, following the concept proposed by Xu et al. (2017) [3], we define the concept of personalization as the level of a perceived service that meets personalized needs of a consumer in the GOSC context, and the associated personalized service provided by a GOSC platform includes product recommendations on consumers' personalized shopping home pages, product recommendations based on consumers' current searches, etc., [2]. The personalized service of GOSC influences consumer behaviors in two aspects. On the one hand, personalized services facilitate consumers in finding products that meet their shopping needs, in addition to enjoying rich shopping scenarios and various promotional activities of a GOSC. As a result, GOSC can improve the conversion rate of searching and advertising and bring a better shopping experience to consumers. On the other hand, personalized service can make consumers aware that the GOSC platform cares about consumer purchase preferences and needs and would like to provide better services. Hence,

personalization can reduce consumers' search costs and improve their shopping efficiency [42,44]. It can also effectively enhance consumers' pleasure while browsing and shopping on a GOSC platform and evoke consumers' excitement and desire to browse recommended products and services that meet their purchase needs. Finally, consumers' senses of belonging and sustainable usage of GOSC platform is likely to be enhanced [14].

Moreover, U&G theory indicates that utilitarian gratification may stimulate consumers' motivations to buy products quickly and easily [46], or make repeated purchases [47]. In this sense, it is also possible that some scenario-sensitive GOSC consumers skip the emotional stage, and just directly jump to the behavioral state to choose platforms that best satisfy their needs of personalization. Therefore, it is also plausible to examine if utilitarian shopping gratifications affect platform usage [39]. In summary, we propose that personalization may determine GOSC consumers' arousal and pleasure in the shopping process, and their sustainable usage of a shopping platform. The following hypotheses are proposed:

H_{2a}. *The personalization is positively associated with the pleasure in GOSC.*

H_{2b}. *The personalization is positively associated with the arousal in GOSC.*

H_{2c}. *The personalization value is positively associated with GOSC platform sustainable usage.*

2.5.3. Gamification with Pleasure, Arousal and Sustainable Usage

Hofacker et al. (2016) [48] defined gamification as a process that uses game design elements to increase sales of non-game products and services through enhancing customer values. Especially in the recent decade, along with the rapid development of ICT technologies, gamification marketing has become a very popular and effective instrument in managing and manipulating consumer's purchase intentions and behaviors [49]. Gamification can be a value-adding way to encourage and maintain participation [50]. It creates an atmosphere of entertainment; thus, enabling consumers to release their emotions and indulge in pleasant atmospheres. Gamification produces a novel way for e-commerce consumers to enjoy the fun of playing shopping games while exploring an online shopping platform [46]. As a result, the synergy between gamification and marketing stimulates consumers' emotional reactions, such as pleasure and arousal, as assumed in CET [49].

Embracing the concept proposed by Wu et al. (2016) [2], GOSC gamification is defined as the strategy used to encourage consumers' participation in online marketing games to earn rewards by playing games, such as snatching a red envelop or discount coupons. In the pre-warming phase of GOSC, gamification is usually used to attract consumers to use the platform and participate in in-game activities, and to implement game incentives to inspire consumers' shopping interests and desires. Seaborn and Fels (2015) [51] indicated that gamification of incentives could motivate online consumers to make purchases decisions and interact with merchandises. In addition, the light-hearted experience could be linked with hedonic usage patterns and consumption [52]. Huotari and Hamari (2017) [53] also emphasized that gamification has an effect on retention and customer loyalty. Therefore, the strategy of gamification can stimulate consumers' shopping impulses by satisfying their hedonic gratifications [49], and can raise consumers' arousal and then affect their willingness to use online shopping platforms. Similar to personalization, gamification is also very likely to directly motivate consumers' behaviors of sustainable usage. Therefore, the following hypotheses are proposed:

H_{3a}. *The gamification is positively associated with the pleasure in GOSC.*

H_{3b}. *The gamification is positively associated with the arousal in GOSC.*

H_{3c}. *The gamification value is positively associated with the sustainable usage of the GOSC platform.*

2.5.4. Pleasure and Arousal with Sustainable Usage

Pleasure and arousal are very important representational forms of emotion in the context of GOSC. Pleasure is a subjective feeling of joy, elation and delightful based on human's own satisfaction and security [54]. Based on the study of Mehrabian and Russell (1974) [25], we define pleasure as the degree of joy, elation and delightful a consumer feels when he or she uses an online shopping platform in a GOSC event. Positive emotions can enable individuals to handle greater information complexity, become more optimistic about expected outcomes, and be willing to seek for more risks [3]. Prior studies indicated that consumers who feel happy and joyful when they use an online shopping platform are more likely to continue using the platform and obtain more pleasures [23].

Arousal is the perceptual response evoked by stimulation, which can be divided into physiological and psychological arousals. This study adopts the concept of psychological arousal, and defines it as an individual's subjective experience and cognitive evaluation of her/his physical and mental activation [54]. Following Venkatesh et al. (2012) [23], this study defines the level of arousal as the subjective experience and cognitive evaluation of a consumer's usage of online shopping platforms in GOSC. Previous research suggests that the level of arousal significantly affects an individual's subsequent information processing and decision-making behavior [28]. Therefore, the level of arousal may also have a positive effect on sustainable consumers' platform usage behaviors in GOSC. The following hypotheses are proposed:

H₄. *Pleasure is positively associated with the sustainable usage behavior of GOSC.*

H₅. *Arousal is positively associated with sustainable usage behavior of GOSC.*

2.5.5. Habit with Sustainable Usage

Habit is defined as "routine behaviors that repeat regularly and tend to occur subconsciously" [55]. According to Wood and Neal [56], approximately 45% of people's behavior is repeated daily and eventually turns into habitual behavior, which is an important phenomenon both in the online and offline shopping environment [57]. It is also often used to explain the formation of customer beliefs [23,58], and users' continuous usage [57,59]. Polites and Karahanna (2013) [60] revealed that consumers' shopping habits reflect their interactions with online platforms, and they are very likely to develop habits through obtaining satisfaction towards platform usage [23,61]. With the influence of usage habits, consumers' intentions are not completely affected by subjective feelings, but also past shopping experiences [28,57]. With this in mind, this paper also considers shopping habit as a factor that could directly exert an effect on consumers' usage of GOSC platform, and we define it as behaviors of consumers who subconsciously choose and use online shopping platforms in the case where they are aware of needs [59]. The following hypothesis is proposed:

H₆. *Shopping habit is positively associated with sustainable usage behavior of GOSC.*

3. Results and Analysis

3.1. Measurement Development

In order to examine the hypotheses in the research model, a questionnaire was developed to collect empirical data. The items measuring each construct were mainly developed from previous literature. Some measures were slightly modified in order to suit the context of GOSC. To measure the items, we use a five-point Likert scale ranging from (1) strongly disagree to (5) strongly agree. Generally, the items for measuring Price Value (PV) were adapted from the work of Venkatesh et al. (2012) [23]. We adopted the items from the research of Xu et al. (2017) [3] to measure Personalization (PE). The measures for Gamification (GC) were taken from Wu et al. (2016) [2]. The items for Pleasure (PL) and Arousal (AR) were both modified from Mehrabian and Russell (1974) [25]. Similarly, we developed the items from Venkatesh et al. (2012) [23] to measure Habit (HB). The items for Usage (SU) were

taken from Gefen et al. (2003) [59]. Because the items used in the literature are presented in English, this study translated the measurements from English to Chinese.

For the purpose of improving the content validity of our questionnaire, we conducted a small-scale pilot test. Forty consumers were invited to participate in the pilot test, whose responses are used to calculate the content validity ratios (CVR). Based on the results of the pilot test, some phrases and words are modified to ensure the readability and clarity of the questionnaire. Eventually, the questionnaire consists of three parts, including motivation letter, background information, and the instruments measuring the constructs of the conceptual model.

3.2. Data Collection

This study used a popular web-survey website (<https://www.sojump.com/>) to collect empirical data for examining the research model. The empirical data was collected from December 2018 to February 2019. Participants having experience of GOSC were invited to participate in this survey. All respondents who completed the questionnaire were offered 5–10 RMB. In order to better motivate the respondents, we randomly selected around 20% of the respondents and provided lottery as extra incentives (e.g., free membership of video, music and e-learning websites).

At the beginning of the questionnaire, we explained the research motivation and ensured the confidentiality of respondents' information. Attention check questions were adopted in the questionnaire, such as repeated questions and opposing questions. We excluded 49 participants based on two criteria: (1) They did not pass the attention check questions; (2) they did not provide complete answers to all the questions. Of the 473 questionnaires collected, 424 are valid (89.64%) for the following data analysis. The statistics of valid samples are shown in Appendix A.

3.3. Measurement Model Analysis

SMART PLS (Partial Least Square) was used to analyze the data. The first step was to evaluate the psychometric characteristics of all scales by using confirmatory factor analysis (CFA). This study evaluates the reliability and validity of the measurement model and tests whether the data conform to the research model, i.e., we analyze the reliability and validity of the measurement model; the second step is to use the Bootstrapping Procedure to estimate the statistical significance of the path coefficients and parameter estimates for the structural model.

The construct measurements, including questions, loadings, and sources, are shown in Table 1. All of the factor loadings on their corresponding constructs are over the threshold of 0.707, and ranging from 0.732 to 0.927. A higher value represents a stronger relationship between the item and its corresponding construct, and a value larger than 0.7 is considered acceptable [62].

Table 2 presents the results of composite reliability (CR) ranging from 0.84 to 0.931. CR represents the ratio of a scale's estimated true score variance relative to its total variance, and AVE measures the reliability of the latent variable component score. These values exceeded the recommended score of 0.7 for CR [63], respectively, indicating that the study has reliability and convergent validity. This study also examines the discriminant validity. The square root of AVE shown as the numbers on the diagonal, was greater than the off-diagonal elements in the corresponding rows and columns, demonstrating an adequate discriminant validity for the study [63].

3.4. Common Method Variance

We used Harmon's test for measuring common method variance (CMV) [64], all of the indicators are measured by factor analysis with one factor. If the extracted sums of the squared variance are more than 50%, a potential CMV problem may exist. The extracted sum of squared variance for the constructs in the study is 28%, indicating that common method biases are unlikely to contaminate our results.

Table 1. Measurement Items and factor loading.

Constructs	Questionnaire Items/Loadings/Source
Price Value (PV)	PV1: The product is reasonably priced on the Global Online Shopping Carnival (GOSC) platform. (0.905) PV2: The product has a good value for the money during GOSC. (0.902) PV3: The GOSC platform offers products with good price value. (0.823) [23]
Personalization (PE)	PE1: The GOSC platform I use sends me personalization promotional messages. (0.922) PE2: The GOSC platform I use recommends products according to my interests (0.883) PE3: The GOSC platform I use recommends services to me based on my preferences (0.789) [3]
Gamification (GC)	GC1: I can get rewards by obtaining red envelopes and scanning QR codes to participate in shopping games during GOSC. (0.782) GC2: The GOSC platform gives me the opportunity to share/collaborate with friends, complete a task, and win a reward by playing the shopping games. (0.733) GC3: I like the lucky-lottery promotion games in the GOSC. (0.782) [2]
Pleasure (PL)	PL1: I enjoy the fun of shopping/earning rewards during the GOSC. (0.872) PL2: I feel happy when participating in the GOSC activities with friends. (0.852) PL3: The GOSC platform enables me to enjoy the pleasure of shopping. (0.854) PL4: I experience the emotion of pleasure when I am shopping on the GOSC platform. (0.878) [25]
Arousal (AR)	AR1: I feel enthusiastic while engaging in the GOSC platform. (0.838) AR2: I feel exhilarated to participate in GOSC activities. (0.834) AR3: I feel energized to use the GOSC platform. (0.732) AR4: I feel excited when I indulge in the GOSC platform. (0.772) [25]
Habit (HB)	HB1: It has become a habit for me to using the online shopping platform. (0.915) HB2: I am addicted to using the online shopping platform. (0.822) HB3: Using the online shopping platform has become natural to me. (0.916) [23]
Sustainable Usage (SU)	UB1: I purchase from the online shopping platform during GOSC sustainably (0.927) UB2: I prefer to continuously use the online shopping platform when I have shopping needs during GOSC. (0.924) USB3: I would like to continue using the online shopping platform in the future GOSC. (0.843) [59]

Table 2. Discriminant validity.

	Composite Reliability	Mean	S.D.	PV	PE	GC	PL	AR	HB	SU
PV	0.901	3.93	0.907	0.905						
PE	0.890	3.82	0.913	0.500	0.900					
GC	0.840	3.71	0.921	0.475	0.423	0.768				
PL	0.931	3.94	0.898	0.521	0.607	0.698	0.854			
AR	0.890	3.54	0.921	0.475	0.405	0.683	0.567	0.790		
HB	0.912	3.88	0.879	0.515	0.492	0.480	0.533	0.531	0.883	
SU	0.922	3.66	1.012	0.586	0.615	0.520	0.617	0.602	0.504	0.872

Notes: CR = Composite Reliability; Numbers on the diagonal (in boldface) are the square root of the average variance extracted (AVE). Other numbers are the constructs' correlation.

Moreover, we employed a technique by incorporating a common method factor in the research model. All of the construct indicators are used to measure the common method factor, in order to estimate the variance explained by substantive factors and the method factor [64]. The results demonstrated that the substantive variance of the indicators is 0.51, while the variance of the method factor is 0.021. The ratio of substantive variance to method variance was about 26:1. Similarly, the analysis results indicated that common method bias should not be a serious problem in the study.

3.5. Structural Model Analysis

Hair et al. (2017) [65] proposed that the most widely applied way of measuring the structural model is the coefficient of determination (R^2 value). It is a measure of the research model's predictive accuracy and is calculated as the squared correlation between a specific endogenous construct's actual and predicted values. The results of the model are shown in Figure 2. The R^2 of the research is 0.602 and exceeding the acceptable level [65]. Nine out of twelve causal effects tests are statistically significant.

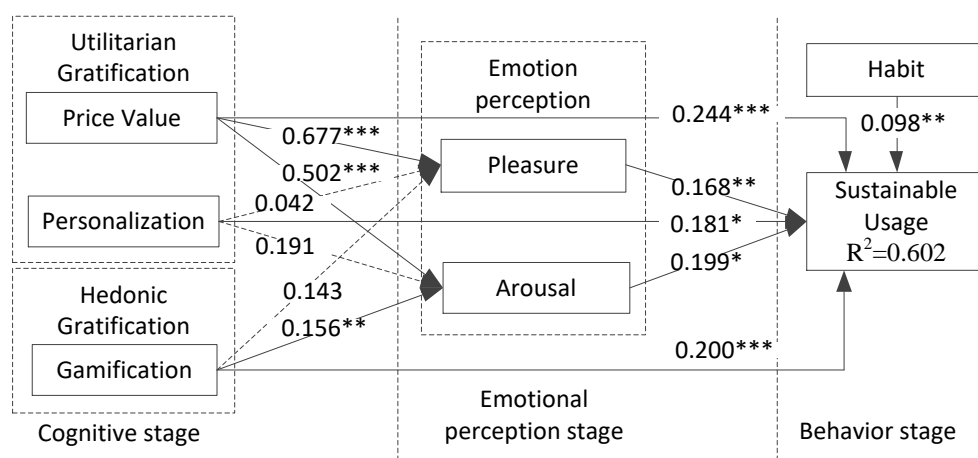


Figure 2. Results of the PLS Analysis for the Full Research Model. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; $p > 0.05$ (not significant).

A goodness of fit measure (GOF) for PLS path modeling is defined as the geometric mean of average variances extracted and average R^2 for endogenous constructs, which ranges from 0.00 to 1.00 [66]. Wetzels et al. (2009) [66] suggested the formula to calculate GOF. In line with the effect sizes for R^2 (small—0.02; medium—0.13; large—0.26) proposed by Cohen (1988) [67], Wetzels et al. (2009) provided the following GOF criteria for small, medium, and large effect sizes of R^2 , respectively: GOF small = 0.1, GOF medium = 0.25, and GOF large = 0.36 [66,68]. The R^2 in this study exceeds 0.26, hence, GOF large = 0.36 should be used as the cut-off level. According to the formula, the GOF in this study is 0.602, which exceeds the cut-off value of 0.36 for GOF large, and allows the study to conclude that the model performs well compared to the baseline values defined above [68]. In summary, the results show that the proposed research model in this study is high applicable in terms of reliability, convergence, discriminant validity and GOF. As can be seen in Table 3, nine of twelve hypotheses (H_{1a} , H_{1b} , H_{1c} , H_{2c} , H_{3b} , H_{3c} , H_4 , H_5 , and H_6) were supported by the empirical data, whereas, H_{2a} , H_{2b} , H_{3a} were not supported.

Table 3. Results of the hypotheses testing.

Hypothesis	Content	Path Coefficient	T Value	P-Value	Results
H_{1a}	Price Value \rightarrow Pleasure	0.677	7.567	<0.001	Supported
H_{1b}	Price Value \rightarrow Arousal	0.502	4.647	<0.001	Supported
H_{1c}	Price Value \rightarrow Usage	0.244	3.857	<0.001	Supported
H_{2a}	Personalization \rightarrow Pleasure	0.042	0.479	>0.05	Not Supported
H_{2b}	Personalization \rightarrow Arousal	0.191	1.829	>0.05	Not Supported
H_{2c}	Personalization \rightarrow Usage	0.181	2.398	<0.05	Supported
H_{3a}	Gamification \rightarrow Pleasure	0.143	1.698	>0.05	Not Supported
H_{3b}	Gamification \rightarrow Arousal	0.156	2.012	<0.01	Supported
H_{3c}	Gamification \rightarrow Sustainable Usage	0.200	3.587	<0.001	Supported
H_4	Pleasure \rightarrow Usage	0.168	2.366	<0.01	Supported
H_5	Arousal \rightarrow Usage	0.199	3.108	<0.05	Supported
H_6	Habit \rightarrow Usage	0.098	2.547	<0.01	Supported

4. Discussion and Implication

4.1. Discussion

Following the concept of social and economic sustainability, the sustainable development of e-commerce in China highly depends on the performance of GOSC. However, the success of a GOSC further depends on the reciprocal relationship between consumers, producers, and all other third parties. In this sense, this study, through exploring the underlying mechanism of consumer's multiple

reactions towards online platform usage, provides important references for policy makers to understand the details of online user management in such a relatively new context. Integrating cognitive emotion theory with the U&G theory and shopping habit, this study develops the research model to investigate: (1) The effect of consumers' cognitive perceptions on GOSC consumers' emotional state; (2) the impacts of emotional state and cognitive perceptions on GOSC consumers' platform usage. Using empirical data, this study produced the following conclusions.

4.1.1. The Linkage between Cognitive Factors and Emotional State

We investigate the effects of GOSC consumers' perceived gratifications on consumers' emotional state. First, this study confirms that consumers' perceptions of a price value have a significantly positive impact on pleasure ($0.677, P < 0.001$) and arousal ($0.502, P < 0.001$), hence, H_{1a} and H_{1b} were all supported. Products with high price value can satisfy GOSC consumers' needs, thus, evoking consumers' emotions of higher pleasure and stronger arousal. The results are in accordance with many prior studies (e.g., References [23,69–71]). Second, consumers' perceptions of personalized service of a GOSC platform have no significant effect on pleasure and arousal level, thus, H_{2a} and H_{2b} were not supported. The reason is twofold: On the one hand, personalized service is usually launched with advertisements and commercial promotions, consumers may not feel excited and pleasure; and on the other hand, personalized service is provided during consumers' daily shopping procedures. Hence, personalized services in GOSC may not bring consumers with special gratifications in GOSC.

Third, GOSC consumers' perceptions of gamification have a significant influence on arousal ($0.156, P < 0.01$), thus, H_{3b} was supported. This implies that gamification stimulates the level of arousal by means of games and then enhances the enthusiasm and participation of consumers in GOSC, while it does not exert a significantly positive effect on pleasure. This finding implies that H_{3a} was rejected. This can be deemed realistic, as consumers' participation in shopping games requires time and energy effort, thus, the pleasure of participation in shopping games is likely to be reduced. In summary, price value is the most dominant factor influencing the GOSC emotional state. Personalized service does not have a significant effect on emotional state, and gamification only has a significant effect on arousal. The results suggest that monetary incentives (e.g., price value) appear to exert stronger effects on people's emotional state than those of functional features (e.g., personalized service).

4.1.2. The Linkage between Cognitive/Emotional States and Consumer Behaviors

This study then examines the effects of GOSC consumers' cognitions (e.g., gratifications) and emotional state on GOSC platform usage. First, this study provides empirical evidence to support that price value, personalized service and gamification all exert positive effects on platform usage. Thus, H_{1c} , H_{1b} , and H_{1c} were supported. Especially, price value exerts the most significant effect on platform usage. The results suggest that cognitive perceptions (e.g., utilitarian and hedonic gratifications) exert direct impacts on users' behaviors. According to the use and gratification theory, prior studies have indicated that people would actively search and use media and shopping channels to gratify their needs [43,72,73]. In the context of GOSC, user gratifications manifest in different angles. For example, recent studies have shown that many other factors, such as rich user experience [74–78], and value-added customer services [79–81] exert powerful impacts on users' behaviors, since more and more customers prefer to receive gratification from different channels, in addition to having it through price value only. However, this study suggests that promotion strategies, such as discount and red envelopes, can raise the perceived price value of products in GOSC, thus, retaining consumers' platform usage in the long run. In other words, although online consumers' behaviors are likely to evolve with technological progress [82–84], price value is still a very powerful determinant of user behavior in GOSC. In addition, hedonic gratification represented by gamification directly influences GOSC consumers' usage of a platform, thus, H_{3c} was supported. This research result implies that hedonic gratification may lead to people's sustainable usage of a platform in a festival atmosphere of GOSC. Second, the level of pleasure and arousal in the consumer emotional state has a significant positive

effect on consumers' sustainable usage of a platform, thus, H₄ and H₅ were supported. These findings are in accordance with prior studies and suggest that GOSC consumers' emotional state is a powerful determinant of consumers' sustainable usage. Overall, both customer's cognitions and emotions appear to influence their sustainable usage behaviors.

Finally, this study investigates the effect of habit on GOSC consumers' usage of a platform. The empirical evidence indicates that shopping habits exert a significantly positive effect, whereas, the size of this effect is relatively small, with a coefficient of 0.098. As consumers may habitually log in their daily used platform to browse and participate in GOSC activities, such habits may influence their selection and usage of GOSC platforms. However, e-commerce platforms often offer different promotion packages during a GOSC, and provide flexible offers towards various product categories. Therefore, these specific needs of consumers may also exert a significant influence on consumers' selection of platforms, which in turn reduces the positive effect of their shopping habits as mentioned above.

4.2. Implication and Future Studies

The effects of online information, consumer characteristics and product features on consumers' intentions and behaviors have long been known. However, the present study considers GOSC as a particular case of online activities, which further depends on the consumer's emotional state, while conceptualizing a theoretical framework based on cognitive emotion theory (CET), use and gratification theory (U&G) and theory of pleasure-arousal-determinant (PAD). Our findings show that the underlying mechanism of consumer's online platform usage in the context of GOSC is complicated. It appears that cognition (gratifications) may influence the usage behavior directly and determines emotional state, which in turn indirectly affects the usage behavior. At this point, our results are partially consistent with previous studies. For instance, consumers concerned most about the price value of products in GOSC [14,29,85,86]. However, we further added an "emotional" puzzle to the present transmission mechanism we acknowledged.

More specifically, it appears that there is no "one-size-fits-all" solution. The event manager should clearly understand that consumer's intentions and behaviors towards different internal/external stimuli are dynamic. Our study, therefore, has highlighted a number of key points to the success of a GOSC event: (1) The important effect of personalization and gamification on GOSC consumers' behaviors is observed, whereas, effects of these two factors on emotional state are not significant. This implies that for those products with a low level of involvement, providing good consumer experience by improving the quality of personalized service and enhancing the entertainment of gamification can be an effective, short-term strategy to attract consumers and boost sales. In doing so, platform managers may launch more interactive and hedonic activities to induce consumer's engagement, while applying advanced technology and business strategies to provide personalized services within consumer's shopping process; (2) this study also contributes to existing studies regarding the effect of emotion on consumer behaviors in GOSC. The emotional state of consumers appears to play a critical role in determining GOSC user's behavior directly. Thus, even though cognitive perceptions exert a direct effect on consumers' behaviors, GOSC managers should never overlook the importance of consumer relations. Here, an alternative, more sustainable way to increase online sales is to allocate more resources to manipulate consumers' emotional state towards a GOSC event. This would be an icing on the cake to the present fast-sale, promotion-based framework, and is more likely to ensure consumers to obtain great benefits and values when they repeatedly purchase online [87]. Such a shopping behavior, therefore, will be strengthened and become habitual [88] not only in a GOSC context; (3) these measures require flexible strategic planning. Companies must have a clear goal regarding their products, based on limited time and resources. For example, a company may allocate all resources to only promote price value and gamification if its marketing target is to evoke the emotion of arousal at a certain stage and to develop emotional connection with customers.

This study is not without limitations. First, the data collection was based on Chinese GOSC consumers. Hence, future studies should be cautious when applying the results in other populations. Second, using the theoretical lens of CET, this study combines U&G and PAD to develop the research model. However, we only examined the effects of gratifications and the determinants of consumers' emotional state. It is possible to explore other motivational factors and the antecedents determining the consumers' cognition from different theoretical perspectives. Finally, this study does not examine the effects of social-related factors. Therefore, future studies may examine how social factors, such as social gratifications, influence consumers' cognitive and emotional states and their subsequent behaviors.

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Appendix A. Background Information

Table A1. Sample Statistics.

Measure	Item	N	Percentage (%)
Gender	Male	140	33.11%
	Female	284	67.08%
Age	under 18	11	2.55%
	18–23	186	43.87%
	24–30	72	16.98%
	31–40	94	22.08%
	41–50	36	8.49%
	50–60	22	5.09%
	over 60	4	0.85%
Duration of each use	<10 min	22	5.09%
	10–30 min	219	51.65%
	30–60 min	133	31.42%
	1–2 h	47	11.04%
	More than 2 h	4	0.85%
Online shopping platforms (multiple choices)	Taobao	396	93.40%
	JD.COM	356	84.06%
	Jumei.com	40	9.34%
	Xiaohongshu	29	6.79%
	Suning.com	97	22.92%
	Tmall mall	227	53.49%
	Amazon	162	38.21%
	Alibaba	47	11.04%
	Vip.com	212	50.09%
	VANCL	22	5.09%
	Yoho!	11	2.55%
	others	108	25.47%

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