The effect of online shopping festival promotion strategies on consumer participation intention

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Abstract

Purpose – The purpose of this paper is to explore the effect of consumers’ perceived product promotion and atmosphere promotion strategies on their participation intention, and the possible interaction between product promotion and atmosphere promotion strategies on their participation intention in online shopping festivals.

Design/methodology/approach – This paper conceptualized consumer perception of product promotion strategies of online shopping festivals as Perceived Temptation of Price Promotion, Perceived Categories Richness of Promotion and Perceived Fun of Promotion Activities and atmosphere promotion strategies as Perceived Contagiousness of Mass Participation. Based on the Stimulus-Response Theory, this study constructed an influencing model of promotion strategies on consumer participation intention in online shopping festivals. Structural equation modeling with partial least squares was used for analyzing the data from a sample of 495 consumers to test the proposed hypotheses.

Findings – The results showed that Perceived Temptation of Price Promotion, Perceived Categories Richness of Promotion, Perceived Fun of Promotion Activities and Perceived Contagiousness of Mass Participation significantly and positively affect consumer Participation Intention; Perceived Contagiousness of Mass Participation plays a moderating role in the effect of Perceived Temptation of Price Promotion on Participation Intention.

Originality/value – This study is the first empirical attempt to examine the moderating role of atmosphere promotion between product promotion and consumer participation intention in online shopping festivals. The findings provide theoretical basis and practical guidance for e-commerce platforms and merchants for improving their online shopping festival promotion strategies.

Keywords Online shopping festival, Promotion strategy, Stimulus-response theory, Participation intention

Paper type Research paper

1. Introduction
The online shopping festivals, such as Amazon’s Prime Day, Cyber Monday, Alibaba Singles’ Day (aka.11.11; Singles’ Day; Double 11), “Double 12” and JD 618, are online shopping carnival activities initiated and organized by e-commerce platforms. Among all online shopping festivals, Alibaba Singles’ Day surpassed the traditional western shopping festival “Black Friday” and became the largest shopping carnival in the world. It is the most influential one in China and in the world. In 2019, its turnover reached RMB 268.4 billion and total e-commerce platform sales reached RMB 410.1 billion. The great success of Singles’ Day attracted researchers’ interest. Wu et al. (2016a) argued that the synergy of Alibaba’s IT platform and e-commerce drive the success of Singles’ Day, because it “successfully implemented five critical strategies associated with value activities from identifying merchants and pricing, marketing and sales, payments and outbound logistics” (p. 193). Researchers of online platforms have adopted a series of approaches to investigate the influence of e-commerce platforms on consumers and the strategies of e-commerce platforms.

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consumer behavior believe that the success of Singles’ Day is mainly due to successful online promotion strategies (Liu et al., 2018a; Akram et al., 2017). By gathering a large number of merchants and commodities and launching large-scale aggregation promotions (including price discounts, coupons, lucky money, free freight and gifts) within a time limit (Wu et al., 2016b; Lu and Zhuang, 2018), online shopping festivals can stimulate mass participation and consumption enthusiasm (Zhao and Wan, 2017). The convenience of e-commerce and price promotion can easily lead consumers to increase their online consumption during holidays (Oh and Kwon, 2009).

We noticed that the Alibaba has unique Singles’ Day promotion strategies compared with other online shopping festivals. In addition to product promotion, it makes full use of Internet and traditional media to create a festive atmosphere for mass participation (Zhao and Wan, 2017). Since 2015, Alibaba holds “Tmall Double 11 Gala” every year. By virtue of the celebrity effect and the “fanatical” participation of the public, Alibaba broadcasts live on the internet and TV in the form of “variety show” along with transaction data in real time to create an atmosphere of national impulse buying. Alibaba sold RMB 10 billion at 86 s after 0:00 on November 11, 2019, which indicates the effectiveness of Alibaba innovative marketing strategies, i.e. the combination of e-commerce platform product promotion with a mass participation atmosphere. The success of Singles’ Day demonstrates Chinese experience of online shopping festival promotion strategies, and such success bears significance for other countries to develop their own online shopping festivals.

Singles’ Day promotion strategies comprehensively use product promotion and atmosphere promotion to bring out their synergistic effect; meanwhile, the effect of product promotion is enhanced by atmosphere promotion as well. Product promotion and atmosphere promotion are considered as two important tools to increase consumers’ purchases (Kolter, 1973; Kotler and Keller, 2006). Although previous research confirmed the separate effect of product promotion and atmosphere promotion on consumer purchase intention, their possible interaction, that is, atmosphere promotion can possibly enhance the influence of product promotion on consumers’ purchase intention, remains unexplored and lack of empirical support. In order to respond to the needs of online shopping festival marketing practice and contribute to knowledge body, the main purpose of this research is to study the effect of consumer perception of product and atmosphere promotion stimuli as online shopping festival promotion strategies, and their possible interaction on consumer participation intention in Singles’ Day Online Shopping Festival.

Alibaba e-commerce platform adopts strategies of combining atmosphere promotion and product promotion on Singles’ Day. The core purpose is to enhance consumers’ perception of promotion stimuli. According to Kotler and Keller (2006) Stimulus-Response Model of Buyer Behavior, consumer behavior can be considered as one’s response to the stimuli of online shopping festival promotion. Therefore, this paper builds a research model based on Stimulus-Response framework to explore the influence of online shopping festival product and atmosphere promotion strategies and their interaction on consumer participation intention.

The dominant consumer population in China’s Alibaba Singles’ Day Shopping Festival is young consumers. Thus this study selected young consumers as participants, collected data through questionnaires and tested research hypotheses by structural equation modeling. This study provides a theoretical basis and practical guidance for improving marketing strategies of online shopping festivals for e-commerce platforms and merchants to attract and maintain consumer participation, increase purchase intention, promote healthy development of online shopping festivals and contribute to the knowledge body of online shopping festivals’ consumption behavior and marketing.
2. Theoretical basis and research hypothesis

2.1 Stimulus-Response Theory framework

The influence of online shopping festival promotion strategy on consumer participation can be explained by John B. Watson (1913) Stimulus (S) – Response (R) theory framework. He believed that human complex behavior can be divided into two parts: internal and external stimulus and response. Human psychological process is a “black box”, an objective link between stimulus and response, and human behavior is the response to stimulus. Singles’ Day Online Shopping Festival promotion strategies are typical external stimuli, and they are also the most important reason for driving consumers’ online purchase intention (Zhao and Wan, 2017). Based on the S–R Theory, marketing management guru Kotler proposed a classic stimulus response model of consumer buying behavior in his book “Marketing Management” (Kotler and Keller, 2006), as shown in Figure 1.

S–R theory is often used as the theoretical basis for studying consumer behavior of online shopping festival to explore the relationship between influencing factors and behaviors (Xu et al., 2017; Liu et al., 2018b). For example, Xu et al. (2017) examined the impact of information incentive and social influence on consumer behavior during Alibaba online shopping carnival. Liu et al. (2018b) explored the direct impact of internal shopping motivation and external stimuli on consumer festival shopping behavior. There is a strong correlation between online festival promotion stimuli and consumption behaviors. The promotion stimuli in environment increase the likelihood of consumer impulse buying behavior (Dholakia, 2000). The greater the discount is, or the more convincing the sales personnel sounds, the more likely consumers will be to purchase on impulse (Chen and Yao, 2018). S–R Theory has become an important theoretical basis to study the relationship between marketing strategies and consumer behaviors.

2.1.1 Online shopping festival promotion strategy stimuli. Online shopping festivals generally adopt the strategies of combining atmosphere promotion and product promotion to stimulate consumption behavior. In the context of online shopping festival, the external stimuli perceived by consumers mainly originate from product promotion and atmosphere promotion. Diamond et al. (1990) classified promotions into “monetary promotions” and “non-monetary promotions” from perceived currency. Chandon et al. (2000) further found out monetary and non-monetary promotion provides consumers with hedonic benefits and utilitarian benefits. According to attribution theory, consumers make attribution to their purchase action when they evaluate their shopping (Puccinelli et al., 2009). When consumers make purchase, they consider product promotion stimulus factors directly related to products, and environment stimulus factors indirectly related to products. This paper conceptualized product promotion strategy of online shopping festivals as

![Figure 1. Stimulus-response model of buyer behavior](image-url)
Perceived Temptation of Price Promotion, Perceived Categories Richness of Promotion and Perceived Fun of Promotion Activities, and atmosphere promotion strategy as Perceived Contagiousness of Mass Participation.

2.1.2 Consumers’ online shopping festival responses. Mehrabian and Russell (1974) believed that consumers mainly have two behavioral responses (R) to the external stimulus, approach and avoidance. The approach response to online shopping festival promotion stimuli mainly includes paying attention to promotion activities, browsing platforms, marking interested goods and putting them into shopping carts. These approaching reactions are specific manifestation of consumer participation intention in online shopping festivals. Intention reflects an individual’s readiness to perform a given behavior (Ajzen, 1985, 1991). Therefore, this study used consumers’ approaching responses to measure their participation intention and indicate their actual purchase behavior.

2.2 Application of S–R framework and hypotheses development

The main purpose of this research is to explore the impact of Singles’ Day promotion strategies on consumer participation intention, focusing on the effect of product and atmosphere promotion stimuli and their interaction on consumer participation intention. The stimuli variables (S) are consumer perceived product and atmosphere promotion strategy stimuli of Singles’ Day Online Shopping Festival, including Perceived Temptation of Price Promotion, Perceived Categories Richness of Promotion, Perceived Fun of Promotion Activities and Perceived Contagiousness of Mass Participation. The theoretical basis of variable selection is discussed in previous section. The behavioral response variable (R) is consumers’ online shopping festival participation intention. Based on the S–R framework, the hypotheses are as follows:

The stimuli directly related to product mainly include promotion prices, categories and entertainment. During online shopping festival, platforms and merchants make promotion more intensively, such as price discount, time-limited promotion, coupons, specific deduction, buy-one-get-one-free, gifts and free freight. The intensity of promotion is perceived by consumers as “Perceived Temptation of Price Promotion”. Almost all categories of products, including clothing, shoes and hats, daily necessities, appliances and electronic products, are involved in the price promotion. The breadth of promotion is perceived as “Perceived Categories Richness of Promotion”. Entertainment appealing and pleasure of promotion activities, such as drawing lucky money, interactive games and raffle activities, are perceived as “Perceived Fun of Promotion Activities”.

2.2.1 Perceived temptation of price promotion (PTPP) stimulates participation intention. PTPP is the perception that consumers can gain great economic benefits by participating in shopping. During online shopping festivals, platforms adopt price discounts, time-limited promotions, coupons, specific deduction, buy-one-get-one-free, gifts, free freight and other forms to improve the price temptation of promotion. Most researchers believed that price advantage directly affects consumer purchase intention and value perception (Huang and Jiang, 2014; Zhou and Wong, 2003; Gilbert and Jackaria, 2003), while some other studies indicated that price advantage affects consumer purchase intention directly and indirectly (Hao et al., 2008; Dodds et al., 1991). Price promotion acts as a tempting stimulus that greatly reduces consumers’ self-control resources (Yan et al., 2017), which in turn results in their impulse buying behaviors (Wertenbroch, 1998). In view of this, the following assumption is proposed:

HI. PTPP is positively correlated with consumer Participation Intention.

2.2.2 Perceived fun of promotion activities (PFPA) stimulates participation intention. PFPA is consumers’ perception of shopping pleasure that promotion activities bring. Platforms and
merchants improve entertainment through promotion activities such as drawing lucky money, interactive games and raffle activities. Consumers can not only gain shopping pleasure from interesting promotion activities but also feel the carnival atmosphere (Lu and Zhuang, 2018). Research on online shopping festivals found that hedonic motivational factor has a strong and positive influence on Singles’ Day online buying (Akram et al., 2017). In view of this, the following assumption is proposed:

H2. PFPA is positive correlated with consumer participation intention.

2.2.3 Perceived categories richness of promotion (PCRP) stimulates participation intention. PCRP refers to the types, quantities and styles of goods in promotion activities, which are more diverse than usual and therefore meet the diverse needs of consumers. Alibaba, the organizer of the Singles’ Day Online Shopping Festival, currently has more than 50,000 merchants, more than 70,000 brands and more than 800 million online goods per day. Usually only a relatively small number of goods have discounts. On the contrast, online shopping carnival is to create a festival atmosphere with the great richness of the numbers and types of goods, including clothing, shoes and hats, daily necessities, appliances and electronic products, and almost all goods have discounts.

Research on brand selection found that product diversity positively influences brand selection with perceived quality as a mediator (Wu and Hou, 2009). Product diversity is positively correlated with consumer positive impression on product and therefore stimulates consumers’ expectation of enjoyable consumption experience and purchase action (Kahn and Wansink, 2004). Perception of categories richness of promotion enables consumers to meet almost all needs in “one-stop” and makes them feel the worth of investing time and energy. In view of this, the following assumption is proposed:

H3. The PCRP is positively correlated with consumers’ participation intention.

Kolter (1973) viewed atmospherics as an important marketing tool. Manganari et al. (2009) reviewed empirical research in top academic journals and found empirical evidence for “the influence of online atmosphere on consumer behaviors” (p. 1140). Academic and industry communities commonly acknowledge that it is an important marketing strategy to create an appealing shopping atmosphere in an online shopping environment (Turley and Millian, 2000). Shopping atmosphere and environment are important factors driving consumers’ shopping behavior (Baker et al., 2002). Huang (2017) claimed that festival atmosphere is even more influential than product itself for consumers’ purchase decision.

Alibaba, the sponsor of Singles’ Day Online Shopping Festival, cooperates with main e-commerce platforms in China to create not only a micro-festival atmosphere online but also a macro-festival atmosphere in public. As the most influential shopping festival every year, Singles’ Day is a hot topic of new and traditional media, not to mention among consumers. Online shopping festival atmosphere has become one of the most important marketing tools to stimulate consumers’ purchase in China.

Consumers act as independent individuals, and meanwhile as members of society. Their behaviors are inevitably influenced by the mainstream values of society and important others in their own social relations (Conner et al., 2007). Online shopping festivals attract more and more consumers to participate through social media platforms such as WeChat and Facebook, especially the recommendation of important others who can affect individuals’ opinions and behaviors. When consumers perceived most people around them participating in online shopping festivals, they perceived such atmosphere promotion as “Perceived Contagiousness of Mass Participation”.

2.2.4 Perceived Contagiousness of mass participation (PCMP) stimulates participation intention. PCMP is a special type of social influence: mass participation social influence, which means that consumers are influenced by media and the participation of others around
them, especially colleagues, friends, classmates, neighbors and relatives. Fan et al. (2019) found social support and presence are positively associated with swift guanxi and trust which further lead to repurchase intention and social sharing intention. Social impact theory is often used to study consumers’ online shopping behavior (Lee et al., 2011). Consumers’ decision to purchase online is influenced by other people’s choices, and social influence significantly influences consumer shopping decision (Chen, 2008). In addition, social impact affects consumers’ repeated shopping behaviors (Butcher et al., 2002). Silvera et al. (2008) demonstrated that consumers’ informational and normative social impact significantly affects consumer impulse purchase behavior. Interaction within the fan community exerts second-order effect of content marketing on sales performance (Geng et al., 2020). During online shopping festivals, consumers perceive that the greater the number of important others is, the deeper the degree of participation is, and the greater the social impact is. Under social influence and group pressure, individuals change in emotion, thoughts and behaviors (Yu and Xing, 2015). Consumers tend to intentionally maintain a similar consumption mode with important others (Sheth and Parvatiyar, 1995). Research on Alibaba Singles’ Day consumer behavior found that social impact significantly affects consumer shopping behavior (Xu et al., 2017). In view of this, the following assumption is proposed:

**H4.** PCMP is positively correlated with consumer participation intention.

2.2.5 The moderating role of perceived contagiousness of mass participation (PCMP). Previous literature tends to focus on the direct effect of social influence on consumer online shopping behavior, while only some research notices the moderating role of social influence. Lee et al. (2011) used a laboratory experiment to study the impact of consumer reading positive comments about online shopping experience in an online discussion forum on their consumption behavior and found that positive informational social influence reinforces the relationship between beliefs about and attitude toward online shopping, as well as the relationship between attitude and purchase intention.

Researchers also found the moderating effect of social impact in off-line consumer consumption behavior. Povey et al. (2000) used the theory of planned behavior to study consumer healthy eating and the moderating effects of social influence and found that perceived social support acts as a moderator in the relationship between perceived behavioral control and intention, and the relationship between attitude and intention. Stacy et al. (2015) examined moderators of peer social influence in adolescent smoking and found that friends’ social influence significantly moderates the predictive effect of self-efficacy judgment on smoking tendency. The more in the five closest friends of high school students who smoke, the harder it is for their self-efficacy to resist smoking.

Thus, we believed that PCMP exerts a moderating impact on consumer online shopping festival participation intention. PCMP can enhance consumers’ perception, i.e. PTPP, PFPA and PCRP, the three dimensions of product promotion. The clearer perception of product promotion an individual has, the more likely it is that product promotion influences participation intention. In view of this, the following hypothesis is proposed:

**H5.** PCMP moderates the impact of product promotion strategies on consumer participation intention

**H5.1.** PCMP moderates the impact of PTPP on consumer participation intention.

**H5.2.** PCMP moderates the impact of PFPA on consumer participation intention.

**H5.3.** PCMP moderates the impact of PCRP on consumer participation intention.

Consumers’ gender, age, income, education level and experience in participating in online shopping festivals have an impact on their decision to participate in online shopping festivals.
Therefore, this study took these demographic variables as control variables. Based on the above theoretical analyses and research hypotheses, the research model was proposed and shown in Figure 2.

3. Methodology

3.1 Measurement of constructs

In this study, the questionnaire consisted of two parts. The first part had five variables in the research model, which were measured with consideration of well-developed scales in existing literature and the characteristics of online shopping festival, except for the categories richness of promotion, in which the items were designed by the author. The measurement of PTPP was adapted from the work of Zhao (2010) on economy of online shopping, Hong and Tam (2006) on perceived monetary value, and Dodds et al. (1991) on perceived value indicators. PFPA items were adapted from Mazaheri et al. (2012) to measure entertainment of online shopping. PCMP referred to Hsu and Lu (2004). The participation intention items were adapted from Eroglu et al. (2003) to measure online shopping approaching behaviors.

Because the original measurement items were in English, we conducted a back-to-back translation procedure. First author translated all original items into Chinese. Then, co-author independently translated the items back to English. We compared the two English versions and confirmed the Chinese version to ensure translation validity. After that, the Chinese version was further reviewed by two professors, one in e-commerce and the other in marketing, both of whom are proficient in English. Based on their feedback, some wordings of items in the questionnaire were modified to be clear and understandable.

The questionnaire used a Likert seven-point scale from 1 (very disagreement) to 7 (very agreement). Fifty-six undergraduate e-commerce students with Singles’ Day online shopping experience were selected for the pilot questionnaire. According to the data analysis results, the pilot questionnaire was revised to formulate the formal questionnaire containing five variables and 18 items (shown in Table 2). The second part was demographic variables including gender, age, education, personal monthly income, online shopping festivals participation experience and the preferred e-commerce platforms to participate in Singles’ Day Online Shopping Festival.

3.2 Data collection and sample description

According to TalkingData “2016 Singles’ Day Online Shopping Population Insight” report, the age distribution of online shopping population of Singles’ Day in 2016 shows that the
The proportion of 18–39 years old is as high as 81%. Youth consumers are the backbone of online shopping on Singles’ Day (Talkingdata, 2016).

In this study, the data were collected in the form of online questionnaires. Snowball sampling was used to collect data from consumers who participated in Single’s Day Online Shopping Festival. First, the questionnaire was edited and published on a professional questionnaire website, and then the webpage link of the questionnaire was sent to university students of one author via QQ and Wechat platforms, including the current students and the graduates (age range 22–32). All of them were listed in the author’s QQ and Wechat, because they were enrolled in the author’s courses before. Second, a short introduction was sent along with the webpage link, asking these students’ assistance for filling in the questionnaire online themselves and sharing the webpage link and instruction to their similar-aged friends or colleagues who had experience of participating in Singles’ Day Online Shopping Festival.

In order to study the responses of consumers under the stimulation of the real shopping festival atmosphere, the questionnaires were published online 20 days before Singles’ Day Online Shopping Festival in 2017, and 495 valid questionnaires were collected from October 20 to November 10, 2017. The sample size meets the recommended requirements of Boomsma (1982) and Nunally (1967). The demographic characteristics of sample as shown in Table 1 are basically consistent with TalkingData’s report (Talkingdata, 2016). The Singles’ Day Online Shopping Festival was initiated in November 2009 and is held once a year in the same time period ever since, and it had been 9 years till the year of 2017 when data were collected. Participation times, as the indicator of participation experience, mean the number of years of consumer participation in Alibaba Singles’ Day in the past 9 years.

### 3.3 Common method bias testing

This study collected data from questionnaire based on consumers’ self-reports. In order to test the possible common method bias, Harman’s single factor test was conducted by using factor analysis in SPSS 21.0 (Harman, 1976). The result showed that the first component constitutes 41.3% (<50%) of all the variables in the model and indicated that common method

<table>
<thead>
<tr>
<th>Measure</th>
<th>Item values</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female</td>
<td>285</td>
<td>57.6</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>210</td>
<td>42.4</td>
</tr>
<tr>
<td>Age</td>
<td>Less than 18</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>18–24</td>
<td>362</td>
<td>73.1</td>
</tr>
<tr>
<td></td>
<td>25–35</td>
<td>126</td>
<td>25.5</td>
</tr>
<tr>
<td></td>
<td>Over 36</td>
<td>5</td>
<td>1.0</td>
</tr>
<tr>
<td>Education</td>
<td>Junior high school or less High school</td>
<td>4</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s degree</td>
<td>129</td>
<td>26.1</td>
</tr>
<tr>
<td></td>
<td>Graduate and Doctor’s degree</td>
<td>293</td>
<td>59.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>59</td>
<td>11.9</td>
</tr>
<tr>
<td>Monthly Income (RMB)</td>
<td>Less than 2000</td>
<td>318</td>
<td>64.3</td>
</tr>
<tr>
<td></td>
<td>2001–3,000</td>
<td>82</td>
<td>16.6</td>
</tr>
<tr>
<td></td>
<td>3,001–5,000</td>
<td>69</td>
<td>13.9</td>
</tr>
<tr>
<td></td>
<td>5,001–8,000</td>
<td>15</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>Over 8,000</td>
<td>11</td>
<td>2.2</td>
</tr>
<tr>
<td>Participation times</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>137</td>
<td>27.7</td>
</tr>
<tr>
<td></td>
<td>2–3</td>
<td>100</td>
<td>20.2</td>
</tr>
<tr>
<td></td>
<td>4–6</td>
<td>176</td>
<td>35.5</td>
</tr>
<tr>
<td></td>
<td>Over 6</td>
<td>82</td>
<td>16.6</td>
</tr>
</tbody>
</table>

Table 1. Sample demographics (N = 495)
<table>
<thead>
<tr>
<th>Variable</th>
<th>Item</th>
<th>Description</th>
<th>Standardized factor loading</th>
<th>Cronbach's alpha</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Temptation of Price Promotion (PTPP)</td>
<td>PTPP1</td>
<td>The coupons issued by the merchants during the Singles' Day period are very tempting for me</td>
<td>0.893</td>
<td>0.899</td>
<td>0.929</td>
<td>0.767</td>
</tr>
<tr>
<td></td>
<td>PTPP2</td>
<td>The lucky money of platforms and merchants during the Singles' Day period is very tempting for me</td>
<td>0.831</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PTPP3</td>
<td>The large price discount during the Singles' Day period is very tempting for me</td>
<td>0.899</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PTPP4</td>
<td>The various reductions and exemptions during the Single' Day period make me very excited</td>
<td>0.879</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Fun of promotion activities (PFPA)</td>
<td>PFPA1</td>
<td>The Singles' Day promotion activities are full of variety and fun</td>
<td>0.927</td>
<td>0.93</td>
<td>0.95</td>
<td>0.827</td>
</tr>
<tr>
<td></td>
<td>PFPA2</td>
<td>The Singles' Day promotion activities are interactive and entertaining</td>
<td>0.905</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PFPA3</td>
<td>The Singles' Day coupons, drawing lucky money and getting reduction are full of fun</td>
<td>0.912</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PFPA4</td>
<td>The Singles' Day promotion is creative and interesting</td>
<td>0.892</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Categories Richness of Promotion (PCRP)</td>
<td>PCRP1</td>
<td>During the Singles' Day period, the goods styles are of more variety than usual</td>
<td>0.783</td>
<td>0.839</td>
<td>0.892</td>
<td>0.674</td>
</tr>
<tr>
<td></td>
<td>PCRP2</td>
<td>During the Singles' Day period, the variety of goods can fully meet my needs</td>
<td>0.864</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PCRP3</td>
<td>The variety of goods offered by the platform during the Singles' Day period is very rich</td>
<td>0.806</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PCRP4</td>
<td>The items offered by the platform during the Singles' Day period is of bigger number than usual</td>
<td>0.828</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Contagiousness of</td>
<td>PCMP1</td>
<td>Most people around me participate in the</td>
<td>0.934</td>
<td>0.916</td>
<td>0.947</td>
<td>0.856</td>
</tr>
</tbody>
</table>

Table 2. List of items used to measure constructs and scale properties
bias was not a serious problem (Podsakoff et al., 2003). Moreover, we also performed the marker variable method to test for common method bias (Chin et al., 2012; Shiau et al., 2020). The results showed that the marker variables had no significant influence on PTPP, PCMP, PFPA, PCRP or PI. The average substantively explained variance of the indicators was 0.781, while the average method-based variance was 0.007. The ratio of substantive variance to method variance was about 111:1. Therefore, common method bias was unlikely to be a serious concern for this study.

4. Data analysis and results
The study adopted structural equation modeling (SEM) to test the research model. SEM has two approaches, covariance-based SEM (CB-SEM) and variance-based SEM (PLS-SEM). Many researchers argue that, compared to CB-SEM, PLS-SEM has advantages (Hwang et al., 2020; Sarstedt and Cheah, 2019; Hair et al., 2019a, b), excels in optimizing the prediction accuracy and is therefore more suitable for theory development and the research requiring latent variable scores for consequent analyses (Gefen et al., 2011; Hair et al., 2019a, b; Shiau et al., 2019; Khan et al., 2019; Shiau and Chau, 2016). This study is a preliminary exploration of product and atmosphere promotion strategy stimuli and their interaction on consumer participation intention in online shopping festivals. So we chose PLS-SEM approach for analysis using SmartPLS (v.3.2.8) (Ringle et al., 2015). There are two parts in PLS-SEM analysis. First, the measurement model was analyzed to ensure the reliability and validity of the constructs. Second, the structural model was tested to examine hypotheses.
4.1 Measurement model results

The measurement model needs to assess the indicator and construct reliabilities, convergent validity and discriminant validity (Sarstedt and Cheah, 2019; Hair et al., 2019a). Cronbach’s alpha and composite reliability (CR) were tested for the reliability of constructs, average variance extraction (AVE) and the values of items loadings were used to assess the convergent validity of constructs. The results are shown in Table 2. The loadings of variables were more than 0.7 and significant at the level of 0.001, indicating that all items had good indicator reliability (Fornell and Larker, 1981). CR and Cronbach’s alpha values of all variables were greater than 0.7, indicating that the measurement model had good construct reliability. The AVE values were greater than 0.6, showing that the measurement model had good convergence validity (Fornell and Larker, 1981).

Furthermore, in order to test the discriminant validity of the measurement model, the square root of the AVE for each variable and its corresponding correlation coefficients with other variables were compared. As shown in Table 3, diagonals (italic face) represent the square root of AVE for each variable, larger than the corresponding correlation coefficients, which shows that the measurement model had good discriminatory validity (Fornell and Larker, 1981).

Heterotrait–monotrait ratio (HTMT) is an estimate for factor correlation (more precisely, an upper boundary), and HTMT criterion was employed to assess discriminant validity. Monte Carlo simulations show that HTMT outperforms traditional measures of discriminant validity (Voorhees et al., 2016). In order to clearly discriminate between two factors, the HTMT should be significantly smaller than the value of 1 (Henseler et al., 2015). As presented in Table 4, all HTMT values are below the threshold value of 0.85, which warrants discriminant validity (Henseler et al., 2015).

4.2 Structural model results

The results of hypothesis testing are presented in Table 5, and all hypotheses were supported. Both products and atmosphere promotion strategy stimuli had positive effect on consumer

<table>
<thead>
<tr>
<th>Items</th>
<th>PI</th>
<th>PCRP</th>
<th>PCMP</th>
<th>PTPP</th>
<th>PFPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI</td>
<td>0.877</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCRP</td>
<td>0.373</td>
<td>0.821</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCMP</td>
<td>0.37</td>
<td>0.267</td>
<td>0.925</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTPP</td>
<td>0.468</td>
<td>0.401</td>
<td>0.271</td>
<td>0.876</td>
<td></td>
</tr>
<tr>
<td>PFPA</td>
<td>0.499</td>
<td>0.464</td>
<td>0.207</td>
<td>0.673</td>
<td>0.909</td>
</tr>
</tbody>
</table>

Note(s): PTPP = Perceived Temptation of Price Promotion; PFPA = Perceived Fun of Promotion Activities; PCRP = Perceived Categories Richness of Promotion; PCMP = Perceived Contagiousness of Mass Participation; PI = Participation Intention

<table>
<thead>
<tr>
<th>Items</th>
<th>PI</th>
<th>PCRP</th>
<th>PCMP</th>
<th>PTPP</th>
<th>PFPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCRP</td>
<td>0.296</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFPA</td>
<td>0.222</td>
<td>0.52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI</td>
<td>0.417</td>
<td>0.431</td>
<td>0.556</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTPP</td>
<td>0.296</td>
<td>0.452</td>
<td>0.727</td>
<td>0.528</td>
<td></td>
</tr>
</tbody>
</table>

Note(s): PFPA = Perceived Fun of Promotion Activities; PCRP = Perceived Categories Richness of Promotion; PCMP = Perceived Contagiousness of Mass Participation; PI = Participation Intention

Table 3. Correlations of the constructs and square root of AVE

Table 4. Heterotrait–monotrait ratio
<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Structural path</th>
<th>$\beta$</th>
<th>Sample mean</th>
<th>$t$-value</th>
<th>$p$-value</th>
<th>Findings</th>
<th>$f^2$</th>
<th>$q^2$</th>
<th>2.5% CI</th>
<th>97.5% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>PTPP $\rightarrow$ PI</td>
<td>0.168</td>
<td>0.164</td>
<td>2.845</td>
<td>0.005</td>
<td>Supported**</td>
<td>0.023</td>
<td>0.013</td>
<td>0.155</td>
<td>0.319</td>
</tr>
<tr>
<td>H2</td>
<td>PFPA $\rightarrow$ PI</td>
<td>0.286</td>
<td>0.288</td>
<td>4.46</td>
<td>0.000</td>
<td>Supported***</td>
<td>0.063</td>
<td>0.039</td>
<td>-0.006</td>
<td>0.212</td>
</tr>
<tr>
<td>H3</td>
<td>PCRP $\rightarrow$ PI</td>
<td>0.110</td>
<td>0.116</td>
<td>1.974</td>
<td>0.049</td>
<td>Supported*</td>
<td>0.014</td>
<td>0.008</td>
<td>0.158</td>
<td>0.41</td>
</tr>
<tr>
<td>H4</td>
<td>PCMP $\rightarrow$ PI</td>
<td>0.236</td>
<td>0.236</td>
<td>5.647</td>
<td>0.000</td>
<td>Supported***</td>
<td>0.077</td>
<td>0.048</td>
<td>0.056</td>
<td>0.288</td>
</tr>
</tbody>
</table>

Note(s): [based on $t$(500), two-tailed test]; **$p < 0.01$, ***$p < 0.001$, $p < 0.05$]. PTPP=Perceived Temptation of Price Promotion; PFPA=Perceived Fun of Promotion Activities; PCRP=Perceived Categories Richness of Promotion; PCMP=Perceived Contagiousness of Mass Participation; PI=Participation Intention
participation intention in online shopping festivals, and the proposed relationships were significant. Hypothesis 1 was supported that PTPP had a significant and positive effect ($\beta = 0.145$, $p < 0.05$) in consumer participation intention in online shopping festivals. Hypothesis 2 was supported that PFPA had a positive effect ($\beta = 0.285$, $p < 0.001$) on participation intention. Hypothesis 3 was supported that PCRP had a positive effect ($\beta = 0.132$, $p < 0.05$) on participation intention. Hypothesis 4 was supported that PCMP had a significant effect ($\beta = 0.255$, $p < 0.001$) on participation intention. $R^2$ is referred as in-sample predictive power (Rigdon, 2012). The $R^2$ value for participation intention is 0.350, bigger than 0.25 and it can be considered weak to moderate (Henseler et al., 2009).

According to Henseler et al. (2009), $f^2$ values of 0.02, 0.15 and 0.35 respectively, imply weak, medium and large effect of predictor latent variables; $q^2$ values of 0.02, 0.15 and 0.35, respectively, imply weak, medium and large effect of relative impact of predictive relevance. As showed in Table 5, the $f^2$ values range from 0.014 to 0.077 and $q^2$ values from 0.013 to 0.048, demonstrating weak to medium effects. These results further provided support for the relationships proposed in this study.

The predictive relevance ($Q^2$) was above 0, indicating that the model had predictive relevance (Henseler et al., 2009). The $Q^2$ of participation intention was 0.251, bigger than 0.25, depicting medium predictive relevance of the PLS-path model (Hair et al., 2011). SRMR was 0.053, smaller than 0.08, indicating that the degree of misfit was not substantial (Henseler, 2017).

To further test out-of-sample predictive power, we followed the Shmueli et al. (2019) guidelines of using PLSpredict method. PLSpredict with 10 folds and 10 repetitions in SmartPLS (v.3.2.8) was used to generate and evaluate prediction from PLS path model estimation. To illustrate the interpretation, we focused our analysis on the model’s key target construct PI indicators (Table 6). All indicators in the PLS-SEM analysis had lower RMSE values (PLS-SEM < LM) compared to the naïve LM benchmark, the model had high predictive power.

### 4.3 Moderating effect testing

Moderating effect was tested to see whether atmosphere promotion strategy stimuli can strengthen or weaken the relationship between product promotion strategy stimuli and consumer participation intention in online shopping festivals. In order to determine such effect, SmartPLS moderating effect tool is used with the product indicator approach recommended by Chin et al. (2003). The results are shown in Figure 3. In PLS-SEM analysis, moderating effect exists if the path coefficient of interaction effect is significant. The interaction effect (PCMP × PTPP) on participation intention ($\beta = 0.118$, $p < 0.05$) was significant, and the interaction plot of PCMP and PTPP is shown in Figure 4. Hypothesis 5.1 was supported. The interaction effect (PCMP × PFPA) on participation intention ($\beta = -0.039$, $p > 0.05$) was insignificant. The path coefficient of interaction effect (PCMP × PCRP) on participation intention ($\beta = -0.082$, $p > 0.05$) was insignificant. So Hypothesis 5.2 and Hypothesis 5.3 were not supported. The $R^2$ for participation intention increased from 0.350 to 0.361.

<table>
<thead>
<tr>
<th>Item</th>
<th>PLS-SEM RMSE</th>
<th>$Q^2$ predict</th>
<th>LM RMSE</th>
<th>PLS-SEM-LM RMSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI3</td>
<td>1.337</td>
<td>0.214</td>
<td>1.351</td>
<td>−0.014</td>
</tr>
<tr>
<td>PI1</td>
<td>1.187</td>
<td>0.278</td>
<td>1.191</td>
<td>0.004</td>
</tr>
<tr>
<td>PI2</td>
<td>1.26</td>
<td>0.258</td>
<td>1.276</td>
<td>0.016</td>
</tr>
</tbody>
</table>

Table 6. PLS predict assessment of manifest variables
4.4 Control variable testing
In terms of the influence of control variables, participation times of shopping festivals had a significant positive impact on participation intention ($\beta = 0.167$, $t = 4.082$, $p < 0.001$), while other control variables, gender ($\beta = -0.069$, $t = 1.787$, $p = 0.075$), age ($\beta = 0.000$, $t = 0.004$, $p = 0.997$), education ($\beta = 0.065$, $t = 1.676$, $p = 0.094$), monthly income ($\beta = -0.014$, $t = 0.303$, $p = 0.762$) had no significant impact. The $R^2$ for participation intention increases from 0.361 to 0.391. The results showed that the more times consumers participated in the Singles’ Day Shopping Festivals before, the more likely they participated in it again.

5. Discussion and contributions
5.1 Discussion
This paper attempted to summarize the successful experience of Alibaba’s e-commerce platform in applying product promotion and atmosphere promotion strategies in Singles’ Day Online Shopping Festival. From the perspective of consumer perception, three dimensions, i.e. PTPP, PCRP, and PFPA, were used to measure product promotion stimuli, and PCMP to measure atmosphere promotion stimuli. Based on the S–R theory, this paper constructed a research model to examine the impact of product promotion and atmosphere promotion strategies on consumer participation intention and the moderation that
atmosphere promotion enhanced the effect of product promotion on participation intention. Based on the analysis of empirical data, the findings are as follows.

First, we confirmed that product promotion and atmosphere promotion strategies have significant impacts on consumer participation intention in the context of online shopping festival. The four main dimensions of promotion strategies, i.e. PTPP, PCRP, PFPA and PCMP, have significant and positive effects on consumer participation intention. This finding is in line with the argument of existing studies. For instance, Xu et al. (2017) argued that consumer behavior is influenced by informational incentives and social influence during Alibaba’s Online Shopping Festival. In the present study, PTPP, PCRP and PFPA are promotion informational incentives, and PCMP is social influence in the form of mass participation. Furthermore, (Akram et al., 2017) stated that consumers are prone to impulse shopping under the external and internal stimuli of online shopping festival. In the present study, PTPP, PCRP, PFPA and PCMP are external stimuli. Such empirical results provide evidence for the practice that product promotion has become one of the most important ways for e-commerce platforms to stimulate sales (Zhou et al., 2017).

In the process of traditional retailing operation, in order to attract a large number of people, retailers often choose to launch product promotion at time points such as opening new stores, changing seasons and holiday seasons (Oh and Kwon, 2009). Studies found that with large-scale, sensational product promotions, retailers can increase not only overall sales but also brand influence (Alvarez and Casielles, 2005; Swilley and Goldsmith, 2013). This study confirms that the successful experience of these traditional festival marketing can also be a good fit for the online shopping festival. The success of Singles’ Day is largely due to the innovative use of product promotion and atmosphere promotion marketing strategies by Chinese e-commerce platforms and merchants in the internet environment.

In addition, the effects of consumer perception of promotion strategies on participation intention vary. Among them, the path coefficient of PFPA is the biggest, followed by PCMP, PTPP and PCRP. Previous studies showed that price promotion is the main factor affecting consumer purchase intention in promotion strategies (Huang and Jiang, 2014; Hao et al., 2008; Dodds et al., 1991). In the present study, PTPP in online shopping festival significantly affects participation intention, but the influence is weaker than that of PFPA and PCMP. This finding echoes consumers’ priorities for the core dimension of online shopping festival promotion.

Finally, we verified the moderating role of atmosphere promotion between product promotion and consumer participation intention. PCMP significantly reinforces the effect of PTPP on participation intention, while does not significantly reinforces the effect of PFPA and PCRP on participation intention. The main reason is that PCRP of online shopping festival depends on the e-commerce platform and merchants. PFPA is mainly related to the design of promotion rules, and therefore less affected by PCMP. PTPP is the core cognition of consumers on price promotion. The more contagious the individual perceives the mass participation of people around them, the more they can enhance their cognition of the price advantage of the online shopping festival, and the greater the influence of perceived temptation of price promotion on their participation intention.

5.2 Contributions
5.2.1 Theoretical contributions. This study is of great significance to the theoretical exploration of online shopping festival marketing. First, atmosphere promotion can not only directly stimulates consumer participation intention but also strengthens the impact of product promotion on participation intention. This finding provides a theoretical basis for the effectiveness of the online shopping festival marketing practice to create an atmosphere of mass participation. It can well explain the phenomenon that the more the
discounted products are pre-selected, the more popular they are. The choices made by a
great number of consumers strengthen their perception of the economy aspect of specific
products.
Second, “Perceived Categories Richness of Promotion”, as the breadth of promotion, is an
important factor for consumers to choose among shopping platforms and bears practical
significance for platforms competition in festival. The platforms that can satisfy customers’
needs in “one-stop” with extremely rich products are more likely to attract consumers.
Third, profit-seeking and enjoyment are still the main motivations for consumers to
participate in the online shopping festival. The essence of the online shopping festival is not
only the gathering and promotion of commodities but also the national carnival. Under the
temptation of universal promotion, consumer purchase intention is therefore mainly
intrigued by the comprehensive consideration of the price/performance ratio of goods and the
happy experience of online shopping.

5.2.2 Practical contributions. The findings of this paper can improve the online shopping
festival promotion strategies for e-commerce platforms and merchants to attract more
consumers to shop online and provide some important practical implications.
First, atmosphere promotion strategy of creating a shopping atmosphere of mass
participation is as important as the product promotion strategy based on product itself.
Alibaba Singles’ Day practice shows that e-commerce platforms and merchants use a variety
of media formats to create an atmosphere with mass participation and encourage the public to
shop online. The atmosphere of the online shopping festival of mass population effectively
stimulates consumer participation and purchase willingness. Interviews with college
students demonstrated that those who live in the same dormitory are easily affected by the
atmosphere of mass participation around them and thus tend to participate in Singles’ Day
Online Shopping Festival all together, so as the young people in the same office. As Dahe
News reported, Singles’ Day is not for everyone to buy online; but in Zhengzhou University
where there are more than 70,000 students, almost everyone has an online shopping package
on average to receive (Yang and Ding, 2016).
Second, PCMP and PFPA have a greater influence on participation intention than PTPP
and PCRP. During the Singles’ Day Online Shopping Festival, platforms and merchants stock
extremely abundant commodities and use price promotion to successfully attract consumer
participation. However, consumers increasingly regard the festival as a carnival, and paying
more attention to the entertainment and collective aspect of participation. E-commerce
platforms and merchants have gradually recognized this trend and shifted their marketing
focus to improving the happy experience of consumers and creating a carnival atmosphere
with national participation. For example, the main e-commerce platforms in China, such as
Alibaba Tmall, JD.com, Pinduoduo and Suning, can fully connect shopping, entertainment
and life scenarios all together to build a all-round Singles’ Day shopping environment
through the “game + social + e-commerce” approach. Moreover, they constantly innovate
their marketing practice in price promotion to improve entertainment, attract consumers to
actively invite their acquaintances around them and create a festive atmosphere with mass
participation. These practices have achieved good marketing results.
Third, e-commerce platforms and merchants can enhance the effectiveness of product
promotion through social influence of mass participation. PCMP moderates the effect of
PTPP on participation intention. Chinese consumers live in a Confucian cultural environment
with a strong sense of collectivity. Redding and Ng (1983) found that Confucian “collectivist
values” emphasizes harmony and interdependence, and consumers’ pursuit of collective
value shapes their “congruent” consumption behavior. Consumers generally perceive that
products purchased in festival have more price discounts than usual. Yang (1981) also
pointed out that Chinese people attach great importance to the views and evaluations of their
behaviors by people in their social groups. When consumers perceive that most people
around them participate in online shopping festival, their sense of profit from participating in shopping festivals is strengthened. The success of Singles’ Day shows that Chinese e-commerce platforms and merchants have found online marketing strategies suitable for Chinese consumers. This study summarizes the successful marketing experience of Alibaba’s Singles’ Day, the world’s largest online shopping festival, which is of great significance for e-commerce platforms and merchants around the world to create their own online shopping festival to stimulate domestic needs.

6. Limitations and future research
This paper has some limitations. It mainly studied the intention of young consumers to participate in online shopping festival, rather than their actual consumption behaviors. In the future, we intend to cooperate with e-commerce platforms to further study the factors affecting actual consumption based on the big data generated in Singles’ Day Online Shopping Festival, so as to provide reference for e-commerce platforms and merchants to improve their services. In addition, this paper mainly studied the positive effect of online shopping festival promotion stimuli; however, such promotion may have some negative effect such as unneeded impulse buying and the accompanying resources waste. Under the stimulation of mass promotion, consumers may have difficulty in making choices; promotion activities are concentrated in limited time period, and consumers may therefore face time pressure in shopping. In the future, we can further examine the response differences of different income groups, age and gender groups to the Singles’ Day marketing stimuli and propose more specific marketing strategies for online shopping festivals.

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Further reading

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