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Enhancing the flow experience of consumers in China through interpersonal interaction in social commerce



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ABSTRACT

Although research on flow experience has recently received much attention, few studies have been published on the perceived interpersonal interaction factors of consumers and their influence in social commerce. In addition, few studies have focused on the impact of interpersonal interaction factors on flow experience. Drawing on the stimulus-organism-response framework, this study examines the impact of interpersonal interaction factors (perceived expertise, similarity, and familiarity) on the formation of flow experience and its subsequent effects on purchase intention in the context of social commerce. We investigate whether the impact of the three interpersonal interaction factors on flow experience differs between young and old users. We conduct a survey and collect 349 responses from users of a social shopping site in China. Our results indicate that interpersonal interaction factors positively relate to flow experience and subsequently influence purchase intention. We also find differences between young and old users in this area.

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1. Introduction

Social commerce is an emerging business trend that is growing rapidly in China. According to the 2015 McKinsey report, consumers in China spend 78 min per day on social commerce. Approximately 50% of customers in China make their purchase decisions according to recommendations from relatives and friends. In recent years, the virtual experiences of customers in the social commerce context have gained importance. Providing consumers with unforgettable experiences has emerged as an important issue in driving customer participation and developing favorable consumer behavior responses in social commerce (Huang & Benyoucef, 2014; Zhang, Lu, Gupta, & Zhao, 2014).

When considering the provision of online consumption experiences, scholars have highlighted the importance of flow (Chang, 2013; Faiola, Newlon, Pfaff, & Smyslova, 2013). Flow is a state of concentration in which people are so involved that nothing else matters (Gao & Bai, 2014). Specifically, flow refers to a temporarily unaware experience in which an individual engages in a social shopping activity in a social shopping website with total

concentration, control, and enjoyment (Gao & Bai, 2014). In emphasizing the importance of flow and the formation of compelling experiences, Hoffman and Novak (1996) went as far as declaring that “creating a commercially compelling website depends on facilitating a state of flow for consumers [and that] ... an important objective for marketers is to provide these opportunities” (Hoffman & Novak, 1996, p. 66). Zhang et al. (2014) argued that enhancing the flow experience is essential for the survival of social commerce. Despite the understanding of the contribution of flow to the creation of compelling experiences, investigating the drivers of customer flow experiences is important for the success of social shopping sites, however, little effort has been devoted to studying the factors contributing to flow experience in social commerce. In order to fill this gap, the present study is trying to explore the formation drivers of flow in social commerce.

With the growing competition, online vendors rely on web atmospherics to create an environment that can produce positive emotional and cognitive states of online shoppers (Gao & Bai, 2014; Zhang et al., 2014). Chang (2013) suggested that social interaction among members in social networking sites would yield a state of flow. In the social commerce context, interpersonal interactional factors have received much attention (Hsiao, Lin, Wang, Lu, & Yu, 2010; Liao, Chu, Huang, & Shen, 2010; Lu, Zhao, & Wang, 2010). Social commerce involves using social media to support social interaction, and its unique characteristics provide opportunities for

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consumers to make better buying decisions (Ng, 2013). Carlson and O'Cass (2011) posited that future studies should explore the effects of consumer-based variables on the formation of flow experience. However, to our knowledge, little is known about the interpersonal interaction factors that promote the flow experience for customers in social commerce.

Drawing from the above literature review, we infer that investigating the impact of interpersonal interaction factors on the creation of flow experience should be a promising research area in social commerce. On the basis of Liao et al. (2010) study, three interpersonal interaction factors are investigated, namely, perceived expertise of group members, similarity of group members, and familiarity of group members. As the context of our research is similar to the virtual community context, we focus on these three interpersonal interaction factors. Therefore, this study draws on the stimulus–organism–response (SOR) model to investigate the impact of the three interpersonal attraction factors on the flow experience and the relationship between flow experience and purchase intention.

This research makes important contributions to the extant literature. First, we extend the extant literature by testing and validating a model by incorporating interpersonal drivers of flow experience in social commerce. Second, our data analysis reveals significant differences between young and old users. Third, the present study advances the understanding that interpersonal interaction factors remain important in the context of social commerce. Fourth, our research provides empirical evidence to the deduction that interpersonal interaction factors positively affect purchase intention through flow experience in social commerce.

2. Theoretical background and research hypotheses

2.1. SOR framework

The SOR model is extensively used in studies that measure the impact of perceived website features on consumer responses (Gao & Bai, 2014; Zhang et al., 2014). According to the SOR model, environmental stimuli (S) influence consumer internal states (O) and correspondingly affect consumers' overall responses (R). Donovan and Rossiter (1982) proposed a model that is adapted to the retail context. The model treats atmospheric cues as stimuli, two major emotional states as organism, and shopping behaviors within the store as response. We can learn from the application of the SOR model in the retailing context that environmental stimuli influence consumer internal states, which in turn drive their behavioral intention toward the store. Fiore and Kim (2007) developed an integrated SOR model for the brick-and-mortar context. In the framework, the stimuli include ambient, design, and social cues.

In the online shopping environment, some researchers use actual stimuli (Animesh, Pinsonneault, Yang, & Oh, 2011; Kim & Lennon, 2010; Wang, Hernandez, & Minor, 2010), and others use customer assessments of the stimuli to denote the stimulus segment of the model (Koo & Ju, 2010; Manganari, Siomkos, Rigopoulou, & Vrechopoulos, 2011; Nath, 2009). Research on the social factors of online shopping environment is growing in the context of virtual community and social shopping sites (Hsiao et al., 2010; Lu et al., 2010). The present study adopts the SOR model using interpersonal interaction factors as the environmental stimulus (S). The organism pertains to emotional and cognitive states and includes experiences (Jiang, Chan, Tan, & Chua, 2010). In the current study, adapting from the research of Gao and Bai (2014), the organism is the customer's cognitive judgment of the online consumers' experience, which is presented in the form of flow experience. The responses refer to website patronage intention

(Jeong, Fiore, Niehm, & Lorenz, 2009), purchase intention (Hsu, Chang, & Chen, 2011), and intention to use and buy (Huang, 2013). In our study, we follow Hsu et al. (2011) and treat consumer purchase intention as consumer behavioral outcomes.

The application of the SOR paradigm as a holistic theory is appropriate for this study for two reasons. First, the SOR paradigm was extensively used in previous research on online customer behavior (Chang, Chih, Liou, & Hwang, 2014; Hsieh, Chiu, & Yang, 2014; Parboteeah, Valacich, & Wells, 2009). For example, using the SOR paradigm, Zhang et al. (2014) examined the effects of three technological stimuli (perceived interactivity, personalization, and sociability) on consumers' virtual experiences and subsequent social commerce intention. Parboteeah et al. (2009) applied the SOR paradigm to explore the impact of task-relevant cues and mood-relevant cues on perceived usefulness and perceived enjoyment, and then online purchase intention. The findings of these studies support the use of the SOR paradigm in accounting for consumer internal reactions and behavioral outcomes to the stimuli. Second, the SOR paradigm provides a strict and structured manner to examine the impact of interpersonal interaction factors as environmental stimuli on consumer online experiences (e.g., flow) and their subsequent intention to purchase from social commerce sites.

2.2. Social influence factors as environmental stimuli (S)

Social commerce involves the application of social media to support social interaction, communication, and user-generated content for assisting consumers in online buying. One of its unique characteristics is that it provides an opportunity for consumers to make better buying decisions and improve their future shopping experience (Ng, 2013). Therefore, social commerce sites need to facilitate member interaction. Frequent member interaction will enhance the interpersonal attraction of websites (Liao et al., 2010). As our research focuses on interpersonal interaction factors, flow experience, and online buying behavior, we consider three interpersonal interaction factors proposed by Liao et al. (2010), namely, perceived similarity, expertise, and familiarity. Perceived similarity refers to the commonness shared by customers in taste, preference, and liking toward products. Perceived expertise refers to other consumers' ability to recommend products based on their knowledge and experience. Perceived familiarity relates to the frequency of interactions and relationships with other shoppers in social shopping sites (Liao et al., 2010).

2.3. Flow experience as customer internal states (O)

The SOR paradigm suggests that the impact of environmental stimuli on consumer behavior is mediated by virtual experiences (Animesh et al., 2011; Zhang et al., 2014). Generally, studies show that the effects of web atmospherics can be studied from two major perspectives. The first perspective includes cognitive reactions from the stimulus such as perceived usefulness (Parboteeah et al., 2009). The second perspective refers to affective reactions from the stimulus such as perceived enjoyment (Floh & Madlberger, 2013). According to Gao and Bai (2014), focusing on the cognitive aspects is significant. Furthermore, there is a lack of investigations focus only on the cognitive responses of consumers, such as flow experience, especially in social commerce.

According to Ding, Hu, Verma, and Wardell (2010), flow experience has been treated as a basis to facilitate the creation of a compelling experience. Flow is a psychological state in which people become completely involved within a stimulus, and it can be described as the whole experience that individuals feel when they are fully absorbed (Gao & Bai, 2014). Some scholars highlight the

importance of flow in computer-mediated environments and suggest that the success of online vendors depends on their ability to create opportunities for customers to experience flow (Gao & Bai, 2014; Hoffman & Novak, 1996; Hsu, Chang, & Chen, 2012). In computer-mediated environments, the interactivity among members creates a sense of immersion and induces a state of flow for users (Mollen & Wilson, 2010; Teng, Huang, Jeng, Chou, & Hu, 2012).

In the application of the SOR model, many scholars identify the relationship between flow experience and purchase intention. For example, Animesh et al. (2011) explored the impact of technological and spatial factors on purchase intention through the mediating effect of flow, telepresence, and social presence. Gao and Bai (2014) investigated the influence of website atmospheric cues on purchase intention and satisfaction by applying flow as a mediator. As flow is a broad concept in different contexts, many studies argue that flow is a multidimensional concept with different components. For example, Wang, Baker, Wagner, and Wakefield (2007) reported that flow consists of control, interest, attention, and curiosity. According to Gao and Bai (2014), we define flow as a temporarily unaware experience in which an individual engages in a social shopping activity in a social shopping website with total concentration, control, and enjoyment.

2.4. Interpersonal stimulus(S) and flow experience(O)

Expertise is defined as a person's amount of knowledge about a field (Liao et al., 2010). The expertise of the source in a group is important for information acceptance (Petty, Cacioppo, & Goldman, 1981), and people agree more with an expert's view when suffering from social influence (Kelman, 1961). In the domain of a social shopping site, members with higher expertise contribute useful advice (Constant, Sproull, & Kiesler, 1996). The useful and relevant message provided by group members will reduce information asymmetry and cost, leading to enjoyable experiences (Kim & Li, 2009). Moreover, consumers are likely to have higher levels of interaction if useful and relevant information is provided (MacKenzie & Lutz, 1989; Zhou, 2013). The involvement in the interaction will make customers lose their self-awareness and experience a flow state (Gao & Bai, 2014). Therefore, we argue that perceived expertise of group members in the social shopping environment will induce flow experience.

H1. Perceived expertise is positively related to flow.

In the present study, similarity refers to the self-perceived similarity of psychological traits (e.g., preferences and tastes) of members of social shopping sites. According to the similarity–attraction theory, individuals are attracted by those who are similar to them (Al-Natour, Benbasat, & Cenfetelli, 2005). Al-Natour et al. (2005) pointed out that consumers' perceived similarity of other members helps them enjoy interactions. Empirical studies demonstrate that social interactions are correlated with the experience of flow (Animesh et al., 2011; Chang, 2013). Therefore, social interaction enhances the level of enjoyment and makes virtual experiences more enjoyable and engaging, thus leading to a flow state (Animesh et al., 2011). Therefore, we can infer that if consumers feel that the interaction is interesting, they will prefer to focus on the interaction and consequently enter a state of flow (Gao & Bai, 2014). The current study suggests that consumers who perceive similarity with members in social commerce sites are likely to experience a state of flow.

H2. Perceived similarity is positively related to flow.

In social shopping, familiarity refers to the previous interaction

of members in social shopping sites and their knowledge of other group members (Liao et al., 2010). Familiarity can reduce uncertainty (Hinds, Carley, Krackhardt, & Wholey, 2000), increase cognitive trust (Komiak & Benbasat, 2006), and promote individual social interactions. In addition, social interactions among consumers in social commerce sites help in the purchase of a product, and they lead consumers to generating a sense of self-worth or self-efficacy (Zhang et al., 2014). Consumers will then find social commerce enjoyable and involving (Pagani & Mirabello, 2011). Consumer participation in this involvement process may help lead them to be fully immersed in their activities, which could induce a sense of flow (Animesh et al., 2011). Therefore, this study argues that consumers who perceive familiarity with members in social commerce sites may experience a state of flow.

H3. Perceived familiarity is positively related to flow.

2.5. Purchase intention as response (R)

In social commerce, social media tools are used to support social interactions and user contributions to promote activities in the process of selling and buying products (Wang & Zhang, 2012). According to Liao et al. (2010), customers are exposed to various interpersonal attraction factors and influences, such as perceived expertise, perceived familiarity, perceived similarity, informational influence, and normative influence, which will motivate their subsequent behavior. Previous studies have demonstrated that consumer purchase intention could reflect consumer behavioral outcomes (Gao & Bai, 2014; Huang, 2013; Jiang et al., 2010). Therefore, we use purchase intention, specifically purchase intention in social commerce, as the response in the model. Our research is consistent with studies that use the SOR model and treat purchase intention as the response (Jiang et al., 2010; Kim & Lennon, 2013; Wu, Lee, Fu, & Wang, 2013).

2.6. Flow experience(O) and purchase intention(R)

Flow experience is a compelling experience that affects consumer behavior in online shopping (Koufaris, 2002) and social network games (Shin & Shin, 2011). Previous studies argued that flow experience leads to specific behavioral outcomes (Gao & Bai, 2014; Hsu et al., 2012; Zhang et al., 2014). Hoffman and Novak (1996) suggested that individuals who experience flow states would have higher satisfaction and loyalty than those who do not. Koufaris (2002) posited that consumers who experience flow when visiting an online store are likely to make unplanned purchases. In social commerce, consumers who have experienced flow are likely to participate in social commerce activities (Zhang et al., 2014), which affect customer purchase intention. Lee and Chen (2010) and Gao and Bai (2014) noted that flow experience affects consumer behavioral intention, such as the likelihood to purchase from the website. We argue that participants who have compelling experiences will become fully involved in their interactions in social shopping sites and will be more likely to buy products for their virtual existence (Animesh et al., 2011). On the basis of Animesh et al. (2011), we infer that consumers who enjoy their virtual existence are likely to spend more time and money in the purchase of products in social shopping sites. Building on past research, this study indicates that customers who experience a state of flow in social shopping sites are likely to purchase from the social commerce sites.

H4. Flow experience is positively related to purchase intention in social commerce.

2.7. Mediating effect of flow experience

The present study tests for the mediating effect of flow experience. The SOR model provides a theoretical foundation for the mediating effect of flow experience. Studies that apply the SOR framework demonstrate that consumer internal state (organism) can mediate between stimuli and consumer response behavior (Gao & Bai, 2014; Ha & Lennon, 2010; Yoon, 2012). For example, Manganari et al. (2011) investigated the impact of perceived online store features (ease of use of the layout) on consumer responses (satisfaction and trust) and posited that consumer internal states (pleasure and attitude) mediate such impact. Ha and Lennon (2010) examined the mediating role of affective states between website design and consumer response behavior. Based on the SOR model and previous studies on the mediating effects of internal cognitive states, the current study suggests that flow plays a mediating role between the interpersonal interaction factors of the website and consumer responses. Fig. 1 shows the conceptual model of the current study.

H5. Flow mediates the relationship between interpersonal interaction factors (perceived similarity, expertise, and familiarity) and purchase intention.

3. Methods

3.1. Measurement development

In this study, the items used in the survey were adapted from existing research to fit the context of social commerce. We followed the generally accepted suggestion on wording questions when developing and finalizing the questionnaire (Fang et al., 2014). Perceived similarity was measured using four items adapted from Liao et al. (2010). Items for perceived expertise and familiarity were also adapted from Liao et al. (2010). Items for flow were adapted from Zhang et al. (2014). Items for purchase intention were adapted from Pavlou and Fygenon (2006). Appendix A lists the measure items and their related sources.

Seven-point Likert scales ranging from “strongly disagree” to “strongly agree” were used to measure all items in the survey. To ensure content validity, we conducted an expert review to refine the instruments. All construct items were originally developed in English. As our research was conducted in China, all instrument items were translated to Chinese following the translation committee approach (Van de Vijver & Leung, 1997). Four native Chinese

IS Ph.D. students who are fluent in English were involved in the translation process. The initial Chinese questionnaire was piloted among some of our peers and online friends. Forty useful responses were returned before being accepted as the final version. Several control variables were included in our model to ensure that empirical results were not due to covariance with other variables. Previous literature suggests that consumers' gender, level of education, and income may affect the intention to purchase on the Internet (Fang et al., 2014; Pavlou & Fygenon, 2006). On the basis of Lee, Qu, and Kim (2007), we included gender, education, and income of shoppers as control variables in our study.

3.2. Survey design

We conducted a survey to test our research model. We chose the survey method because this quantitative research method predicts behavior and examines the relations between variables and constructs (Newsted, Huff, & Munro, 1998). Besides, the survey method has been widely employed in investigating behaviors in social commerce (Huang & Benyoucef, 2014; Zhang et al., 2014). To collect our survey data, an online survey was used for the present study. Our target population comprised online users of a particular website. Using an online survey can maintain the consistency between the research and data collection contexts. Moreover, an online survey has many advantages, such as wide reach. In addition, in our research, the model is integrated and includes a lot of social variables that are difficult to measure by other methods, such as case studies or experiments. Thus we believe that survey is an appropriate method for the current study (Cheung & Lee, 2009).

3.3. Data collection

We chose one of the largest social shopping website as the research context. At the same time, this website claimed to be a fashion shopping website aiming to help users to make better purchase decisions. On this website, registered users can establish their own profiles, build relationships with other online consumers, and contact with other through using communication tools. Accordingly, we think this website is a suitable research context for studying social commerce topic. We collected data through an online survey, and our target samples were the registered users of this website. Only those users who have purchase experience in the website were included in our survey. An online survey questionnaire was created on an online survey website in China (www.wenjuanxing.com). Data were collected from one channel. The

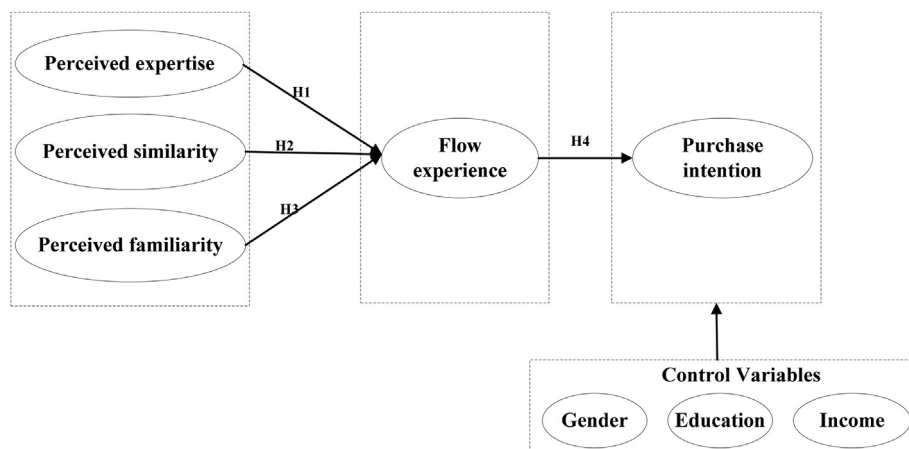


Fig. 1. Conceptual model of this study.

online questionnaire was distributed through email to potential users with the help of an online survey website. To encourage participation in our study, respondents were told that they would be rewarded with 300 points that could be used to exchange for money if they completed the survey. Finally, 349 valid responses were obtained for the final data analysis. Table 1 shows the demographic profiles of the respondents.

3.4. Data analysis

To test our measurement and structural model, we choose the structural equation modeling using partial least squares (PLS) estimation. The PLS is a powerful technique, which combines the principal components analysis (CFA) and regression, to estimate the measurement and structural model simultaneously (Hair, Anderson, Tatham, & Black, 1998). In the current study, we used the software of Smart-PLS 2.0 to conduct the PLS estimation. According to Barnes (2011), the Smart-PLS 2.0 is better equipped to deal with formative measures and moderating relationships. Tamjidyamcholo, Gholipour, Baba, and Yamchello (2013) posited that Smart PLS is not only able to formulate a formative model for latent constructs but also demands fewer requirements to verify a model. Thus, we used Smart PLS 2.0 software to examine both the CFA and the structural model in our study.

4. Results

4.1. Common method bias

When all data were perceptual and collected from a single source at the same point of time, the issue of common method bias might be a threat to the validity of the research (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In our study, common method bias was examined using Harman's single factor test. The analysis finally showed that all the items can be categorized into five factors, and the first factor explains only 14.85% of the variance. These results suggested that common method bias was not a serious concern in the present study.

4.2. Measurement model

The measurement model were examined based on the CFA (Hair

Table 1
Demographics of respondents.

Demographics	Frequency	Percentage (%)
Gender		
Male	90	25.8%
Female	259	74.2%
Age range		
Below 25	171	49.0%
25–29	138	39.5%
30–39	32	9.2%
Above 40	8	2.3%
Educational level		
High school or below	6	1.7%
Junior college	25	7.2%
University	294	84.2%
Master or above	24	6.9%
Personal income in RMB (monthly)		
Below 1000	106	30.4%
1000–1999	40	11.5%
2000–3999	56	16.0%
4000–5999	72	20.6%
6000–7999	41	11.8%
Above 8000	34	9.7%

et al., 1998). Specifically, we assessed the measurement model by testing the content, convergent, and discriminant validities. By reviewing the relevant literature and pilot testing the instrument, we assessed the content validity. During this process, we dropped some items because of their item-to-total correlations. Convergent validity was assessed by testing the value of the factor loadings, Cronbach's alpha, composite reliability, and average variance extracted (AVE). The results of the confirmatory factor analysis show that all item loadings are above 0.7. The threshold levels for Cronbach's alpha, composite reliability, and average variance are 0.7, 0.7, and 0.5, respectively (Flynn, Sakakibara, Schroeder, Bates, & Flynn, 1990; Fornell & Larcker, 1981; Hair et al., 1998; Nunally & Bernstein, 1978). As shown in Table 2, the Cronbach's alpha and composite reliability values are above 0.8, and the AVE of all constructs is above 0.7. Therefore, the results indicate good convergent validity.

Discriminant validity determines whether the measures of a construct are distinct from other constructs. To assess discriminant validity, we adopted two approaches (Gefen & Straub, 2005). First, according to Fornell and Larcker (1981), we assessed the discriminant validity by comparing the relationship between the correlations among constructs and the square root of the AVE of constructs. As shown in Table 3, the square roots of the AVE are higher than the correlations among constructs, thus indicating good discriminant validity. Second, we examined the items in the item loadings and cross-loadings to construct the correlations. As shown in Table 4, all the item loadings of the corresponding constructs are higher than the cross-loading values of the other latent variables, thus suggesting sufficient discriminant validity.

To ensure that multicollinearity was not an issue, we examined the variance inflation factors (VIFs) and tolerance values of the independent values. When VIFs are lower than 10 or when tolerance values are higher than 0.1, multicollinearity may not be an issue (Mason & Perreault, 1991). The results indicate that the VIF values range from 1.638 to 2.322. Therefore, multicollinearity is not an important issue in this study.

4.3. Structural model

After demonstrating the validity of the measurement model, we tested the hypothesized relationships using Smart PLS. Fig. 2 shows the results of the Smart PLS analysis on the full dataset. The results indicate that perceived expertise ($\beta = 0.231$, $p < 0.001$), perceived similarity ($\beta = 0.427$, $p < 0.001$), and perceived familiarity ($\beta = 0.220$, $p < 0.01$) have positive effects on flow. Therefore, H1, H2, and H3 are supported. Flow has a significant effect on purchase intention ($\beta = 0.557$, $p < 0.001$), thus supporting H4. The model illustrates that 54.0% of the variance exists in flow, and 41.8% of the variance is related to purchase intention. Only one control variable (income) has a significant effect on flow.

Further, we tested the structural model for the old and young users separately. Specifically, Heinonen and Strandvik (2007) suggested that age is a key differentiator of responses to digital media between younger and older consumers. The results of the study of Barutçu (2007) demonstrate that younger consumers tend to have more positive attitudes than older customers about mobile entertainment. In the study of Persaud and Azhar (2012), 18- to 25-year-old customers comprised most Internet consumers (Table 1). In terms of age, 49% of the respondents were below 24, and 51% were 25 years old or older. To explore the impact of age on our research model, the respondents in our study were divided into two groups: (1) those less than 25 years old called young users and (2) those over 25 years old called old users.

Fig. 3 shows that perceived familiarity for old users ($\beta = 0.342$, $p < 0.001$) has a positive effect on flow experience, and perceived

Table 2
Results of the confirmatory factor analysis.

Constructs	Items	Loading	Cronbach's alpha	Composite reliability	Average Variance extracted
Perceived Similarity (PS)	PS1	0.877	0.884	0.920	0.741
	PS2	0.857			
	PS3	0.861			
	PS4	0.849			
Perceived Expertise (PE)	PE1	0.911	0.917	0.942	0.801
	PE2	0.889			
	PE3	0.914			
	PE4	0.865			
Perceived Familiarity (PF)	PF1	0.882	0.926	0.947	0.817
	PF2	0.920			
	PF3	0.919			
	PF4	0.895			
Flow Experience (FL)	FL1	0.811	0.847	0.897	0.686
	FL2	0.872			
	FL3	0.807			
	FL4	0.821			
Purchase Intention (PUI)	PUI1	0.916	0.938	0.956	0.844
	PUI2	0.927			
	PUI3	0.914			
	PUI4	0.917			

Note: All factor loading are significant at the $p < 0.001$ level.

Table 3
Correlations among constructs.

Constructs	AVE	Cronbach alpha	1	2	3	4	5
1. Perceived Expertise	0.801	0.917	0.895				
2. Perceived Similarity	0.741	0.884	0.576	0.861			
3. Perceived Familiarity	0.817	0.926	0.445	0.516	0.904		
4. Flow Experience	0.686	0.847	0.575	0.673	0.543	0.828	
5. Purchase Intention	0.844	0.938	0.539	0.561	0.513	0.617	0.919

Note: Diagonal elements are the square root of the average variance extracted of each construct; Pearson correlations are shown below the diagonal.

Table 4
Item loadings and cross loadings.

Constructs	Items	PS	PE	PF	FL	PUI
Perceived Similarity (PS)	PS1	0.877	0.492	0.492	0.595	0.482
	PS2	0.857	0.477	0.458	0.574	0.463
	PS3	0.861	0.513	0.396	0.565	0.481
	PS4	0.849	0.502	0.428	0.584	0.506
Perceived Expertise (PE)	PE1	0.529	0.911	0.359	0.532	0.495
	PE2	0.477	0.889	0.391	0.483	0.470
	PE3	0.520	0.914	0.404	0.488	0.453
	PE4	0.530	0.865	0.437	0.548	0.505
Perceived Familiarity (PF)	PF1	0.487	0.453	0.882	0.525	0.479
	PF2	0.436	0.333	0.920	0.447	0.432
	PF3	0.445	0.368	0.919	0.450	0.423
	PF4	0.488	0.438	0.895	0.526	0.509
Flow experience (FL)	FL1	0.568	0.524	0.379	0.811	0.542
	FL2	0.592	0.506	0.527	0.872	0.562
	FL3	0.524	0.410	0.433	0.807	0.476
	FL4	0.543	0.456	0.454	0.821	0.455
Purchase Intention (PUI)	PUI1	0.487	0.503	0.461	0.538	0.916
	PUI2	0.521	0.497	0.474	0.580	0.927
	PUI3	0.540	0.490	0.478	0.549	0.914
	PUI4	0.512	0.491	0.473	0.597	0.917

familiarity for young users has no effect on flow experience, $t = -3.97$. The results indicate that the impact of flow experience on purchase intention is stronger for old users ($\beta = 0.64$, $p < 0.001$) than for young users ($\beta = 0.45$, $p < 0.001$), $t = -4.19$.

4.4. Mediation analyses

H5 posits that consumer flow experience mediates the effect of the interpersonal interaction factors on consumer's response

behavior (purchase intention). We used the bootstrapping approach (Preacher & Hayes, 2008; Shrout & Bolger, 2002) to test the mediating effect. Table 5 shows that the indirect effect of flow experience on the relationship between perceived expertise and purchase intention is significant with a 95% bootstrap confidence interval, excluding zero (CI.95 = 0.0471, 0.1397). This finding suggests that flow experience mediates the effect of perceived expertise on purchase intention. The indirect effect of perceived similarity on purchase intention is also significant (CI.95 = 0.0667, 0.1803). Moreover, the mediating effect of perceived familiarity is valid (CI.95 = 0.0239, 0.0880).

5. Discussion and conclusion

This study explores the role of flow experience in influencing customers' purchase intention in social shopping sites based on the SOR framework from the perspective of interpersonal interaction. According to Liao et al. (2010), we classify interpersonal attraction factors into perceived expertise, similarity, and familiarity. Then, we investigate the differences in the influence of three interpersonal interaction factors on flow experience and the impact of flow experience on purchase intention according to age. The findings of our research support all the hypotheses, thus confirming that flow experience is a useful predictor of purchase intention in social commerce.

Our findings present that all three interpersonal attraction factors significantly affect flow experience in social commerce. Perceived similarity of group members seems to be more important than perceived expertise and perceived familiarity of group members in the context of social commerce. We also find that flow experience has a positive impact on purchase intention, which

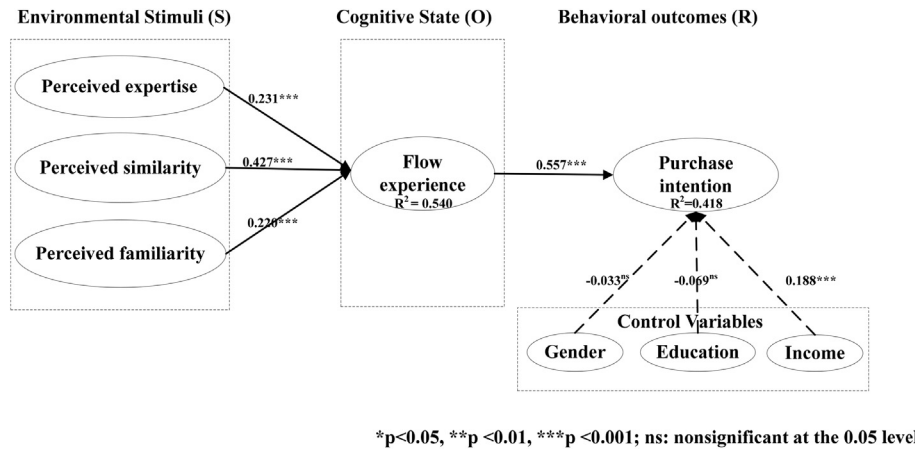


Fig. 2. Results of the research model tests.

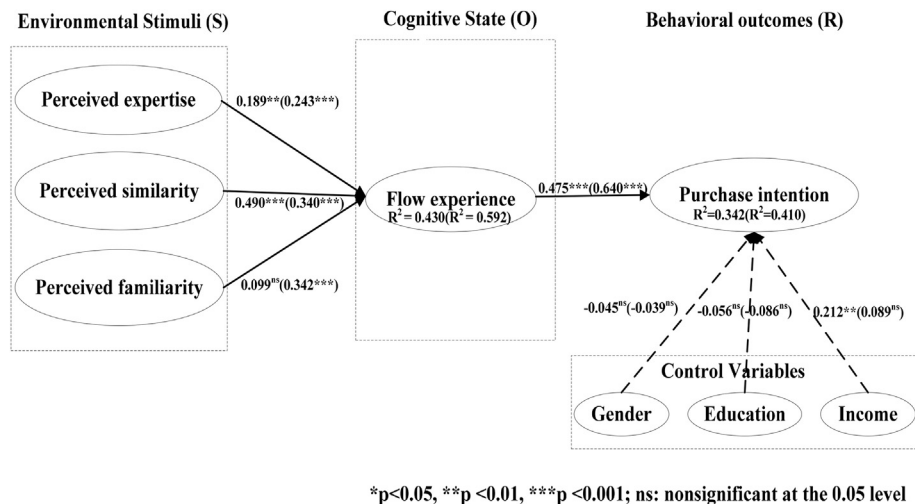


Fig. 3. Results of the research model tests of young users (old users).

Table 5
Bootstrapping results.

95% Bootstrap confidence intervals for indirect effect			
Flow experience			
	Effect	SE	CIs
Perceived expertise	0.090	0.023	(0.047,0.140)
Perceived similarity	0.120	0.286	(0.067,0.180)
Perceived familiarity	0.053	0.017	(0.024,0.088)

corresponds with the study of Gao and Bai (2014). Therefore, consumers entering a flow state in a social shopping site will likely purchase from that website.

Furthermore, Fig. 3 shows the differences between young and old users. For young social shopping consumers, the impact of similarity perceived by consumers tends to be more influential than perceived expertise on the formation of flow state. A possible explanation is that young consumers prefer to interact with members who have similar tastes with them rather than experts. Our results also indicate that perceived familiarity has no effect on flow experience for young consumers. A potential explanation is that the motivation of young consumers who participate in social commerce is more likely to obtain purchase advice rather than build social bonds with members in social commerce. This group is

involved in social shopping sites to obtain more useful purchase advice. For old social shopping consumers, perceived familiarity and similarity of other members on a social shopping site are more important drivers than perceived expertise in inducing flow experience. Considering perceived familiarity of group members, old users tend to experience stronger flow state than young users. A possible explanation is that older consumers pay more attention to building social bonds than younger consumers. When respondents experience flow state, old users are more likely to purchase from social shopping sites than young users. A potential illustration is that flow experience is more important for old users than young users when making purchase decisions.

6. Limitations and future directions

Our study has several limitations. First, this study was conducted with data collected from a social shopping site in China. The results of this study might be different had the model been retested in a different context or in a different cultural environment. In the future, scholars should further test and validate our findings in different contexts and cultural environments. Second, because of the features of the focal social shopping sites in the study, the participants of this study were mainly females. Therefore, future research should study male-oriented social shopping sites and

provide more insights into the differences between male and female shoppers' shopping behavior. Third, our study was cross sectional. As social shopping sites are dynamic in their development, future research can use a longitudinal design to identify the roles and effects of interpersonal interaction factors perceived by consumers in social shopping sites.

7. Research implications

7.1. Theoretical implications

Our study makes important contributions to the existing literature. First, this study extends the extant literature by testing and validating a model that incorporates interpersonal drivers of flow experience in social commerce. Flow experience is proved to be an important predictor of social commerce participation (Zhang et al., 2014). Moreover, interpersonal interaction factors play a useful role in the context of virtual community, which is similar to the social commerce. Only a few studies have examined the flow experience in social commerce, especially from the perspective of interpersonal attraction. Therefore, our study enriches the literature on the drivers of flow experience. The results indicate that interpersonal interaction enhances flow experience. To the best of our knowledge, this study is among the first to empirically test the effects of three kinds of interpersonal interaction factors (perceived expertise, similarity,

social shopping sites. First, our study helps managers to understand the formation of flow experience thoroughly in social commerce. As interpersonal attraction factors significantly affect customer flow experience, practitioners should focus on enhancing the interpersonal attraction of social shopping sites and pay more attention to the factors of perceived expertise, similarity, and familiarity.

Second, our study provides a new insight into the different users of social shopping sites. For users in social shopping sites, especially for young users, the role of similarity seems to be more important than the role of familiarity. Therefore, different types of groups should be constructed in social shopping sites to help young members find people who have similar likes and tastes. As for the role of familiarity, old users seem to focus on this factor. Therefore, for those groups in which more old users participate, frequent member interactions should be encouraged.

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Appendix A

Survey Questionnaire Items

Constructs	Items	Measures	Sources
Perceived expertise	PE1	Some members on this website are very knowledgeable about fashion and beauty products.	(Liao et al., 2010)
	PE2	Some members on this website are experts in fashion and beauty products.	
	PE3	Some members on this website are highly experienced in fashion and beauty products.	
	PE4	Compared with other sites, this website contains much information and knowledge about fashion and beauty products.	
Perceived similarity	PS1	As regards the styles in fashion and beauty products, I am similar to some members on this website.	(Liao et al., 2010)
	PS2	As regards the tastes in fashion and beauty products, I am similar to some members on this website.	
	PS3	As regards my likes and dislikes about fashion and beauty products, I am similar to some members on this website.	
	PS4	As regards preferences in fashion and beauty products, I am similar to some members on this website.	
Perceived familiarity	PF1	Members of this website are as familiar to me as good friends are.	(Liao et al., 2010)
	PF2	I have frequent interactions with other members of this website by writing or replying to articles.	
	PF3	The members on this website are familiar to me.	
	PF4	I keep close contact with this website members.	
Flow experience	FL1	It is fun to interact on this website.	(Zhang et al., 2014)
	FL2	The interaction on this website is interesting.	
	FL3	When shopping on this website, I feel the excitement of exploring.	
	FL4	I am absorbed when shopping on this website.	
Purchase intention	PUI1	Whenever I need to shop, I intend to purchase products on this website.	(Pavlou & Fygenon, 2006)
	PUI2	Whenever I need to shop, I plan to purchase products on this website.	
	PUI3	I predict that I will purchase products on this website.	
	PUI4	It is highly likely that I will purchase products on this website.	

and familiarity) on the formation of flow in social commerce.

Second, this study advances the understanding that interpersonal interaction factors are important in social commerce. Liao et al. (2010) highlighted the importance of interpersonal interaction factors in affecting the loyalty of members in a virtual community. The present study extends the findings of Liao et al. (2010) by demonstrating that interpersonal interaction factors influence consumer purchase intention in social commerce.

Third, we divided our respondents into two groups based on age and found significant differences between old and young users. As only a few previous studies on flow experience compared the differences based on age, our study enriches the literature on flow and purchase intention.

7.2. Managerial implications

This research contributes to improving the management of

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