From sPassion to sWOM: The role of flow

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ABSTRACT

Purpose

Social commerce websites entail a completely new scenario for sharing experiences and opinions due to its richness in terms of social interactions. Nowadays, users can interact with the company and with other users; hence, it seems important to study how social stimuli affect users. Drawing on the stimulus–organism–response framework and flow theory, this study proposes that the social stimulus (named sPassion) has a positive effect on the organism (state of flow), which leads to a users' positive response (via social word of mouth, or sWOM).

Design/methodology/approach

The data were collected through an online survey in 2015. The sample consists of 771 users of social commerce websites, of which 51% are male and 49% female, aged between 16 and 80 years old. Structural equation modeling was used to analyze the data with the statistical software SPSS version 22 and EQS 6.

Findings

The empirical results confirm that passionate users are prone to experience a state of flow and, as a consequence, share positive sWOM.

Originality/value

This study contributes to the literature on customers' online participation, and the findings are hoped to help companies in developing social commerce websites that boost users' exchange of information.

Keywords: *flow theory, social commerce, SOR framework, sPassion, sWOM*

1. Introduction

Social commerce appears as a consequence of the evolution of e-commerce combined with the Web 2.0 features on the websites (Zhang and Benyoucef, 2016), making possible users' online participation (Huang and Benyoucef, 2013). Different from e-commerce, social commerce involves customers within the firm, gives them active roles and optimizes their social experience because it allows users to generate and share information (Brodie et al., 2013). Nevertheless, social commerce allows users to share both positive and negative social word of mouth (sWOM); hence, companies are on a constant search to identify how to encourage positive, and avoid negative, sWOM. It is assumed that if users have positive experiences on a website, their attitude will be positive, making it more likely that they will spread the word in a positive way, and thereby acting as website evangelists. This highly interactive environment shaped by social interactions can contribute to boosting social passion (sPassion); that is, to creating a positive affective feeling as a result of navigating, interacting with, and socializing with users and the website (Herrando et al., 2016). Likewise, social commerce websites allow users to enjoy, concentrate, and lose track of time when surfing and interacting with other users, and ultimately to experience a state of flow (Gao and Bai, 2014; Zhang et al., 2014). Some authors have studied the positive relationship between passion and flow (Carpentier, et al., 2012; Lavigne, Forest, and Crevier-Braud, 2012; Vallerand et al., 2003); however, there are no studies focusing on how this relationship could increase positive sWOM.

The research question in this paper is *How can websites improve users' experience to boost positive, while avoiding negative, sWOM?* Companies can make a great deal of effort to offer efficient, useful, and interactive websites; however, social interactions are not completely in their hands. That is, it is not as easy as having (or not) a specific feature on the website, as a positive atmosphere must also be generated. The importance of sPassion and state of flow in the context of this investigation lies in the fact that positive experiences and states of mind are likely to result in a positive response (Albert et al., 2013; Bauer et al., 2007; Matzler et al., 2007; Swimberghe et al., 2014). Therefore, even when navigating a well-designed website, users can also be affected by social stimuli. When users generate content about products they are giving information about the products themselves, but also about their opinions and experiences. Passionate users tend to express their enthusiasm and can infect others with their excitement, and this stimulus could be an antecedent of the state of flow. Hence, the contribution of the current work is to bridge the gap in terms of encouraging sWOM from the perspective of social interactions.

Given that social commerce takes place in an environment characterized by social interactions and exchange of experiences, it is suitable to study sWOM with reference to positive states of mind, such as sPassion and flow, which can be generated based on social relationships and not only from websites cues. This paper aims to study how positive sWOM responses can be increased. The stimulus–organism–response (SOR) framework is used to help explain how users share positive sWOM as a response to the effect on the organism of a social stimulus. Drawing on the SOR framework (Donovan and Rossiter, 1982; Eroglu et al., 2001; Eroglu et al., 2003; Mehrabian and Russell, 1974) and flow theory (Csikszentmihalyi, 1975), this study analyzes the role of sPassion as the social *stimulus* and its positive effect on the state of flow, the *organism*, achieving as a *response* an increase in positive sWOM. As noted above, the sPassion–flow relationship has been studied by several authors to date; however, to the best of the current authors' knowledge, this relationship has not been analyzed in terms of the social stimulus in the SOR framework to study how to boost users' participation from experiencing a state of flow. Likewise, the SOR framework is also focused on the individual.

Section 2 explains the SOR framework to contextualize its role in social commerce in terms of boosting positive sWOM thorough the social stimulus of sPassion, and the state of flow as organism. Likewise, literature on sPassion, the state of flow components, and sWOM is reviewed, and the relationships between the concepts hypothesized. Section 3 describes the methodology. Due to the lack of consensus about the dimensionality of the concept of flow and

the variables used for its measurement (Ghani and Deshpande, 1994; Hoffman and Novak, 1996), Section 4 first empirically tests the flow concept and then analyzes the SOR model and presents the results. Finally, findings are discussed, and the paper concludes with the theoretical and business implications of the work, future lines of research, and limitations.

2. Theoretical background and development of hypotheses

2.1. SOR framework

The SOR framework was proposed by Mehrabian and Russel (1974), and later applied to the retail context by Donovan and Rossiter (1982) and to online retailing by Eroglu et al. (2001). The SOR framework stems from environmental psychology and states that some environmental stimuli affect users' emotional states, which result in specific behavioral responses (Eroglu et al., 2001). Some authors have suggested that there are three kinds of stimuli: social factors, design factors, and ambient factors (Baker, 1986; Bitner, 1992). The vast majority of studies in online environments have focused on design and ambient stimuli, such as interactivity (i.e., Huang and Huang, 2013; Jiang et al., 2010; Mollen and Wilson, 2010), and fewer studies have considered social stimuli (Animesh et al., 2011; Chang, 2013; Fiore and Kim, 2007; Liu et al., 2016; Zhang et al., 2014). The SOR framework has been applied together with flow theory in social commerce contexts (Gao and Bai, 2014; Liu et al., 2016; Zhang et al., 2014), and widely used in the context of online consumer behavior (Ha and Im, 2012; Koo and Ju, 2010; Xu et al., 2014). In this research, the SOR framework is considered appropriate for studying how to increase positive sWOM through the social stimulus of sPassion and the state of flow as organism. sPassion can stimulate users to experience a state of flow and, since both concepts are related to positive states of mind, it is expected that users respond to this in the form of positive sWOM.

2.2. Stimulus: sPassion

Passion has been described *as a strong inclination toward an activity that people like, that they find important, and in which they invest time and energy* (Vallerand et al., 2003, p. 757). For these authors there are two kinds of passion, obsessive, that is the passion that *controls the person,* and harmonious, which is related to positive states of mind and feelings such as flow, what produces *a motivational force to engage in the activity willingly and engenders a sense of volition and personal endorsement about pursuing the activity* (Vallerand et al., 2003, p. 757). In this study, sPassion is defined as a positive affective feeling that social commerce users experience when interacting and socializing on a website (Herrando et al., 2016). Social commerce enables interaction, participation, and sharing of information and experiences with other users. While passion is related to being in love with a brand or company (Batra et al., 2012), sPassion is linked to passion for the social commerce website itself, and not to a specific brand (Herrando et al., 2016). In this study, the concept of sPassion is coined and is measured using a scale suggested by Baldus et al. (2015) by focusing on those items that reflect brand passion and helping, and contextualizing the role of sPassion in social commerce. While those items derived from brand passion are related to the emotional component, the other items related to helping behavior are associated with altruistic and evangelistic behavior, which is precisely where the difference between passion and sPassion can be found. sPassion not only has an emotional component, but also an altruistic one, which contextualizes its usage in social commerce contexts. Passion is important for the online marketing strategies because passionate consumers tend to share their excitement and act as *brand evangelists* (Albert et al., 2013; Bauer et al., 2007; Matzler et al., 2007; Swimberghe et al., 2014). Hence, it is proposed that although passion has not been used as the social stimulus in the SOR framework to date, sPassion could be a stimulus that fosters a state of flow and increases positive sWOM as a consequence, since passion has been shown to increase the state of flow and boost evangelistic behavior. The SOR framework states that there are some social interactions that act as stimuli and can have a positive effect on the organism (Animesh et al., 2011; Chang, 2013; Fiore and Kim, 2007; Liu et al., 2016; Zhang et al., 2014). In this study, sPassion is considered the social stimulus, and,

according to several authors, passion can stimulate a state of flow (Carpentier et al., 2012; Lavigne et al., 2012; Vallerand et al., 2003). Therefore, we hypothesize the following:

H1: sPassion positively affects the state of flow.

2.3. Organism: State of flow

The state of flow has been described as a rewarding experience where people are so concentrate on and absorbed in the activity they are performing that they are not conscious of themselves nor of the track of time, but they enjoy every single minute of the experience and afterwards they look for repeating the sensation (Csikszentmihalyi, 1975). The state of flow or optimal experience has been extensively applied in various disciplines and in several contexts (Csikszentmihalyi and Csikszentmihalyi, 1988). In recent years, investigations have analyzed the impact of flow in social commerce environments (i.e., Gao and Bai, 2014; Zhang et al., 2014), but such studies remain scarce and there is no general consensus on the definition of flow in Web environments. The pertinence of flow theory to e-commerce lies in the fact that the state of flow involves an increase in intentions to purchase, or return to the website and repurchase (Kamis et al., 2010). It has been shown that the state of flow enhances loyalty towards a website and the intention to spread positive WOM (O'Cass and Carlson, 2010).

The state of flow has been considered as the organism within the SOR framework in social commerce contexts (Gao and Bai, 2014; Zhang et al., 2014; Liu et al., 2016), because it is an emotional state that can be affected by the stimulus and can generate a behavioral response. In such contexts, the state of flow can be considered to be defined by concentration, enjoyment, and temporal distortion (Wang and Hsu, 2014; Lee and Chen, 2010). On a social commerce website, as its name implies, users relate to others in an environment that is highly influenced by interactivity, personalization, and socialization, which directly affect the state of flow (Zhang et al., 2014). Thus, online social relationships, like those that take place in offline environments, can come from enjoyable experiences, can absorb users—causing a temporal distortion—and can require users' concentration; for example, in terms of concentrating in order to syhare/receive user-generated content, write referrals, and so on.

Due to the lack of consensus about the dimensionality of flow, before analyzing the model, the paper will first discuss whether *the state of flow is in fact composed of these three dimensions (concentration, enjoyment, and temporal distortion).* Despite the differences among these three dimensions, they reflect a common concept; thus to reach a state of flow, it is suggested that they must be simultaneous and reflective (as will be explained in Section 4.2). Therefore, whether *the dimensions of the state of flow converge toward a single factor as reflective constructs* will also be tested, through a second-order structure.

2.4. Response: Positive sWOM

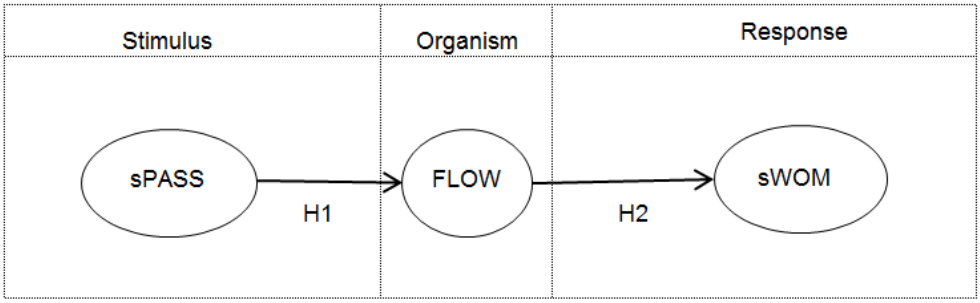
Social commerce is based on a combination of e-commerce and Web 2.0, providing the tools for *user-generated content* and *sharing of content;* hence, it is focused on enhancing *customer participation and achieving greater economic value* (Huang and Benyoucef, 2013, p. 246). *Social relationship is the key element that differentiates social commerce from other forms of online commercial activities* (Liang et al., 2011, p. 71). WOM is so crucial in social commerce contexts that the concept of sWOM—previously referred to as eWOM in e-commerce contexts—has been used to refer specifically to the WOM spread in this highly interactive environment (Hajli et al., 2014). The current study defines positive sWOM as the positive comments, recommendations, advice, suggestions, etc., shared by users on social commerce websites—that is, websites that sell products online and contain social commerce features, such as recommendation systems, referrals, ratings, discussion forums, etc. (Herrando et al., 2016).

According to the SOR framework, the state of flow, here considered as the organism, can affect users' responses (Gao and Bai, 2014; Zhang et al., 2014; Liu et al., 2016); thus, it is likely to affect positive WOM behaviors as a response. Although numerous studies based on flow theory

have focused on analyzing online consumer behavior as a result of having experienced a state of flow, few have been focused on studying how this positive state affects sharing behavior to spread WOM. To the best of the authors' knowledge, to date, a study by O'Cass and Carlson (2010) is the only one to have considered WOM behavior a consequence of the state of flow. Zhang et al. (2014) applied the SOR framework to study social commerce intention as a response of experiencing flow, also related to WOM behavior. Although WOM is a well-known concept in the online consumer behavior research, there is little evidence of its study as a response within SOR models (e.g., Ha and Im, 2012). Nevertheless, here it is considered that applying the SOR framework can explain how users share positive sWOM as a response to the effect on the organism of a social stimulus. Considering sPassion and the state of flow as positive states of mind related to users' experiences, it is reasonable to suggest that the response of users can take the form of positive sWOM. Therefore, based on the idea that users who have experienced a state of flow are prone to reengage on the website and share their feelings (O'Cass and Carlson, 2010), we hypothesize that the state of flow could boost positive sWOM.

H2: The state of flow positively affects positive sWOM.

Figure 1. Proposed model



3. Methodology

The data were collected in Spain through an online survey between February and June 2015. The sample consists of 771 users of social commerce websites. It resembles the profile of the Spanish users' according to the annual report of the Telecommunications and Information Society Spanish Watch (ONTSI, 2014), because both genders are equally represented and the age varies between 16 and 80 years old. We checked that all of them were experienced online consumers. Participants were given an explanation of the concept of social commerce at the beginning of the questionnaire, and after that they were asked whether they had recently purchased using a social commerce platform. Those respondents who answered positively, continued with the survey, being asked to recall their experience on the website they had chosen, and were asked to name the social commerce website from which they had purchased. Among their answers were Amazon, Aliexpress, and Booking.

A thorough review of the literature that used the measurement factors employed in this model was conducted in order to ensure content validity. Some of them were adapted to the context of social commerce (see Table 1). Seven-point Likert scale were used to measure all the variables, ranging from "1 = strongly disagree" to "7 = strongly agree." The questionnaire was checked by various experts, with the aim to ensure that all the questions and text were understandable, apart from assessing its length and ease of completion. This pretest turned into some minor changes, most of them oriented to improve the reading fluency and comprehensibility of certain issues. Software SPSS 22 and EQS 6 were used in the statistical analyses.

Table 1. Scale

	sPassion - Developed from Baldus et al. (2015):
sPASS1	I am motivated to participate on this social commerce website because I am passionate about it
sPASS2	I participate on this social commerce website because I care about it

sPASS3	My passion for this social commerce website's products makes me want to participate in its community
sPASS4	I like participating on this social commerce website because I can use my experience to help other people
sPASS5	I really like helping other users with their questions
sPASS6	I feel good when I can help answer other users' questions
	State of flow:
	Concentration - Based on Jackson & Marsh (1996).
CON1	My attention was focused entirely on what I was doing.
CON2	I was totally absorbed in what I was doing.
CON3	I had total concentration.
	Enjoyment - Based on Koufaris (2002).
ENJ1	I found my visit interesting.
ENJ2	I found my visit enjoyable.
ENJ3	I found my visit fun.
	Temporal distorsion - Based on Agarwal & Karahanna (2000); Novak et al. (2000).
TD1	Time seemed to go by very quickly when I used this social commerce website.
TD2	When I used this social commerce website, I tended to lose track of time.
TD3	I often spend more time on this social commerce website than I had intended.
TD4	I feel I am in a world created by the web I visit.
TD5	Using this web often makes me forget where I am.
TD6	The world generated by the web I visit is more real for me than the "real world".
	sWOM - Based on Liang et al. (2011)
sWOM1	I have provided my experiences and suggestions when other users need advice on buying something
sWOM2	I have recommended a product that is worth buying

4. Results

4.1. Analysis of dimensionality

With the purpose of identifying the dimensionality of the flow concept, the first step started by carrying out an exploratory factor analysis of the three factors—enjoyment, concentration, and temporal distortion—using the principal axis factoring method and varimax rotation (Hair et al., 1999; Kaiser, 1970; Kaiser, 1974). The Kaiser–Meyer–Olkin (KMO) value was greater than the threshold of 0.70 (KMO = 0.905), and Barlett's sphericity test was significant. The findings show that each item loaded onto its factor, so the three-factor structure can be introduced as hypothesized (see Table 2). These three factors explain 80.13% of the total variance. Furthermore, Cronbach's alpha ($\alpha = 0.927$) was greater than 0.70 (Nunnally, 1978), and was not improved if any element was removed.

Table 2. Rotated component matrix

Items	Factor 1 (λ)	Factor 2 (λ)	Factor 3 (λ)
Temporal Distorsion 2	.857		
Temporal Distorsion 5	.829		
Temporal Distorsion 1	.806		
Temporal Distorsion 6	.797		
Temporal Distorsion 3	.726		
Temporal Distorsion 4	.703		
Enjoyment 3		.894	
Enjoyment 2		.811	
Enjoyment 1		.719	
Concentration 3			.782
Concentration 2			.763
Concentration 1			.748

The normality of the variables was tested through the asymmetry and kurtosis values, which were greater than 2.52 and 1.96, respectively (Hair et al., 2010), and the significance of the Kolmogorov–Smirnov–Lilliefors and Shapiro–Wilk statistics, so that distribution of the data did not fulfill the hypothesis of normality. Because of this, the robust maximum-likelihood estimation method was used (Bentler, 1995). With the purpose of testing the reliability and validity of the proposed dimensions and to confirm the obtained results, confirmatory analyses were performed. The findings confirm that the three factors fit the data well and the coefficients calculated were all significant (Satorra-Bentler Scaled Chi-Sq = 504.7682, 51 d.f., p-value = 0.001; Bentler-Bonett Normed Fit Index (NFI) = 0.925; Bentler-Bonett Nonnormed Fit Index (NNFI) = 0.912; Comparative Fit Index (CFI) = 0.932; Bollen (IFI) Fit Index = 0.932; Root Mean-Sq. Error of Approximation (RMSEA) = 0.107; (χ2/d.f)= 9.898).

With intent to analyze the reliability and validity of the flow dimensions it was tested that Cronbach's alpha values were greater than 0.70 (Nunally, 1978), the composite reliability (CR) indexes (Jöreskog, 1971) exceeded the recommended value of 0.70, and the average variance extracted (AVE) showed values higher than 0.50 (Fornell and Larcker, 1981). As for convergent and discriminant analyses; convergent validity was analyzed to corroborate that the standardized coefficients of all factorial loadings were statistically significant and greater than 0.50 (Hildebrandt, 1984); and, discriminant validity was tested with the AVE analysis to compare, in a symmetric matrix, whether the AVE on the diagonal was larger than its corresponding squared correlation coefficients in its rows and columns (Fornell and Larcker, 1981; Hair et al., 1999). Therefore, the results confirm that the flow state is indeed composed of the three dimensions concentration, enjoyment, and temporal distortion.

After that, the following step was to compare the multidimensional and the unidimensional model. Using the *rival models technique* proposed by Anderson and Gerbing (1988) and Hair et al. (1999), this analysis consists of comparing alternative models. The first alternative established a unidimensional model in which all items were gathered in a single factor. The second alternative—based on the three dimensions obtained in the previous analyses—proposed a multidimensional model that contains three factors. The comparison between the empirical findings corroborate that the multidimensional model has better goodness of fit indexes than the unidimensional model does (see Table 3). This confirms that flow is multidimensional and is measured through concentration, enjoyment, and temporal distortion.

Table 3. Comparison between unidimensional and multidimensional models

Goodness of fit indexes	Alternative 1 Unidimensional model 12 items – 1 factor	Alternative 2 Multidimensional model 12 items – 3 factors
Satorra-Bentler Scaled Chi-Sq	1768.078	504.7957
Degrees of freedom	54	51
P	.000	.000
Bentler-Bonett Normed Fit Index (NFI)	.74	.93
Bentler-Bonett Nonnormed Fit Index (NNFI)	.69	.91
Comparative Fit Index (CFI)	.74	.93
Bollen (IFI) Fit Index	.74	.93
Root Mean Sq. Error of App. (RMESA)	.203	.107
Confidence Interval of RMESA	(.195 - .211)	(.099 - .116)

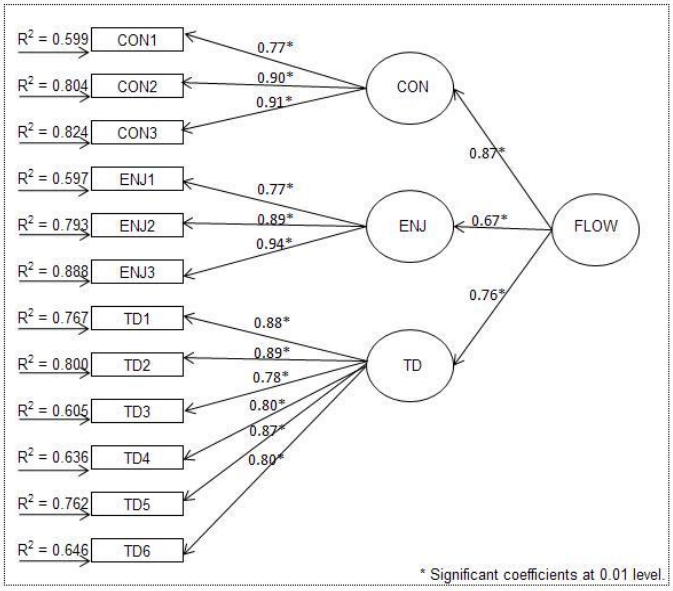
4.2. Factorial analysis of the second-order model

After determining the three-dimensional structure, the following step was to analyze the convergence of concentration, enjoyment, and temporal distortion toward a single factor, *flow*. Based on the existing literature, a reflective second-order model was proposed. In computer-mediated environments, the multidimensionality of the flow concept was analyzed and it was examined whether flow should be measured in a formative or a reflective model, showing better fit for the reflective version (Siekpe, 2005). Furthermore, some authors have found cognitive

absorption—derived from the state of flow—to be reflective, since covariance is expected among the indicators that measure it (Agarwal and Karahanna, 2000; Reychav and Wu, 2015). Likewise, when measuring psychological constructs that show an attitude or behavior, it is better to use reflective indicators because they are the origin of the observed variable and their effects are reflected in this variable.

The results affirm that flow as a concept is not directly observable, but is measured through three dimensions; namely, concentration, enjoyment, and temporal distortion. The confluence of the three factors is what allows users to reach the state of flow (see Figure 2).

Figure 2. Second-order model of flow



4.3. Analysis of the measurement model

The next step was to test whether the social stimulus, represented by sPassion, affects users' flow state, which results in boosting users' positive sWOM. Hence, to assess the reliability of the scale of the variables included in the SOR model, exploratory and confirmatory analyses were carried out.

Firstly, the psychometric properties were tested (Gerbing and Anderson, 1988). As shown in Table 4, all the indexes studied were accepted. The reliability of the scale was corroborated by analyzing Cronbach's alpha (Nunally, 1978), the CR index (Jöreskog, 1971) and the AVE (Fornell and Larcker, 1981). The KMO value was greater than 0.70, except in the case of the variable sWOM, whose value was 0.50 with a medium level of correlation and, therefore, medium acceptance (Kaiser, 1970). Then, the confirmatory factor analysis was conducted with the robust maximum-likelihood estimation method. The results show that the model fit the data well and that the coefficients calculated were all significant. The factor loadings were greater than the accepted value of 0.50 (see Table 4).

Table 4. Analysis of the reliability and validity of the model

Ítem	**α Cronbach**	**CR**	**AVE**	**Kaiser Meyer Olkin**	**R^2**	**λ**
sPASS1	.933	.933	.699	.879	.728	.853
sPASS2					.696	.834
sPASS3					.724	.851
sPASS4					.721	.849
sPASS5					.677	.823
sPASS6					.646	.804

CON1 CON2 CON3	.895	.896	.743	.736	.601 .805 .823	.775 .897 .907
ENJ1 ENJ2 ENJ3	.900	.904	.760	.717	.604 .797 .880	.777 .893 .938
TD1 TD2 TD3 TD4 TD5 TP6	.933	.934	.703	.891	.642 .766 .648 .764 .794 .604	.801 .875 .805 .874 .891 .777
sWOM1 sWOM2	.835	.836	.718	.500	.741 .694	.861 .833
Satorra-Bentler Scaled Chi-Sq = 1112.1025, 160 d.f., p<0,01; Bentler-Bonett Normed Fit Index (NFI) = 0.903; Bentler-Bonett Nonnormed Fit Index (NNFI) = 0.899; Comparative Fit Index (CFI) = 0.915; Bollen (IFI) Fit Index = 0.916; Root Mean-Sq. Error of Approximation (RMSEA) = 0.08 * Significant coefficients at 0.01 level.						

Discriminant validity was analyzed by checking whether the square root of the AVE for each construct was higher than the correlations of this construct and the rest of the constructs in the same row and column (see Table 5).

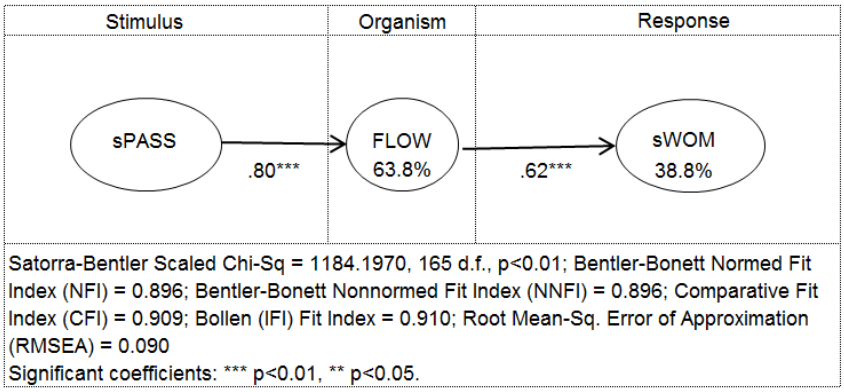
Table 5. Discriminant validity

	sPASS	**CON**	**ENJ**	**TD**	**sWOM**
sPASS	**.699**				
CON	.286	**.743**			
ENJ	.393	.345	**.760**		
TD	.336	.440	.261	**.703**	
sWOM	.355	.175	.247	.153	**.718**

4.4. Analysis of the structural model

Finally, the theoretical SOR based model was estimated. As can be seen in Figure 3, the goodness of fit indexes from the structural model showed acceptable values and the two hypotheses were supported. The results show that sPassion has a positive effect on the state of flow (ß = 0.80, t = 15.02, p < 0.01) and this influences positive sWOM as a response (ß = 0.62, t = 11.60, p < 0.01). As posited above, the aim was to determine whether those who are prone to experience a state of flow report more positive sWOM. Regarding the empirical findings, the state of flow can be said to have a positive effect on positive sWOM. Thus, all the hypotheses were supported and sPassion can be confirmed to positively affect the flow state, thereby helping to increase online participation through positive sWOM.

Figure 3. Structural Equation



5. Discussion and conclusions

This study uses the SOR framework based on a social stimulus to analyze how positive sWOM can be increased in social commerce. That is, it addressed the role of sPassion as the social *stimulus* and its positive effect on the state of flow, the *organism*, achieving as a *response* an increase in positive sWOM. Firstly, it was empirically found that flow is a multidimensional factor composed of concentration, enjoyment, and temporal distortion. When users experience the three dimensions, they reach a state of flow or optimal experience; that is, they not only navigate, but flow. Secondly, the SOR model was analyzed to show that passionate users are prone to experience a state of flow and, as a consequence, to share positive sWOM. Therefore, experiencing flow can be a way of increasing online participation.

The literature in which the concept of flow is analyzed in various contexts was considered in order to study the variables, dimensions, and structure that must be used to measure flow. Nevertheless, no consensus was found in this regard (Ghani and Deshpande, 1994; Hoffman and Novak, 1996). Secondly, a three-dimensional structure was theorized that comprises a second-order factor to measure flow in social commerce contexts. Following this theoretical proposal, various statistical analyses were conducted to compare the unidimensional and multidimensional models through the *rival models technique;* these confirmed the tri-dimensionality of the concept. The next step was to conduct a second-order confirmatory analysis to corroborate that the second-order reflective model fit the data well. Therefore, support was found for the idea that the state of flow is measured through the dimensions concentration, enjoyment, and temporal distortion, and can be considered a second-order multidimensional factor. As a consequence, when users experience flow, they focus their attention on the activity they are performing, enjoying it and losing track of time, which leads them to flow when navigating on the website, reaching an optimal experience when surfing.

Finally, the SOR model was tested to showed that, as per to previous studies (Animesh et al., 2011; Chang, 2013; Fiore and Kim, 2007; Liu et al., 2016; Zhang et al., 2014), the stimulus has a positive effect on flow. Likewise, supporting the idea put forth by Carpentier et al. (2012), Lavigne et al. (2012) and Vallerand et al. (2003) sPassion boosts users' flow state, which has a positive effect on positive sWOM. Therefore, the empirical analyses shed light on controversial flow issues that were previously without consensus. The literature review showed that there is still no agreement about how to measure the state of flow, not only with regard to the variables that comprise the experience, but also concerning its structure. This gap is an important aspect to consider in order to help companies develop their websites to be truly appealing and to show which social commerce keys generate optimal experiences that enhance users' positive behavior. Thus, the contribution of this study is that positive sWOM can be boosted through sPassion and the state of flow; that is, through a social stimulus and an individual's state of mind. Likewise, regarding the direct relationship between experiencing flow and spreading positive sWOM, our results contribute to the literature because there have been few studies on this positive relationship to date (O'Cass and Carlson, 2010).

6. Implications and future lines of research

This study contributes to establishing the foundations for measuring the state of flow, and its structure, factors, and measurement instrument. The study supports the idea of the multidimensionality of the state of flow and establishes the three dimensions that shape it. The findings have academic implications for the establishment of guidelines for using flow theory in the specific context of social commerce.

In addition, it was shown that the social stimulus (sPassion) has a positive effect on the organism (state of flow), which implies a positive response (sWOM). Therefore, this formula could help companies to direct WOM valence online. WOM valence (positive, neutral, or negative) can impact how users value and perceive reviews; for example, on the perceived usefulness of, and enjoyment derived from reading, online reviews (Park and Nicolau, 2015). Users who experience a state of flow are prone to share their positive experiences through sWOM; therefore, this formula could help companies to direct the online valence of WOM. That is, companies that are able to stimulate a state of flow in their users will be more likely to have positive sWOM, since it is supposed that a positive optimal experience is verbalized in positive sWOM. Likewise, given that people who reach a state of flow affirm that it is a rewarding experience that is worth repeating (Csikszentmihalyi, 1975), users who desire to experience this sensation again will return to the same website to find it. This will entail benefits for companies because, on the one hand, returning to the website facilitates user repurchase and, on the other, it can contribute to customers' loyalty and engagement.

Nevertheless, marketing strategies on the Internet that adopt the flow approach should bear in mind that delivery is as important as the navigation and transaction processes, since consumers' irritation in one of the purchasing process stages may vanish the rewarding sensation. Hence, user navigation should be considered as important as purchase and post-purchase. That is the reason why it would be advisable to study flow and engagement together and to test how both concepts interact.

Furthermore, as sPassion differs from passion based on the social component, if companies seek to encourage sPassion, they should boost social interactions—that is, interactivity (Cardon et al., 2013) and social presence (Smith and Gallicano, 2015)—besides generating an enjoyable atmosphere (Herrando et al., 2016). In this vein, social commerce relies on recommendation systems, rating tools, discussion boards, etc.

7. Limitations

This research presents some limitations. The sample consists of data from a single country, so the research would benefit from collecting data from different countries and carrying out a cross-cultural analysis. This would allow to extent the findings and would identify how flow is generated in different countries because users all around the world can access and navigate a same social commerce website, so cultural issues may arise.

References

Agarwal, R., & Karahanna, E. (2000). Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage. *MIS Quarterly, 24*(4), 665-694.

Albert, N., Merunka, D., & Valette-Florence, P. (2013). Brand passion: Antecedents and consequences. *Journal of Business Research, 66*(7), 904-909.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411.

Animesh, A., Pinsonneault, A., Yang, S., & Oh, W. (2011). An odyssey into virtual worlds: exploring the impacts of technological and spatial environments on intention to purchase virtual products. *MIS Quarterly, 35*(3), 789.

Baker, J. (1986). The role of the environment in marketing services: The consumer perspective. *The services challenge: Integrating for Competitive Advantage, 1*(1), 79-84.

Baldus, B. J., Voorhees, C., & Calantone, R. (2015). Online brand community engagement: Scale development and validation. *Journal of Business Research, 68*(5), 978-985.
Batra, R., Ahuvia, A., & Bagozzi, R. P. (2012). Brand love. *Journal of Marketing, 76*(2), 1-16.
Bauer, H. H., Heinrich, D., & Martin, I. (2007). How to create high emotional consumer-brand relationships? The causalities of brand passion. *2007 Australian & New Zealand Marketing Academy Conference Proceedings,* 2189-2198.
Bentler, P. M. (1995). *EQS structural equations program manual.* Multivariate Software, Inc., Encino, CA.
Bitner, M. J. (1992). Servicescapes: The impact of physical surroundings on customers and employees. *The Journal of Marketing,* 56(2), 57-71.
Brodie, R. J., Ilic, A., Juric, B., & Hollebeek, L. (2013). Consumer engagement in a virtual brand community: An exploratory analysis. *Journal of Business Research, 66*(1), 105-114.
Cardon, M. S., Gregoire, D. A., Stevens, C. E., & Patel, P. C. (2013). Measuring entrepreneurial passion: Conceptual foundations and scale validation. *Journal of Business Venturing, 28*(3), 373-396.
Carpentier, J., Mageau, G. A., & Vallerand, R. J. (2012). Ruminations and Flow: Why Do People with a More Harmonious Passion Experience Higher Well-Being? *Journal of Happiness Studies, 13*(3), 501-518.
Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety.* San Francisco: Jossey-Bass.
Csikszentmihalyi, M., & Csikszentmihalyi, I. S. (1988). *Optimal experience: Psychological studies of flow in consciousness*. New York: Cambridge University Press.
Chang, C. (2013). Examining users′ intention to continue using social network games: A flow experience perspective. *Telematics and Informatics, 30*(4), 311-321.
Donovan, R., & Rossiter, J. (1982). Store atmosphere: an environmental psychology approach. *Journal of Retailing, 58*(1), 34-57.
Eroglu, S. A., Machleit, K. A., & Davis, L. M. (2001). Atmospheric qualities of online retailing: A conceptual model and implications. *Journal of Business Research, 54*(2), 177-184.
Eroglu, S. A., Machleit, K. A., & Davis, L. M. (2003). Empirical testing of a model of online store atmospherics and shopper responses. *Psychology & Marketing, 20*(2), 139-150.
Fiore, A. M., & Kim, J. (2007). An integrative framework capturing experiential and utilitarian shopping experience. *International Journal of Retail & Distribution Management, 35*(6), 421-442.
Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research, 18*, 39-50.
Gao, L., & Bai, X. (2014). Online consumer behaviour and its relationship to website atmospheric induced flow: Insights into online travel agencies in China. *Journal of Retailing and Consumer Services, 21*(4), 653-665.
Gerbing, D. W., & Anderson, J. C. (1988). An updated paradigm for scale development incorporating unidimensionality and its assessment. *Journal of Marketing Research, 15*, 186-192.
Ghani, J. A., & Deshpande, S. P. (1994). Task characteristics and the experience of optimal flow in human—computer interaction. *The Journal of Psychology, 128*(4), 381-391.
Ha, Y., & Im, H. (2012). Role of web site design quality in satisfaction and word of mouth generation. *Journal of Service Management, 23*(1), 79-96.
Hair, J.F., William C.B., Barry J. B., and Rolph, E.A. (2010). *Multivariate Data Analysis: A Global Perspective*. 7th ed. London, England: Pearson.
Hair, J., Anderson, R., Tatham, R., & Black, W. (1999). *Multivariate Data Analysis*. New Jersey: Prentice-Hall International.
Hajli, N., Lin, X., Featherman, M. S., & Wang, Y. (2014). Social word of mouth: How trust develops in the market. *International Journal of Market Research, 56*(5), 673-689.
Herrando, C., Jiménez-Martínez, J., & Martín-De Hoyos, M.J. (2016). Passion at first sight: How to engage users in social commerce contexts. *Electronic Commerce Research*, 1-20. DOI: 10.1007/s10660-016-9251-6
Hildebrandt, L. (1984). Attitudes and values as predictors of energy information behaviour patterns. *Advances in Consumer Research, 11*(1), 574-578.

Hoffman, D. L., & Novak, T. P. (1996). Marketing in hypermedia computer-mediated environments: conceptual foundations. *The Journal of Marketing, 60*, 50-68.
Huang, E., & Huang, Y. (2013). Interactivity and identification influences on virtual shopping. *International Journal of Electronic Commerce Studies, 4*(2), 305-312.
Huang, Z., & Benyoucef, M. (2013). From e-commerce to social commerce: A close look at design features. *Electronic Commerce Research and Applications, 12*(4), 246-259.
Jackson, S. A., & Marsh, H. W. (1996). Development and validation of a scale to measure optimal experience: The Flow State Scale. *Journal of Sport and Exercise Psychology, 18*(1), 17-35.
Jiang, Z., Chan, J., Tan, B. C., & Chua, W. S. (2010). Effects of interactivity on website involvement and purchase intention. *Journal of the Association for Information Systems, 11*(1), 34.
Jöreskog, K. G. (1971). Statistical analysis of sets of congeneric tests. *Psychometrika, 36*(2), 109-133.
Kaiser, H. F. (1970). A second generation little jiffy. *Psychometrika, 35*(4), 401-415.
Kaiser, H. F. (1974). Little Jiffy, Mark IV. *Educational and psychological measurement, 34*, 111-117.
Kamis, A., Stern, T., & Ladik, D. M. (2010). A flow-based model of web site intentions when users customize products in business-to-consumer electronic commerce. *Information Systems Frontiers, 12*(2), 157-168.
Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling* (3rd ed.). New York: Guilford Press.
Koo, D., & Ju, S. (2010). The interactional effects of atmospherics and perceptual curiosity on emotions and online shopping intention. *Computers in Human Behavior, 26*(3), 377-388.
Koufaris, M. (2002). Applying the technology acceptance model and flow theory to online consumer behavior. *Information Systems Research*, 13(2), 205-223.
Lavigne, G. L., Forest, J., & Crevier-Braud, L. (2012). Passion at work and burnout: A two-study test of the mediating role of flow experiences. *European Journal of Work and Organizational Psychology, 21*(4), 518-546.
Lee, S. M., & Chen, L. (2010). The impact of flow on online consumer behavior. *Journal of Computer Information Systems*, 50(4), 1.
Liang, T., Ho, Y., Li, Y., & Turban, E. (2011). What drives social commerce: The role of social support and relationship quality. *International Journal of Electronic Commerce, 16*(2), 69-90.
Liu, H., Chu, H., Huang, Q., & Chen, X. (2016). Enhancing the flow experience of consumers in China through interpersonal interaction in social commerce. *Computers in Human Behavior, 58*, 306-314.
Matzler, K., Pichler, E. A., & Hemetsberger, A. (2007). Who is spreading the word? The positive influence of extraversion on consumer passion and brand evangelism. *Marketing Theory and Applications, 18*, 25-32.
Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology.* The MIT Press.
Mollen, A., & Wilson, H. (2010). Engagement, telepresence and interactivity in online consumer experience: Reconciling scholastic and managerial perspectives. *Journal of Business Research, 63*(9), 919-925.
Novak, T. P., Hoffman, D. L., & Yung, Y. (2000). Measuring the customer experience in online environments: A structural modeling approach. *Marketing Science, 19*(1), 22-42.
Nunnally, J. C. (1978). In McGraw-Hill (Ed.), *Psychometric theory* (2nd ed.). New York: New York: McGraw-Hill.
O'Cass, A., & Carlson, J. (2010). Examining the effects of website-induced flow in professional sporting team websites. *Internet Research, 20*(2), 115-134.
ONTSI. (2014). *Informe Anual La Sociedad en Red 2013, Observatorio Nacional de las Telecomunicaciones y de la Sociedad de la Información.* Retrieved February/10, 2015, from

http://www.ontsi.red.es/ontsi/sites/default/files/informe_anual_la_sociedad_en_red_2013_ed._2014.pdf
Park, S., & Nicolau, J. L. (2015). Asymmetric effects of online consumer reviews. *Annals of Tourism Research, 50*, 67-83.
Reychav, I., & Wu, D. (2015). Are your users actively involved? A cognitive absorption perspective in mobile training. *Computers in Human Behavior, 44*, 335-346.
Siekpe, J. S. (2005). An examination of the multidimensionality of flow construct in a computer-mediated environment. *Journal of Electronic Commerce Research, 6*(1), 31-43.
Smith, B. G., & Gallicano, T. D. (2015). Terms of engagement: Analyzing public engagement with organizations through social media. *Computers in Human Behavior, 53*, 82-90.
Smith, D. N., & Sivakumar, K. (2004). Flow and Internet shopping behavior: A conceptual model and research propositions. *Journal of Business Research, 57*(10), 1199-1208.
Swimberghe, K. R., Astakhova, M., & Wooldridge, B. R. (2014). A new dualistic approach to brand passion: Harmonious and obsessive. *Journal of Business Research, 67*(12), 2657-2665.
Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Léonard, M., et al. (2003). Les passions de l'âme: on obsessive and harmonious passion. *Journal of Personality and Social Psychology, 85*(4), 756-767.
Wang, C., & Hsu, M. (2014). An exploratory study using inexpensive electroencephalography (EEG) to understand flow experience in computer-based instruction. *Information & Management, 51*(7), 912-923.
Xu, J. D., Benbasat, I., & Cenfetelli, R. T. (2014). The nature and consequences of trade-off transparency in the context of recommendation agents. *MIS Quarterly, 38*(2), 379.
Zhang, H., Lu, Y., Gupta, S., & Zhao, L. (2014). What motivates customers to participate in social commerce? The impact of technological environments and virtual customer experiences. *Information & Management, 51*(8), 1017-1030.
Zhang, K. Z., & Benyoucef, M. (2016). Consumer behavior in social commerce: A literature review. *Decision Support Systems, 86*, 95-108.