Surfing or flowing? How to retain e-customers on the internet

¿Surfear of fluir? Cómo retener clientes en internet

Carolina Herrando and Julio Jimenez-Martinez
Department of Marketing and Market Research, Faculty of Economics and Business Studies, University of Zaragoza, Zaragoza, Spain, and

M. Jose Martin de Hoyos
*Department of Marketing and Business Studies,
University of Zaragoza, Zaragoza, Spain*

Abstract

Purpose – Social commerce websites entail a completely new scenario for retaining e-customers due to the richness of their social interactions. Nowadays, users can interact with companies and with other users; hence, it is considered important to study how social stimuli affect users. Drawing on the Stimulus Organism Response framework and Flow Theory, this paper aims to propose that the social stimulus (sPassion) has a positive effect on the organism (state of flow) causing positive responses from users (flow consciousness, trust and eLoyalty).

Design/methodology/approach – The data were collected through an online survey. The sample consists of 771 users of social commerce websites, of which 51 per cent are male and 49 per cent female, aged between 16 and 80 years. The structural equation model statistical software EQS 6 was used to test the model.

Findings – The empirical results confirm that passionate users are prone to experience state of flow, and, as a consequence, they are conscious of this optimal experience, resulting in an increase in trust.

Originality/value – The originality of this research stems from analysing how users' passion on social commerce creates an optimal experience that boost customers' retention.

Keywords Flow theory, Customer retention, Social commerce, sPassion, SOR model

Paper type Research paper

Resumen

Objetivo – Las páginas web de social commerce ofrecen un escenario completamente diferente al estudiado hasta la fecha, favoreciendo la retención de clientes en Internet gracias a la riqueza de las interacciones sociales del medio. En la actualidad los usuarios pueden interactuar tanto con la compañía como con otros usuarios, de ahí que se considere importante estudiar cómo los estímulos sociales afectan a los usuarios. Enmarcado en el modelo SOR (del

inglés stimulus, organism, response) y la Teoría del Flujo, este estudio propone que el estímulo social (la pasión en el social commerce) tiene un efecto positivo sobre el organismo (estado de flujo), causando respuestas positivas en los usuarios (consciencia de flujo, confianza y lealtad online).

Diseño/metodología/enfoque – Los datos fueron recogidos a través de una encuesta online. La muestra está compuesta por 771 respuestas de usuarios de páginas de social commerce, de los cuales el 51 per cent son hombres y el 49 per cent mujeres, con edades comprendidas entre los 16 y los 80 años. Para testar el modelo se utilizó el software estadístico EQS 6 para modelos de ecuaciones estructurales.

Resultados – Los resultados empíricos confirman que los usuarios más apasionados son más propensos a experimentar el estado de flujo y, como consecuencia, son conscientes más de alcanzar ese estado de experiencia óptima, lo que tiene como resultado un incremento de su confianza en la página web de social commerce.

Originalidad/valor – La originalidad de esta investigación radica en analizar cómo la pasión de los usuarios en entornos de social commerce crea una experiencia óptima que ayuda a retener clientes.

Palabras clave – Teoría del flujo, Social commerce, Modelo SOR, Pasión en social commerce, Retención de clients

Tipo de artículo – Trabajo de investigación

1. Introduction

Flow is an optimal state experienced by users in which they can be so absorbed in and concentrated on an activity that they lose their sense of time and self-consciousness, enjoying every single minute and leading them to repeat the sensation (Csikszentmihalyi, 1975). Flow state has been widely studied in various disciplines and in several contexts (Csikszentmihalyi and Csikszentmihalyi, 1988). The interest in Flow Theory for e-commerce is that the state of flow involves an increase in intention to purchase, repurchase and return to the website (Kamis *et al.*, 2010; Ettis, 2017). This state also improves loyalty towards a website (Huang *et al.*, 2017a) and the intention to spread positive word of mouth (WOM) (O'Cass and Carlson, 2010).

Previous research in Web navigation has analysed state of flow, collecting individuals' perceptions through different constructs and considering various factors such as antecedents (see the meta-analysis of Fong *et al.*, 2014). But these investigations do not take into account that people are not always aware of everything they experience (Lamme, 2003). Therefore, it is possible that those individuals who have had *a rewarding experience when surfing a website* may not link the fact of experiencing flow with the cause and do not seek to repeat this sensation on the same website. Companies must understand not only how their websites can generate flow but also how to ensure that users associate this sensation with the website so that they return to it to experience the state of flow again. Hence, we consider it of interest to study the consciousness of the flow state as a different variable from the flow state.

Social commerce websites allow users to enjoy, to concentrate and to lose track of time when surfing and interacting with other users and, in the end, to experience the state of flow (Gao and Bai, 2014; Zhang *et al.*, 2014). In recent years, many e-commerce websites have evolved towards social commerce (Zhang and Benyoucef, 2016; Lin *et al.*, 2016). Social commerce websites challenge companies to pay attention to cognitive and affective dimensions during the purchasing process, as it is not only the website that influences users but also the affective experience they can have on it (Chen *et al.*, 2017). Hence, due to the intrinsic characteristics of social commerce contexts, it has revolutionized companies' organization regarding website management, online advertising and user-generated content, among other things (Lin *et al.*, 2016). One of the distinguishing features of this kind of website is its ability to involve customers in the firm, giving them active roles and optimizing their *social experience* by allowing them to generate and share information (Brodie *et al.*, 2013). This highly interactive environment, shaped by social interactions, can contribute to boost passion, *a primarily affective, extremely positive attitude that leads to emotional attachment and influences relevant behavioural factors* (Bauer *et al.*, 2007); in the

social commerce context, we coin the term social passion (hereafter sPassion), which is a positive affective feeling created as a result of navigating, interacting and socializing with other users and the website, which leads to the individual being emotionally and commercially engaged with the social commerce website (Herrando *et al.*, 2017).

Some authors have studied the positive relationship between passion and flow (Carpentier *et al.*, 2012; Lavigne *et al.*, 2012; Vallerand *et al.*, 2003); however, to the best of our knowledge, it has not been analysed as the social stimulus in the Stimulus Organism Response framework (SOR framework) to study how to retain customers through experiencing the state of flow. This study posits that if users are conscious of having experienced flow, they will be more willing to trust and be loyal to the social commerce website, and, as a consequence, it should be easier for companies to retain e-customers on the internet. Based 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 analyses 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 flow consciousness, trust and loyalty. To do so, and as there is not a consensus about the dimensionality of the concept of flow and about the variables used for its measurement (Ghani and Deshpande, 1994; Hoffman and Novak, 1996), first, we will empirically test the flow concept and, then, we will analyse the SOR model. Hence, the analysis of this study is divided into two parts; first, the study of the dimensionality of the flow state and, second, the study of the SOR model.

2. Study of the Stimulus Organism Response model

2.1 Stimulus Organism Response framework

The SOR model was first introduced by Mehrabian and Russell (1974) and later used in retail research by Donovan and Rossiter (1982) and in online retailing research by Eroglu *et al.* (2001). Stemming from environmental psychology, the SOR framework states that some environmental stimuli affect users' emotional states, which results in specific behavioural responses (Eroglu *et al.*, 2001). Three different kinds of stimuli have been mainly considered within the SOR framework: social factors, design factors and ambient factors (Baker, 1986; Bitner, 1992). The vast majority of the studies in online environments have focussed on design and ambient stimuli such as interactivity (Huang and Huang, 2013; Jiang *et al.*, 2010; Mollen and Wilson, 2010), whereas few studies have aimed at the social stimuli (Chang, 2013; Liu *et al.*, 2016; Zhang *et al.*, 2014). In social commerce contexts, the SOR framework has been applied in combination with Flow Theory (Gao and Bai, 2014; Liu *et al.*, 2016; Zhang *et al.*, 2014), and it has been also widely used in online consumer behaviour studies (Ha and Im, 2012; Koo and Ju, 2010; Xu *et al.*, 2014; Ettis, 2017).

2.2 Development of hypotheses

2.2.1 Stimulus: sPassion. Passion can fuel motivation to engage in an activity, enhance well-being and lead to greater positive affect during task engagement (Vallerand *et al.*, 2003). These authors differentiate between two opposite types of passion: obsessive passion, when people lose control of the activity they are performing, and harmonious passion, which is related to positive states of mind and feelings such as flow. In marketing strategies on the internet, boosting harmonious passion can be really helpful for companies, as passionate consumers tend to share this excitement and act as brand evangelists (Albert *et al.*, 2013; Bauer *et al.*, 2007; Matzler *et al.*, 2007; Swimberghe *et al.*, 2014). We define sPassion as a positive affective feeling that social commerce users experience when interacting and socializing on a website. Social commerce enables social interaction, active and passive

participation, and sharing of information and experiences with other users. The main difference between Passion and sPassion is that while passion is linked to being in love with a brand or company (Batra *et al.*, 2012), sPassion is related to passion for the social commerce website itself, and not to a specific brand (Herrando *et al.*, 2017). In this study, sPassion is measured based on the work of Baldus *et al.* (2015), using the scale items that reflect brand passion and helping, and contextualizing the role of sPassion in social commerce. The scale items of sPassion derived from brand passion are related to the emotional component, and the items related to helping behaviour are associated with altruistic and evangelistic behaviour, where the difference between passion and sPassion can be found. That is, sPassion has both an emotional component and an altruistic component, which contextualizes its usage in social commerce contexts. In contrast to electronic commerce, social commerce websites do not only sell products but also enable social interactions through which users can express their emotions and act altruistically by sharing content and helping others.

Social commerce websites are defined as platforms aimed to boost online purchases and social interactions (Zhang and Benyoucef, 2016). Hence, it can be said that the social commerce users' purchasing process is partly based on an affective experience with other users. However, for some years, online consumer behaviour research has mainly been focussed on website design features (Huang and Huang, 2013; Jiang *et al.*, 2010; Mollen and Wilson, 2010), but with the appearance of social commerce websites, research has begun to consider not only the cognitive but also the affective dimensions of the websites (Brodie *et al.*, 2013, Chen *et al.*, 2017). Given the importance of social interactions on social commerce websites, among the factors linked to the SOR framework (social, design and ambient factors), this study focuses on the social stimulus (Chang, 2013; Liu *et al.*, 2016; Zhang *et al.*, 2014). Hence, considering that sPassion is formed based on the social interactions that can be found on a social commerce website, this study considers sPassion as a social stimulus. According to several authors, passion can stimulate state of flow (Carpentier *et al.*, 2012; Herrando *et al.*, 2018; Lavigne *et al.*, 2012; Vallerand *et al.*, 2003), a state of optimal experience. Therefore, in social commerce contexts, an affective and positive feeling such as sPassion will make users more predisposed to positive responses to the navigation, that is, to experience a flow state. Hence, we hypothesize that sPassion acts as the social stimulus that influences state of flow, as the organism:

H1. sPassion positively affects state of flow.

2.2.2 Organism: state of flow. Flow is a state that can occur anytime and anywhere and is defined as *the holistic sensation that people feel when they act with total involvement* (Csikszentmihalyi, 1975). It is reached *"when an individual engages in an activity with total involvement, concentration and enjoyment, and experiences an intrinsic interest and the sense of time distortion during his/her engagement"* (Chen *et al.*, 2000, p. 263). Flow Theory has been applied in varied contexts. Research in marketing has analysed topics such as the use of computer-mediated technologies (Hoffman and Novak, 1996), website effectiveness (Sicilia and Ruiz, 2007), the interactivity of virtual purchases (Huang and Huang, 2013), m-commerce (Zhou and Lu, 2011), online experience (Shim *et al.*, 2015), online consumer behaviour (Richard and Chebat, 2016) and social media (Jiao *et al.*, 2015), among others. In recent years, there have also been some investigations analysing the impact of social commerce environments (Gao and Bai, 2014; Zhang *et al.*, 2014), but they are still scarce, and there is no general acceptance of the definition of flow in Web environments.

In social commerce contexts, the SOR framework has been applied together with Flow Theory, considering the state of flow as the organism of the model, influenced by the

environmental stimuli and generating a behavioural response (Gao and Bai, 2014; Zhang *et al.*, 2014; Liu *et al.*, 2016; Huang *et al.*, 2017b). We consider that state of flow is defined by concentration, enjoyment and temporal distortion on social commerce websites (Wang and Hsu, 2014; Lee and Chen, 2010). This type of website is characterized by being highly interactive, promoting socialization and personalization, which directly affects the state of flow (Zhang *et al.*, 2014). So, online social interactions, like those in offline environments, can come from enjoyable experiences, can absorb users – causing a temporal distortion– and can require users to concentrate; for example, the mere fact that they need to concentrate to share/receive user-generated content, to write referrals and so on.

Once users have experienced the state of flow, it is important that they remember and identify it with surfing this particular website to motivate them to return to it and obtain benefits for themselves and the company. Hence, it is interesting to study whether users remember and are conscious of having experienced flow. Consciousness has been widely studied by neuroscientists, psychologists and philosophers. The debate about consciousness was popularized by Sigmund Freud in Psychoanalytic Theory at the end of the nineteenth century and the functioning of the conscious and the unconscious has still to be deciphered. As an example, consumption has been considered as a *conscious experience* (Holbrook and Hirschman, 1982), and it has been highlighted that people are conscious of the activities that they carry out when they are concentrated (Cahill and McGaugh, 1998; Lamme, 2003). Moreover, *emotionally arousing experiences tend to be well remembered* because of their novelty, concentration or frequency (Cahill and McGaugh, 1998). If the moment of optimal experience when surfing is remembered and linked to the navigation, users may try to repeat it, leading to purchase and repurchase on the website (Kamis *et al.*, 2010) or to spreading positive WOM (O'Cass and Carlson, 2010), a key aspect for the success of a social commerce website.

If users who surf a social commerce website achieve a state of concentration that brings enjoyment and makes them lose track of time, they will not only surf, they will flow. However, are users aware of what has caused that feeling of flow? If the answer is yes, they will try to repeat that experience. This study proposes that this is not always the case. Therefore, besides considering it necessary to study the state of flow, we also believe it is appropriate to specifically analyse *flow consciousness*, that is, the perception of users of having experienced the flow state in social commerce contexts. On the basis of all this, we propose that the first response of the state of flow as the organism of the SOR model is for users to be aware of having experienced it:

H2. The more intense the experience of flow, the greater the awareness of having achieved it (flow consciousness).

2.2.3 Response: flow consciousness, trust and loyalty. Trust is defined as the users' necessity to control the social environment where they live and interact (Gefen and Straub, 2003). Trust has been widely studied in online commerce environments (Gefen and Straub, 2003; Grabner-Kräuter and Kaluscha, 2003; Ng, 2013; Sharma and Crossler, 2014). Grabner-Kräuter and Kaluscha (2003) review the literature about trust in the e-commerce context and state that there is a common belief that *trust only exists in an uncertain and risky environment*. In social commerce, trust has been defined as *the willingness of s-commerce users to trust in the ability, generosity, integrity and predictableness of a seller based on the belief that the seller would take certain action crucial for its customers regardless of their capability to monitor or control the seller* (Kim and Park, 2013, p. 325). Therefore, the information contained on the website could contribute to trust. In social commerce context, users may develop their trust based on the information from the social community

(Ng, 2013). The information on a social commerce website consists of a combination of user-generated information and company-generated information, so users can become informed and develop their trust online based on cognitive and affective aspects. Following the line of research of the affective dimension of the website, users can develop their trust response towards the social commerce website based on experiencing the state of flow, as flow is a positive emotional state, and this flow experience turns into being conscious of having experienced this optimal positive state. Even though it is true that the state of flow contributes to the generation of trust (Bilgihan, 2016; Bilgihan *et al.*, 2015), not all of those who experience flow are aware of it; this is what drives this study to consider the relationship between flow consciousness and trust, positing *H3*:

   H3. Users' consciousness of having experienced the state of flow strengthens their trust in the social commerce website.

Loyalty, called eLoyalty in online settings, has been defined as the intention to buy on a specific website and not to change to another one (Flavián *et al.*, 2005) and as the intention to revisit and repurchase (Cyr *et al.*, 2007). Online customer loyalty has been widely studied in the marketing literature, and it has been tested considering different theoretical frameworks such as the SERVQUAL scale (Parasuraman *et al.*, 1994), the Expectation–Confirmation Theory (Oliver, 1997) or the Theory of Reasoned Action (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980) among others (see the meta-analysis of Toufaily *et al.*, 2013). There are also studies that have confirmed the positive relationship between flow and loyalty in online environments (Alcántara-Pilar *et al.*, 2015; Gupta and Kabadayi, 2010; O'Cass and Carlson, 2010; Jiao *et al.*, 2015). The SOR framework has been used in social commerce contexts (Gao and Bai, 2014; Liu *et al.*, 2016; Zhang *et al.*, 2014), to explain online consumer behaviour (Ha and Im, 2012; Koo and Ju, 2010; Xu *et al.*, 2014), considering flow as the organism of the SOR. Based on the idea that state of flow is an optimal experience that people look to repeat, it has been shown that this feeling of having been conscious of again experiencing the state of flow can contribute to the development of customer loyalty, since return intention is closely related to loyalty response. According to this argument, the combination of both theoretical approaches, SOR framework and Flow Theory, can help to understand how flow consciousness determines the influence on loyalty. Therefore, based on the idea that flow can help to retain customers, we hypothesize that those users who are conscious of their state of flow will be more loyal:

   H4. Flow consciousness positively affects users' eLoyalty.

Following the idea that customer eLoyalty towards social commerce websites can be the result of the influence of those passionate users who experience an affective state as flow, we also consider that, to show a loyal response, individuals must first trust the social commerce website. That is, it is inconceivable to be loyal if you mistrust; hence, trust is an important determinant of loyalty (Nadeem *et al.*, 2015; Cyr *et al.*, 2010; Cyr *et al.*, 2007; Laroche *et al.*, 2013; Lee *et al.*, 2015). Although it is an obvious relationship, apart from testing the direct relationship of flow consciousness on eLoyalty, we will also analyse the indirect effect on eLoyalty of flow consciousness through trust, as a response to the stimulus of being passionate on the social commerce website and experiencing flow:

   H5. Trust positively affects users' eLoyalty (Figure 1).

3. Methodology

The data used for the analysis were collected in Spain through an online survey between February and June 2015, using the services of a panel agency to assure the representativeness of the data. The sample consists of 771 users of social commerce websites, of which 51 per cent are male and 49 per cent female, aged between 16 and 80 years, similar to the Spanish users' profile according to the annual report of the Telecommunications and Information Society Spanish Watch (ONTSI, 2014), to assure the representativeness of the data (Table I). The respondents were all experienced online consumers. At the beginning of the questionnaire, after being given an explanation of the concept of social commerce, participants were asked whether they had recently purchased using a website with the characteristics of a social commerce platform. If they answered "yes", they carried on answering the survey and were asked to name the social commerce website from which they had purchased. Among their answers were Amazon, Aliexpress and Booking. Throughout the questionnaire, the respondents were continuously asked to recall their experience on the website they had chosen.

To ensure content validity, we carried out a thorough review of the literature that used the measurement factors that we use in our model, adapting them to the context of social commerce. sPassion was developed from the scale of Baldus *et al*. (2015) and consists of six items. This paper developed a scale to measure online brand community engagement; however, instead of using all of its factors, we took only those related to sPassion (brand passion and helping). State of flow was measured through the variables of concentration, enjoyment and temporal distortion, as a second-order reflective model. Concentration was measured with three items from the *Flow State Scale* (Jackson and Marsh, 1996) and as used by other authors as Huang (2003), Chen (2006) and Lee and Chen (2010). Enjoyment consists of three items, adapted from the scale of Koufaris (2002) and used by Kim and Han (2014), Casaló *et al*. (2012), Cyr *et al*. (2007) and Lee and Chen (2010). Temporal distortion was based on the study of Agarwal and Karahanna (2000) and Novak *et al*. (2000), also used by
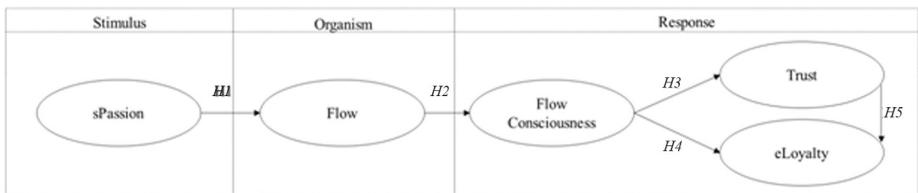
Figure 1.
Proposed model

Age	Data collected (%)
15-24	135 18
25-34	262 34
35-49	244 32
50-64	109 14
>65	21 3
Total	771 100
Genre	Data collected (%)
Men	399 59
Women	372 41
Total	771 100

Table I.
Demographic detail of the sample

Lee and Chen (2010). *Flow consciousness* was analysed through the adaptation of the *narrative description* of Sicilia *et al.* (2005) to social commerce contexts, based on the work of Novak *et al.* (2000). Trust consists of four items adapted from Kim and Park (2013) and eLoyalty is adapted from Zeithaml *et al.* (1996) and Cyr *et al.* (2007) with three items (Table II).

The survey variables were measured on a seven-point Likert scale, ranging from "1 = *strongly disagree*" to "7 = *strongly agree*". Before conducting the online questionnaire, it was checked by various experts. The purpose of this pretest was to ensure that all the questions and texts of the questionnaire were understandable and to assess its length and ease. After

	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 and Marsh (1996)
CON1	My attention was focussed 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 and 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 social commerce website I visit
TD5	Using this social commerce website often makes me forget where I am
TD6	The world generated by the social commerce website I visit is more real for me than the "real world"
	Flow consciousness – Based on Sicilia *et al.* (2005)
	The word "*flow*" is used to describe a state of mind sometimes experienced by people who are deeply involved in some activity. When one is in flow, time may seem to stand still, and nothing else seems to matter. Activities that lead to flow completely captivate a person for some period of time. Thinking about the experience you had on this social commerce website that you have named at the beginning of the questionnaire, respond to the following:
FLOWC1	On this social commerce website I have experienced flow
FLOWC2	It was a very intense sensation
	Trust – adapted from the scale of Kim and Park (2013)
T1	This social commerce website is trustworthy
T2	This social commerce website wants to be known as a company that keeps its promises and commitments
T3	This social commerce website will keep its promises
T4	I believe in the information that this Web provides
	eLoyalty – based on Zeithaml *et al.* (1996) and Cyr *et al.* (2007)
eLOY1	I would consider this social commerce website my first choice to buy
eLOY2	I would recommend this social commerce website to someone who seeks your advice
eLOY3	I would use this social commerce website again

Table II.
Scale

the comments and suggestions from the pretest, we made minor changes to improve the reading fluency and comprehensibility of certain issues. The analyses were performed using the statistical software SPSS 22 and EQS 6.

4. Results

4.1 Study of dimensionality of the flow state

Due to the lack of consensus about the dimensionality of flow, before analysing the model, first, we tested if *state of flow is a factor composed of three dimensions: concentration, enjoyment and temporal distortion*. Despite the differences among these three dimensions, we must not forget that they reflect a common concept so, to reach the state of flow, we consider that these three dimensions must be simultaneous and reflective. Therefore, we also tested if *the dimensions of the state of flow converged towards a single factor as reflective constructs*, through a second-order structure.

As previous studies have already highlighted the multidimensional character of the state of flow, the first step was to identify its dimensions. We began by conducting an exploratory factor analysis of the three factors – concentration, enjoyment and temporal distortion – using the Principal Axis Factoring method and Varimax rotation (Hair *et al.*, 1999; Kaiser, 1970; Kaiser, 1974). The Kaiser–Meyer–Olkin value was greater than the threshold of 0.70 (KMO = 0.905) and Barlett's sphericity test was significant. As can be seen in Table III, the results show that each item loaded onto its factor so we can introduce the three-factor structure that we hypothesized. These three factors explain 80.13 per cent of the total variance. Moreover, Cronbach's alpha ($\alpha = 0.927$) was greater than 0.70 (Nunnally, 1978), and it was not improved if any element was removed.

Following the exploratory analysis that suggested the dimensionality of the flow concept, we tested the normality of the variables through the asymmetry and kurtosis values, which were greater than 2.52 and 1.96 (Hair *et al.*, 2010), and the significance of the Kolmogorov–Smirnov–Lilliefors and Shapiro–Wilk statistics, so the distribution of our data did not fulfil the hypothesis of normality. Because of this, we used the robust maximum-likelihood estimation method (Bentler, 1995). Confirmatory analyses were performed with the purpose of analysing the reliability and validity of the proposed dimensions and to confirm the results obtained. The results show that the three factors fit the data well and the coefficients calculated are all significant (Satorra–Bentler scaled $\chi^2 = 504.7682$, 51 d.f., p-value = 0.001; Bentler–Bonett normed fit index (NFI) = 0.925; Bentler–Bonett non-normed fit index (NNFI) = 0.912; comparative fit index (CFI) = 0.932; Bollen (IFI) Fit index = 0.932;

Items	Factor 1 (λ)	Factor 2 (λ)	Factor 3 (λ)
Temporal Distortion 2	0.857		
Temporal Distortion 5	0.829		
Temporal Distortion 1	0.806		
Temporal Distortion 6	0.797		
Temporal Distortion 3	0.726		
Temporal Distortion 4	0.703		
Enjoyment 3		0.894	
Enjoyment 2		0.811	
Enjoyment 1		0.719	
Concentration 3			0.782
Concentration 2			0.763
Concentration 1			0.748

Table III.
Rotated component matrix

root mean-sq. error of approximation (RMSEA) = 0.107; (χ^2/d.f) = 9.898). Nevertheless, we must explain that the value of the normed chi-squared statistic was greater than the cut off of 3 (Kline, 2011). The reason for this is that the chi-squared test is highly sensitive to large sample sizes, not because of internal consistency problems, as all the factorial loadings are significant and greater than 0.50 (Hair *et al.*, 1999), and the goodness-of-fit indexes are above the recommended values.

We also analyse the reliability and validity of the flow dimensions. All the Cronbach's alpha values are greater than 0.70 (Nunnally, 1978), the composite reliability indexes (CR) exceed the recommended value of 0.70 (Jöreskog, 1971) and the average variance extracted (AVE) shows values higher than 0.50 (Fornell and Larcker, 1981). In addition to studying content validity in Section 3, we carry out convergent and discriminant analyses. Convergent validity was tested to corroborate that the standardized coefficients of all factorial loadings were statistically significant and greater than 0.50 (Hildebrandt, 1984). Discriminant validity was tested with the AVE analysis to compare, in a symmetric matrix, whether the AVE on the diagonal is larger than its corresponding squared correlation coefficients in its rows and columns (Fornell and Larcker, 1981; Hair *et al.*, 1999). Thus, we can conclude that flow state is composed of three dimensions: concentration, enjoyment and temporal distortion.

Having identified the three dimensions of flow (concentration, enjoyment and temporal distortion), and corroborated the validity of the scale (none of the items having to be removed), we then tested whether the multidimensional model was more appropriate than the unidimensional model. Using the *rival model technique* proposed by Anderson and Gerbing (1988) and Hair *et al.* (1999), we conducted an analysis that consisted of comparing alternative models. The first alternative established a unidimensional model where all items were gathered into a single factor. The second alternative – based on the three dimensions obtained in the previous analyses – proposed a multidimensional model that contains three factors. As can be seen in Table IV, the comparison between the empirical results confirms that the multidimensional model has better goodness-of-fit indexes than the unidimensional model. This confirms that flow is multidimensional and is measured through concentration, enjoyment and temporal distortion.

4.2 Factorial analysis of the second-order model
Having determined the three-dimensional model and verified its components, the next step was to test the convergence of concentration, enjoyment and temporal distortion towards a single factor, *flow*. After reviewing the literature, we proposed a reflective second-order

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	0.000	0.000
Bentler–Bonett normed fit index (NFI)	0.74	0.93
Bentler–Bonett nonnormed fit index (NNFI)	0.69	0.91
Comparative fit index (CFI)	0.74	0.93
Bollen (IFI) fit index	0.74	0.93
Root mean sq. error of app. (RMESA)	0.203	0.107
Confidence interval of RMESA	(0.195-0.211)	(0.099-0.116)

Table IV.
Comparison between unidimensional and multidimensional models

model. Siekpe's (2005) research analyses the multidimensionality of the flow concept in computer-mediated environments and examines whether flow should be measured in a formative or in a reflective model, showing better fit for the reflective model of flow. Likewise, authors such as Agarwal and Karahanna (2000) and Reychav and Wu (2015) have suggested that cognitive absorption – derived from the state of flow – as reflective, as covariance is expected among the indicators that measure it. Moreover, when measuring psychological constructs that show an attitude or behaviour, it is better to use reflective indicators because they are the origin of the observed variable and their effects are reflected in this variable.

Figure 2 shows the results of the analyses. The three factors are significant at the 0.01 level. According to the findings, we can confirm 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.

4.3 Analysis of the measurement model

After determining the measurement instrument and the structure of flow, the next step was to test the research model based on the SOR framework. The aim is to test whether the social stimulus, represented by sPassion, affects users' flow state which results in being conscious of experiencing flow and an increase in users' trust and eLoyalty. With the inclusion of these new factors, exploratory and confirmatory analyses were carried out to assess the reliability of the scale.

First, the psychometric properties were tested (Gerbing and Anderson, 1988). As shown in Table V, all the indexes studied were accepted. The reliability of the scale was corroborated by analysing Cronbach's alpha (Nunnally, 1978), the composite reliability index (Jöreskog, 1971) and the AVE (Fornell and Larcker, 1981). The Kaiser–Meyer–Olkin value was greater than 0.70, except in the case of the variable *flow consciousness*, whose value was 0.50, with a medium level of correlation and, therefore, medium acceptance (Kaiser, 1970). Then, we conducted a confirmatory factor analysis with the robust maximum-likelihood estimation method. The results showed that the model fitted the data well and that the coefficients calculated were all significant. The factorial loadings were greater than the accepted value of 0.50 and the recommended value of 0.70 (Table V).
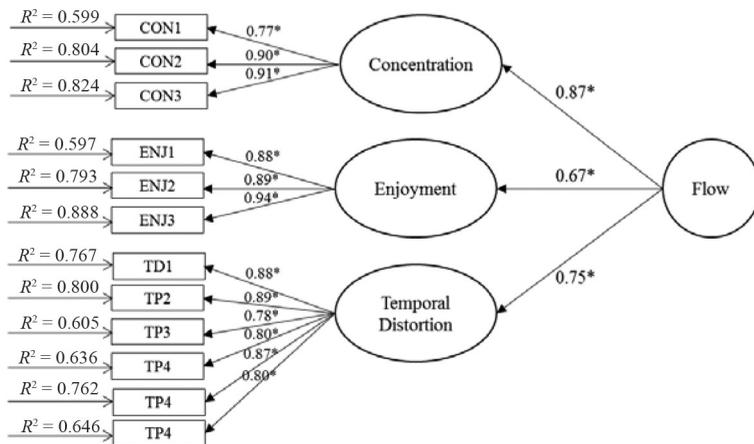

Figure 2.
Second-order model of flow

Note: *Signification coefficients at 0.01 level

Item	α Cronbach	CR	AVE	Kaiser-Meyer–Olkin	R^2	$\lambda *$
sPASS1	0.933	0.933	0.697	0.879	0.739	0.860
sPASS2					0.705	0.840
sPASS3					0.734	0.857
sPASS4					0.712	0.844
sPASS5					0.661	0.813
sPASS6					0.632	0.795
CON1	0.895	0.896	0.762	0.736	0.612	0.782
CON2					0.797	0.893
CON3					0.878	0.937
ENJ1	0.900	0.904	0.761	0.717	0.601	0.781
ENJ2					0.796	0.892
ENJ3					0.878	0.937
TD1	0.933	0.934	0.703	0.891	0.766	0.875
TD2					0.792	0.890
TD3					0.601	0.775
TD4					0.642	0.801
TD5					0.766	0.875
TP6					0.650	0.806
FLOWC1	0.921	0.924	0.859	0.500	0.775	0.869
FLOWC2					0.964	0.982
TRUST1	0.938	0.939	0.794	0.849	0.790	0.889
TRUST2					0.750	0.866
TRUST3					0.865	0.930
TRUST4					0.771	0.878
eLOY1	0.871	0.887	0.725	0.676	0.570	0.755
eLOY2					0.880	0.938
eLOY3					0.724	0.851

Notes: Satorra–Bentler scaled chi-sq = 1632.4454, 303 d.f., $p < 0.01$; Bentler–Bonett normed fit index (NFI) = 0.894; Bentler–Bonett nonnormed fit index (NNFI) = 0.898; Comparative fit index (CFI) = 0.912; Bollen (IFI) fit index = 0.912; root mean sq. error of approximation (RMSEA) = 0.075; *significant coefficients at 0.01 level

Table V.
Analysis of the reliability and validity of the SOR model

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

4.4 Analysis of the structural model
After carrying out the confirmatory analyses, the structural model was examined to test the hypotheses. The model fit indexes showed acceptable values (Figure 3). The results show

	sPASS	CON	ENJ	TD	FLOWC	TRUST	eLOY
sPASS	0.697						
CON	0.289	0.762					
ENJ	0.396	0.347	0.761				
TD	0.340	0.438	0.261	0.703			
FLOWC	0.398	0.314	0.263	0.372	0.860		
TRUST	0.125	0.137	0.185	0.010	0.064	0.794	
eLOY	0.133	0.149	0.203	0.017	0.069	0.729	0.794

Note: Italics values correspond to the average variance extracted

Table VI.
Discriminant validity

that sPassion has a positive effect on state of flow ($\beta = 0.78$, t = 13.61, $p < 0.01$), and, as a response, this influences flow consciousness ($\beta = 0.78$, t = 14.25, $p < 0.01$). As we posited at the beginning, we would like to corroborate whether being aware of experiencing flow has positive consequences for retaining customers. Regarding the empirical findings, flow consciousness has a positive effect on users' trust ($\beta = 0.29$, t = 6.81, $p < 0.01$), although it explains only 8.10 per cent of the variance of trust, and a smaller effect on eLoyalty ($\beta = 0.06$, t = 2.39, $p < 0.05$). However, the results show that eLoyalty is highly influenced by users' trust ($\beta = 0.84$, t = 25.35, $p < 0.01$). Thus, all the hypotheses are supported, and we can confirm that sPassion positively affects flow state, helping to retain customers by increasing eLoyalty.

5. Discussion and conclusions

Based on the SOR framework, this study analyses the role of sPassion as a social *stimulus* and its positive effect on the state of flow, the *organism*, achieving as a *response* an increase in flow consciousness, trust and loyalty. First, we empirically tested that flow is a multidimensional factor composed of concentration, enjoyment and temporal distortion. When users experience the three dimensions, they reach the state of flow or the optimal experience; they not only surf the website but also flow. Second, we analysed the SOR model to show that passionate users are prone to experience the state of flow and as a consequence they become more trusting. Therefore, experiencing flow can be a way of retaining customers.

We found support for the idea that state of flow is measured through the dimensions of concentration, enjoyment and temporal distortion, and it can be considered a second-order multidimensional factor. As a result, when users experience flow, they focus their attention on the activity they are performing, enjoy it and lose track of time, which leads them to flow on the website, reaching an optimal experience when surfing. The main contribution of these findings is not only to present the structure and dimensionality of the concept of flow in a social commerce context but also to test the difference between state of flow and the consciousness of such a state.

Finally, we tested the SOR model and showed that sPassion boosts users' flow state, which has a positive effect on *flow consciousness*, that is, on the awareness of having experienced this state on a social commerce website. Users need to be conscious of having reached that state and, to do so, the first step is to experience flow. The reason why we test this effect is because perceiving this rewarding experience will lead users to try to repeat it (Csikszentmihalyi, 1975), with the positive consequences that this entails for companies such as increasing loyalty (O'Cass and Carlson, 2010). Moreover, to date, all flow research has focussed on studying the consequences of the flow state, without regard to whether users were or were not aware of associating the state with the rewarding experience. Analysing
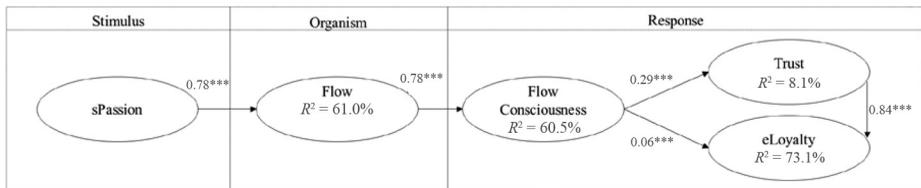

Figure 3.
Structural equation model

Notes: Satorra-Bentler Scaled Chi-Sq = 1834.2435, 316 d.f., $p < 0.01$; Bentler-Bonett Nonmed Fit Index (NFI) = 0.881; Bentler-Bonett Nonnormed Fit Index (NNFI) = 0.888; Comparative Fit Index (CFI) = 0.900; Bollen (WI) Fit Index = 0.900; Root Mean-Sq. Error of Approximation (RMSEA) = 0.079 Significant coefficients: ***$p < 0.01$, **$p < 0.05$

the results of the present study, we can state that flow consciousness has a weak effect on customers' eLoyalty, but contributes to the development of trust, which indirectly affects eLoyalty. Therefore, even though users' consciousness of having experienced the state of flow contributes to users' generation of trust towards the social commerce website, loyalty is not determined by flow consciousness, as it has only a weak positive influence. The reason why this relationship is not strong enough could be because the model is based on the study of the perceptions of emotions of the surveyed individuals, while the concept of loyalty has been measured with items related to the cognitive dimension. Therefore, in the same way that some studies of brand image base their scales of loyalty on both cognitive and emotional dimensions (Esch *et al.*, 2006; Albert *et al.*, 2008), future lines of research should incorporate into their loyalty scales some items related to emotional loyalty towards the social commerce website, as a consequence of having experienced emotions such as flow.

6. Implications and future lines of research

The empirical analyses shed light on controversial flow issues that were previously lacking consensus. The literature review showed that there is still no agreement about how to measure the state of flow (Ghani and Deshpande, 1994; Hoffman and Novak, 1996), not only with regard to the variables that compose the experience but also concerning its structure. This gap is an important aspect for companies to consider when developing their websites to become really appealing and to show what social commerce keys generate optimal experiences that enhance users' positive behaviour. Flow state has been separately considered in studies contextualized on social commerce websites (Gao and Bai, 2014; Zhang *et al.*, 2014), but due to the focus of these kind of websites on generating online experiences, it can be useful for future studies in this field.

The implications of the present study are thus twofold. On the one hand, regarding the academic implications, the study contributes to a deeper analysis of the concept of flow; on the other hand, concerning business implications, the SOR framework helps companies to better understand the consequences of customers experiencing flow. First, we contribute to establishing the basis for measuring the state of flow, its structure, factors and the establishment of a measurement instrument. Our study supports the idea of the multidimensionality of the state of flow and establishes the three dimensions that shape it. It has academic implications for the establishment of guidelines for using Flow Theory in the specific context of social commerce. It is hoped that the creation of the concept of *flow consciousness* will allow future investigations to focus on how it may enhance the commercial success of these social platforms.

Second, it has been shown that the social stimulus (sPassion) has a positive effect on the organism (state of flow), and this implies positive responses (flow consciousness, trust and weak eLoyalty). Therefore, this formula could help users to strengthen their trust towards the website and to keep the social commerce website in their memories. Given that people who reach the state of flow affirm that it is a rewarding experience that is worth repeating, 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, because it can contribute to customers' loyalty and engagement. However, the results show that what really has a strong effect on customers' eLoyalty is trust. Hence, future lines of research should study why, if the flow literature shows that this optimal experience contributes to increase loyalty responses such as an intention to return to the website, the consciousness of flow is not so strongly related. Based on this result, it would be interesting to study if some other aspects can mediate this relationship.

Nevertheless, companies that integrate Flow Theory into their marketing strategies should not forget that surfing and the transaction are as important as the subsequent delivery because, if one of the stages of the purchasing process irritates customers, they may forget that they reached the state of flow and, consequently, the rewarding sensation may vanish. That is, in online purchasing, user surfing time should be considered to be as important as purchase and post-purchase. Hence, flow and engagement are two concepts that should be studied in unison. Engagement is a sensation of passion, is generated slowly and is long-lasting (O'Brien and Toms, 2010), which can contribute to solving minor problems that appear during the purchasing process because engaged users are characterized by their loyalty. Thus, the study of the combination of *flow* and *engagement* should be taken into account in future lines of research.

7. Limitations
This research is not without limitations. Data were collected in a single country, so it would be advisable to carry out an international study, which would enable generalization of our results, to observe how state of flow is generated in different cultures because social commerce users surf websites from all around the world. Likewise, as Novak *et al*. (2003) suggest, the model of flow should be moderated by the hedonic or utilitarian constitution of the consumption experience because it may vary depending on whether it is goal-oriented or experiential.

References

Agarwal, R. and Karahanna, E. (2000), "Time flies when you're having fun: cognitive absorption and beliefs about information technology usage", *MIS Quarterly*, Vol. 24 No. 4, pp. 665-694.

Ajzen, I. and Fishbein, M. (1980), *Understanding Attitudes and Predicting Social Behaviour*, Prentice-Hall, Englewood Cliffs, NJ.

Albert, N., Merunka, D. and Valette-Florence, P. (2008), "When consumers love their brands: exploring the concept and its dimensions", *Journal of Business Research*, Vol. 61 No. 10, pp. 1062-1075.

Albert, N., Merunka, D. and Valette-Florence, P. (2013), "Brand passion: antecedents and consequences", *Journal of Business Research*, Vol. 66 No. 7, pp. 904-909.

Alcántara-Pilar, J.M., Barrio-García, S., Porcu, L. and Crespo-Almendros, E. (2015), "Motivational duality in online consumer behaviour: website usability and flow state as moderating factors", *International Journal of Business and Economic*, Vol. 14 No. 1, pp. 79-104.

Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modeling in practice: a review and recommended two-step approach", *Psychological Bulletin*, Vol. 103 No. 3, p. 411.

Baker, J. (1986), "The role of the environment in marketing services: the consumer perspective", *The Services Challenge: Integrating for Competitive Advantage*, Vol. 1 No. 1, pp. 79-84.

Baldus, B.J., Voorhees, C. and Calantone, R. (2015), "Online brand community engagement: scale development and validation", *Journal of Business Research*, Vol. 68 No. 5, pp. 978-985.

Batra, R., Ahuvia, A. and Bagozzi, R.P. (2012), "Brand love", *Journal of Marketing*, Vol. 76 No. 2, pp. 1-16.

Bauer, H.H., Heinrich, D. and Martin, I. (2007), "How to create high emotional consumer-brand relationships? The causalities of brand passion", *2007 Australian and New Zealand Marketing Academy Conference Proceedings*, pp. 2189-2198.

Bentler, P.M. (1995), *EQS Structural Equations Program Manual*, Multivariate Software, Encino, CA.

Bilgihan, A. (2016), "Gen Y customer loyalty in online shopping: an integrated model of trust, user experience and branding", *Computers in Human Behavior*, Vol. 61, pp. 103-113.

Bilgihan, A., Nusair, K., Okumus, F. and Cobanoglu, C. (2015), "Applying flow theory to booking experiences- an integrated model in an online service context", *Information and Management*, Vol. 52 No. 6, pp. 668-678.

Bitner, M.J. (1992), "Servicescapes: the impact of physical surroundings on customers and employees", *Journal of Marketing*, Vol. 56 No. 2, pp. 57-71.

Brodie, R.J., Ilic, A., Juric, B. and Hollebeek, L. (2013), "Consumer engagement in a virtual Brand community: an exploratory analysis", *Journal of Business Research*, Vol. 66 No. 1, pp. 105-114.

Cahill, L. and McGaugh, J.L. (1998), "Mechanisms of emotional arousal and lasting declarative memory", *Trends in Neurosciences*, Vol. 21 No. 7, pp. 294-299.

Carpentier, J., Mageau, G.A. and Vallerand, R.J. (2012), "Ruminations and flow: why do people with a more harmonious passion experience higher well-being?", *Journal of Happiness Studies*, Vol. 13 No. 3, pp. 501-518.

Casaló, L.V., Flavián, C. and Guinalíu, M. (2012), "Redes sociales virtuales desarrolladas por organizaciones empresariales: antecedentes de la intención de participación del consumidor", *Cuadernos De Economía y Dirección De La Empresa*, Vol. 15 No. 1, pp. 42-51.

Chang, C. (2013), "Examining users′ intention to continue using social network games: a flow experience perspective", *Telematics and Informatics*, Vol. 30 No. 4, pp. 311-321.

Chen, A., Lu, Y. and Wang, B. (2017), "Customers' purchase decision-making process in social commerce: a social learning perspective", *International Journal of Information Management*, Vol. 37 No. 6, pp. 627-638.

Chen, H. (2006), "Flow on the net–detecting web users' positive affects and their flow states", *Computers in Human Behavior*, Vol. 22 No. 2, pp. 221-233.

Chen, H., Wigand, R.T. and Nilan, M. (2000), "Exploring web users' optimal flow experiences", *Information Technology & People*, Vol. 13 No. 4, pp. 263-281.

Csikszentmihalyi, M. (1975), *Beyond Boredom and Anxiety*, Jossey-Bass, San Francisco.

Csikszentmihalyi, M. and Csikszentmihalyi, I.S. (1988), *Optimal Experience: Psychological Studies of Flow in Consciousness*, Cambridge University Press, New York, NY.

Cyr, D., Hassanein, K., Head, M. and Ivanov, A. (2007), "The role of social presence in establishing loyalty in e-service environments", *Interacting with Computers*, Vol. 19 No. 1, pp. 43-56.

Cyr, D., Head, M. and Larios, H. (2010), "Colour appeal in website design within and across cultures: a multi-method evaluation", *International Journal of Human-Computer Studies*, Vol. 68 Nos 1/2, pp. 1-21.

Donovan, R. and Rossiter, J. (1982), "Store atmosphere: an environmental psychology approach", *Journal of Retailing*, Vol. 58 No. 1, pp. 34-57.

Eroglu, S.A., Machleit, K.A. and Davis, L.M. (2001), "Atmospheric qualities of online retailing: a conceptual model and implications", *Journal of Business Research*, Vol. 54 No. 2, pp. 177-184.

Eroglu, S.A., Machleit, K.A. and Davis, L.M. (2003), "Empirical testing of a model of online store atmospherics and shopper responses", *Psychology and Marketing*, Vol. 20 No. 2, pp. 139-150.

Esch, F.R., Langer, T., Schmitt, B.H. and Geus, P. (2006), "Are brands forever? How Brand knowledge and relationships affect current and future purchases", *Journal of Product & Brand Management*, Vol. 15 No. 2, pp. 98-105.

Ettis, S.A. (2017), "Examining the relationships between online store atmospheric color, flow experience and consumer behavior", *Journal of Retailing and Consumer Services*, Vol. 37, pp. 43-55.

Fishbein, M. and Ajzen, I. (1975), *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*, Addison-Wesley, Reading, MA.

Flavián, C., Guinalíu, M. and Torres, E. (2005), "The influence of corporate image on consumer trust. A comparative analysis in traditional versus internet banking", *Internet Research*, Vol. 15 No. 4, pp. 447-470.

Fong, C.J., Zaleski, D.J. and Leach, J.K. (2014), "The challenge–skill balance and antecedents of flow: a Meta-analytic investigation", *The Journal of Positive Psychology*, Vol. 10 No. 5, pp. 1-22.

Fornell, C. and Larcker, D.F. (1981), "Structural equation models with unobservable variables and measurement error: algebra and statistics", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50.

Gao, L. and 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*, Vol. 21 No. 4, pp. 653-665.

Gefen, D. and Straub, D.W. (2003), "Managing user trust in B2C e-services", *E-Service Journal*, Vol. 2 No. 2, pp. 7-24.

Gerbing, D.W. and Anderson, J.C. (1988), "An updated paradigm for scale development incorporating unidimensionality and its assessment", *Journal of Marketing Research*, Vol. 25 No. 2, pp. 186-192.

Ghani, J.A. and Deshpande, S.P. (1994), "Task characteristics and the experience of optimal flow in human – computer interaction", *The Journal of Psychology*, Vol. 128 No. 4, pp. 381-391.

Grabner-Kräuter, S. and Kaluscha, E.A. (2003), "Empirical research in on-line trust: a review and critical assessment", *International Journal of Human-Computer Studies*, Vol. 58 No. 6, pp. 783-812.

Gupta, R. and Kabadayi, S. (2010), "The relationship between trusting beliefs and web site loyalty: the moderating role of consumer motives and flow", *Psychology and Marketing*, Vol. 27 No. 2, pp. 166-185.

Ha, Y. and Im, H. (2012), "Role of web site design quality in satisfaction and word of mouth generation", *Journal of Service Management*, Vol. 23 No. 1, pp. 79-96.

Hair, J., Anderson, R., Tatham, R. and Black, W. (1999), *Multivariate Data Analysis*, Prentivce-Hall International, NJ.

Hair, J.F., Wiliam, C.B., Barry, J.B. and Rolph, E.A. (2010), *Multivariate Data Analysis: A Global Perspective*, 7th ed., Pearson, London.

Herrando, C., Jiménez-Martínez, J. and Martín-De Hoyos, M.J. (2017), "Passion at first sight: how to engage users in social commerce contexts", *Electronic Commerce Research*, Vol. 17 No. 4, pp. 701-720.

Herrando, C., Jiménez-Martínez, J. and Martín-De Hoyos, M.J. (2018), "From sPassion to sWOM: the role of flow", *Online Information Review*, Vol. 42 No. 2.

Hildebrandt, L. (1984), "Attitudes and values as predictors of energy information behaviour patterns", *Advances in Consumer Research*, Vol. 11 No. 1, pp. 574-578.

Hoffman, D.L. and Novak, T.P. (1996), "Marketing in hypermedia computer-mediated environments: conceptual foundations", *Journal of Marketing*, Vol. 60 No. 3, pp. 50-68.

Holbrook, M.B. and Hirschman, E.C. (1982), "The experiential aspects of consumption: Consumer fantasies, feelings, and fun", *Journal of Consumer Research*, Vol. 9 No. 2, pp. 132-140.

Huang, D., Li, Z., Mou, J. and Liu, X. (2017b), "Effects of flow on young Chinese consumers' purchase intention: a study of e-servicescape in hotel booking context", *Information Technology and Tourism*, Vol. 17 No. 2, pp. 203-228.

Huang, E. and Huang, Y. (2013), "Interactivity and identification influences on virtual shopping", *International Journal of Electronic Commerce Studies*, Vol. 4 No. 2, pp. 305-312.

Huang, H.-C., Huang, L.-S., Chou, Y.-J. and Teng, C.-I. (2017a), "Influence of temperament and character on online gamer loyalty: perspectives from personality and flow theories", *Computers in Human Behavior*, Vol. 70, pp. 398-406.

Huang, M. (2003), "Designing website attributes to induce experiential encounters", *Computers in Human Behavior*, Vol. 19 No. 4, pp. 425-442.

Jackson, S.A. and Marsh, H.W. (1996), "Development and validation of a scale to measure optimal experience: the flow state scale", *Journal of Sport and Exercise Psychology*, Vol. 18 No. 1, pp. 17-35.

Jiang, Z., Chan, J., Tan, B.C. and Chua, W.S. (2010), "Effects of interactivity on website involvement and purchase intention", *Journal of the Association for Information Systems*, Vol. 11 No. 1, p. 34.

Jiao, Y., Gao, J. and Yang, J. (2015), "Social value and content value in social media: two ways to flow", *Journal of Advanced Management Science*, Vol. 3 No. 4, pp. 299-306.

Jöreskog, K.G. (1971), "Statistical analysis of sets of congeneric tests", *Psychometrika*, Vol. 36 No. 2, pp. 109-133.

Kaiser, H.F. (1970), "A second generation little jiffy", *Psychometrika*, Vol. 35 No. 4, pp. 401-415.

Kaiser, H.F. (1974), "Little jiffy, mark IV", *Educational and Psychological Measurement*, Vol. 34 No. 1, pp. 111-117.

Kamis, A., Stern, T. and 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*, Vol. 12 No. 2, pp. 157-168.

Kim, S. and Park, H. (2013), "Effects of various characteristics of social commerce (s-commerce) on consumers' trust and trust performance", *International Journal of Information Management*, Vol. 33 No. 2, pp. 318-332.

Kim, Y.J. and Han, J. (2014), "Why smartphone advertising attracts customers: a model of web advertising, flow, and personalization", *Computers in Human Behavior*, Vol. 33, pp. 256-269.

Kline, R.B. (2011), *Principles and Practice of Structural Equation Modeling*, 3rd ed., Guilford Press, New York, NY.

Koo, D. and Ju, S. (2010), "The interactional effects of atmospherics and perceptual curiosity on emotions and online shopping intention", *Computers in Human Behavior*, Vol. 26 No. 3, pp. 377-388.

Koufaris, M. (2002), "Applying the technology acceptance model and flow theory to online consumer behavior", *Information Systems Research*, Vol. 13 No. 2, pp. 205-223.

Lamme, V.A. (2003), "Why visual attention and awareness are different", *Trends in Cognitive Sciences*, Vol. 7 No. 1, pp. 12-18.

Laroche, M., Habibi, M.R. and Richard, M.O. (2013), "To be or not to be in social media: How brand loyalty is affected by social media?", *International Journal of Information Management*, Vol. 33 No. 1, pp. 76-82.

Lavigne, G.L., Forest, J. and 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*, Vol. 21 No. 4, pp. 518-546.

Lee, S.M. and Chen, L. (2010), "The impact of flow on online consumer behavior", *Journal of Computer Information Systems*, Vol. 50 No. 4, pp. 1-10.

Lee, D., Moon, J., Kim, Y.J. and Mun, Y.Y. (2015), "Antecedents and consequences of mobile phone usability: Linking simplicity and interactivity to satisfaction, trust, and brand loyalty", *Information & Management*, Vol. 52 No. 3, pp. 295-304.

Lin, X., Li, Y. and Wang, X. (2016), "Social commerce research: Definition, research themes and the trend", *International Journal of Information Management*, Vol. 37 No. 3, pp. 190-201.

Liu, H., Chu, H., Huang, Q. and Chen, X. (2016), "Enhancing the flow experience of consumers in China through interpersonal interaction in social commerce", *Computers in Human Behavior*, Vol. 58, pp. 306-314.

Matzler, K., Pichler, E.A. and Hemetsberger, A. (2007), "Who is spreading the word? The positive influence of extraversion on consumer passion and Brand evangelism", *Marketing Theory and Applications*, Vol. 18, pp. 25-32.

Mehrabian, A. and Russell, J.A. (1974), *An Approach to Environmental Psychology*, The MIT Press.

Mollen, A. and Wilson, H. (2010), "Engagement, telepresence and interactivity in online consumer experience: reconciling scholastic and managerial perspectives", *Journal of Business Research*, Vol. 63 No. 9-10, pp. 919-925.

Nadeem, W., Andreini, D., Salo, J. and Laukkanen, T. (2015), "Engaging consumers online through websites and social media: a gender study of Italian Generation Y clothing consumers", *International Journal of Information Management*, Vol. 35 No. 4, pp. 432-442.

Ng, C.S. (2013), "Intention to purchase on social commerce websites across cultures: a cross-regional study", *Information and Management*, Vol. 50 No. 8, pp. 609-620.

Novak, T.P., Hoffman, D.L. and Duhachek, A. (2003), "The influence of goal-directed and experiential activities on online flow experiences", *Journal of Consumer Psychology*, Vol. 13 No. 1, pp. 3-16.

Novak, T.P., Hoffman, D.L. and Yung, Y. (2000), "Measuring the customer experience in online environments: a structural modeling approach", *Marketing Science*, Vol. 19 No. 1, pp. 22-42.

Nunnally, J.C. (1978), in McGraw-Hill (Ed.), *Psychometric Theory*, 2nd ed., McGraw-Hill, New York, NY.

O'Brien, H.L. and Toms, E.G. (2010), "The development and evaluation of a survey to measure user engagement", *Journal of the American Society for Information Science and Technology*, Vol. 61 No. 1, pp. 50-69.

O'Cass, A. and Carlson, J. (2010), "Examining the effects of website-induced flow in professional sporting team websites", *Internet Research*, Vol. 20 No. 2, pp. 115-134.

Oliver, R.L. (1997), *Satisfaction, a Behavioral Perspective on Consumers*, McGraw-Hill, London, Maidenhead.

ONTSI (2014), Informe Anual La Sociedad en Red 2013, Observatorio Nacional de las Telecomunicaciones y de la Sociedad de la Información, available at: www.ontsi.red.es/ontsi/sites/default/files/informe_anual_la_sociedad_en_red_2013_ed._2014.pdf (accessed 10 February 2015).

Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1994), "Alternative scales for measuring service quality: a comparative assessment based on psychometric and diagnostic criteria", *Journal of Marketing*, Vol. 70 No. 3, pp. 201-230.

Reychav, I. and Wu, D. (2015), "Are your users actively involved? A cognitive absorption perspective in mobile training", *Computers in Human Behavior*, Vol. 44, pp. 335-346.

Richard, M. and Chebat, J. (2016), "Modeling online consumer behavior: preeminence of emotions and moderating influences of need for cognition and optimal stimulation level", *Journal of Business Research*, Vol. 69 No. 2, pp. 541-553.

Sharma, S. and Crossler, R.E. (2014), "Disclosing too much? situational factors affecting information disclosure in social commerce environment", *Electronic Commerce Research and Applications*, Vol. 13 No. 5, pp. 305-319.

Shim, S.I., Forsythe, S. and Kwon, W. (2015), "Impact of online flow on Brand experience and loyalty", *Journal of Electronic Commerce Research*, Vol. 16 No. 1, pp. 56-71.

Sicilia, M. and Ruiz, S. (2007), "The role of flow in web site effectiveness", *Journal of Interactive Advertising*, Vol. 8 No. 1, pp. 33-44.

Sicilia, M., Ruiz, S. and Munuera, J.L. (2005), "Effects of interactivity in a web site: the moderating effect of need for cognition", *Journal of Advertising*, Vol. 34 No. 3, pp. 31-44.

Siekpe, J.S. (2005), "An examination of the multidimensionality of flow construct in a computer-mediated environment", *Journal of Electronic Commerce Research*, Vol. 6 No. 1, pp. 31-43.

Swimberghe, K.R., Astakhova, M. and Wooldridge, B.R. (2014), "A new dualistic approach to Brand passion: harmonious and obsessive", *Journal of Business Research*, Vol. 67 No. 12, pp. 2657-2665.

Toufaily, E., Ricard, L. and Perrien, J. (2013), "Customer loyalty to a commercial website: Descriptive Meta-analysis of the empirical literature and proposal of an integrative model", *Journal of Business Research*, Vol. 66 No. 9, pp. 1436-1447.

Vallerand, R.J., Blanchard, C., Mageau, G.A., Koestner, R., Ratelle, C., Léonard, M., Gagne, M. and Marsolais, J. (2003), "Les passions de l'âme: on obsessive and harmonious passion", *Journal of Personality and Social Psychology*, Vol. 85 No. 4, pp. 756-767.

Wang, C. and Hsu, M. (2014), "An exploratory study using inexpensive electroencephalography (EEG) to understand flow experience in computer-based instruction", *Information and Management*, Vol. 51 No. 7, pp. 912-923.

Xu, J.D., Benbasat, I. and Cenfetelli, R.T. (2014), "The nature and consequences of trade-off transparency in the context of recommendation agents", *MIS Quarterly*, Vol. 38 No. 2, pp. 379-406.

Zeithaml, V.A., Berry, L.L. and Parasuraman, A. (1996), "The behavioral consequences of service quality", *Journal of Marketing*, Vol. 60 No. 2, pp. 31-46.

Zhang, H., Lu, Y., Gupta, S. and Zhao, L. (2014), "What motivates customers to participate in social commerce? The impact of technological environments and virtual customer experiences", *Information and Management*, Vol. 51 No. 8, pp. 1017-1030.

Zhang, K.Z. and Benyoucef, M. (2016), "Consumer behavior in social commerce: a literature review", *Decision Support Systems*, Vol. 86, pp. 95-108.

Zhou, T. and Lu, Y. (2011), "Examining mobile instant messaging user loyalty from the perspectives of network externalities and flow experience", *Computers in Human Behavior*, Vol. 27 No. 2, pp. 883-889.

Further reading

Chan, W.W.L. and Kit, W.W. (2014), "The influence of playfulness and subject involvement on focused attention when using social media", *Journal of Communication and Education*, Vol. 1 No. 1, pp. 16-45.

Choi, D.H., Kim, J. and Kim, S.H. (2007), "ERP training with a web-based electronic learning system: the flow theory perspective", *International Journal of Human-Computer Studies*, Vol. 65 No. 3, pp. 223-243.

Ding, D.X., Hu, P.J., Verma, R. and Wardell, D.G. (2010), "The impact of service system design and flow experience on customer satisfaction in online financial services", *Journal of Service Research*, Vol. 13 No. 1, pp. 96-110.

About the authors

Carolina Herrando is a PhD student and a Research Fellow in the Department of Marketing and Market Research at the University of Zaragoza (Spain). Herrando's research interests are in the fields of online consumer behaviour, ICT and online commerce, with a particular focus on social commerce websites, engagement and the optimal experience, or flow state, which may be created on the Web. Her research has been published in journals such as *Electronic Commerce Research* and *Online Information Review*. Carolina Herrando is the corresponding author and can be contacted at: cherrand@unizar.es

Dr Julio Jimenez-Martinez has a PhD in Business Administration and is a Professor in the Department of Marketing and Market Research at the University of Zaragoza (Spain). His research in the adoption and diffusion of information technologies has been published in several journals, such as *Research Policy*, *Technovation*, *Journal of Business Research*, *Online Information Review*, *European Journal of Marketing*, *International Journal of Information Management*, *Journal of Business and Industrial Marketing*, *Electronic Commerce Research* and *The Service Industries Journal*.

Dr M. Jose Martin de Hoyos holds a PhD in Business Administration and is an Assistant Professor in the Department of Marketing and Market Research at the University of Zaragoza (Spain). Her research interests include issues in e-commerce and consumer behaviour, acceptance of new technologies and marketing management systems. Her work has been published in several journals such as *Industrial Marketing Management*, *Technovation*, *Journal of Business Research*, *Interacting with Computers* and *Online Information Review*.