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The impact of affective and cognitive app experiences on loyalty towards retailers

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ABSTRACT

Although mobile applications (apps) are now widespread, to date few studies have considered the effects that app use has on loyalty towards the retailer. This study aims to explore the impact of affective and cognitive app experiences on loyalty towards retailers. A theoretical model, validated empirically with data from a survey using partial least squares structural equation modelling (PLS-SEM), is proposed. The results show the key role of affective experience and its impact on cognitive experience and that both dimensions positively influence the satisfaction and trust that users have in apps, which in turn has a positive effect on loyalty felt towards the retailer. These findings contribute towards improving the theoretical knowledge of the impact of apps on the retailer-customer relationship, and guide businesses in developing and implementing appropriate app-related strategies.

1. Introduction

As a result of the growth in purchases made through mobile applications (apps), many retailers are increasingly interested in this technology. However, the majority of smartphone users have only a few retailer apps, mostly those of the largest retailers (EMarketer, 2018). For example, in the U.S., 46% of shoppers make purchases using retailer apps at least once a month, but only 20% of smartphone owners have more than five installed apps, so most of these purchases are made from a smaller number of large companies (e.g. Amazon) (Internet Retailer, 2018). Many users download retailer apps in search of offers, coupons and information (Grewal et al., 2017). A large percentage of these apps is used only once and are immediately thereafter deleted (Synchrony, 2018). This behaviour is very worrying for retailers as it doesn't allow them to harness the app's potential as a sales and engagement channel that can help strengthen customer relationships.

Despite the importance of apps in the current retail environment, few studies have analysed related consumer behaviour (Hew, 2017). To date, studies into retailer apps have focused on understanding what factors lead users to download retailer apps (e.g. Harris et al., 2016; Kim et al., 2017), and their intention to use them (e.g. Iyer et al., 2018; Kang et al., 2015; Taylor and Levin, 2014) and intention to make purchases through them (e.g. Dacko, 2017; Liu et al., 2019; Van Heerde et al., 2019). However, little attention has been paid to the question of how using apps impacts on the customer's relationship with the retailer, for example, in increased loyalty.

Previous studies have suggested that the relationship of a company with its customers is influenced by the result of their interactive experience (Gentile et al., 2007; Novak et al., 2000; Rose et al., 2011; Verhoef et al., 2009). According to Calder and Malthouse (2008, p.3), experiences "can be described in terms of the thoughts and feelings that consumers have about what is happening when they are doing something". The interest in examining customers' experiences in retail environments is not new. Hitherto, most work has focused on the offline environment, and it is only recently that researchers have empirically analysed the shopping experience on the Internet (e.g. Martin et al., 2015; Rose et al., 2012), social networks (e.g. Li, 2017) and the Internet of Things (e.g. Hoffman and Novak, 2018).

Apps have great potential to improve the shopping experience in mobile commerce (m-commerce) and, as a consequence, the retailer-customer relationship (Inman and Nikolova, 2017; Iyer et al., 2018; Molinillo and Viano-Pastor, 2015). Generally, the services offered are

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sufficient to obtain product information, compare, buy, evaluate, share on social networks, redeem coupons and locate stores, among other tasks (Grewal et al., 2017). The purpose of apps is not just to improve the customers' shopping experiences, but also to customise their experiences (Parise et al., 2016), to send them promotions and individual messages, and to provide in-store services that reduce the need for staff and to increase click and collect sales (Inman and Nikolova, 2017). Therefore, retailers need to understand the app experience and how it influences consumer behaviour.

Customer experience is a holistic construct that has been conceptualized in various ways (e.g. Hoffman and Novak, 2018; Lemon and Verhoef, 2016). In the online environment, Rose et al. (2012) conceptualize consumer experience around two dimensions (i.e. cognitive and affective), with two direct outcomes (i.e. satisfaction and trust) and one indirect outcome (i.e. online repurchase intention). Their model was empirically tested and validated in an online web environment with a sample composed mostly of U.S. shoppers. The objectives of the present paper are threefold: First, we examine how user experience with retailer apps influences the customer-retailer relationship. Second, we assess the validity of Rose et al. (2012)'s model by applying it to a consumer experience with a different channel, that is, apps, in a different country, Spain. Third, we extend Rose et al. (2012)'s model by introducing the critical dimension of customer loyalty towards the retailer. By doing so, this research responds to the calls of Alnawas and Aburub (2016), Dacko (2017) and Ström et al. (2014) to improve the empirical knowledge of the contribution of apps to the customer experience in the retail sector and company performance.

2. Background

2.1. Retailers' mobile apps' studies

Although businesses did not launch mobile apps until the very late 2000s, their development is now one of the main mobile marketing activities that retailers are undertaking to meet the needs of their customers (Pantano and Priporas, 2016; Shankar et al., 2010; Van Heerde et al., 2019). However, Hew (2017)'s bibliographical study demonstrated that most studies about mobile apps have, to date, focused on services, payment and banking, among other areas, but few have examined retailers' apps. Most of these studies have analysed, from very diverse theoretical frameworks, the antecedents of intention to use, purchases and satisfaction with apps.

Some authors have highlighted a wide variety of variables among the antecedents of intention to use, continuing intention to use and frequency of use: interest in the app, the time period between visits by a customer to a company's retail locations (Taylor and Levin, 2014), affective involvement, experiential orientation (Kang et al., 2015), the fit between the retailer's brand image and the mobile app, functional value, hedonic value, social value, satisfaction with the retailer's mobile app (Iyer et al., 2018), utilitarian factors of the technology (i.e. ease of use, convenience and customisation), timeliness, enjoyment (McLean, 2018), aesthetics, navigability, service experience, trust, and self-efficacy (Thakur, 2018).

Similarly, researchers have shown that the likelihood of buying using apps is also influenced by a range of variables, such as the consumer's online and mobile experience (Kim et al., 2017), experiential benefits (e.g. efficiency and shopping value), satisfaction (Dacko, 2017), quality (i.e. information, system and service), customisation (Trivedi and Trivedi, 2018), distance to the store and offline-only shopping behaviour (Van Heerde et al., 2019).

On the other hand, very few studies have analysed the influence of the consumer's experience with the app on the consumer-retailer relationship. For example, Saarijärvi et al. (2014) analysed ten businesses and proposed a framework that described how retailers might use mobile services to better serve their customers. Pantano and Priporas (2016)'s qualitative study suggested that mobile apps improve customers' shopping experiences through their functionality, ease of use and convenience. More recently, McLean (2018) established that utilitarian variables (i.e. perceived ease of use, perceived usefulness and convenience) and enjoyment positively influence customer engagement with apps, and customisation enhances engagement, which, in turn, increases consumer loyalty towards the retailer's brand. Therefore, to date there are few studies into how the user's experience with retailer apps influences the customer-retailer relationship and, in particular, loyalty felt towards the retailer.

2.2. Customer experience in the retail context

Customer experience originates from the interactions between the consumer and the retailer, generates value, and shapes satisfaction and purchase intentions (Alnawas and Aburub, 2016). In recent years, retailers have increased their interest in generating positive customer experiences (Khan and Rahman, 2015). Creating a memorable experience is a key retailer objective, who see it as a tool with which to differentiate themselves (Meyer and Schwager, 2007). In this regard, until recently it was assumed that bricks-and-mortar stores had an advantage over the incipient electronic commerce, because there in the customer can have a tangible interactive experience with both the product and the environment (e.g. try the product, talk with employees, etc.). However, recent studies have suggested that improving the customer experience should not be limited to the offline environment and that the retailer should be oriented towards improving the experience at all the consumer and retailer touchpoints (Sit et al., 2018; Stein and Ramaseshan, 2016). Therefore, as the customer experience is not dependant solely on physical interaction, it is increasingly common to find retailers who complement their offline activities with online activities (Parise et al., 2016).

Online shopping experience has been widely studied in the marketing literature (see Bilgihan et al., 2016; Bleier et al., 2019; Lemon and Verhoef, 2016; Novak et al., 2000; Rose et al., 2011). However, findings in the e-commerce environment cannot be extrapolated to m-commerce due to motivational, technical and situational differences, among other factors. For example, some authors have suggested that m-commerce customers are more time conscious and value most its convenience, especially as they often use it "on the go" (McLean et al., 2018; Wang et al., 2015). In this sense, Okazaki and Mendez (2013) demonstrated that the perceived convenience of m-commerce is influenced by the intrinsic (i.e. portability and interface design) and extrinsic (i.e. simultaneity, speed, and searchability) attributes of mobile devices. In addition, mobile devices facilitate seamless cross-channel customer experiences and personalised location-based marketing (Verhoef et al., 2015; Von Briel, 2018), service ubiquity (Tojib and Tsarenko, 2012), high connectivity, and the use of contactless technologies (Pantano and Priporas, 2016), which are not possible in the e-commerce environment.

In addition, mobile apps are specific to m-commerce, and have their own characteristics that provide a different customer experience to mobile websites. In this sense, Liu et al. (2019), for example, highlighted their greater flexibility, online wireless capacity, more user-friendly interfaces, faster information loading, better adaptation to devices, greater potential for customisation (they store more user information), and greater privacy options. So, the growth of online commerce using apps opens up new opportunities to provide consumers with positive experiences that might lead them to exhibit future behaviours beneficial for the retailer (Inman and Nikolova, 2017; Shin, 2015). Through the use of mobile devices, the purchasing process begins before the consumer enters the store (Molinillo and Viano-Pastor, 2015), as (s)he alternates between the online and offline channels; this behaviour carries on inside the store itself (Fuentes et al., 2017). As a result, recent studies have shown that the use of mobile apps influences consumer satisfaction, positive emotions and their behavioural intentions (Iyer et al., 2018; McLean et al., 2018). Moreover, some authors

have analysed the factors that influence loyalty towards m-commerce retailers (e.g. Lin and Wang, 2006), and the intention to use or recommend a retailer's app (e.g. Xu et al., 2015) but, to the best of the authors' knowledge, to date, very few other studies have analysed how consumers' experiences with apps influence their allegiance to retailers.

Loyalty is one of the most important outcomes of consumer experience in retail (Srivastava and Kaul, 2016). In the present study, loyalty is defined as the consumer's intention to behave in the retailer's interest, which can manifest itself in different ways, such as stating that they will continue buying at that retailer, that they will recommend it or that they will increase their purchases there in the coming months (Rubio et al., 2017). Loyalty generates important benefits for the retailer, such as: promotion of the store through recommendation (Srinivasan et al., 2002), customer retention and cross-buying (Liang et al., 2008) and high customer profitability (Donio' et al., 2006), among others. Understanding the relationship between loyalty and its antecedents is one of the biggest challenges for retailers (Toufaily et al., 2013), due to, among other reasons, the important changes to the shopping experience since the adoption of the smartphone (Molinillo and Viano-Pastor, 2015).

2.3. Cognitive and affective experience dimensions results

In the previous literature, the customer experience construct has been defined multidimensionally by various authors (e.g. Bleier et al., 2019; Brakus et al., 2009; Gentile et al., 2007; Hoffman and Novak, 2018), and most tend to include the cognitive and affective dimensions of experience within their conceptualisations (Kranzbühler et al., 2018). In this study, as with Rose et al. (2012), the conceptualisation of cognitive experience was based on the concept of flow, defined by Novak et al. (2000) as “a cognitive state experienced during navigation” (p. 22), which was interpreted as “cognitive absorption” by Agarwal and Karahanna (2000) and was considered to be an “optimal experience” by Csikszentmihalyi (1997). Schmitt (1999) suggested that cognitive experiences can be created by setting the consumer problems that pose an intellectual challenge. In the context of consumer behaviour studies in the online environment, it has been consistently shown that this conceptualisation of cognitive experience (flow) captures the effect of cognitive aspects, such as cognitive curiosity and concentration (Pelet et al., 2017), utilitarian features (Bilgihan et al., 2016), informativeness, effectiveness (Gao and Bai, 2014), perceived ease of use and perceived usefulness (Chen et al., 2018), among others.

Bagozzi et al. (1999) established that affective experiential state is a set of mental processes that includes emotions, moods and attitudes. Emotional experience is decisive in purchasing behaviour, so retailers must channel all their activities, interactions and offers to create unique experiences for their clients (Terblanche, 2018).

Some recent studies have identified these two dimensions as key antecedents of consumer-related constructs, such as, among others, perceived value, satisfaction, intention to use, and repurchase intention in e-commerce web environments (e.g. Martin et al., 2015; Rose et al., 2012), mobile-shopping websites (e.g. Agrebi and Jallais, 2015) and retailers' mobile apps (e.g. Iyer et al., 2018; McLean et al., 2018). However, although the influence of cognitive and affective experience on consumer-related constructs is, in general, accepted, these studies yielded mixed results. For example, Rose et al. (2012) found cognitive or affective experience had no significant influence on customer trust in online shopping, Bilgihan et al. (2016) found that these relationships were significant, and Martin et al. (2015) found that only the affective experience was significant. In the retailer m-commerce applications environment, McLean (2018) showed that the cognitive dimension (i.e. ease of use, usefulness and convenience) and, to a lesser extent, the affective (i.e. enjoyment) dimension, influenced the customer's engagement with the app, which, in turn impacted on customer loyalty towards the brand. On the other hand, Kang et al. (2015) demonstrated that affective involvement with the retailer's app increased the likelihood of the app being downloaded and used, while cognitive involvement did not play a significant role. In relation to user satisfaction, Agrebi and Jallais (2015) demonstrated that the cognitive and affective consumer experience with mobile shopping websites positively influenced their satisfaction, and Iyer et al. (2018) obtained similar results in relation to retailers' mobile apps.

Therefore, while the roles played by the cognitive and affective dimensions of experience in previous studies are not easily comparable due to the wide range of approaches, variables and retail contexts, it seems to be confirmed that both dimensions can influence consumer-related constructs, although their effects are not consistent across the studies. In addition, until now the influence of these two dimensions on loyalty felt towards the retailer in other, specific environments, such as the use of retailer apps, has received relatively little attention. Accordingly, there is a need for further examination of the roles of these two experiential components in the retailer mobile app environment.

3. Hypotheses development

3.1. Relationship between the affective and cognitive dimensions of experience

While the relationship between the affective and cognitive dimensions of experience is not consistent across the literature, in this study, following Bagozzi et al. (1999), we consider that a person's emotional state may influence aspects of information processing, such as the coding and retrieval of information, and the formulation of assessments and judgments, among others. In this line of thinking, Pham (2004) also suggested that affective feelings impact on judgement and decision-making processes. More recently, Rose et al. (2012) demonstrated empirically that, in the e-commerce environment, the consumer's affective experience positively influences his/her cognitive experience. Similarly, Kang and Lee (2018) showed that, in e-service environments, affective experience (i.e. arousal and pleasure) influenced the consumer's cognitive experience (evaluation of service quality). In m-commerce environments, Agrebi and Jallais (2015) also demonstrated that affective experience (enjoyment) positively impacts on the cognitive dimension of the experience (i.e. perceived usefulness). The following hypothesis is therefore proposed:

H1. The affective experience of customers using retailers' apps has a positive effect on their cognitive experience.

3.2. Experience and satisfaction

Meyer and Schwager (2007) defined satisfaction as the state resulting from the culmination of a set of consumer experiences which arises when their expectations and experiences are balanced. These authors argue that, in order to understand how consumer satisfaction is achieved, it is necessary to break down the experience into elements or dimensions. Several studies divide experience into two components that positively influence satisfaction, the cognitive and the affective (Martin et al., 2015; Rose et al., 2012; Shin, 2015). In particular, Martin et al. (2015) and Rose et al. (2012) demonstrated empirically that consumer experience (cognitive and affective) in the e-commerce web environment positively influences satisfaction. In the field of smartphones, Shin (2015) highlighted the importance of improving the cognitive and affective dimensions to achieve greater consumer satisfaction. Specifically, cognitive and affective experience have been identified as antecedents of satisfaction with mobile apps (Xu et al., 2015).

In the retail context, Mosquera et al. (2018) have shown that when consumers have positive experiences with retailers' smart technologies this produces greater satisfaction and increases in-store purchase intention. Similarly, Pantano and Priporas (2016) have shown that cognitive experience positively influences the consumer's attitude towards the use of mobile technologies by retailers. More specifically, Han et al.

(2016) identified that the consumer's experience when using an app to obtain information about an establishment and its products positively influences satisfaction with the application. McLean et al. (2018) highlighted the importance of cognitive aspects in generating positive experiences with retailer apps to produce consumer satisfaction. For all these reasons, the following hypotheses are proposed:

H2. The cognitive experience of customers using retailers' apps has a positive effect on their satisfaction.

H3. The affective experience of customers using retailers' apps has a positive effect on their satisfaction.

3.3. Experience and trust

Various authors have found that a positive experience in an online environment facilitates a higher level of trust (Martínez-López et al., 2017; Rose et al., 2012). In online commerce, trust is the security that customers feel based on their expectations regarding the ability, benevolence and integrity of the retailer (Hao et al., 2015). The online shopping experience is an important antecedent of consumer trust (Bart et al., 2005). Specifically, in the mobile context, Li and Yeh (2010) identify cognitive and affective factors, such as ease of use, customisation and aesthetic design, as antecedents of consumer trust. Similarly, Rose et al. (2012) found that improvement in cognitive and affective experiential states created greater consumer trust in e-commerce. Harris et al. (2016) found that different cognitive and affective elements linked to the consumer's previous experience improves his/her trust in an app. Therefore, the following hypotheses are proposed:

H4. The customer's cognitive experience of the retailer's app has a positive effect on his/her trust.

H5. The customer's affective experience of the retailer's app has a positive effect on his/her trust.

3.4. Satisfaction and trust

In the context of e-commerce, consumer satisfaction is considered an antecedent of trust; if the consumer's previous experiences have been satisfactory, (s)he will tend to trust the online retailer (Anderson and Srinivasan, 2003; Fang et al., 2016). This relationship has been rejected in online contexts as diverse as online brand communities (Martínez-López et al., 2017), internet-based sharing economy platforms (Liang et al., 2018), application services (Kim et al., 2011), and mobile services (Lee et al., 2015). Therefore, the following hypothesis is proposed:

H6. Customer satisfaction with the retailer's app has a positive effect on his/her trust.

3.5. Satisfaction and loyalty

Oliver (1999) argued that satisfaction was the seed from which loyalty is born. The positive relationship between satisfaction and loyalty has been demonstrated empirically in various industries and cultural settings (Kumar et al., 2013). A more satisfied customer will have less reason to look for alternatives with which to satisfy his/her needs, will be more willing to repurchase from the same outlet, to recommend it to others and, even, to resist competitors' promotions.

In the e-commerce environment, Hwang and Kim (2018) also found a positive relationship between satisfaction and customer loyalty. Anderson and Srinivasan (2003) and Jin et al. (2008) showed that the influence of satisfaction on online retailer loyalty is moderated by individual and business factors.

Regarding mobile applications, several authors have found a positive relationship between satisfaction with apps and loyalty towards apps (e.g. Chang, 2015; Xu et al., 2015). Recently, Han et al. (2016) identified that consumer satisfaction with the use of apps that allowed them to obtain information from a store, using NFC technology (near-field communication), positively influenced their loyalty towards the retailer; Alnawas and Aburub (2016), with retailer's apps, and Iyer et al. (2018), with augmented-reality apps, showed how satisfaction helps generate higher repurchase intention. Consequently, the following hypothesis is posited:

H7. Customer satisfaction with the retailer's app has a positive effect on loyalty towards the retailer.

3.6. Trust and loyalty

To gain consumer loyalty, it is not enough to focus solely on marketing efforts that improve satisfaction (Anderson and Srinivasan, 2003; Kumar et al., 2013). According to Reichheld and Schefter (2000), to create loyal consumers a retailer has to instil them with trust; thus, the trust variable is a key antecedent of loyalty (Chaudhuri and Holbrook, 2001). Transmitting trust to consumers to reduce their feelings of uncertainty and risk is a key element in ensuring that their future behaviour towards the retailer is favourable (McKnight et al., 2002). In the services sector, trust has been identified as one of the main factors that creates loyalty towards the supplier (Nguyen et al., 2013), particularly in e-commerce (Anderson and Srinivasan, 2003; Hao et al., 2015). In addition, some studies have identified the mediating role of trust in the relationship between user experience and loyalty in e-commerce (Kim et al., 2009) and in mobile telephony services (Lee et al., 2015). Therefore, the following hypothesis is proposed:

H8. Customer trust in a retailer's apps has a positive effect on loyalty towards the retailer.

Fig. 1 shows the proposed research model which forms the basis for the empirical analysis.

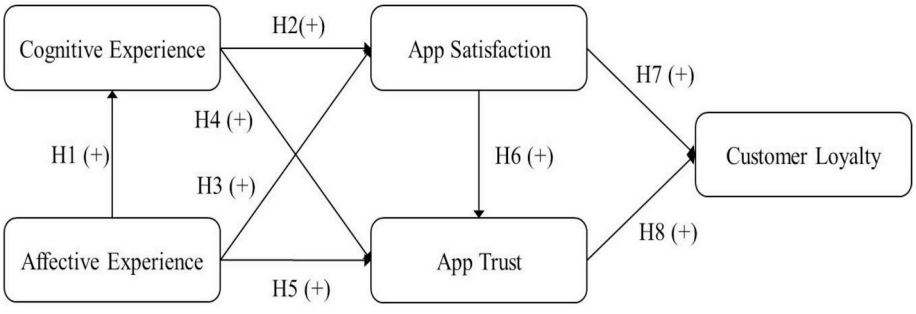

Fig. 1. Proposed model.

4. Methodology

4.1. Measuring instrument

To achieve the research objectives and evaluate the proposed model, an empirical study was conducted via an online survey. The model's constructs were adapted from previous studies. Prior to the data collection, the questionnaire was qualitatively reviewed by three experts. A subsequent validation was carried out with a sample of consumers to determine the acceptance level, dimensionality, reliability, and validity of the proposed scales. Table 2 shows the questionnaire items used in the data collection for the evaluation of the research model. Cognitive experience was measured using three items adapted from Novak et al. (2000)'s measurement of the cognitive state of flow; affective state was measured using six items adopted from Rose et al. (2012); satisfaction was measured using three items adopted from Lin and Wang (2006); trust was measured using four items adopted from Liébana-Cabanillas et al. (2014); finally, loyalty was measured using five items adopted from Zeithaml et al. (1996). The constructs were measured on 7-point Likert-type scales (from strongly disagree to strongly agree), except for affective experience which was measured using 7-point semantic differential scale items, and items CE1 and CE2 of the cognitive construct, which were measured using scales from “not at all”, to “a lot” and from “never”, to “every time”, respectively.

4.2. Sample

The study population consisted of people aged 18 or older who had installed a retailer's app on their smartphone or tablet at least one month prior to the survey and had used it at least twice; therefore, the participants were in a better position to rate their experience with the app, as a single test greatly limits knowledge of the features on offer. These requirements were controlled using screening questions. The data were collected through an online survey conducted October–December 2017. The invitation with the URL link to the online survey was posted on social networks, such as Facebook, and send by email to consumers who had previously given their consent to participate in academic research. A snowball sampling procedure facilitated the distribution of the survey among the target population. Responses with repeat values and identical IP addresses were discarded. Participation was voluntary and non-incentivised. The final sample consisted of 393 participants; 395 consumers participated, but 2 questionnaires were eliminated because they were incorrectly completed. The age range of the sample is consistent with the most common profile of users of retailers' mobile applications (ComScore, 2015). Women made up 58% of the sample, 55.7% were between 18 and 24 years and 24.2% were between 24 and 34 years. As to monthly income, 21.6% receive less than 901 euros, 17.6 between 901 and 1200 euros, and 18.1% between 1201 and 1500 euros. As to education/employment, 51.9% were university graduates, 28% have a baccalaureate, 48.9% are students, and 40.2% are employed (Table 1). The participants were asked to answer the questions about the model's variables on the basis of the retailer's mobile app that they used most frequently. Most of the answers concerned fashion retailer applications (62.5%) (e.g. Zara, El Corte Ingles, Pull & Bear, Stradivarius, Mango), and others concerned home and electronics (12.2%) (e.g. IKEA, MediaMarkt) and sporting goods (10.6%) (e.g. Decathlon), and to a lesser extent other categories such as food (e.g. Carrefour, Lidl), games (e.g. Game), and marketplaces (e.g. Amazon, Aliexpress), among others.

Table 1
Sample characteristics.

Gender	%
Male	42.0
Female	58.0
Age	
Between 18 and 24 years	55.7
Between 25 and 34 years	24.2
Between 35 and 44 years	11.5
Between 45 and 54 years	6.1
55 years and over	2.5
Net monthly income of the household	
Up to 900€	21.6
901 to 1200€	17.6
1201 to 1500€	18.1
1501 to 1800€	14.8
1801 to 2400€	13.2
2401 to 3000€	6.9
Over 3000€	7.9
Level of studies completed	
No studies	0.3
Primary school studies	2.8
Secondary school studies	5.9
High school	28.0
Vocational training	11.2
University studies (diploma, bachelor's degree, engineering, …)	45.0
Postgraduate university studies (master's degree, doctorate)	6.9
Main employment situation	
Employee or self-employed worker	40.2
Student	48.9
Unemployed	7.1
Housework	3.6
Retired	0.3

4.3. Data analysis

The research model was analysed using partial least squares structural equation modelling (PLS-SEM). This technique is appropriate for exploratory research, does not require data normality and can be used with small samples (Hair et al., 2014). SmartPLS 3.0.M3 software was used for the data analysis (Ringle et al., 2015).

5. Results

The PLS model was analysed in two stages: first, the reliability and validity of the measurement scales were evaluated (i.e. measurement model) and, second, the relationships between the constructs and the fit of the model (i.e. structural model) were evaluated.

5.1. Evaluation of the measurement model

Table 2 shows the descriptive statistics (mean and standard deviations) and psychometric properties of the measures. The individual reliability of each item was evaluated by factor loadings. Values above 0.7 indicate that the shared variance between the item and its construct is greater than the error variance (see Hair et al., 2014; Henseler et al., 2009). Table 2 shows that all item loadings exceeded the recommended minimum value. The internal consistency of each construct was evaluated by Cronbach's alpha (CA) (Cronbach, 1951) and the factor's composite reliability (CR) (Nunnally and Bernstein, 1994). The constructs presented values above the recommended minimum of 0.7. Convergent validity was also guaranteed as all the latent variables had an average variance extracted (AVE) higher than the recommended minimum value of 0.5 (Fornell and Larcker, 1981) (Table 2).

Table 2
Descriptive statistics and psychometric properties of the measures.

Constructs/items	Loadings
Cognitive Experience (CE) (Mean: 3.53; SD: 1.86; CA: 0.946; CR: 0.957; AVE: 0.880)	
CE1. Do you think that you have ever felt immersed[1] in an application?	0.937
CE2. How often would you say you felt immersed using an application?	0.937
CE3. Most times I use an application I feel immersed.	0.940
Affective Experience (AE) (Mean: 4.26; SD: 1.78; CA: 0.901; CR: 0.869; AVE: 0.528)	
AE1. Unhappy/Happy	0.786
AE2. Sad/Content	0.811
AE3. Annoyed/Pleased	0.802
AE4. Calm/Excited	0.715
AE5. Relaxed/Stimulated	0.719
AE6. Guided/Autonomous	0.749
Satisfaction with the app (S) (Mean: 5.37; SD: 1.48; CA: 0.932; CR: 0.947; AVE: 0.856)	
S1: I am satisfied with the application.	0.925
S2: The application is successful.	0.893
S3: The application has met my expectations.	0.956
Trust in the app (T) (Mean: 5.11; SD: 1.57; CA: 0.966; CR: 0.964; AVE: 0.870)	
T1: I think the application will keep the promises and commitments that it makes.	0.919
T2: I would rate the application as honest.	0.934
T3: I think the application is responsible.	0.938
T4: In general, I trust the application.	0.941
Loyalty to the retailer (L) (Mean: 5.09; SD: 1.70; CA: 0.943; CR: 0.943; AVE: 0.768)	
L1: You consider this retailer as your first purchase choice.	0.813
L2: You will buy more from that retailer in the coming years.	0.869
L3: Speak well of that retailer with other people.	0.929
L4: Recommend that retailer to someone who asks for advice.	0.917
L5: Encourage family and friends to shop at that retailer.	0.850

Note 1. In the questionnaire, "immersed" is defined as the mental state that the person experiences when they are deeply involved in an activity.

To assess discriminant validity, the Fornell-Larcker criteria (Fornell and Larcker, 1981) and the heterotrait-monotrait (HTMT) ratio (Henseler et al., 2015) were used. As to the first, the square root of the AVE of each construct must be greater than the inter-construct correlations of the model. The HTMT ratio of correlations between two constructs should be below 0.9. Both criteria were met, so the discriminant validity of the measurement model is confirmed (Table 3).

5.2. Evaluation of the structural model

Table 4 shows the results of the evaluation of the structural model and the tests of the hypotheses. All the relationships are significant at 99.9% ($p < 0.001$), except H4 which is at 99% ($p < 0.01$). It is recommended that the standardised regression coefficients (ß) should be greater than 0.2 (Chin, 1998). In this case, of the eight proposed relationships in the structural model, five are much higher than 0.2 (H1, H3, H6, H7 and H8), while the remainder (H2, H4 and H5) obtained lower values. Therefore, the eight hypotheses are accepted, although in three of them the effect is reduced (see Fig. 2), so there is partial empirical validation of the proposed model (Henseler et al., 2009).

The indirect effects were all observed to be significant, and three of the six are above 0.2. The impact of affective experience was seen to be important on consumer loyalty and on trust in mobile apps, and important also for consumer satisfaction on loyalty.

Table 3
Discriminant Validity; Fornell-Larcker criterion (below the main diagonal) and HTMT ratio (above the main diagonal).

Constructs	AE	CE	L	S	T
Affective Experience (AE)	**0.726**	0.488	0.611	0.616	0.626
Cognitive Experience (CE)	0.475	**0.938**	0.378	0.376	0.418
Loyalty (L)	0.537	0.354	**0.877**	0.748	0.722
Satisfaction (S)	0.539	0.355	0.695	**0.925**	0.802
Trust (T)	0.694	0.698	0.684	0.713	**0.933**

Note. Main diagonal: in bold, square root of the AVE.

Table 4
Direct and indirect effects on the endogenous variables.

	Direct effect	t value (bootstrap)	Explained variance
Cognitive Experience	$R^2 = 0.204$; $Q^2 = 0.174$		
H1. Affective > Cognitive Experience	β2 = 0.429*** 9.846		20.4%
Consumer Satisfaction	$R^2 = 0.309$; $Q^2 = 0.272$		
H2. Cognitive Experience > Satisfaction	β2 = 0.151***	3.256	5.36%
H3. Affective Experience > Satisfaction	β3 = 0.473***	10.756	25.49%
Trust in Mobile App	$R^2 = 0.676$; $Q^2 = 0.610$		
H4. Cognitive Experience > Trust	β4 = 0.081**	2.397	5.65%
H5. Affective Experience > Trust	β5 = 0.111***	3.354	7.70%
H6. Satisfaction > Trust	β6 = 0.761***	14.401	54.26%
Consumer Loyalty	$R^2 = 0.515$; $Q^2 = 0.375$		
H7. Satisfaction > Loyalty	β7 = 0.407***	4.741	28.29%
H8. Trust > Loyalty	β8 = 0.339***	3.800	23.19%
	Indirect effect	t value (bootstrap)	Percentile 95% bci
Affective Experience > Satisfaction	0.065**	3.030	[0.023, 0.108]
Cognitive Experience > Loyalty	0.128***	3.803	[0.059, 0.192]
Affective Experience > Loyalty	0.407***	11.312	[0.339, 0.480]
Cognitive Experience > Trust	0.115***	3.229	[0.042, 0.183]
Affective Experience > Trust	0.444***	12.971	[0.376, 0.511]
Satisfaction > Loyalty	0.258***	3.673	[0.128, 0.404]

Note. ***$p < 0.001$, **$p < 0.01$ (based on t(4999), one-tailed test); t(0.05, 4999) = 1.645, t(0.01.4999) = 2.327, t(0.001, 4999) = 3.092. Bootstrapping based on n = 5000 subsamples; bci = bootstrap confidence intervals.

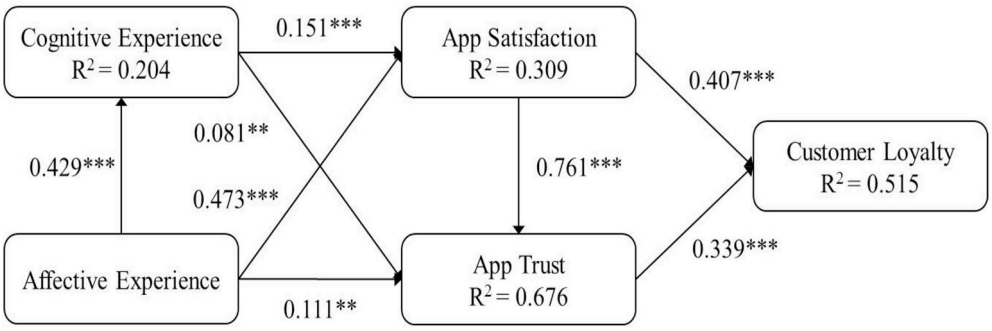

Fig. 2. Results of the structural model.

The explanatory power of the predictor constructs was evaluated through the coefficient of determination (R^2), whose value should be equal to, or greater than, 0.1 (Falk and Miller, 1992). This measure indicates the amount of variance of the construct that is explained by the model. Chin (1998) argues that values around 0.19, 0.33 and 0.67 show weak, moderate and substantial explanatory capacities, respectively. The results show that the model explains 20.4% of the variance of cognitive experience, 67.6% of trust, 30.9% of satisfaction and 51.5% of consumer loyalty, so the model's explanatory capacity can be considered moderate to substantial (Chin, 1998).

Next, we studied to what extent the antecedent and predictor variables contributed to the explained variance of the endogenous variables. Falk and Miller (1992) propose an index consisting of the absolute value of the result of multiplying the path coefficient (ß) by the corresponding correlation coefficient between both variables, the result of which must be greater than 0.015. In this case, the variance of consumer satisfaction is 25.49% explained by affective experience and 5.36% by cognitive experience. The variance of trust in mobile apps is 54.26% explained by consumer satisfaction, 7.70% by affective experience, and 5.65% by cognitive experience. Finally, the variance of consumer loyalty is 28.29% explained by consumer satisfaction and 23.19% by trust in the mobile app.

Finally, the Stone-Geisser, or Q2, test (Geisser, 1975; Stone, 1974) indicates the predictive capacity of the model. Q^2 values of 0.02, 0.15, and 0.35 suggest a small, medium, and large predictive relevance for the endogenous latent variable of interest (Henseler et al., 2009). The estimated Q^2 values for the endogenous variables (cognitive experience: 0.174, satisfaction: 0.272, trust: 0.610, loyalty: 0.375) show that the model has good predictive capacity. Lastly, the value of the standardised root mean square residual (SRMR) compares the difference between the observed correlation and the predicted correlation matrix; values under 0.08 are considered to be acceptable (Henseler et al., 2015). As the SRMR value is 0.069, the model has a good fit.

6. Discussion and conclusions

6.1. Theoretical implications

More and more retailers are complementing their channels with a mobile application that allows customers to interact with the store throughout the purchase process. Unlike other studies that have examined the adoption and use of retailers' apps, the present study analyses the effect that the app experience has on loyalty towards the retailer. In this sense, the present study makes several important contributions to the previous literature on the consumer's experience and his/her interaction with the retailer.

First, this study highlights the importance of experience with the app for reinforcing the loyalty the customer feels towards the retailer. To date, the limited research into retailers' mobile apps has focused on understanding what factors lead customers to use them and make purchases using them (e.g. Dacko, 2017; Harris et al., 2016; Iyer et al., 2018; Kang et al., 2015; Kim et al., 2017; Liu et al., 2019; Van Heerde et al., 2019), but their role in the customer-retailer relationship has been very little studied. Therefore, this study contributes significantly to the literature on m-commerce and customer experience by highlighting that apps are not just another channel within the retailer's omnichannel strategy, but a medium that can play an important role in building loyalty towards the retailer.

Second, many studies carried out into the online environment have evaluated the customer's experience, including the cognitive and affective dimensions (Iyer et al., 2018; Martin et al., 2015; McLean et al., 2018). The results of the present study show that the affective dimension has a positive effect on the cognitive dimension. Therefore, the stimulus of the app evokes emotions in customers that influence their perceptions, evaluations and cognitive decision-making. This is also a significant contribution of the present study and is consistent with earlier research (e.g. Agrebi and Jallais, 2015; Kang and Lee, 2018; Rose et al., 2012). It also helps to increase the understanding of the interrelationships between the dimensions of experience, that have sometimes been shown to be independent (Bilgihan et al., 2016; Kumar et al., 2018), or even in complete contrast to the findings of this study (e.g. McLean et al., 2018).

Third, some authors have emphasized that cognitive experience, understood as cognitive absorption or flow, is fundamental to achieving an optimal customer experience (Agarwal and Karahanna, 2000; Csikszentmihalyi, 1997; Hoffman and Novak, 2009; McLean, 2018; Novak et al., 2000). However, the results of the present study show that, in the case of retailers' mobile apps, its impact on customer satisfaction and trust is much lower than that of the affective dimension, the true key to the customer experience. Therefore, this study qualifies the findings of Pantano and Priporas (2016), who showed that retailer apps are adopted fundamentally due to cognitive motivations. The results of the present study show that, although cognitive experience has a positive impact, its role, both direct and indirect, is less important than that of affective experience. These findings, although not very common in the context of e-commerce and m-commerce, are consistent with previous research (Bart et al., 2005; Li and Yeh, 2010; Rose et al., 2012) and can be explained by the conceptualisation of customer experience as context specific (Klaus, 2013), as consumers often use m-commerce “on the go” (Wang et al., 2015), which does not foster cognitive absorption. This is, therefore, an important contribution.

Fourth, the present study connects customer satisfaction and trust in the retailer's application with customer loyalty to the retailer, reinforcing the notion that every touch-point in the omnichannel strategy can play a key role in customer-retailer relationship outcomes (Lemon and Verhoef, 2016). Satisfaction with the application is a key direct and indirect (through trust) antecedent of loyalty towards the retailer. This finding, which is consistent with previous research conducted in the retail trade context (Anderson and Srinivasan, 2003; Jin et al., 2008), is an important contribution of the study. Recently, Han et al. (2016) identified that consumer satisfaction with an app is an antecedent of loyalty towards an establishment, mediated by overall satisfaction with

that establishment. Other works have shown that satisfaction with an app creates loyalty towards that app (e.g. Iyer et al., 2018). However, unlike these earlier studies, the present study, to the best of the authors' knowledge, for the first time identifies the direct relationship between satisfaction with an application and loyalty felt towards the retailer; this is an important contribution to the literature on the use of mobile applications in the retail sector.

Finally, satisfaction with the application directly affects trust. This result is in line with previous works in the fields of e-commerce (e.g. Fang et al., 2016), mobile applications and services (Kim et al., 2011; Lee et al., 2015). In this way, this study contributes to the previous literature by extending this relationship to the field of retailer apps. Moreover, trust in the retailer's application is also an important antecedent of loyalty felt towards the retailer, although it is slightly less important than satisfaction. This result is consistent with previous studies examining service companies (Lee et al., 2015; Nguyen et al., 2013) and e-retailers (Anderson and Srinivasan, 2003; Kim et al., 2009). Therefore, this study contributes to the previous literature by extending that relationship to the context of retailers' apps. This is also an important contribution, as this relationship has not been found in previous studies.

6.2. Practical implications

This study also has important implications for managers. First, although in the omnichannel context several reports have highlighted the significant increase in purchases made through apps (e.g. Internet Retailer, 2018), some large retailers (e.g. IKEA, Tesco, Fnac, Gap) are not, based on consumer ratings, providing their customers with the experience they expect. The results of the present study show that retailers should seriously consider adopting mobile apps because user experience influences not only satisfaction with the app, its adoption and purchases (Iyer et al., 2018; Liu et al., 2019; McLean et al., 2018) but also loyalty felt towards the retailer, understood as a relationship that goes way beyond the app itself. Therefore, retailers that support their strategies with apps must put a strong focus on their features and benefits, as their influence on user behaviour can be very important for their relationship with the company.

Second, most importantly, the app must provide the user with a very positive affective experience, a pleasant, exciting, comfortable, and intuitive interaction with a simple, but attractive, interface. Affective experience increases perceived value, satisfaction, and positive emotions (Chang, 2015; Pantano and Priporas, 2016; Taylor and Levin, 2014; Zhao and Balagué, 2015). For example, an app might complement offline and online channels, for example, in click and collect operations, buy online - return in store, or by offering coupons that can be used in both channels. Similarly, the app might allow the consumer to switch between channels, for example by scanning the barcode in the store to buy online through the app, or by using customised coupons downloaded from the app within the store itself.

The retailer also must pay attention to the technical characteristics of the application, the service quality it delivers, its functionality, its connectivity, ease of use, perceived usefulness, response speed, personalisation (Alnawas and Aburub, 2016; Kumar et al., 2018; McLean, 2018) and other characteristics that the customer evaluates cognitively, and which create a deep involvement with the app.

It is very important to ensure that users are satisfied with the app because, to a large extent, loyalty depends on satisfaction. In some cases, the services accessed through the application did not provide enough value or did not meet the users' expectations. Some retailers use applications that are neither native, nor even hybrid, but are cheaper responsive web developments that have poor performance and usability.

Retailers might also increase satisfaction with the experience by including in-app features that improve both cognitive and affective aspects. For example, a barcode scanner, location, augmented reality, virtual mirror, personalised location-based marketing, mobile payments, etc. In addition, retailers should ensure that the in-app experience is integrated into a seamless, cross-channel consumer experience (Verhoef et al., 2015; Von Briel, 2018).

Finally, the retailer also has to build trust in the application. For this, it is important that the service and information provided is reliable, and that the user understands (s)he faces no financial or personal risk. A good guarantee policy, exceptional service, brand equity and accreditation provided by a recognised seal will contribute to generating user trust (Peng et al., 2014).

6.3. Limitations and future research

This research has some limitations. The study is based on data from a convenience sample of Spanish consumers. Future studies might replicate the survey using a probability sampling technique to reduce possible bias, and in other cultural settings as a robustness test and to generalize the findings. Moreover, the criterion of selecting participants who had used the application at least twice decreases the representativeness of the results, because prior positive experiences could encourage repeat use of the technology (Kim and Malhotra, 2005), so future research could perhaps compare the results of first-time and repeat customers.

The present study conceptualized the cognitive experience as cognitive absorption (flow). Future studies might take other approaches that include a broader interpretation of the concept, including aspects such as creativity, curiosity, and intrigue that, to name just a few, have previously been validated in the literature on, among other topics, technology adoption and use (e.g. Mahfouz et al., 2008). In addition, the model could incorporate other experiential dimensions identified in the previous literature (e.g. Gentile et al., 2007; Verhoef et al., 2009) to enrich the explanation of satisfaction and trust. For example, apps typically include access to social networks or user communities, so they could introduce a relational dimension to capture the experience of social interaction. Sensory experiences could have a place in the model as apps can stimulate the senses through sound, vibration, the required interaction with the screen and the visual design. Finally, future studies should consider the possible moderating effects of user characteristics such as gender, age and the location where the app was used (e.g. McLean et al., 2018).

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