ORIGINAL ARTICLE

The role of transactionality of mobile branded apps in brand experience and its impact on loyalty

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Abstract

Branded apps are gaining momentum in branding strategies, as they allow proximity to the customers and a great opportunity to engage and retain them. This paper aims to fill in the existing literature gap and investigate the role of transactionality in the effect of branded app experience on brand loyalty. A lab experiment compares fully transactional (i.e., commercial), semi-transactional (i.e., freemium), and non-transactional (free service-oriented) branded apps, while a field study focuses on the impact of a non-transactional branded app. The effect of branded app experience is explained via identification with the brand, satisfaction with the brand, and perceived brand personality. Results show that perceived and actual physical brand experience both improve brand satisfaction, perceived personality, and identification with the brand. Furthermore, the research highlights the importance of identification with the brand to explain the effects of brand experience on brand loyalty. The findings suggest that brand managers should seriously consider creating non-transactional (i.e., non-commercial) branded apps, because they encourage the creation of a stronger identification with the brand, satisfy customers, and increase customer loyalty toward the brand.

Keywords Customer experience · Identification with the brand · Loyalty · Non-transactional branded app · Satisfaction · Perceived brand personality

Introduction

Recently mobile technology and mobile apps have become prolifically pervasive in every part of our life (Nandonde 2019). This is also true for branded mobile apps, which are gaining momentum and greatly influence consumer behavior (Newman et al. 2018). Thus, today brands not only engage in physical product development, but also invest in new digital product development such as mobile apps (Lim et al. 2020). Bellman et al. (2011) define branded mobile apps as software downloadable to a mobile device which clearly displays a brand identity via the name of the app and the appearance of a brand logo throughout the user experience. Indeed, mobile apps offer a new channel to exchange sensory stimuli, information, and emotion, becoming crucial in providing customer experience, establishing customer relationships and engagement (Jang et al. 2018; Kim et al. 2013). Due to the unique customer proximity created by mobile apps, such brand experience is worth special investigation (Lemon and Verhoef 2016; van Noort and van Reijmersdal 2019). The majority of the top 100 brands have launched mobile apps in Apple or Google app stores (Zhao and Balagué 2015). While apps are costly to create, so far it has not been clear to what extent they contribute to consumers' satisfaction and long-term relationship with the brand (Alnawas and Aburub 2016). Prior studies show that brand experience leads to a better perception of brand personality (Ramaseshan and Stein 2014) and satisfaction with the brand (Brakus et al. 2009; Khan and Fatma 2017) and helps consumers to identify with a specific brand (Kumar and Kaushik 2018), which in turn leads to loyalty toward that brand (Torres et al. 2017). Indeed, brand loyalty is important to account for, since it predicts brand equity (Husain et al. 2022; Lang et al. 2022; Sindhu et al. 2021). Hence, we investigate the role of branded app experience on loyalty and explain it

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through satisfaction, perceived brand personality, and identification with the brand.

Zhao and Balagué (2015) identified five business objectives when developing branded apps: communication, customer relationship management, sales, product innovation, and marketing research. Most previous research has determined the effect of branded mobile apps with a sales objective (i.e., transactional), focusing on purchase-oriented interaction with consumers (Kim et al. 2017; van Noort and van Reijmersdal 2019). Kim et al. (2013) indicate that mobile branded apps can provide distinctive brand experiences and engage consumers more by focusing on communication and customer relationships (i.e., non-transactional mobile apps) than by focusing on solely sales-oriented interactions. Since the revolutionizing paper of Vargo and Lusch (2004), modern marketing shifts its attention from a *transactional goods-dominant paradigm* to a *relational service-dominant* priority, which posits that the brand value is determined by service orientation (Brodie et al. 2011). Companies recognize the importance of service in building strong relationships with their existing customers and its direct effect on firm competitiveness and profitability (Nunkoo et al. 2020). However, only two previous studies have examined the effectiveness of non-transactional apps but failed to study the effect on loyalty (Bellman et al. 2011; van Noort and van Reijmersdal 2019). Companies may also offer a freemium version (i.e., a semi-transactional branded app, which allows unlimited use of the basic functions and can be upgraded to the full version for a payment), which impacts on the related consumer decision-making (Dinsmore et al. 2021). We, therefore, compare three branded apps with a different level of *transactionality* (i.e., fully transactional vs. semi-transactional vs. non-transactional) to account for the shift from good-dominant to service-dominant logic (Fang 2017).

The contribution of the current study to the literature is threefold. First, the study extends the concept of mobile apps experience and its impact on brand perceptions and intentions (e.g., Brakus et al. 2009). Second, it provides insights on the nature of the benefits generated when interacting with branded mobile apps, including augmented identification with the brand, which ultimately leads to higher brand loyalty (Confente and Kucharska 2021; Huang et al. 2017). Finally, our findings provide managerial implications highlighting the benefits of creating non-transactional branded apps.

Literature review and hypotheses

Mobile apps can be effective tools to engage consumers as they create multiple customer touchpoints (Lemon and Verhoef 2016). Previous research has mainly investigated the effects of fully transactional apps (e.g., Dacko 2017; Fang 2019; McLean et al. 2020). So far, only two studies have investigated the effects of non-transactional apps (Bellman et al. 2011; van Noort and van Reijmersdal 2019) and none of them investigated the role of experience with non-transactional branded apps on brand loyalty. To fill in these literature gaps, the current study provides insight into how experience with various types of branded apps could stimulate brand loyalty through the effect of identification with the brand. We discuss the relationships in more detail further on and develop the hypotheses.

Effect of brand experience with branded mobile apps

Brand experience is defined as "the collection of points at which companies and consumers exchange sensory stimuli, information and emotion" (Robinette et al. 2002, p. 60). In addition, Brakus and colleagues (2009, p. 53) define brand experience as "subjective, internal consumer responses (sensations, feelings, and cognitions) as well as behavioral responses evoked by brand related stimuli that are part of a brand's design and identity, packaging, communications, and environment." *Sensory* brand experience includes the bodily experiences based on visual, gustatory, aural, olfactory, and tactile experience. *Affective* brand experience refers to emotions, sentiments, and feelings. *Intellectual* brand experience relates to thoughts, arousal of curiosity, and problem solving. *Behavioral* brand experience relates to the bodily experiences with physical actions. Thus, brand experience refers to consumer responses induced at different levels of interaction with brand-related stimuli (Brakus et al. 2009; Lemon and Verhoef 2016).

Brand satisfaction derives from a cumulative satisfaction based on the consumer's total purchase and experience with a brand of product or service (Grisaffe and Nguyen 2011). Brakus et al. (2009) as well as Khan and Fatma (2017) confirmed that brand experience may lead to satisfaction with the brand. Moreover, previous research reveals the relevance mobile app brand experience on satisfaction with the app (McLean et al. 2020) and consequent positive brand attitude (Dirsehan and Cankat 2021). Gratifying experience with branded mobile apps has a particularly big potential to increase brand satisfaction (Alnawas and Aburb 2016). Therefore, we propose the following:

H1a Experience with a branded app is positively related to brand satisfaction.

Brand personality is a symbolic and emotional (non-product-related) attribute, defined by Aaker (1997) as a set of human traits assigned to a brand. Aaker (1997) stated that brand personality can be influenced through both direct and indirect contacts with the brand, while Brakus et al.

(2009) supported that brand experiences are useful as input for brand personality inferences and that the stronger the brand experiences, the greater the chance that consumers will develop personality associations to brands. It was demonstrated that mobile apps create multiple touchpoints that allow companies to exchange sensory stimuli, information, and emotion with consumers (Kim et al. 2013). Furthermore, Plotkina et al. (2021) found that the usage of branded mobile apps impacts on perceived brand personality. Therefore, we propose the following:

H1b Experience with a branded app is positively related to perceived brand personality.

Social identity theory states that individuals classify themselves in various social categories to facilitate their definition of oneself (Tajfel and Turner 1985). This theory was mainly applied in an organizational context to study the feelings, attitudes, and beliefs of employees (e.g., Bergami and Bagozzi 2000). Researchers extended the scope of identification to a brand–consumer context by justifying that individuals can seek identification even without being a formal member of an organization (Scott and Lane 2002). Thus, the concept of brand identification is based on social identity theory that defines brand identification as a perceptual construct (Mael and Ashforth 1992), implying identity matching and identity fit. Consumers' identification with a brand refers to the perception of sameness between the brand and the consumer. Brand experience is one of the drivers of brand identification (Kumar and Kaushnik 2020; Stokburger-Sauer et al., 2012) and branded app experience, therefore, is expected to strengthen the bond between the consumer and the brand:

H1c Experience with a branded app is positively related to identification with the brand.

Effect on brand loyalty

The introduction of mobile apps raises crucial marketing questions, the most important of which is how mobile apps impact consumer purchases and brand loyalty. Brand loyalty is defined as the tendency to be loyal to a focal brand, which is demonstrated by the intention to buy the brand as a primary choice (Yoo and Donthu 2001). Previous research conceptualized brand loyalty both as a behavioral and a psychological long-term commitment to a brand (Dick and Basu 1994), and it has emerged as one of the key factors for organizational success (Kumar and Kaushik 2018; Nunkoo et al. 2020). The brand experience model suggested by Brakus et al. (2009) outlines the positive relationship between brand experience and brand loyalty, while recent studies show evidence of this relationship (e.g., Khan and Fatma

2017; Torres et al. 2021). We, therefore, propose the following hypothesis:

H2a Brand satisfaction is positively related to loyalty to the brand.

Brand personality is perceived as an efficient differentiating tool that can enhance consumer preferences (Aaker 1997). The sensory impressions about the brand stored by consumers influence their experiences (Sung and Kim 2010) and emotional responses (Aaker 1997). Furthermore, Clatworthy (2012) revealed that brand personality provides the consumer with better comprehension about the brand image as it is transformed into an experiential manifestation. Therefore, brand personality can stimulate brand affect (Sung and Kim 2010) and brand preferences and trigger long-term behavioral responses such as brand loyalty (Brakus et al. 2009). Furthermore, Ramaseshan and Stein (2014) confirm the mediation role of perceived brand personality in explaining the effect of brand experience on brand loyalty. Thus, we hypothesize the following:

H2b Perceived brand personality is positively related to loyalty to the brand.

The match between the personality of the consumer and the brand determines the future customer buying behaviors such as brand community commitment (Demiray and Burnaz 2019), brand trust (Hollebeek and Macky 2019), and loyalty (So et al. 2013). It was revealed that identification leads individuals to be psychologically attached to the organization, which in turn causes the development of loyalty (Bhattacharya and Sen 2003). Previous research has highlighted the importance of brand loyalty for companies as an important outcome of identification (Ahearne et al. 2005; Bhattacharya and Sen 2003). Overall, it is well established that brand identification is positively related to brand loyalty (Confente and Kucharska 2021; Elbedweihy et al. 2016) and long-time commitment (Huang et al. 2017). Finally, Kumar and Kaushik (2018) have proven that identification with the brand has a mediating explanatory role of brand experience on brand loyalty. More recent studies confirmed the effect of consumer-brand identification on brand loyalty (e.g., Mills et al. 2022; Santos et al. 2021; Yoshida et al. 2021). Hence, it is hypothesized that:

H2c Identification with the brand is positively related to loyalty to the brand.

Moderating effect of mobile app type

Companies now use both fully transactional and non-transactional mobile apps to attract consumers. Sensor Tower's
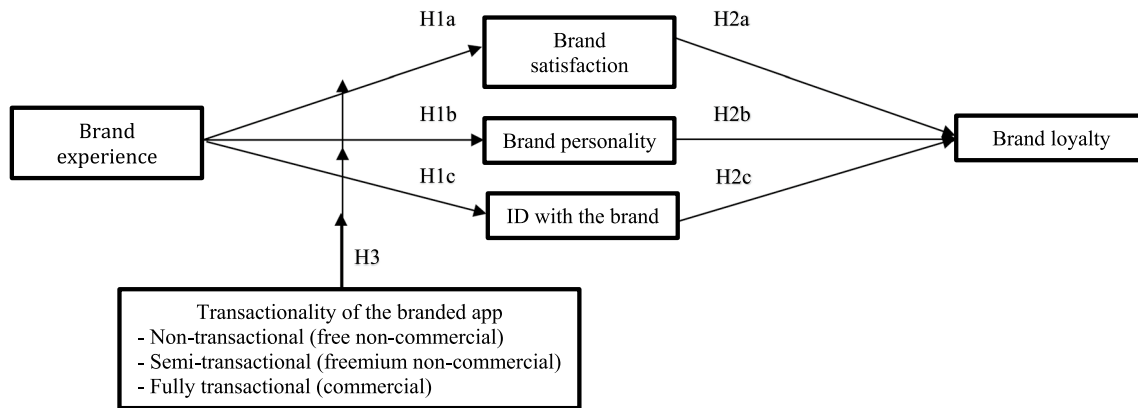
Fig. 1 Conceptual model and hypotheses

stats show that in 2020 the five most downloaded types of apps are games (2690 million), photo and video (703 million), entertainment (618 million), utilities (549 million), and shopping (546 million). This implies brand managers have a greater chance of capturing consumers' attention by using different types of mobile apps. The research of van Noort and van Reijmersdal (2019) supported the importance of non-transactional mobile apps and revealed that they can generate more positive affective brand attitude and brand relationship, as well as the cognitive brand memory and brand beliefs.

Furthermore, branded mobile apps can be free of charge, which allows consumers to use the basic functions of them without a time limit, and they can also be the upgradeable freemium, a combination of the words "free" and "premium." The freemium version is a business model by which a product is offered for free, but a premium is charged for advanced features, functionality, or related products (Hayes 2008). Thus, among the non-transactional mobile apps we distinguish between non-transactional (free apps) and semi-transactional (freemium apps). Prior studies have demonstrated that a free mobile app is considered by consumers to be more interesting, attractive, and novel compared to mobile apps which require a monetary price (Dinsmore et al. 2016). Specifically, they found that people have an irrationally positive view of products with zero price, which invokes a more positive affective response. Thus, we could expect that a free mobile app (i.e., non-transactional) will generate more effect than a freemium mobile app (i.e., semi-transactional). Hence, we hypothesize as follows:

H3 The transactional nature of the branded app moderates the effect of branded app experience in a way that the more transactional the app, the less the experience increases brand personality, satisfaction, identification with the brand, and brand loyalty.

Our conceptual framework is based on the brand experience model suggested by Brakus et al. (2009; Fig. 1). This model shows that brand experience has a behavioral impact on loyalty intentions since it generates consumer satisfaction and better brand personality perception. Based on recent studies (Kumar and Kaushik 2018; Torres et al. 2017), this model is extended by adding brand identification as a mediator between brand experience and brand loyalty. Moreover, we tested the moderating role of app transactionality.

Study 1: lab experiment

Method

Experimental design and sample

To test our hypotheses, we distributed a questionnaire among French graduate students who gave their informed consent to use their responses for academic purposes. While a student sample might be seen as a limitation, recent studies point out that graduate students represent the target segment of mobile apps and, thus, are applicable for studies on apps (Pantano and Servidio 2012). Thus, student samples could provide certain homogeneity in an experimental design, thereby eliminating potential heterogeneous effects that could arise from possible confounds (Lim et al. 2020).

Among 240 received responses, we excluded 31 based on poor response quality (i.e., straight-lined answers) and incomplete answers. The final sample of 209 respondents consists of French graduate students aged from 21 to 23 years old; 63.6% are female and 36.4% are male. The participants were randomly assigned to one of the three experimental conditions describing a non-transactional branded app (i.e., free non-commercial app Nike Training Coach), a semi-transactional branded app (i.e., freemium non-commercial app Nike Training Coach freemium), and

a fully transactional branded app (i.e., commercial app Nike shopping app). Every experimental condition presented the respondents with three screenshots of the actual Nike app and a short description that differed only in the transactionality attribute of the app. Such projective experimental approach is predicated on the conditional approach (e.g., selecting participants according to their actual use of one of the three targeted apps) (Lim 2021a). There are no significant differences between the three conditions in terms of participants' gender and initial attitude to Nike (F-tests, p > 0.50), thus the random assignment of participants to the conditions can be judged as successful.

Manipulation check

To confirm the validity and realism of the experimental design, we performed a separate pre-test with a different cohort of graduate students. We collected 83 respondents and verified that all the conditions were identified as intended on the categorical scales of transactionality ("involving money transactions/not involving money transactions"), commercial intent ("commercial/ non-commercial"), and free access ("completely free/ with included purchases/ paid"). Furthermore, we verified that all the wording was understood correctly. As the socio-demographic profiles of students used in the pre-test are similar to the sample used in the main study, we concluded that the experimental design of the questionnaire was applicable.

Measures

We used established scales with previously demonstrated validity and reliability. The items were only slightly modified in terms of wording to fit the study context and all were consistently measured on a seven-point Likert scale. To measure brand experience, we used the scale by Brakus et al. (2009), distinguishing sensory, affective, behavioral, and intellectual brand experience. Identification with the brand was measured with seven items from Escalas and Bettman (2009), satisfaction with the brand was measured with five items also adopted from Brakus et al. (2009), while brand personality was adopted from Geuens et al. (2009); brand loyalty was measured with five items from Srinivasan et al. (2002). As control variables, we included technology innovativeness (Agarwal and Prasad 1998), involvement with the brand prior to the study (Aggarwal and Law 2005), and a seven-item scale on attitude to sport and exercises based on Brustad (1993; e.g., "I enjoy exercising a lot."). We also incorporated an attention check ("While watching the television, have you ever had a fatal heart attack?").

The performance of the scales is presented in Table 1. All measurement scales are reliable: thus, composite reliability (Chin 1998) exceeds 0.70, while Cronbach's alpha

is over or near the threshold (Nunnally 1978). With regard to convergent validity, the items load well on the factors, with the exception of reversed items that are below the 0.50 threshold. Due to the satisfactory alpha and to maintain measurement tool consistency, we kept the reversed items in calculated constructs. Finally, average variance extracted (AVE) exceeds 0.50 (Fornell and Larcker 1981). To address discriminant validity, we also verified that AVE exceeds every pairwise shared variance between the constructs (Fornell and Larcker 1981).

Finally, following the approach of Brakus et al. (2009) and to be able to operationalize the multi-dimensional measure of brand experience and brand personality as single constructs, we assessed whether the dimensions of the constructs (i.e., sensory, affective, behavioral, and intellectual experiences for brand experience and responsibility, activity, aggressiveness, simplicity, and emotionality for brand personality) load well on the same factor and have Alpha Cronbach, CR, and AVE above the respective thresholds. Following this procedure, we only retained the brand's responsibility, activity, and aggressiveness to measure brand personality.

Results

To test our hypotheses, we first carried out formal mediation analysis with multiple mediators that allowed us to account for all the main relationships in the conceptual model. To do so, we ran model 4 in Process macro in SPSS (Hayes and Preacher 2014). Every regression employs 5,000 samples bootstrap. The results show that brand experience has a significant effect on satisfaction with the brand (coef. = 0.728, CI 95% [0.588; 0.869]), brand personality (coef. = 0.364, CI 95% [0.245; 0.432]), and identification with the brand (coef. = 1.153, CI 95% [1.015; 1.290]).[1] Furthermore, satisfaction (coef. = 0.340, CI 95% [0.230; 0.449]) and identification with the brand (coef. = 0.439, CI 95% [0.334; 0.544]) are significantly associated with brand loyalty. Yet, for the brand personality, this relationship is insignificant (impact of brand personality on brand loyalty: coef. = 0.012, CI 95% [−0.144; 0.177]). These findings validate our hypotheses H1 (a–c) and H2 (a and c). The only rejected hypothesis is H2b, which relates to the impact of brand personality on brand loyalty.

We further found that satisfaction (coef. = 0.247, CI 95% [0.171; 0.326]) and identification with the brand

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[1] In a regression model including the independent variable, all mediators and moderators, variable inflation factors (VIFs) are smaller than 2.5, meaning that multicollinearity is not a serious concern (Hair et al., 2006).

Table 1 Scale items, factor loadings, and construct validity (Study 1 and Study 2)

Construct	Item wording	Study 1					Study 2				
		Mean (Std. Dev.)	Loading	Alpha Cro	CR	AVE	Mean (Std. Dev.)	Loading	Alpha Cro	CR	AVE
Brand experience (total) (Brakus et al., 2009)	Sensory Affective Behavioral Intellectual	.787		.815	.880	.648	.770		.797	.869	.625
		.877					.829				
		.790					.815				
		.763					.747				
Please evaluate your experience with the brand. Each seven-point Likert scale was anchored by "strongly disagree" (1) and "strongly agree" (7)											
Sensory	This brand makes a strong impression on my visual sense or other senses	4.36 (1.52)	.902	.705	.820	.620	4.53 (1.31)	.912	.692	.853	.667
	I find this brand interesting in a sensory way	4.33 (1.49)	.913				4.53 (1.31)	.901			
	This brand does not appeal to my senses. (R)	4.46 (1.61)	.463				4.34 (1.64)	.598			
Affective	This brand induces feelings and sentiments	3.96 (1.66)	.893	.716	.817	.608	4.02 (1.66)	.920	.599	.782	.588
	I do not have strong emotions for this brand. (R)	4.11 (1.72)	.543				3.93 (1.46)	.271			
	This brand is an emotional brand	3.77 (1.64)	.856				3.57 (1.59)	.919			
Behavioral	I engage in physical actions and behaviours when I use this brand	4.04 (1.74)	.916	.679	.821	.625	4.70 (1.53)	.930	.768	.836	.647
	This brand results in bodily experiences	4.56 (1.57)	.913				4.61 (1.43)	.931			
	This brand is not action oriented. (R)	4.71 (1.68)	.450				4.87 (1.58)	.460			
Intellectual	I engage in a lot of thinking when I encounter this brand	3.59 (1.71)	.896	.697	.788	.569	3.53 (1.42)	.876	.625	.761	.549
	This brand does not make me think. (R)	4.25 (1.65)	.464				3.95 (1.54)	.320			
	This brand stimulates my curiosity and problem solving	3.57 (1.70)	.831				3.65 (1.43)	.883			
Brand personality (total) (Brakus et al., 2009)	Responsible	4.46 (1.04)	.734	.669	.722	.429	4.70 (1.15)	.905	.643	.804	.583
	Active	5.50 (1.09)	.890				5.85 (1.12)	.668			
	Aggressive	3.92 (1.31)	.574				4.24 (1.37)	.697			
	Simple	3.65 (1.28)	.238				3.57 (1.22)	.007			
	Emotional	2.52 (1.39)	.067				2.84 (1.71)	.139			
How could you describe the brand? Each seven-point Likert scale was anchored by "strongly disagree" (1) and "strongly agree" (7)											
Responsible	Down-to-earth	4.10 (1.42)	.731	.608	.785	.550	4.25 (1.53)	.793	.741	.853	.661
	Stable	5.00 (1.28)	.751				5.12 (1.24)	.775			
	Responsible	4.29 (1.52)	.743				4.72 (1.47)	.869			
Active	Active	5.49 (1.23)	.901	.841	.908	.767	5.87 (1.11)	.877	.842	.912	.776
	Dynamic	5.67 (1.17)	.914				5.97 (1.20)	.934			
	Innovative	5.35 (1.36)	.810				5.70 (1.50)	.830			

Table 1 (continued)

Construct	Item wording	Study 1					Study 2				
		Mean (Std. Dev.)	Loading	Alpha Cro	CR	AVE	Mean (Std. Dev.)	Loading	Alpha Cro	CR	AVE
Aggressive	Aggressive	3.57 (1.65)	.841	.604	.828	.707	3.87 (1.70)	.843	.691	.830	.710
	Bold	4.27 (1.47)	.841				4.61 (1.56)	.843			
Simple	Ordinary	3.54 (1.51)	.844	.596	.832	.712	3.42 (1.29)	.788	.727	.766	.620
	Simple	3.77 (1.53)	.844				3.72 (1.47)	.788			
Emotional	Romantic	2.35 (1.43)	.909	.785	.904	.826	2.46 (1.73)	.911	.790	.907	.829
	Sentimental	2.70 (1.63)	.909				3.21 (2.02)	.911			

Do you agree with the following statements on your attitude toward the brand?

Each seven-point Likert scale was anchored by "strongly disagree" (1) and "strongly agree" (7)

Construct	Item wording	Study 1					Study 2				
		Mean (Std. Dev.)	Loading	Alpha Cro	CR	AVE	Mean (Std. Dev.)	Loading	Alpha Cro	CR	AVE
Brand satisfaction (Brakus et al., 2009)	I am satisfied with the brand and its performance	5.13 (1.47)	.872	.874	.906	.663	5.27 (1.24)	.708	.679	.887	.617
	If I could do it again, I would	4.85 (1.45)	.821				3.51 (1.57)	.584			
	buy a brand different from that brand. (R)	4.95 (1.52)	.830				4.65 (1.23)	.809			
	My choice to get this brand has been a wise one	4.35 (1.87)	.606				4.18 (1.46)	.914			
	I feel bad about my decision to get this brand. (R)	4.70 (1.64)	.909				4.09 (1.76)	.869			
	I am not happy with what I did with this brand										
Identification with the brand (Escalas and Bettman, 2009)	This brand reflects who I am	3.67 (1.85)	.893	.956	.964	.793	3.69 (1.87)	.895	.940	.951	.740
	I can identify with this brand	3.72 (1.78)	.899				4.34 (1.72)	.775			
	I feel a personal connection to this brand	3.44 (1.79)	.912				3.82 (1.63)	.912			
	I use this brand to communicate who I am to other people	3.17 (1.84)	.865				3.54 (1.84)	.924			
	I think this brand helps me become the type of person I want to be	3.25 (1.85)	.915				3.34 (1.84)	.929			
	I consider this brand to be "me" (it reflects who I consider myself to be or the way that I want to present myself to others)	3.22 (1.86)	.918				3.50 (1.91)	.912			
Brand loyalty (Srinivasan et al., 2002)	This brand suits me well	4.12 (1.71)	.828	.895	.923	.709	4.73 (1.67)	.636	.845	.891	.622
	In the future, I will be loyal to this brand	3.71 (1.77)	.910				4.42 (1.41)	.884			
	I will buy this brand again	4.63 (1.65)	.821				5.23 (1.27)	.709			
	This brand will be my first choice in the future	3.88 (1.71)	.903				4.06 (1.38)	.771			

Table 1 (continued)

Construct	Item wording	Study 1					Study 2				
		Mean (Std. Dev.)	Loading	Alpha Cro	CR	AVE	Mean (Std. Dev.)	Loading	Alpha Cro	CR	AVE
	I will not buy other brands if this brand is available at the store	3.17 (1.81)	.722				3.38 (1.67)	.803			
	I will recommend this brand to others	4.44 (1.73)	.843				4.95 (1.42)	.766			

Notes: Factor loadings according to Varimax rotation; ¤ extracted from the measure; Alpha Cro. = Alpha Cronbach, CR = Composite Reliability, AVE = Average Variance Extracted

(coef. = 0.506, CI 95% [0.380; 0.646]) have a significant mediating impact explaining the effect of brand experience on brand loyalty. The effect for brand personality is non−significant (coef. = 0.004, CI 95% [−0.045; 0.054]). Furthermore, this effect is stronger for identification with the brand than for satisfaction (the difference between the indirect effects between identification with the brand and satisfaction: coef. = 0.177, CI 95% [0.064; 0.298]). While we found only partial mediation (direct effect = 0.225, CI 95% [0.084; 0.367]), the mediators have a strong explanatory power, increasing the total effect of the brand experience on brand loyalty (total effect = 0.984, CI 95% [0.873; 1.095]). We, therefore, confirmed the importance of the added construct of identification with the brand to explain the impact of brand experience on brand loyalty. The results are presented in Fig. 2.

Finally, we analyzed the impact of branded app transactionality and tested the moderating effect of mobile apps type on brand experience and its impact on brand loyalty. To do so we ran model 7 of moderated mediation in Process macro in SPSS (Hayes and Preacher 2014) with 5,000 samples bootstrap. The results are presented in Table 2. We found that, although mobile app experience leads to a positive brand loyalty in all conditions, the effect is significantly more important for a non-transactional app (coef. = 0.896 CI 95% [0.658; 1.154]) than for a fully transactional one (coef. = 0.668 CI 95% [0.498; 0.841]). Furthermore, a free non-transactional app is preferred to a freemium app (i.e., semi-transactional) (coef. = 0.808 CI 95% [0.508; 1.121]); however, the difference between a freemium and a commercial app is not significant. We thus only partly validate the H3 for fully transactional vs. non-transactional branded apps. Specifically, we found that the effect of branded mobile app experience on brand loyalty is explained by identification with the brand and satisfaction with the brand. Nonetheless, only brand identification explains the preference of non-commercial over a commercial app (commercial: coef. = 0.423 CI 95% [0.274; 0.599]; freemium: coef. = 0.483 CI 95% [0.321; 0.665]; free non-commercial: coef. = 0.543 CI 95% [0.359; 0.753]). In all the studied relationships we noted that involvement, attitude to sport, and technology innovativeness did not impact on the results.

Study 2: field study

Method

Experimental design, measures, and sample

To test our hypotheses with real-life use of a non-transactional branded mobile app, we conducted a separate field study. Prior studies recommend capturing consumer
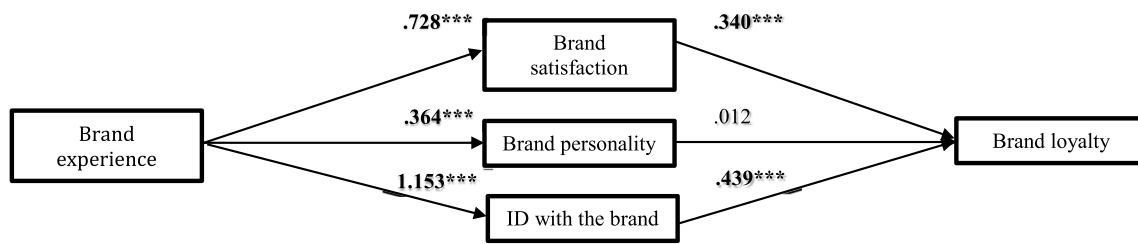
Fig. 2 Results of Study 1

Table 2 Moderation effect of branded app transactionality

Effect of mobile app experience on brand loyalty	For commercial app	For freemium non-commercial apps	For free non-commercial app	Index of moderated mediation
Total effect	.668 [.498; .841]	.808 [.508; 1.121]	.896 [.658; 1.154]	NA
Mediated by brand satisfaction	.237 [.143; .341]	. 280 [.179; .382]	.323 [.191; .466]	.042 [−.017; .112]
Mediated by brand personality	.011 [−.011; .049]	.019 [−.010; .054]	.026 [−.012; .078]	.007 [−.010; .033]
Mediated by identification with the brand	.423 [.274; .599]	.483 [.321; .665]	.543 [.359; .753]	.059 [.004; .122]

Notes: the results show the coefficient at confidence interval of 95% [lower limit; upper level]

responses right after the studied marketing stimuli (Becker and Jaakkola 2020). Furthermore, field studies have considerable interest for marketing research (Gneezy 2017). We focused on the non-transactional version since Study 1 shows that its effect is significantly more important than for the fully transactional one. The choice of the app for the field study comes both from the indications of Study 1 and for practical reasons such as cost related to the use of a freemium branded app and ethical conflict to ask the respondents to buy on a fully transactional (i.e., commercial) app. Indeed, it is difficult to overcome such difficulties when relying on student sample and requiring them to download and fully use the app (Lim et al. 2019). We asked a different cohort of French graduate students to evaluate their attitude toward Nike, submit personality and attitudinal information, and then download a non-transactional Nike app (Nike Training Coach), which they had to use at their own rhythm for five weeks. This duration corresponds to the average length of a fitness challenge on the NTC app as well as treatment duration for effective habit formation (Loewenstein et al. 2016). Hence, using the app for five weeks can establish or strengthen a health and fitness related habit among the participants, as well as anchor their attitudes and further intentions toward the brand. To confirm and illustrate their use of the app, the students submitted selfies and photos of their training. After the submission of the visual proof, the students were asked to evaluate their experience, satisfaction, and identification with the brand, as well as loyalty intentions. We used the same scales as in Study 1. The performance, reliability, and validity of the scales were validated and are presented in Table 1. Among 60 students mobilized for the study, 47 actually used the app and were thus retained for the analysis. All the participants gave their informed consent to use their responses for academic purposes. The analyzed 47 students were aged from 21 to 23 years old, with 55.3% female and 44.7% male.

Results

In line with our previous results, we found that mobile branded app experience positively impacts brand satisfaction (coef. = 0.597, CI 95% [0.405; 0.788]), brand personality (coef. = 0.284, CI 95% [0.082; 0.487]), and identification with the brand (coef. = 0.956, CI 95% [0.687; 1.230]).[2] In the field study, we found that only identification with the brand has a positive effect on loyalty intentions (coef. = 0.221, CI 95% [0.027; 0.416]). Furthermore, identification with the brand explains the effect of mobile app experience on brand loyalty (coef. = 0.208, CI 95% [0.001; 0.437]). With these results, we validated our initial hypotheses H1 (a–c) and H2c for the actual use of a non-transactional app. The direct effect of the brand experience on loyalty intentions is not significant (coef. = 0.277, CI 95% [−0.113; 0.668]); however, the

[2] In a regression model including the independent variable, all mediators and moderators, variable inflation factors (VIFs) are smaller than 2.5, meaning that multicollinearity is not a serious concern (Hair et al., 2006).
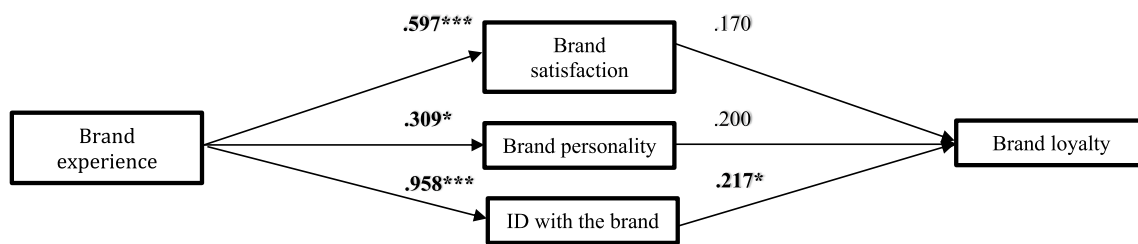
Fig. 3 Results of Study 2

total effect accounting for the included mediators is positive and significant (coef. = 0.643, CI 95% [0.388; 0.910]). The significant indirect effect is only present for identification with the brand (identification with the brand: coef. = 0.208, CI 95% [0.001; 0.437]; satisfaction: coef. = 0.101, CI 95% [−0.143; 0.539]; brand personality: coef. = 0.062, CI 95% [−0.144; 0.242]). We thus confirmed the actual positive effect of launching a non-transactional app and the importance of identification with the brand to explain the effect of branded experience on further behavioral intentions (cf. Figure 3).

General discussion

Summary of results

Our studies allow us to confirm the potential of mobile apps for company-related intentions. Thus, mobile experience has a positive effect on the intended loyalty and the underlying variables: satisfaction, brand personality, and identification with the brand. While there is a direct significant effect of experience on brand loyalty, the mediators have an important explaining role, especially identification with the brand. Indeed, identification with the brand is the key explaining factor, which prevails over satisfaction with the brand in the lab study and is the only explaining factor in the field study. In both studies, brand personality does not explain the effect of experience on brand loyalty. This might be due to the fact that different brand personality dimensions impact loyalty toward the brand differently. Thus, Molinillo et al. (2017) found that a responsible brand is a stronger predictor of brand loyalty compared to an active brand. Zentes et al. (2008) showed that brand personality dimensions have a difference in significance and valence of their impact on retail store loyalty, where brand excitement and sincerity have the most significant positive effect, while ruggedness might even have a negative effect. The impact of selective brand personality dimensions on (affective) brand loyalty was also true in the study by Lin (2010), where brand competence and sophistication had a significant positive effect, while other personality dimensions did not.

When comparing mobile apps, we find that consumers prefer non-transactional apps to fully transactional ones. Among the non-transactional apps, free apps are evaluated better than the freemium, but the difference is not significant. Although it might seem counter-intuitive, we assume that consumers see in the freemium version of a non-transactional app a possibility to further improve their experience and that the cost of the premium version is not hindering the perception of a better experience. Furthermore, the advantage of the freemium version is the freedom to switch to the premium without, however, being obligated to do so. Moreover, anchoring effects induced by time pressure can reduce preference for free versions of products (Dinsmore et al. 2021). The field study confirms the positive effect of non-transactional mobile app experience on brand loyalty and highlights the importance of identification with the brand as the underlying process of the impact. Thus, we conclude that a non-transactional app augments identification with the brand and by this means increases the intention to remain loyal to the brand.

Theoretical contributions

The present research extends the model proposed by Brakus et al. (2009) in the context of mobile applications by adding brand identification as a mediator between brand experience and brand loyalty. Specifically, the results of laboratory and field experiments show that the creation of brand identification is an effective way to trigger brand loyalty after experiences with branded mobile apps. In addition, the field experiment does not confirm the mediating role of customer satisfaction and brand personality. A possible explanation is that brand identification is more emotional and internalized (relates to self-perception and values); it is real self-congruence (the brand helps me to be who I am) and thus it has more impact than a simple evaluation of the brand's activity. Thus, the findings demonstrate the cornerstone importance of the identification with the brand variable to explain the effect of the mobile app. Moreover, personal relationships and dependence on the mobile phone make the experience very personal. In short, developing and maintaining brand identification through experience with branded apps helps

consumers consider the brand as their long-term companion. Thus, consumers can have a profound bond with the brand which can benefit their loyalty intentions. This kind of long-term relationship with customers is the main objective of companies (Pekovic and Rolland 2020). Furthermore, this paper extends previous research showing the moderating role of different types of mobile apps. The moderation effect of different types of apps (non-transactional vs. semi-transactional vs. fully transactional apps) investigated in this study shows that consumers prefer non-transactional apps.

Managerial implications

Our findings indicate that brands should invest in branded apps to provide mobile experiences. The most potential is held by non-transactional apps. While the freemium apps are not significantly under-evaluated by consumers, Nike and similar companies should still be very careful with freemium apps. Thus, the price of the premium version should be perceived as just with regard to the provided experience.

Other companies may follow Nike's example and provide non-transactional and semi-transactional apps. This is already the case for its direct competitors. Thus, Reebok provides an app to maximize the training experience in the network of partner gym centers and to book face-to-face training classes. Adidas follows the same strategy as Nike and has introduced freemium app Training by Runtastic. As the brands do not hesitate to capitalize on their non-transactional adjacent services and include premium content in such mobile apps, they have to make sure that the free content is providing a very high-quality experience and that the incremental payments are seen as further worthwhile improvement of the experience rather than a commercial transaction with the brand. This is an especially important consideration because many competing brands, such as Decathlon, Reebok, and Puma, provide a completely free non-transactional app. The competition on training apps is quite important, so retailing brands should be careful not to pour out to a different market. The latter makes sense to save the image of the brand and secure the identification of consumers with the brand. Thus, as identification with the brand is crucial to stimulate loyalty intentions, the mobile experience should reflect the brand personality and stimulate personal connection with the brand. The apps can also include functions to share brand experience, such as challenges completed, level of training, and amount of kilometers covered, so that consumers can communicate to others their relationship with the brand. The training apps should also put forward the advancement and achievements of the consumers so they can be seen as a partner in self-improvement and firmly implant their role of helper in becoming a person the consumer wants to be.

The content proposed by the non-transactional apps should be in line with the target segment and the expertise of the brand. Although big retailing brands propose garments and equipment for all sport types, there is always a stronger association with certain activities. For instance, Nike has been for a long time associated with running (Reis et al. 2016), while Reebok became a leader in the Cross-Fit landscape (Rishe 2011). Therefore, the suggested non-transactional content should reflect the main interest of the consumers and the image of the brand for a smoother identification with the brand, focusing on augmenting the fit between the brand and the customer (e.g., if Nike is active and friendly, then the app should be about physical activity and community).

Overall, brands should focus on mobile customer experience. Not only does it have important implications on brand perception and loyalty intentions, but also, in the midst of the COVID-19 pandemic, it is one of the main touchpoints with consumers (Zhuang et al. 2020). While it is true that mobile apps represent one of the main touchpoints with consumers, it may also be the consequence of anxiety, fear, and need for physical distancing, resulting in accelerated technology adoption among mass society worldwide (Lim 2021b) and the sanitary context. Consequently, brands should invest in pleasant and memorable mobile experiences. The developers and marketers should make sure that there is a low bounce rate and that consumers do not uninstall the app. Indeed, having an app on one's smartphone and using it even sporadically increases the personal relationship and bond with the app, as it "lives" on the screen of one's closest ally, (i.e., smartphone) (van Noort and van Reijmersdal 2019). Finally, brands should advance and measure consumer satisfaction.

Limitations and further research

There are multiple areas available for future research. First, the present study utilized a student sample. While Smith et al. (2015) shows that students represent the highest-use segment of users of mobile devices and allows sample homogeneity (Lim et al. 2020), and while findings with student samples have proved generalizable to other populations (Kardes 1996), future research should validate our findings with other populations. Furthermore, these findings should be confirmed on a bigger sample of actual users.

Second, future research could also look at what types of applications could be used to enhance consumers' identification with the brand and, in turn, their purchase intentions. Indeed, the experience with mobile apps can evolve over time, from non-transactional to semi-transactional to fully transactional over time, or between transactional modes according to needs and lifestyles. Taking a sequencing approach (Lim et al. 2018) to enrich understanding on such experience and its impact on brand satisfaction and

loyalty could be a potentially fruitful way to build on the findings of the present study. Moreover, this research focuses on a single mobile app type (sport). The effects found in this research may vary according to mobile app type. Even within the realm of non-transactional mobile apps, there are many categories of entertaining mobile apps (e.g., music, travel recommendation, lifestyle, games, etc.) that can likely impact customer perceptions of the brand. In addition, we could only test the Nike brand, and our results may not apply to other branded apps. Future research should attempt to replicate our findings using different brands so that we can generalize the findings.

Third, it would also be possible to examine whether the pricing levels of the mobile apps would have an impact on the model studied here since different inferences may be derived from different levels of price (Darke and Chung 2005). We did not find significant differences between free and freemium non-transactional mobile apps. Thus, future research could examine the impact of multiple variations of prices.

Fourth, further research should explore the effect of augmented reality apps as this form of application is more playful and enjoyable, stimulating positive consumer reactions (Plotkina et al. 2021). In addition, it could be interesting to explore the effect of an augmented reality app which is non-transactional (Hoyer et al. 2020), since previous research only studied the fully transactional version (Dacko 2017). Furthermore, pairing mobile apps with wearable technology could also provide physiological data and, thus, proliferate neuromarketing research (Lim 2018) at the intersection of neuroscience and branded mobile apps. Finally, future studies should explore the effect of community impact (e.g., forums, community support, and online interaction with trainers) because the interaction aspect might induce the feeling that consumers have a direct experience and thus engage consumers more (Millán and Diaz 2014).

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