Telematics and Informatics 35 (2018) 1297–1309

Contents lists available at ScienceDirect

Telematics and Informatics

journal homepage: www.elsevier.com/locate/tele

Facilitation of consumer loyalty toward branded applications: The dual-route perspective

Timmy H. Tseng[a], Crystal T. Lee[b,*]

[a] Department of Business Adminstration, National Chengchi University, NO.64, Sec.2, Zhi-Nan Rd., Taipei, Taiwan
[b] College of Management, Wenzhou Business College, Chashan University Town, Wenzhou City, Zhejiang Province, China

ARTICLE INFO

Keywords:
Brand benefits
Information quality
System quality
Parasocial interaction
Perceived usefulness
Branded applications

ABSTRACT

Although many brands develop mobile applications (apps) to build relationships with consumers, most branded apps fail to retain consumers' loyalty. This study examines the facilitation of consumer loyalty toward branded apps (continuance intention, in-app purchase intention, and word-of-mouth intention) from the dual-route perspective. One route is the affective (relationship) route, where brand benefits (functional benefits, experiential benefits, symbolic benefits, and monetary benefits) drive parasocial interactions between consumers and the brand, which, in turn, influences branded app loyalty. The other route is the utility route, where system characteristics (system quality and information quality) affect perceived usefulness, which, in turn, facilitates branded app loyalty. An online survey was conducted, and the research model was empirically tested using partial least squares structural equation modeling. The findings support the dual-route perspective according to which both affective and utilitarian paths facilitate branded app loyalty. The key theoretical contribution of this study is that it moves beyond the utilitarian path and finds the affective (relationship) path to give a more complete picture of the facilitation of consumer loyalty in the branded app context. A strategy is provided to suggest to practitioners how to design branded apps to facilitate consumer loyalty.

1. Introduction

Smartphone users spend approximately 90% of their time on their devices using mobile applications (apps) (Allan, 2015). Based on Nielsen research, apps are now an essential part of people's everyday lives, with individuals spending an average of 30 h per month on them (Tiongson, 2015). Many companies have begun to launch branded apps to connect with consumers through brand messages (Allan, 2015; Reddy, 2015; Tiongson, 2015). More than 90 of the top 100 global brands have already launched at least one app. Branded apps are defined as "software downloadable to a mobile device which prominently displays a brand identity, often via the name of the app and the appearance of a brand logo or icon, throughout the user experience" (Bellman et al., 2011). Branded apps offer rich opportunities for brands to build loyalty in a competitive marketplace, drive e-commerce, and boost brand recognition and sales (Allan, 2015; Tiongson, 2015). However, most branded apps fail (Allan, 2015). New research from the creative digital marketing company Ampersand Mobile indicated that brands are mostly failing in their efforts to engage with consumers using apps. A total of 84% of consumers deleted branded apps after only one use, according to the Ampersand Mobile research (Feeley, 2015). Although there are many branded apps, few of them have gained long-term and repeat usage (Reddy, 2015). How to facilitate consumers' loyalty toward branded apps is a research question worth examining. Although it is crucial for firms to facilitate the

* Corresponding author.
E-mail address: Iampinkcrystal@gmail.com (C.T. Lee).

https://doi.org/10.1016/j.tele.2018.03.002
Received 19 November 2017; Received in revised form 24 January 2018; Accepted 1 March 2018
Available online 02 March 2018

adoption of branded apps, many firms place more effort on retaining current users because acquiring new users is more expensive than retaining current users (Wood, 2004).

Most previous studies examined mobile app loyalty or retention from the utilitarian perspective (Fang and Fang, 2016; Fang, 2017; Hsiao and Chen, 2016; Kang, 2014; Lu, 2014) using the technology acceptance model (TAM), in which perceived usefulness as a key component drives continuance intention (Fang and Fang, 2016; Fang, 2017; Hsiao and Chen, 2016; Lu, 2014). However, the factors facilitating branded app continuance are not restricted to utilitarian factors (Fang, 2017). Since firms use branded apps as a tool to develop a long-term relationship with consumers (Zhao and Balagué, 2015) and since consumers perceive brands as humans and tend to develop affective relationship with brands (Aggarwal, 2004), it is worthwhile to investigate how to facilitate branded app loyalty from the consumer-centric relationship perspective. The consumer-brand relationship examined in this research is parasocial interaction, defined as consumers' illusion of having an intimate and personal relationship (friendship) with a media persona such as a brand (Labrecque, 2014). The main feature of parasocial interaction is that the interaction is one-sided and is controlled by the media persona (Horton and Wohl, 1956). Most branded apps provide brand messages to consumers to communicate and build a relationship with consumers (Zhao and Balagué, 2015), and such a relationship is similar to parasocial interaction. Consumers feel as though at any time, brands are on their side to give them valuable information and that brands are similar to their intimate friends (Labrecque, 2014). Since parasocial interaction theory postulates the relationship between parasocial interaction and media usage, this theory is utilized to explain how parasocial interaction between consumers and brands facilitates branded app loyalty (Giles, 2002). Hence, this study moves beyond the utilitarian perspective of the TAM and incorporates the relationship (affective) perspective of parasocial interaction theory to examine the facilitation of branded app loyalty.

This research also seeks to examine the antecedents of parasocial interaction and perceived usefulness in the context of branded apps. There are three knowledge gaps in this body of literature. First, although most previous studies examined the antecedents of parasocial interaction in the context of mass media usage (Giles, 2002) and social media usage (Labrecque, 2014), to the best of the authors' knowledge, the literature has remained silent on the facilitators of parasocial interaction in the context of branded app usage. Since previous studies indicated that the consumer-brand relationship follows commercial norms and that benefit considerations underlie the consumer-brand relationship (Aggarwal, 2004; Batra et al., 2012), this research examines how brand benefits in branded apps facilitate parasocial interaction from the perspective of the reinforcement theory of friendship development, which postulates that people develop friendships with those providing rewards (Fehr, 1996).

Second, previous studies adopting the utilitarian perspective examined the system antecedents of perceived usefulness using the TAM (Fang and Fang, 2016; Fang, 2017). However, two important system characteristics (i.e., system quality and information quality) of the DeLone and McLean IS success model (D&M IS success model) are not investigated (Delone and Mclean, 1992; Seddon, 1997). Since consumers use branded apps to obtain information on products and brands and to facilitate purchase processes, system quality and information quality are two relevant drivers in judging the usefulness of branded apps. Hence, drawing on the IS success model, this research examines whether system quality and information quality facilitate perceived usefulness.

Third, previous studies utilized continuance intention (Fang and Fang, 2016; Fang, 2017) and in-app purchase intention (Fang, 2017) to represent consumers' loyalty toward branded apps. However, word-of-mouth intention, as another important component of consumer loyalty, is not included (Taylor and Jones, 2007; Zeithaml et al., 1990). This study includes these three components and investigates how to facilitate consumers' loyalty toward branded apps from the dual-route perspective.

In summary, the aim of this research is to investigate the facilitation of branded app loyalty (i.e., continuance intention, in-app purchase intention, and word-of-mouth intention) from the dual-route perspective: the affective path and the utilitarian path. Specifically, the system characteristics (i.e., information quality and system quality)-perceived usefulness-branded app loyalty link demonstrates that the utilitarian path is developed based on the D&M IS success model and the TAM. The affective path is developed based on parasocial interaction theory and the reinforcement theory of friendship development, and this path denotes the brand benefits (i.e., functional, experiential, symbolic, and monetary benefits)-parasocial interaction-branded app loyalty link. The utilitarian path focuses on the function of the branded app to facilitate task completion, while the affective path focuses on the relationship-building efforts between consumers and the focal brand of the branded app. Based on the results, we suggest to practitioners how to design effective branded apps to facilitate consumers' loyalty toward branded apps.

2. Literature review and hypothesis development

2.1. The affective path

2.1.1. Parasocial interaction

Parasocial interaction was coined by Horton and Wohl (Horton and Wohl, 1956) to describe audiences' illusionary experience of having established a "seemingly face-to-face relationship or friendship" with a remote media personality (i.e., mediated representations of presenters or characters). The audience has the illusion that the relationship is immediate, personal, and reciprocal. In fact, parasocial interaction is characterized by minimal or no actual interactivity or mutuality and is one-sided, non-dialectical, and controlled by the media figure (Horton and Wohl, 1956; Perse and Rubin, 1989). The development of parasocial interaction does not necessarily depend on the length of the relationship, and feelings of parasocial interaction can arise during initial exposures (Perse and Rubin, 1989).

Although traditional research focused on the audience's relationship with a persona in mass media, previous studies have indicated that parasocial interaction refers to an affective bond persisting outside the mass media context (Giles, 2002), such as the relationship between netizens and political candidates on a website (Thorson and Rodgers, 2006), between bloggers and readers

(Colliander and Dahlen, 2011), and between users and other members in an SNS context (Tsiotsou and Gouri, 2015). Other than real characters, parasocial interaction can be applied to fictional characters such as "brands". For example, research indicated that parasocial interaction can occur between consumers and a brand in the social media context (Labrecque, 2014). Parasocial interaction can be developed through the design and presentation of information (Perse and Rubin, 1989). Previous research indicated that marketers or brand representatives use brand messages to shape different types of brand personalities and that brands are similar to humans and have personalities (Aggarwal, 2004). Most branded apps disseminate brand information to consumers, and in doing so, it is likely that parasocial interaction can be cultivated. Few studies examine parasocial interaction in the branded app context, and this research seeks to fill this gap.

2.1.2. Brand benefits

Benefits are the subjective feeling or personal value that is associated with the consumption or use of a product or service (Keller, 1993). Brand benefits are divided into functional benefits, experiential benefits, and symbolic benefits based on consumer needs (Keller, 1993; Park et al., 1986). A brand with functional benefits is defined as providing a product or service intended to solve consumption-related problems (Park et al., 1986). Functional benefits are the more intrinsic advantages of consuming a product or service and correspond to product-related attributes (Keller, 1993). Experiential benefits refer to what consumers feel using the product or service and correspond to product-related attributes (Keller, 1993) Experiential benefits satisfy experiential needs such as sensory pleasure, variety, and cognitive stimulation (Keller, 1993; Park et al., 1986). Symbolic benefits relate to consumers' underlying needs for social approval, self-expression, and outer-directed self-esteem (Keller, 1993). A brand reflects different parts of consumers' identities, such as the core beliefs, values (e.g., McDonald's for bringing joy to customers, and its essence is forever young), or lifestyles (e.g., Apple for a simple, friendly, innovative and fashionable style) to which they adhere (Escalas and Bettman, 2005). Symbolic benefits are the more extrinsic advantages of product or service consumption and are related to non-product-related attributes (Keller, 1993). Aside from the above three types of brand benefits, since many branded apps provide coupons to consumers (Seitz and Aldebasi, 2016), monetary benefits, defined as economic advantages that consumers obtain from their relationships with a brand (Gwinner et al., 1998; Harris and Goode, 2004), are included as an additional type of brand benefit.

2.1.3. The relationship between brand benefits and parasocial interaction

Parasocial interaction is the audience's illusionary experience of having established a "seemingly face-to-face friendship" with a remote media personality (Horton and Wohl, 1956). Previous research indicated that many attributes of parasocial interaction are similar to those of social interaction and that there is strong evidence of citing parasocial interaction in the relationship psychology at the individual level (Giles, 2002). Hence, friendship theories of interpersonal relationships can be applied in parasocial interaction. For instance, consumers can develop parasocial interaction with a brand in online brand communities and follow reciprocity norms of friendship in which consumers share their personal information and exhibit brand loyalty in return for brands' openness in sharing information and interactivity (Labrecque, 2014).

The reinforcement theory of friendship development, which postulates that rewards facilitate friendship, can be utilized to explain how brand benefits promote parasocial interaction in the context of branded apps. The theory of reinforcement has two principles, that is, operant conditioning and classical conditioning (Fehr, 1996). Operant conditioning postulates that people tend to develop friendships with those who directly provide them rewards (Byrne and Clore, 1970; Clore and Byrne, 1974). Classical conditioning postulates that people develop friendships with those who do not directly give rewards but are associated with the rewarding experience (Lott and Lott, 1960, 1974). In the contexts of branded app usage, consumers obtain rewards from branded apps that include various brand benefits (i.e., functional benefits, experiential benefits, symbolic benefits, and monetary benefits). Brand benefits are not directly provided by the brand but are indirectly provided by marketers (Aaker, 1997). Based on classical conditioning, if consumers perceive more brand benefits while using branded apps, then they tend to develop a friendship with the brand (i.e., parasocial interaction) because brand benefits are associated (paired) with the brand. Alternatively, consumers are likely to consider a brand as a person and think brand benefits are directly provided by the brand (Aaker, 1997). Based on operant conditioning, consumers tend to develop a friendship with the brand if the brand directly provides brand benefits. Hence, the following hypotheses are developed:

H1. Functional benefits positively influence parasocial interaction.

H2. Experiential benefits positively influence parasocial interaction.

H3. Symbolic benefits positively influence parasocial interaction.

H4. Monetary benefits positively influence parasocial interaction.

2.1.4. The relationship between parasocial interaction and branded app loyalty

Based on parasocial interaction theory, parasocial interaction drives media users to contact media figures to maintain parasocial relationships (Giles, 2002). Previous studies indicated that parasocial interaction makes individuals affirm their relationship through behaviors such as increased viewing and purchasing from the programs to which they are attracted (Hofstetter and Gianos, 1997; Perse and Rubin, 1989; Skumanich and Kintsfather, 1998). Furthermore, previous research postulated that people tend to discuss figures with others after the viewing episode, which suggests that parasocial interaction facilitates word-of-mouth behavior or intention toward the media figure (Giles, 2002). In social media contexts, parasocial interaction between consumers and a brand

promotes relationship outcomes (loyalty intention and willingness to provide information) (Labrecque, 2014). Based on parasocial interaction theory, if consumers perceive more parasocial interaction with a brand in the branded app, then to retain the parasocial relationship, they tend to have more continuance intention toward its branded app, more brand purchases in the branded app, and more word-of-mouth intention toward that branded app. Hence, we develop the following hypotheses:

$H5_a$. Parasocial interaction positively influences in-app purchase intention.

$H5_b$. Parasocial interaction positively influences the continuance intention of branded apps.

$H5_c$. Parasocial interaction positively influences the word-of-mouth intention of branded apps.

2.2. The utilitarian path

2.2.1. Perceived usefulness

Most previous studies examined mobile app use from the utilitarian perspective (Fang and Fang, 2016; Fang, 2017; Hsiao and Chen, 2016; Kang, 2014; Lu, 2014). The TAM is used as the basis for developing the research framework. Perceived usefulness is the critical component in the TAM, and it emphasizes usage outcomes such as the improvement of task effectiveness and efficiency (Davis et al., 1992). Perceived usefulness is more effective than perceived ease of use in predicting the intention to use an IS (Davis et al., 1992). Following Fang (Fang, 2017), this study defines perceived usefulness as the utilitarian value that users seek to obtain from the use of branded apps, and it is the core of the utilitarian path of branded app use.

2.2.2. System characteristics

This research categorizes system characteristics based on the D&M IS success model because it is one of the most commonly adopted categorizations in the IS field. Furthermore, a meta-analytic study has indicated that two system characteristics have positive correlations with the intention to use a system (Petter and Mclean, 2009). Based on the D&M IS success model, information quality and system quality are desirable system characteristics (Delone and Mclean, 1992). Specifically, information quality refers to the desired characteristics of the information output generated by the information system. System quality refers to the desired characteristics of the information system itself. Previous studies have applied these two dimensions of quality in the context of IS and e-commerce and examined how these two dimensions of quality influence adoption or reuse (Ahn et al., 2007; Rai et al., 2002). However, the system characteristics of the D&M IS success model have not been examined in the context of branded apps. Thus, this research intends to fill this gap and investigate how system quality and information quality facilitate the perceived usefulness of branded apps.

2.2.3. The relationships between system characteristics and perceived usefulness

The information systems success model integrated previous IS empirical studies on MIS effectiveness (Delone and Mclean, 1992). The D&M IS success model (Seddon, 1997) postulates that IS success factors can be categorized into six factors (i.e., system quality, information quality, system use, user satisfaction, individual impact, and organization impact) and presents the temporal relationships among them. System quality and information quality facilitate the use of the system, which, in turn, results in user satisfaction, individual performance, and, ultimately, organizational performance. The D&M IS success model can be used in the context of e-commerce (Delone and Mclean, 2003) and m-commerce (Gao et al., 2015; Tam and Oliveira, 2016).

In the respecified model, Seddon (Seddon, 1997) corrected key weaknesses in DeLone and McLean's IS success model (Delone and Mclean, 1992) and postulated that perceived usefulness can be used to replace system use. Perceived usefulness belongs to the general perceptual measures of the net benefits of system use, and system characteristics (i.e., system quality and information quality) in the D&M IS success model facilitate perceived usefulness (Seddon, 1997), which is corroborated by previous studies. Subsequently, research indicated that ease of use (a surrogate for system quality) and information quality positively influence perceived usefulness in the context of organizational IS use (Rai et al., 2002). Ahn, Ryu, and Han (Ahn et al., 2007) revealed that perceived usefulness is facilitated by information quality and system quality in the context of online retailing. Hence, the following hypotheses are developed:

H6. System quality positively influences perceived usefulness.

H7. Information quality positively influences perceived usefulness.

2.2.4. The relationships between perceived usefulness and branded app loyalty

In the TAM (Davis, 1989), both perceived usefulness and perceived ease of use facilitate the behavioral intention to use an IT, which, in turn, generates usage behavior. Perceived usefulness is a major determinant of behavioral intention (Davis, 1989). In the context of branded app use, the perceived usefulness of branded apps makes consumers more likely to continue using branded apps and use them to purchase products/services. Previous studies indicated that perceived usefulness facilitates continuance intention (Fang, 2017, 2017; Hsiao and Chen, 2016; Lu, 2014) and purchase intention (Fang, 2017) in the context of mobile apps. Thus, the following hypotheses are developed.

$H8_a$. Perceived usefulness positively influences in-app purchase intention.

$H8_b$. Perceived usefulness positively influences the continuance intention of branded apps.

Other than purchase intention and continuance intention, previous studies postulate that technology adoption theory can be extended by adding the potential of recommendation power (Chea and Luo, 2008; Miltgen et al., 2013). This is even true in the context of mobile apps because word-of-mouth intention is treated as an important outcome variable (Hsieh and Tseng, 2017) and is critical to the increased sales and success of mobile apps (Liang et al., 2015). Therefore, perceived usefulness, as the core element in the TAM, is likely to be positively associated with word-of-mouth intention. If branded apps are useful, then consumers tend to recommend using them to other people in their social network. Hence, we develop the following hypothesis:

$H8_c$. Perceived usefulness positively influences the word-of-mouth intention of the branded apps.

3. Method

3.1. Data collection and profile of the respondents

This study chooses mobile commerce-centric branded mobile apps as the subject based on the research purpose. The goal of this type of branded app is to sell products (Zhao and Balagué, 2015). This study targets participants who have experience in at least one mobile commerce-centric branded app and solicits participants via a survey link hosted on the Amazon Mechanical Turk (MTurk). In the invitation stage, this study included the qualifications and instructions before opening the hyperlink to the questionnaire. The respondents received $0.3 reward for completion of the HIT. The respondents were asked to recall a brand, company, or service that they interact with most often in branded apps and to keep the same brand they mentioned at the top of their mind while answering the survey questions, following the suggestion by (Labrecque, 2014).

The first page of the questionnaire explained the purpose of the study and the definition of branded apps and ensured confidentiality. In the following pages, the respondents are asked to answer questions on the key constructs, control variables, and demographic variables. Once the respondents complete the questionnaire, they are thanked for their participation. In total, 330 questionnaires were collected. The respondents who do not write down an app name or brand name or share a non-mobile commerce-centric app (e.g., social-centric branded apps) constitute an invalid sample.

Afterwards, 27 participants were removed from the database, leaving 303 valid samples used in the subsequent analyses. Table 1 provides the demographic data about the users of branded apps. Of the 303 samples, 51.2% were female, while 48.8% were males, and 49.5% fell into the age range of 21–30, followed by 34% in the age range of 31–40. The respondents were well educated, with more than 77.6% having completed college or a graduate degree or above across different types of occupations. More than half of the

Table 1
Profile of use experience.

Profile category	Count	Percentage (%)
Membership duration of branded app		
Shorter than 3 months	36	11.9
3 to less than 6 months	9	3.0
6 months to less than 1 year	51	16.8
1–2 years	79	26.1
More than 2 years	128	42.2
Usage Frequency of branded app		
Once a month or less often	33	10.9
2–3 times a month	68	22.4
1–3 times a week	131	43.2
4–6 times a week	31	10.2
Daily	40	13.2
List of most downloaded categories of brand apps		
Wholesale & retail	151	49.8
Auto & tires & powersport accessories & auto related service	4	1.3
Baby, kids, & toys	6	2.0
Clothing, jewelry, & accessories	33	10.9
Electronics & computers	32	10.6
Home decor & home improvement & hardware & furniture	3	1.0
Food & bakery & desserts & coffee & cocoa & cooking & baking	23	7.6
Household & bath & cleaning products & emergency kits & supply	5	1.7
Health & diet & nutrition & vitamins, herbals & pharmacy	8	2.6
Beauty & personal care	9	3.0
Hotels & tourist attractions & movie & shows & restaurant &	3	1.0
Office & office equipment	2	0.7
Sports & fitness & outdoors	8	2.6
Pet supplies	1	0.3
Others	15	5.0

respondents reported an average household income of $25000 to $74999 (57.7%) and had more than 1to 2 year of experience as users of a branded app (68.3%). The usage frequency of branded apps was distributed between daily to once a month or less often. The brand apps selected in this study had a wide coverage of industries. Most of them belong to wholesale and retail (49.08%), clothing, jewelry, and accessories (10.09%), electronics and computers (10.06%), and food, bakery, desserts, coffee, cocoa, cooking and baking (7.6%). The result indicates that people use branded apps across different brands, including Amazon, Etsy, Macy's, Walmart, Target, Walgreen, Home Depot, Domino's Pizza, Starbucks, Adidas, Samsung, Loreal, Zara, Gap, Nike, and Apple. Detailed usage information is presented in Table 1.

3.2. Research instrument

All the measures were adapted from established scales to suit the research context. The items for measuring system quality (4 items) and information quality (3 items) were adapted from (Fang et al., 2011). Perceived usefulness (5 items) and continuance intention of branded apps (2 items) were measured with items used by Fang (2017). The items for measuring experiential benefits (Hur et al., 2010), functional benefits (Huang et al., 2016; Hur et al., 2010), monetary benefits (Kang et al., 2014), and symbolic benefits (Huang et al., 2016; Hur et al., 2010; Park, Eisingerich, Pol, & Park, 2013) were measure with 3 items, 5 items, 3 items, and 6 items, respectively. In-app purchase intention was adapted from Hsiao and Chen (2016) and Lee (2017) with 5 items. Word-of-mouth was measured with 3 items (Hsieh and Tseng, 2017). Parasocial interaction was adapted from (Labrecque, 2014) (6 items). All item responses use 7-point Likert scales, where 1 indicates strongly disagree and 7 indicates strongly agree. The measures are shown in Table 2.

3.3. Data analysis

Partial least squares structural equation modelling (PLS-SEM) was performed to analyse the data. Following procedures recommended by Anderson and Gerbing (Anderson and Gerbing, 1988), this research conducted a two-stage analysis using SmartPLS 3 to empirically test the research hypotheses (Ringle et al., 2014). The first step is to investigate the measurement model and to evaluate reliability, convergent validity, and discriminant validity. Composite reliability (CR) is as a reliability index at threshold 0.7 is suggested by (Hair et al., 2011). Cronbach's α, which is the most commonly used internal consistency reliability coefficient, is also used to assess scale reliability (Peterson, 1994), and a level 0.7 or higher is recommended (Nunnally, 1978). Convergent validity is supported if all average variance extracted (AVE) estimates are greater than 0.50 and if item loadings are greater than 0.70 (Fornell and Larcker, 1981). Discriminant validity is achieved if the square root of the AVE of each construct is larger than the correlation of the specific construct with any of the other constructs in the model (Chin, 1998). The second step is to test the hypotheses using partial least squares structural equation modeling (PLS-SEM). The paths of the control variables (frequency of using branded apps, and membership duration of branded app) on the endogenous constructs are included. The bootstrap analysis of 5000 subsamples was performed as suggest by (Hair et al., 2011).

4. Results

4.1. Measurement model

The results shown in Table 2 indicate that the alpha coefficients and CR estimates for all of constructs are all greater than the threshold value (i.e., $\alpha \geq 0.7$; $CR \geq 0.7$), which indicates acceptable reliability. For convergent validity, the AVE values are over 0.5, ranging from 0.62 (functional benefits) to 0.85 (continuance intention) and the item loadings are greater than 0.7. As shown in Table 3, our results meet discriminant validity that the square root of AVE are greater than the remaining construct correlation. Thus, the reliability, convergent validity, and discriminant validity of each construct are achieved.

4.2. Structural model

The results of the R^2 value, path coefficients, and the corresponding level of significance are shown in Fig. 1. We examine the coefficient of determination (R^2) to assess the precision in predictions for endogenous constructs. For the establishment of the predictive power of the model, the R^2 values should be greater than 0.67 (substantial), 0.33 (moderate) and 0.19 (weak), as suggested by (Chin, 1998). Our data results show that the R^2 value for continuance intention is 0.463, for word-of-mouth intention 0.563, for in-app purchase intention 0.553, and for usefulness 0.557, showing nearly substantial levels. The R^2 value for parasocial interaction is 0.751, suggesting a substantial predictive power.

In Fig. 1, findings regarding affective path show that functional benefits has positive effect on parasocial interaction ($\beta = 0.20$, $p < 0.001$). The effects of experiential benefits on parasocial interaction is also significant ($\beta = 0.29$, $p < 0.001$). The results showed that both symbolic benefits ($\beta = 0.44$, $p < 0.001$) and monetary benefits ($\beta = 0.12$, $p < 0.01$) have main effects on parasocial interaction. Parasocial interaction has a positive significant effect on in-app purchase ($\beta = 0.22$, $p < 0.001$), continuance intention ($\beta = 0.32$, $p < 0.001$), and word-of-mouth intention ($\beta = 0.56$, $p < 0.001$). Parasocial interaction has a stronger effect on word-of-mouth intention than in-app purchase and continuance intention. As for the utilitarian path, the results also reveal that both system quality ($\beta = 0.48$, $p < 0.001$) and information quality ($\beta = 0.32$, $p < 0.001$) have main effects on perceived usefulness. Finally, perceived usefulness positively influences in-app purchase ($\beta = 0.55$, $p < 0.001$), continuance intention ($\beta = 0.41$,

Table 2
Construct measures, Mean, SD, standardized factor loadings, reliability and validity measures.

Item	Mean	SD	Factor loadings	Reliability and validity
Experiential benefits Hur et al. (2010)				
I feel happy when I use the brand	5.50	1.16	0.92	Alpha = 0.90
I feel good when I use the brand	5.55	1.17	0.94	CR = 0.94
I feel enjoyable when I use the brand	5.32	1.26	0.88	AVE = 0.84
Functional benefits Huang et al. (2016), Hur et al. (2010)				
The functions provided by this brand meet my needs	5.84	1.13	0.72	Alpha = 0.85
This brand helps me a lot in my daily life	5.24	1.44	0.74	CR = 0.89
This brand has an excellent, reliable quality	5.76	1.07	0.88	AVE = 0.62
This brand provides excellent quality among its products/services	5.76	1.06	0.83	
This brand is of superior quality among similar products/services	5.62	1.10	0.76	
Information quality Fang et al. (2011)				
Information on the branded app is relevant to my purchase decisions	5.79	1.17	0.86	Alpha = 0.82
Information on the branded app is easy to comprehend	5.89	1.07	0.87	CR = 0.89
Information on the branded app is accurate	5.79	1.05	0.84	AVE = 0.74
Monetary benefits Kang et al. (2014)				
I can obtain discounts or special deals on this branded app	5.54	1.40	0.80	Alpha = 0.71
I can obtain better prices on this branded app than on other similar branded apps	5.32	1.36	0.83	CR = 0.84
I can receive free coupons for the focal brand on this branded app	4.79	1.78	0.75	AVE = 0.63
Parasocial interaction Labrecque (2014)				
[Brand] makes me feel comfortable, as if I am with a friend	4.83	1.55	0.86	Alpha = 0.92
When I interact with [brand], I feel included	5.00	1.51	0.84	CR = 0.94
The work I do is meaningful to me	5.19	1.38	0.86	AVE = 0.71
I can relate to [brand]	5.12	1.45	0.85	
I like hearing what [brand] has to say	5.40	1.35	0.82	
I care about what happens to [brand]	5.40	1.32	0.80	
System quality Fang et al. (2011)				
The branded app has a simple layout for its contents	5.81	1.12	0.84	Alpha = 0.89
The organization and layout of the branded app facilitate searching for products	5.74	1.12	0.88	CR = 0.92
The appearance of the branded app is appealing.	5.78	1.17	0.83	AVE = 0.75
The branded app is easy to navigate	5.92	1.07	0.89	
Symbolic benefits Huang et al. (2016), Hur et al. (2010), Park et al. (2013)				
This brand fits my belief and values	5.11	1.33	0.76	Alpha = 0.91
This brand makes my life richer and meaningful	4.83	1.54	0.86	CR = 0.93
I can use this brand to express who I am	4.93	1.54	0.86	AVE = 0.69
This brand represents my deepest values	4.57	1.61	0.85	
This brand helps me make a good impression on other people	4.76	1.58	0.85	
Using this brand makes me feel superior to other people	3.97	1.91	0.80	
Perceived usefulness Fang (2017)				
The branded app improves my performance when searching for and purchasing goods	5.55	1.31	0.77	Alpha = 0.90
The branded app increases my productivity when searching for and purchasing goods	5.56	1.28	0.84	CR = 0.92
The branded app makes it easier to search for and purchase goods.	5.76	1.08	0.87	AVE = 0.71
The branded app enhances my effectiveness in searching for and purchasing goods	5.72	1.22	0.88	
The branded app is useful for searching for and buying goods	5.85	1.10	0.85	
Continuance intention Fang (2017)				
I intend to continue using the branded app rather than discontinue its use	5.96	1.16	0.92	Alpha = 0.83
If I could, I would like to continue my use of the branded app	5.82	1.13	0.93	CR = 0.92
				AVE = 0.85
In-app purchase intention Hsiao and Chen (2016), Lee (2017)				
It is likely for me to purchase the products or service in the branded app I use	5.85	1.17	0.89	Alpha = 0.92
It is possible for me to purchase the products or service in the branded app I use	5.89	1.20	0.84	CR = 0.94
It is probable for me to purchase the products or service in the branded app I use	5.86	1.11	0.88	AVE = 0.75
I intend to purchase the products or service in the branded app in future	5.85	1.16	0.90	
I predict that I would pay for the products or service in the branded app in future	5.87	1.16	0.83	
Word-of-mouth intention Hsieh and Tseng (2017)				
I would spread positive word of mouth about using this branded app	5.59	1.21	0.90	Alpha = 0.90
I would recommend this branded app to my friends.	5.71	1.25	0.94	CR = 0.94
If my friends were looking for branded apps of this product category, I would tell them to try this one	5.88	1.15	0.89	AVE = 0.83

$p < 0.001$), and word-of-mouth intention ($\beta = 0.27$, $p < 0.001$). Perceived usefulness has a stronger effects on in-app purchase and continuance intention than word-of-mouth intention. All hypotheses we proposed were supported.

Membership duration and usage frequency are the control variables in the analysis of the proposed relationships among the constructs in the conceptual model. For membership duration, since the “3 to less than 6 months” category has a percentage lower

Table 3
Latent construct correlations and square root of AVEs.

	CON	EXP	FUN	IQ	PSI	SQ	SYM	PU	WOM	PI	MON
CON	**0.92**										
EXP	0.55	**0.91**									
FUN	0.67	0.73	**0.79**								
IQ	0.65	0.45	0.67	**0.86**							
PSI	0.54	0.76	0.70	0.40	**0.84**						
SQ	0.68	0.60	0.73	0.74	0.51	**0.86**					
SYM	0.30	0.66	0.54	0.18	0.78	0.29	**0.83**				
PU	0.61	0.51	0.66	0.67	0.53	0.71	0.35	**0.84**			
WOM	0.72	0.67	0.69	0.51	0.71	0.65	0.48	0.58	**0.91**		
PI	0.73	0.55	0.64	0.66	0.51	0.64	0.30	0.70	0.67	**0.87**	
MON	0.35	0.36	0.41	0.42	0.46	0.44	0.35	0.54	0.38	0.36	**0.79**

Note: Boldface numbers on the diagonal are the square root of the average variances extracted (AVE); CON: Continuance intention (Branded apps), EXP: Experiential benefits, FUN: Functional benefits, IQ: Information quality, PSI: Parasocial interaction, SQ: System quality, SYM: Symbolic benefits, PU: Perceived usefulness, WOM: Word-of-mouth intention (Branded apps), PI: In-app purchase intention, MON: Monetary benefits.

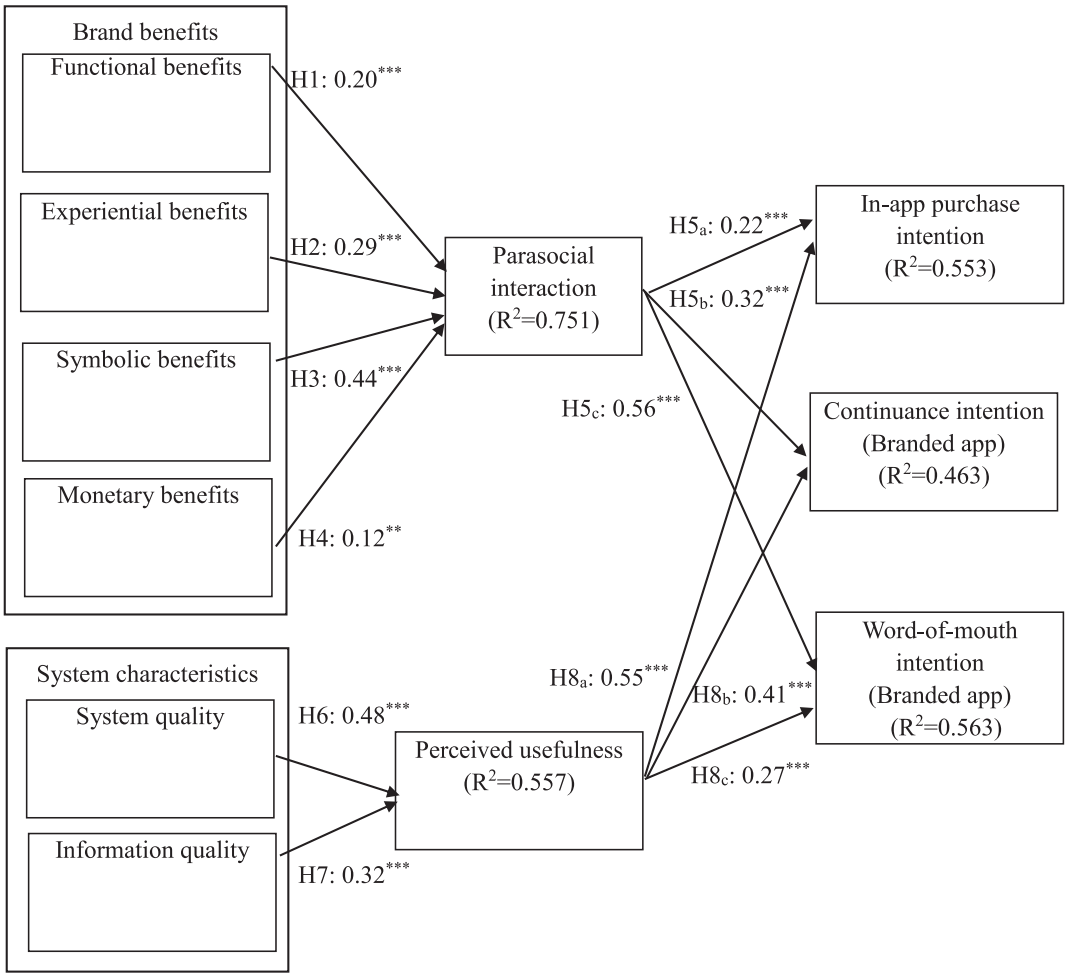

Fig. 1. Structural model testing results. Note: $^{***}p < 0.001$; $^{**}p < 0.01$.

than 5%, it is combined with the "Shorter than 3 months" category to form the "Shorter than 6 months" category. Usage frequency has insignificant influence on continuance intention ($\beta = -0.01$, $p = 0.78$), in-app purchase ($\beta = -0.001$, $p = 0.98$), and word-of-mouth intention ($\beta = 0.01$, $p = 0.86$). Membership duration has insignificant influence on word-of-mouth intention ($\beta = 0.07$, $p = 0.11$). Even though membership duration significantly relates to continuance intention ($\beta = 0.17$, $p < 0.001$) and in-app purchase ($\beta = 0.20$, $p < 0.001$), this outcome did not impact the proposed relationship in our framework.

The effect sizes f^2, reflecting the change in the R^2 value when a specified exogenous construct is omitted from the model, were calculated for all structural model relationships. The f^2 values of 0.35, 0.15, and 0.02 indicate an exogenous construct's large, medium, and small effect on an endogenous construct, respectively (Hair et al., 2011). For the utilitarian path, perceived usefulness had a large effect size on willingness to pay (0.47), a medium effect size on continuance intention (0.22), and a close-to-medium effect size on word-of-mouth intention (0.12). The effect sizes of system quality and information quality on perceived usefulness are medium (0.24) and close-to-medium (0.11), respectively. For the affective path, parasocial interaction had a large effect size on word-of-mouth intention (0.50), a close-to-medium effect size on continuance intention (0.13), and a small effect size on willingness to pay (0.08). Symbolic benefits had a large effect size on parasocial interaction (0.41), and experiential benefits had a close-to-medium effect size on parasocial interaction (0.12), while functional benefits (0.07) and monetary benefits (0.05) had small effect sizes on parasocial interaction.

5. Discussion

5.1. General conclusion

This study examines the facilitation of branded app loyalty (i.e., continuance intention, in-app purchase, and word-of-mouth intention) from a dual-route perspective. The results revealed that both the utilitarian path and the affective (or relationship) path are effective in facilitating branded app loyalty. Most previous studies examined the facilitation of branded app loyalty from the utilitarian path (Fang and Fang, 2016; Fang, 2017; Hsiao and Chen, 2016; Kang et al., 2014; Lu, 2014). The key contribution of this study is that it moves beyond the utilitarian path and finds the affective (relationship) path to gain more insights into the facilitation of branded app loyalty. Despite the importance of brands for understanding what drives consumers' long-term relationships with branded mobile apps, few empirical studies have addressed this issue from a consumer-centric relationship perspective. As the f^2 estimates revealed, parasocial interaction contributes to the R^2 values of the three variables representing branded app loyalty when perceived usefulness is controlled, especially for continuance intention and word-of-mouth intention. Hence, the addition of the affective path to the utilitarian path is empirically justified.

5.2. Theoretical contributions

5.2.1. Affective path

Previous studies examining the antecedents of parasocial interaction have focused on conversational styles (openness and interactivity) and production techniques (close-up shots and camera zooms) (Labrecque, 2014; Perse and Rubin, 1989). This study contributes to parasocial interaction theory by investigating the reward antecedents of parasocial interaction in the context of branded apps. Based on the literature on brand benefits, this study identifies four types of rewards for parasocial interaction with brands: functional, experiential, symbolic, and monetary benefits. Drawing from the reinforcement theory of friendship development, our results show that the four types of brand benefits facilitate parasocial interaction. Since the reinforcement theory of friendship development is empirically confirmed in a context where consumers develop a parasocial interaction with a brand, our results support Giles (2002), in that the psychological processes under face-to-face relationships can be applied under parasocial relationships.

The results reveal that symbolic benefits and experiential benefits are the substantial drivers for parasocial interaction. The findings underline the importance of the hedonic aspects of brand benefits in driving consumer-brand parasocial interaction. They corroborate Hirschman and Holbrook (Hirschman and Holbrook, 1982) by indicating the importance of the hedonic aspects of consumption in the context of branded apps. Hsieh and Tseng (Hsieh and Tseng, 2017) indicated that people use mobile instant messaging apps to express who they are and to represent their belief and value to communicate their social identity. The results of this study extend Hsieh and Tseng (Hsieh and Tseng, 2017) by showing that the growing needs to present themselves to others drive users to participate in parasocial interaction with the focal brand in the branded app context. Hsieh and Tseng (Hsieh and Tseng, 2017) indicated that playfulness in using instant messaging mobile apps facilitates social connectedness. Since playfulness is a key component in customer experience (Holbrook et al., 1984), our results corroborated Hsieh and Tseng (Hsieh and Tseng, 2017) by showing that the experiential benefits in using branded apps drive parasocial interaction, and this study extends their findings to the context of branded apps. Further, our results indicate that hedonic benefits have a much stronger effect on parasocial interaction than utilitarian benefits (i.e., functional benefits and monetary benefits). This finding can be explained by the theory of brand relationship norms (Aggarwal, 2004). Based on this theory, consumers prefer non-comparable benefits to comparable benefits when they develop a communal (friendship) relationship with a brand. Since utilitarian benefits correspond to comparable benefits while hedonic benefits correspond to non-comparable benefits, it can be inferred that hedonic benefits are more effective than utilitarian benefits in facilitating parasocial interaction between consumers and the focal brand.

The results indicate that parasocial interaction facilitates in-app purchase and continuance intention in the context of branded apps. These results empirically confirmed parasocial interaction theory in the context of branded apps and are consistent with previous studies in the context of talk radio (Rubin and Step, 2000; Hofstetter and Gianos, 1997), TV shopping programs (Skumanich and Kintsfather, 1998), and social media (Labrecque, 2014). This study contributes to parasocial interaction theory by adding word-of-mouth intention as a new outcome of parasocial interaction and investigating whether parasocial interaction can facilitate word-of-mouth intention. Although Giles (Giles, 2002) postulates that the discussion of media figures with others is one important element of parasocial relationships, few studies have incorporated it into media use behavior. The findings corroborated Giles (Giles, 2002) by

showing that word-of-mouth intention can be facilitated by parasocial interaction in the context of branded apps. Finally, the results revealed that parasocial interactions exert a greater influence on word-of-mouth intention than perceived usefulness. This finding can be explained by the theory of brand relationship norms. When a brand develops an exchange relationship with a consumer, it provides utilitarian value to consumers, which resembles perceived usefulness; when a brand develops a communal relationship with a consumer, it uses friendship-like interactions (Aggarwal, 2004), which resembles parasocial interaction. Based on this theory, compared to exchange relationships, communal relationships are more likely to facilitate brand-helping behavior (Aggarwal, 2004), which, in the context of branded apps, refers to recommending the branded app to one's personal network or spreading positive word of mouth about this branded app. Therefore, the effect of parasocial interaction on word-of-mouth intention is stronger than the effect of perceived usefulness.

5.2.2. Utilitarian path

Previous studies on the utilitarian perspective of mobile app usage have utilized the TAM to investigate the relationship between perceived usefulness and behavioral intention. This study follows these previous studies, and the results of this study corroborate previous studies, showing that perceived usefulness facilitates continuance intention (Fang and Fang, 2016; Fang, 2017; Hsiao and Chen, 2016; Kang et al., 2014; Lu, 2014) and purchase intention (Fang, 2017) in the context of mobile apps. This study further extends previous studies by adding word-of-mouth intention as a new outcome of perceived usefulness. Previous research proposed that variables that reflect recommendation power can be integrated into technology adoption theory (Chea and Luo, 2008; Miltgen et al., 2013). This study corroborates this aforementioned research (Chea and Luo, 2008; Miltgen et al., 2013) by showing that perceived usefulness has a positive effect on word-of-mouth intention and further tests their assertion in the context of branded apps.

Previous studies examining the antecedents of perceived usefulness in the mobile app context have focused on user personal innovativeness and social influence (Lu, 2014), intrinsic and extrinsic factors (Fang and Fang, 2016) and m-commerce features (Fang, 2017). This study contributes by adopting a different theoretical angle and indicating that perceived usefulness, as a key component in the TAM, can be facilitated by the system characteristics (i.e., information quality and system quality) of the D&M IS success model. Incorporating the system characteristics of the D&M IS success model into the TAM framework can capture a more complete picture of the utilitarian perspective of branded app usage. The findings of this study support this point by showing that both information quality and system quality positively influence perceived usefulness. The finding that perceived usefulness is facilitated by information quality and system quality is corroborated by previous studies in the contexts of organizational IS usage (Rai et al., 2002) and online retailing (Ahn et al., 2007). However, the relative effects of the two types of quality on perceived usefulness are different. System quality is more effective than information quality in the context of m-commerce-centric branded apps (i.e., this study), while the reverse is true in the contexts of both organizational IS usage (Rai et al., 2002) and online retailing (Ahn et al., 2007). In the context of branded apps, consumers care more about whether the use of branded apps can facilitate product purchases. Hence, the simple layout and the navigation provided by branded apps are of much importance for consumers to quickly find products and place orders, and system quality is relatively important for consumers to judge the performance of branded apps.

5.3. Managerial implications

The results of this study indicated that both the utilitarian and affective paths can facilitate branded app loyalty. Based on the results, we suggest two strategies for practitioners to design a successful branded app. The utilitarian strategy focuses on the enhancement of the perceived usefulness of the branded app. Providing a user-friendly, effective, and productive app is important for attracting users. The system quality of the branded app is relatively important for users in determining perceived usefulness. As reported by (eMarketer, 2016), users uninstall a retailer's mobile app mainly because it crashed or froze (92%) and because of slowness (89%). Thus, app developers should place a strong emphasis on designing more secure, helpful, efficient, functional, and robust branded apps. Furthermore, perceived usefulness can be facilitated by information quality. Hence, practitioners should keep the information on branded apps timely, accurate, relevant and comprehensive.

Alternatively, the affective strategy (or relationship strategy) can be utilized, in which practitioners build parasocial interaction between consumers and the focal brand by providing brand benefits. The findings further reveal that utilitarian benefits (monetary and functional benefits) are less effective than hedonic benefits (symbolic and experiential benefits) in driving branded app loyalty. In practice, many practitioners frequently provide temporary promotions, such as free coupons or special discounts, to consumers on branded apps. However, this does not necessarily guarantee the facilitation of branded app loyalty because utilitarian benefits have weaker power in facilitating consumer-brand parasocial interaction. Therefore, more resources should be allocated to enhance the hedonic benefits of branded apps. App developers should design the symbolic meanings associated with a brand such as luxury connotations, visual aesthetics, prestige and fashionable designs to provide symbolic benefits to consumers. For instance, brands can partner with popular Instagram celebrities or fashion designers to launch special themes or emoticons or to provide the conspicuous reputation of the brand. Doing so will also offer opportunities for better parasocial interaction as well as increased cohesiveness through more frequent interactions between brands and users. To provide experiential benefits to consumers, app developers can use interactive games and puzzles to make consumers feel fun and entertained when interacting with the brand using branded apps.

As the results revealed, perceived usefulness is more effective than parasocial interaction in facilitating in-app purchase intention, while parasocial interaction is more effective than perceived usefulness in driving the word-of-mouth intention of branded apps. Furthermore, both perceived usefulness and parasocial interaction are effective in driving the continuance intention of branded apps. The relative importance of the utilitarian strategy and the affective strategy varies depending on the objective of practitioners. When the objective is to augment the customer base, the affective strategy should be adopted since it is more powerful in attracting new

users through word of mouth. The utilitarian strategy should be used when the objective is to stimulate brand purchases. Both the affective and utilitarian strategies are important when the objective is to retain current users.

5.4. Limitations and future research

This study develops the research model for mobile commerce-centric branded apps and investigates the dual routes driving branded app loyalty. Previous research suggests that there are other categories of branded apps (i.e., tool-centric, game-centric, social-centric and design-centric apps) (Zhao and Balagué, 2015). Future studies can investigate the moderating role of the branded app category on the proposed relationships. For instance, the effect of symbolic benefits on parasocial interaction is likely to be larger for design-centric apps than for other categories of apps.

Nearly half (49.8%) of the respondents in this study use branded apps from the wholesale and retail category. Respondents who use different branded apps from different product categories might use different criteria in evaluating branded apps. Future research can compare the results in terms of different brand characteristics (i.e., prestige brands and functional brands) or different product categories.

The results show that monetary benefits have weak effects on parasocial interaction. The monetary benefits in this study were short-term promotions (i.e., free coupons). Since free coupons may not necessarily encourage users' long-term retention (Srinivasan and Anderson, 1998), this finding encourages further research on the effect of long-term monetary benefits, such as loyalty programs, on branded apps.

Although functional benefits are utilitarian by definition, we have no theoretical reason to examine whether functional benefits can facilitate perceived usefulness. Specifically, functional benefits refer to whether the brand can solve consumption-related problems (Park et al., 1986). Functional benefits are associated with the brand, not with the branded app. The utilitarian path proposed by this study refers to the function of the branded app to facilitate task completion. A brand providing good functional benefits does not necessarily mean that its branded app is of high usefulness. In practice, a brand of good quality can develop a poor branded app. For instance, IKEA's store app is useless and only receives a two-star rating on Apple's app store (Liffreing, 2016). We expect that functional benefits can facilitate perceived usefulness for individuals who have no usage experience with the branded app. Specifically, the functional benefits of the brand can serve as a quality cue for individuals to infer the usefulness of the branded app (Kirmani and Rao, 2000). Since this study focuses on users with usage experience of branded apps, it is theoretically less likely to find that functional benefits can facilitate usefulness. Future studies can explore this relationship using individuals with no usage experience of branded apps.

A portion of the research model is based on TAM, where perceived usefulness facilitates branded app loyalty (i.e., continuance intention, in-app purchase intention, and word-of-mouth intention). Perceived ease of use as a key element of TAM is not examined in this research. This research focuses on perceived usefulness for the following reasons. First, past studies indicate that perceived usefulness is more effective than perceived ease of use in predicting the intention to use an IS (Davis et al., 1992). Second, recent studies reveal that perceived ease of use has no or only a marginal effect on intention to use mobile services (Fang, 2017; Lu et al., 2010). Third, Fang (Fang, 2017) indicates that perceived usefulness is more important than ease of use in branded app usage because perceived usefulness facilitates both continuance intention and repurchase intention, while perceived ease of use only facilitates continuance intention. Despite these reasons, future studies can add perceived ease of use to the utilitarian path proposed by this study and examine whether perceived ease of use mediates the relationships between system characteristics (i.e., information quality and system quality) and perceived usefulness and whether perceived ease of use facilitates branded app loyalty as suggested by the original TAM (Davis, 1989). This can provide a more complete picture of the utilitarian path of branded app loyalty facilitation. The relationship between perceived ease of use and word-of-mouth intention, especially, can be investigated since this relationship is less examined in past studies, although some literature suggests extending the technology adoption model by adding the potential of recommendation power (Chea and Luo, 2008; Miltgen et al., 2013). We expect that perceived ease of use can drive word-of-mouth intention and that this relationship is more pronounced for new users than for experienced ones, as Davis (Davis, 1989) indicated that ease of use is less likely to influence behavioral intention when individuals have more usage experience.

This study examines the dual-route model of branded app loyalty facilitation in the United States. While an one-country sample raises concerns regarding statistical generalizability (i.e., whether the proposed relationships differ across countries due to different economic conditions, infrastructure, consumer behavior, quality and influence of the brand), Highhouse and Gillespie (Highhouse and Gillespie, 2009) propose that behavioral science researchers should focus on theoretical generalizability rather than statistical generalizability. The underlying theoretical principles (i.e., TAM, D&M IS success model, parasocial interaction theory, and the reinforcement theory of friendship development in this study) provide the basis on which research findings can be generalized across samples. Hence, a one-country sample has less of a negative influence in terms of generalizability. Future studies can test the research model using samples from different countries and explore whether the relative effectiveness of the affective and utilitarian paths differ across countries. For instance, in countries of high collectivism, where connections between people are highly emphasized, the affective path may have more influence than the utilitarian path in facilitating branded app loyalty.

Acknowledgement

This work was supported by the Humanity and Social Science Youth foundation of Ministry of Education of China under Grant [17YJC630075].

References

Aaker, J.L., 1997. Dimensions of brand personality. J. Mark. Res. 347–356.
Aggarwal, P., 2004. The effects of brand relationship norms on consumer attitudes and behavior. J. Consum. Res. 31, 87–101.
Ahn, T., Ryu, S., Han, I., 2007. The impact of Web quality and playfulness on user acceptance of online retailing. Inf. Manage. 44, 263–275.
Rubin, Alan M., Step, Mary M., 2000. Impact of motivation, attraction, and parasocial interaction on talk radio listening. J. Broadcast. Electron. Media 44, 635–654.
Allan, R., 2015. Why 90% of branded apps have fewer than 10K downloads. Carnival Mob. Insights Blog.
Anderson, J.C., Gerbing, D.W., 1988. Structural equation modeling in practice: a review and recommended two-step approach. Psychol. Bull. 103, 411.
Batra, R., Ahuvia, A., Bagozzi, R.P., 2012. Brand love. J. Mark. 76, 1–16.
Bellman, S., Potter, R.F., Treleaven-Hassard, S., Robinson, J.A., Varan, D., 2011. The effectiveness of branded mobile phone apps. J. Interact. Mark. 25, 191–200.
Byrne, D., Clore, G.L., 1970. A reinforcement model of evaluative responses. Pers. Int. J.
Chea, S., Luo, M.M., 2008. Post-adoption behaviors of E-service customers: the interplay of cognition and emotion. Int. J. Electron. Commer. 12, 29–56.
Chin, W.W., 1998. The partial least squares approach to structural equation modeling. Mod. Methods Bus. Res. 295, 295–336.
Clore, G.L., Byrne, D., 1974. A reinforcement-affect model of attraction.
Colliander, J., Dahlen, M., 2011. Following the fashionable friend: the power of social media - weighing the publicity effectiveness of blogs versus online magazines. J. Advert. Res. 51, 313. http://dx.doi.org/10.2501/JAR-51-1-313-320.
Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. Mis Q. 13, 319–340.
Davis, F.D., Bagozzi, R.P., Warshaw, P.R., 1992. Extrinsic and intrinsic motivation to use computers in the workplace. J. Appl. Soc. Psychol. 22, 1111–1132.
Delone, W.H., Mclean, E.R., 2003. The DeLone and McLean model of information systems success: a ten-year update. J. Manag. Inf. Syst. 19, 9–30.
Delone, W.H., Mclean, E.R., 1992. Information Systems Success: The Quest for the Dependent Variable. INFORMS.
eMarketer, 2016. Why Consumers Download, and Delete, a Retailer's Mobile App – eMarketer [WWW Document]. URL https://www.emarketer.com/Article/Why-Consumers-Download-Delete-Retailers-Mobile-App/1014212 (accessed 8.17.17).
Escalas, J.E., Bettman, J.R., 2005. Self-construal, reference groups, and brand meaning. J. Consum. Res. 32, 378–389.
Fang, I.-C., Fang, S.-C., 2016. Factors affecting consumer stickiness to continue using mobile applications. Int. J. Mob. Commun. 14, 431–453.
Fang, Y.-H., 2017. Beyond the usefulness of branded applications: insights from consumer-brand engagement and self-construal perspectives. Psychol. Mark. 34, 40–58.
Fang, Y.-H., Chiu, C.-M., Wang, E.T., 2011. Understanding customers' satisfaction and repurchase intentions: an integration of IS success model, trust, and justice. Internet Res. 21, 479–503.
Feeley, M., 2015. Ampersand Mobile appoints Dean Adkins as chief technology officer | The Drum [WWW Document]. URL http://www.thedrum.com/news/2015/05/28/ampersand-mobile-appoints-dean-adkins-chief-technology-officer (accessed 10.25.17).
Fehr, B.A., 1996. Friendship Processes. Sage Pubn Inc.
Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. J. Mark. Res. 39–50.
Gao, L., Waechter, K.A., Bai, X., 2015. Understanding consumers' continuance intention towards mobile purchase: a theoretical framework and empirical study – A case of China. Comput. Hum. Behav. 53, 249–262. http://dx.doi.org/10.1016/j.chb.2015.07.014.
Giles, D., 2002. Media Psychology. Routledge.
Gwinner, K.P., Gremler, D.D., Bitner, M.J., 1998. Relational benefits in services industries: the customer's perspective. J. Acad. Mark. Sci. 26, 101.
Hair, J.F., Ringle, C.M., Sarstedt, M., 2011. PLS-SEM: indeed a silver bullet. J. Mark. Theory Pract. 19, 139–152.
Harris, L.C., Goode, M.M.H., 2004. The four levels of loyalty and the pivotal role of trust: a study of online service dynamics. J. Retail. 80, 139–158. http://dx.doi.org/10.1016/j.jretai.2004.04.002.
Highhouse, S., Gillespie, J.Z., 2009. Do samples really matter that much. Stat. Methodol. Myths Urban Legends Doctrine Verity Fable Organ Soc. Sci. 247–265.
Hirschman, E.C., Holbrook, M.B., 1982. Hedonic consumption: emerging concepts, methods and propositions. J. Mark. 46, 92–101.
Hofstetter, C.R., Gianos, C.L., 1997. Political talk radio: actions speak louder than words. J. Broadcast. Electron. Media 41, 501–515.
Holbrook, M.B., Chestnut, R.W., Oliva, T.A., Greenleaf, E.A., 1984. Play as a consumption experience: the roles of emotions, performance, and personality in the enjoyment of games. J. Consum. Res. 11, 728–739.
Horton, D., Wohl, R.R., 1956. Mass communication and para-social interaction. Psychiatry-Interpers. Biol. Process. 19, 215–229.
Hsiao, K.-L., Chen, C.-C., 2016. What drives in-app purchase intention for mobile games? An examination of perceived values and loyalty. Electron. Commer. Res. Appl. 16, 18–29.
Hsieh, S.H., Tseng, T.H., 2017. Playfulness in mobile instant messaging: examining the influence of emoticons and text messaging on social interaction. Comput. Hum. Behav. 69, 405–414.
Huang, S.-M., Fang, S.-R., Fang, S.-C., Huang, C.-C., 2016. The influences of brand benefits on brand loyalty: intermediate mechanisms. Aust. J. Manage. 41, 141–160.
Hur, W.-M., Park, J., Kim, M., 2010. The role of commitment on the customer benefits–loyalty relationship in mobile service industry. Serv. Ind. J. 30, 2293–2309.
Kang, J., Tang, L., Fiore, A.M., 2014. Enhancing consumer–brand relationships on restaurant Facebook fan pages: maximizing consumer benefits and increasing active participation. Int. J. Hosp. Manage. 36, 145–155.
Kang, S., 2014. Factors influencing intention of mobile application use. Int. J. Mob. Commun. 12, 360–379.
Keller, K.L., 1993. The effects of corporate branding strategies on brand equity. Adv. Consum. Res. 20, 27–28.
Kirmani, A., Rao, A.R., 2000. No pain, no gain: a critical review of the literature on signaling unobservable product quality. J. Mark. 64, 66–79.
Labrecque, L.I., 2014. Fostering consumer–brand relationships in social media environments: the role of parasocial interaction. J. Interact. Mark. 28, 134–148.
Lee, Y.-C., 2017. Effects of branded e-stickers on purchase intentions: the perspective of social capital theory. Telemat. Inform. 34, 397–411.
Liang, T.-P., Li, X., Yang, C.-T., Wang, M., 2015. What in consumer reviews affects the sales of mobile apps: a multifacet sentiment analysis approach. Int. J. Electron. Commer. 20, 236–260.
Liffreing, I., 2016. How brands helped kill the app | Campaign US [WWW Document]. URL https://www.campaignlive.com/article/brands-helped-kill-app/1403616 (accessed 1.14.18).
Lott, B.E., Lott, A.J., 1974. 8 – The role of reward in the formation of positive interpersonal attitudes. Found. Interpers. Attract. 171–192.
Lott, B.E., Lott, A.J., 1960. The formation of positive attitudes toward group members. J. Abnorm. Soc. Psychol. 61, 297.
Lu, J., 2014. Are personal innovativeness and social influence critical to continue with mobile commerce? Internet Res. 24, 134–159.
Lu, Y., Deng, Z., Wang, B., 2010. Exploring factors affecting Chinese consumers' usage of short message service for personal communication. Inf. Syst. J. 20, 183–208. http://dx.doi.org/10.1111/j.1365-2575.2008.00312.x.
Miltgen, C.L., Popovic, A., Oliveira, T., 2013. Determinants of End-User Acceptance of Biometrics: Integrating the "Big 3" of Technology Acceptance with Privacy Context. Elsevier Science Publishers B. V.
Nunnally, J., 1978. Psychometric Methods. McGraw-Hill, New York.
Park, C.W., Eisingerich, A.B., Pol, G., Park, J.W., 2013. The role of brand logos in firm performance. J. Bus. Res. 66, 180–187.
Park, C.W., Jaworski, B.J., Macinnis, D.J., 1986. Strategic brand concept-image management. J. Mark. 50, 135.
Perse, E.M., Rubin, R.B., 1989. Attribution in social and parasocial relationships. Commun. Res. 16, 59–77.
Peterson, R.A., 1994. A meta-analysis of Cronbach's coefficient alpha. J. Consum. Res. 21, 381–391.
Petter, S., Mclean, E.R., 2009. A meta-analytic assessment of the DeLone and McLean IS success model: an examination of IS success at the individual level. Inf. Manage. 46, 159–166.
Rai, A., Lang, S.S., Welker, R.B., 2002. Assessing the validity of is success models: an empirical test and theoretical analysis. Inf. Syst. Res. 13, 50–69.
Reddy, T., 2015. 14 Brands Using Mobile Apps Instead of Ads to Build Customer Loyalty | Umbel [WWW Document]. URL https://www.umbel.com/blog/marketing/14-brands-using-mobile-apps-instead-ads-build-loyalty/ (accessed 10.25.17).

Ringle, C.M., Wende, S., Becker, J.-M., 2014. SmartPLS 3. Hamburg: SmartPLS. Acad. Manage. Rev. 9, 419–445.
Seddon, P.B., 1997. A respecification and extension of the delone and mclean model of is success. Inf. Syst. Res. 8, 240–253.
Seitz, V.A., Aldebasi, N.M., 2016. The effectiveness of branded mobile apps on user's brand attitudes and purchase intentions. Rev. Econ. Bus. Stud. 9, 141–154. http://dx.doi.org/10.1515/rebs-2016-0029.
Skumanich, S.A., Kintsfather, D.P., 1998. Individual media dependency relations within television shopping ProgrammingA causal model reviewed and revised. Commun. Res. 25, 200–219.
Srinivasan, S.S., Anderson, R.E., 1998. Concepts and strategy guidelines for designing value enhancing sales promotions. J. Prod. Brand Manage. 7, 410–420.
Tam, C., Oliveira, T., 2016. Understanding the impact of m-banking on individual performance: DeLone & McLean and TTF perspective. Comput. Hum. Behav. 61, 233–244. http://dx.doi.org/10.1016/j.chb.2016.03.016.
Taylor, S.F., Jones, T., 2007. The conceptual domain of service loyalty: how many dimensions? J. Serv. Mark. 21, 36–51. http://dx.doi.org/10.1108/08876040710726284.
Thorson, K.S., Rodgers, S., 2006. Relationships Between Blogs as EWOM and Interactivity, Perceived Interactivity, and Parasocial Interaction. J. Interact. Advert. 6, 5–44. http://dx.doi.org/10.1080/15252019.2006.10722117.
Tiongson, J., 2015. Mobile App Marketing Insights: How Consumers Really Find and Use Your Apps. thinkwithGoogle.
Tsiotsou, R.H., Gouri, N., 2015. The Effect of the Olympic Games on the Tourism Industry of the Host Country. Marketing and Management Sciences – the International Conference on Icmms, pp. 334–338.
Wood, L., 2004. Dimensions of brand purchasing behaviour: consumers in the 18–24 age group. J. Consum. Behav. 4, 9–24.
Zeithaml, V.A., Parasuraman, A., Berry, L.L., 1990. Delivery Quality Service: balancing Customer Perceptions and Expectations. J. Mark. 62, 123–125.
Zhao, Z., Balagué, C., 2015. Designing branded mobile apps: fundamentals and recommendations. Bus. Horiz. 58, 305–315.