Understanding Drivers And Outcomes Of Brand Attachment In Mobile Branded Apps

By: Trang P. Tran, Christopher P. Furner, and **Pia A. Albinsson**

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Purpose – Mobile computing is an emerging trend. Building on motivational theories, brand attachment and mobile application literature, this paper tests a conceptual model with the aim to provide insights into antecedents and outcomes of consumer brand attachment in a mobile app context. Design/methodology/approach – A model is developed in which antecedents and outcomes of brand attachment in a branded mobile app context are examined. Data collected from 228 mobile app users were analyzed using PLS-SEM. Findings – The results confirm that hedonic motivation is positively associated with brand attachment. Nevertheless, the effects of utilitarian motivation and social motivation on brand attachment are not supported. As anticipated, brand attachment is positively associated with three outcomes, including continuance intention, purchase intention and word-of-mouth communication. Originality/value – The paper extends the Mobile Application Stickiness paradigm by including brand characteristics, which had not previously been explored. Also, in terms of attachment in a mobile context, only affection has been explored; this study includes connection and passion to investigate how those components enhance desired outcomes.

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Understanding drivers and outcomes of brand attachment in mobile branded apps

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Keywords Brand attachment, Motivations, Branded mobile apps, Mobile consumer behavior

Paper type Research paper

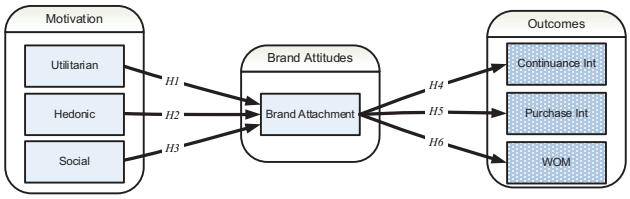
Introduction

Companies are faced with a rapidly changing media environment and strive to maintain relevancy in emerging media (Moro and Rita, 2018). However, compared to the quick shift from traditional media to digital and mobile media, the pace of research in digital and mobile media has been slow (Furner and Zinko, 2018). Mobile environments differ from traditional and Web environments in a several ways. Consumers are constrained by a smaller focus area, cumbersome controls and information is often processed while carrying out other activities, such as attending meetings, walking or sometimes driving (Keith *et al.*, 2011), thus affecting attention and focus. Mobile computing activities foster flow states, in which consumers experience a continuous stream of psychological rewards, in the absence of mindful thinking (Catalán *et al.*, 2019; Cano *et al.*, 2017). As such, mobile application (app) designers must design apps that can influence consumer attitudes and behavior under these constraints.

As consumers conduct more of their information processing in a mobile environment, the extent to which existing information processing and marketing models can be applied to the mobile computing context becomes more relevant. To this end, researchers are only recently striving to understand the information processing and cognitive differences which can occur in a mobile computing environment. Particularly, Furner and Zinko (2017) called for research on the extent to which existing consumer behavior and e-commerce models hold in the mobile computing context. This study aims to answer this call by providing a better understanding of established marketing models' applicability in a mobile computing context.

Specifically, we seek to understand the influence of branded mobile apps (BMA) on the relationship between motivation and brand attachment. Brand attachment is defined as a feeling of closeness that a consumer feels toward a particular brand (Thomson *et al.*, 2005). When consumers experience strong levels of brand attachment, there are feelings of connection, love, affection, and passion associated with the brand (Collins and Read, 1990; Feeney and Noller, 1996). As portrayed in Figure 1, brand attachment is enhanced through motivational mechanisms derived from mobile apps and also serves as a key driver of three desired outcomes. Building on Thomson *et al.*'s (2005) topology of brand attachment and a recent model of

Figure 1 Research model



consumer loyalty toward BMAs (Tseng and Lee, 2018), we present a conceptual model which centers on brand attachment, which is driven by utilitarian, hedonic and social motivations and in turn desired consumer outcomes in the BMA context are expected. We therefore extend Tseng and Lee's (2018) model guided by the following research questions: Do the relationships between motivations and brand attachment hold in a mobile computing context? Do consumer behavior outcomes of brand attachment hold in a mobile computing context?(Figure 1).

While Tseng and Lee (2018) suggested two sources of motivation: affective benefits (hedonic motivation) and utility source (utilitarian motivation), we add social motivation, since many apps now offer interactive features. We predict that these three types of motivation each increase brand attachment, but at differing levels of magnitude. As only affection has been studied in the mobile app context (Li and Fang, 2019), our model explores two additional components of brand attachment, connection and passion. We contribute further by testing the applicability of traditional and e-commerce relationships (i.e. the influence of brand attachment on consumer outcomes such as word of mouth (WOM) and purchase intention, as well as the influence of motivations on brand attachment) in the increasingly relevant mobile computing context (Ooi and Tan, 2016). We identify consistencies and suggest that brand managers can exploit mobile computing experiences to influence consumer behavior outcomes. Our results reinforce the mobile application stickiness (MASS) paradigm, by supporting MASS's proposition that continued use of mobile apps increases brand exposure and thus purchase intention. Finally, MASS considers several user and app characteristics, but no brand characteristics, and our inclusion of brand attachment as a central factor in the proposed model extends MASS.

Literature review

Branded mobile apps

While branding has been central to marketers for decades, research on the influence of mobile interaction on consumer brand perceptions is limited. Consumers are increasingly using mobile devices for everyday tasks and as such, their attitudes are influenced by information consumed on mobile devices (Choi, 2018).

BMAs, in which a brand holder provides a program that runs on individuals' smart phones, represent an increasingly important medium of exchange between consumers and brand holders (Peng *et al.*, 2014). Five main business objectives drive BMA design: Communication, customer relationship management, sales, product innovation, and marketing research (Zhao and Balagué, 2015). Apps not only provide consumable content (e.g. news, weather, games, shopping) but also expose the consumer to brand elements such as brand name, logo, colors, and brand mascot (Zhao and Balagué, 2015). Therefore, BMAs carry substantial advertising potential and opportunities to improve customer service and create additional value Peng *et al.* (2014). In addition, the generated data can be resold or facilitate research and development. When combined with location based services, BMAs can facilitate geofencing (Rodriguez Garzon and Deva, 2014), where the app tries to persuade a user to go into a store, perhaps by generating a mobile device notification containing a coupon when it notices that a user is moving away from one of the stores.

The impacts of BMAs on consumer outcomes are well documented. Peng *et al.* (2014) examine the factors, which lead consumers to adopt certain BMAs. They demonstrate relationships between brand attachment, perceptions of value, brand identification and the intention to use BMAs. Other studies have linked brand engagement to continuance intention (Li and Fang, 2019; Fang, 2017). Other studies have linked BMAs to traditional consumer behavior outcomes like brand re-purchase intention (Fang, 2017). For example, as an ancillary finding, Kim *et al.* (2013) found that the relationship between brand attachment and various brand supportive outcomes are mediated in part by connection with BMAs. Specifically, simply using BMAs had a positive influence on the product category and brand interest; apps with a user-centric design were more effective at facilitating in-app purchase intention, while experiential (gaming apps in their study) were not as effective at facilitating these outcomes.

Brand attachment

Brand attachment stems from attachment theory, which suggests that as individuals interact with an object, they develop feelings of commitment, investment and acceptance of sacrifice related to that object (Hazan and Shaver, 1994). Attachment develops over time, through interaction and experience with an object (Feeney and Noller, 1996). Attachment is a powerful emotional state, which can influence behavior (Hinde *et al.*, 1982). Researchers have sought to understand the factors that lead brand attachment. For example, Japutra *et al.* (2017) identify responsiveness, self-congruence, quality and reputation in their model of brand attachment. Other drivers of brand attachment include engagement in relevant virtual communities (Brodie *et al.*, 2013; Zhou *et al.*, 2012), negative online information (Chiou *et al.*, 2013) and social media presence (Tag, 2015).

A number of consumer outcomes have been linked to brand attachment. For example, brand attachment increases not only consumer satisfaction, but consumer perceptions of brand credibility, brand trust and perceptions of quality (Dwivedi *et al.*, 2018). Other researchers have established links between brand attachment and purchase intention, how much a consumer is willing to pay, WOM intention, consumer loyalty and forgiveness of a mishap (Fedorikhin *et al.*, 2008; Kaufmann *et al.*, 2016). We utilize Thomson *et al.* (2005) topology of brand attachment, which includes three factors: connection, affection, and passion in which connection is defined as "the extent to which a consumer has incorporated a brand into his or

her self-concept" (Ferraro *et al.*, 2013), affection refers to positive feelings that consumers experience when exposed to a brand, and passion involves excitation, obsession and idealization of the brand (Albert *et al.*, 2013). Only affection has previously been studied in a branded mobile context (Li and Fang, 2019).

Hypothesis development

The drivers of Brand attachment

Motivations

Consumers engage in mobile computing for a variety of different purposes, and as such, select, use, and continue to use mobile apps for various reasons. While some mobile computing activities are task focused, or utilitarian in nature, others are hedonic, or purely for entertainment or pleasure (Furner *et al.*, 2015). While, hedonic and utilitarian motivations have been investigated quite extensively in the BMA context through the uses and gratification framework (Alnawas and Aburub, 2016), there is less research on social motivations. By understanding consumers' motivations for using branded apps, researchers can further develop effective models for predicting continuance intention and as we will argue later, brand attachment.

Utilitarian motivations focus on problem solving and meeting practical needs. In information systems research, the technology acceptance model predicts that intention to use information technology is dependent on perceptions of usefulness (i.e. utility) and perceived ease of use (Davis, 1989). Knowledge acquisition and education are also tied to utilitarian motivations (Gerlich *et al.*, 2015).

The current study, proposing that utilitarian motivation for app usage will increase feelings of brand attachment via a positive emotional response to expectation-confirmation, is consistent with extant literature which has found a positive link between utilitarian motivations such as time savings, reliability, control, ease of use, and the avoidance of interacting with retail or service employees and brand attachment (Li and Fang, 2019). For example, in a study with consumers who had purchased a utilitarian product (i.e. car battery), results showed that consumers experience higher brand attachment when perceptions of the practical capabilities of the product are strong (Belaid and Behi, 2011). When motivations are utilitarian, consumer perception of value is derived from their needs being met without inconvenience. As a result, feelings of task efficiency and perceived usefulness drive perceptions of value. We argue that when motivations are utilitarian and value expectations are met, consumers will develop stronger positive perceptions of the brand, specifically the feelings of commitment, investment, and acceptance of sacrifice which comprise brand attachment.

H1. Utilitarian motivation to use a BMA is positively related to consumer brand attachment.

According to Hirschman and Holbrook (1982), consumers who engage in hedonic consumption seek pleasure, enjoyment or alleviation of boredom or stress. Joji and Ashwin (2012) treat hedonic value as a moderator of the relationship between self-congruence (the consumer's perception of congruence between their own personality and the brand personality) and emotional brand attachment, arguing that perceptions of hedonic value reduce self-attributions, thus narrowing the gap in their perception of self-congruence. When hedonic motivations drive purchases, consumers' rational evaluation of the extent to which a product meets a specific need as well as the price/performance tradeoff is not as rigorous or as rational as when the motivation is utilitarian (Zinko *et al.*, 2020). In these situations consumers are more likely to satisfice rather than engage in a thorough evaluation of the advantages and disadvantages of alternative products (Schwartz *et al.*, 2002). As a result, purchase decisions motivated by hedonic value tend to rely more on emotion and subjective perceptions of the alternatives.

Research has identified entertainment, self-status seeking, and pursuit of happiness as hedonic motives for downloading and using BMAs (Lin *et al.*, 2014). We anticipate the effect of motivation on brand attachment to be stronger when the motivation is hedonic compared to utilitarian, because brand attachment is driven by passion and enjoyment, which are also primary drivers of hedonic motivation. Consumers motivated by desires to enjoy themselves will have a stronger affinity to the brand, thus increasing feelings of attachment. As such, we predict that higher levels of hedonic motivation will lead to stronger brand attachment.

H2. Hedonic motivation to use a BMA is positively related to consumer brand attachment.

Social motivation is defined as a state of mind that initiates an action which is meant to influence a state of another individual (Batson, 1996). Social-centric BMAs feature abilities to interact with content or other users. Content interaction includes creating user-generated content, content tagging, content sharing, content rating, and commenting (Zhao and Balagué, 2015). Social interactions among users include online chat, following activities of others, and inviting contact from external social networks (Zhao and Balagué, 2015). We therefore posit that social motivations are of interest to BMA developers since they are based on consumer's reactions to either a product or other consumer's actions, interactions, or decisions. Users of a specific BMA may "perceive a sense of community even though they do not directly engage in social interactions with others" (Labrecque *et al.*, 2011, p. 459). One type of social motivation is referred to as conformity motivation, which is a "need to identify with others through the possession and use of products and brands" (Labrecque *et al.*, 2011, p. 458). Conformity and social influence can therefore influence consumers' interaction with brands and subsequent purchase decisions (Bearden *et al.*, 1989).

Social motivation to use a BMA can be viewed as a desire to engage with a brand to experience a parasocial interaction, which is defined as consumer's illusion of having an intimate and personal relationship with a media persona (i.e. a brand) (Gerlich *et al.*, 2015; Labrecque, 2014). Parasocial interaction, although often only providing one sided communication (from brand to consumer) in most BMAs, is used to communicate brand messages and foster and maintain relationships (Horton and Richard Wohl, 1956; Zhao and Balagué, 2015). From a brand perspective, social-centric mobile apps aim to "increase the sense of intimacy with customers, foster brand engagement by building a community of loyal customers or allow customers

to communicate positive brand images with their social circles" (Zhao and Balagué, 2015, p. 309). Therefore,

H3. Social motivation to use a BMA is positively related to consumer brand attachment.

Outcomes of Brand attachment

Mobile computing researchers have called for greater understanding of factors which influence consumers' continuance intentions of mobile apps. Evidence suggests that approximate 62% of BMAs are deleted by users within two weeks after download (Nielsen, 2011). Further, the average smartphone has 40 apps on it, with only sixteen used on a regular basis (Urban and Sultan, 2015). User retention and continuance intention are a priority for BMA developers (Husson *et al.*, 2013).

Several studies have explored the antecedents of continuance intention in BMAs. Racherla *et al.* (2012) explored the multilayered series of decisions that consumers make as they interact with BMAs, and highlight the importance of user, app and task characteristics which influence perceptions of interactivity, continuance intention, and ultimately trust, purchase intention, WOM and willingness to pay for the apps. They refer to the extent to which users continue to use an app after the initial download as MASS. The authors ground the continuance component of their model in interactivity theory and highlight the importance of app and usage characteristics on planned behavior.

Others explain continuance intention by exploring the brand-consumer relationship. Particularly, Fang (2017) examined consumer-brand engagement in service-oriented apps and found support for the relationship between consumer-brand engagements on continuance intention but less so for repurchase intentions. Satisfaction and attachment with a BMA has been tied to continuance intention for MyStarbucks app users (Li and Fang, 2019). These studies find that some element of consumers' previous experience with an app (in some cases, perceptions of usefulness, in others enjoyment or interactivity) influence continuance intention. Furthermore, the relationship between brand attachment and continuance intention has been demonstrated in a variety of contexts including banking (Levy and Hino, 2016), e-commerce (Rezaei and Valaei, 2017) as well as in mobile computing (Li and Fang, 2019; Hew *et al.*, 2017). Based on these findings, we expect that the feelings of affection, connection, and passion, which constitute brand attachment, lead to enjoyment and will thus drive users to continue to use the BMA, thus we hypothesize:

H4. Brand attachment is positively related to consumers' continuance intention of a BMA.

Purchase intention reflects a consumer's espoused commitment to purchase a product or service (King *et al.*, 2014). While purchase intention has been widely studied in traditional commerce (Chang and Wildt, 1994) and e-commerce contexts (Furner *et al.*, 2014), relatively little attention has been devoted to purchase intention in a mobile computing context. Lu and Yu-Jen Su (2009) examined several factors that influence mobile shopping intention, which they defined as a willingness to make a purchase via a mobile device, but not purchase intention of a specific product. They found that a number of factors including mobile self-efficacy, anxiety, perceptions of ease of use, and usefulness influenced mobile shopping intention. Since Kaufmann *et al.* (2016) showed that brand attachment increases purchase intention for branded goods, we posit that this relationship holds in a mobile environment. Some studies have used in-app purchase intention in addition to continuance intention to represent consumer's loyalty of BMAs (Fang, 2019; Tseng and Lee, 2018).

Based on literature demonstrating the relationship between brand attachment and purchase intention, combined with recent m-commerce literature on in-app purchase intention, we expect that individuals who experience brand attachment will also trust the brand, as well as having desire to associate with the brand. The enhanced feelings of trust are expected to help the consumer overcome barriers to purchase, while the desire to associate with the brand will increase desire to purchase branded products. As such, we hypothesize:

H5. Brand attachment is positively related to consumers' purchase intention in BMAs.

In addition to having needs met by products, consumers seek to reduce uncertainty regarding the durability and quality of products. To mitigate uncertainty, consumers employ one or more uncertainty reductions strategy (Berger, 1979). One approach to reduce uncertainty in a shopping context is by WOM, with the goal of learning more about the effectiveness of the product or service. Potential consumers often value and rely more on WOM information than brand communication (Chung and Darke, 2006).

Several studies have evaluated the influence of experiential factors on WOM intentions, with satisfaction and perceptions of quality being among the most frequently identified across multiple product and service categories (Anderson, 1998; Maxham, 2001; Wirtz and Chew, 2002). Keller (2007) linked WOM to brand characteristics and Verkijika and De Wet (2019) linked simplicity of use and positive emotions to WOM in a BMA context.

Consistent with studies in traditional commerce which have found support for the relationship between brand attachment and WOM, we propose that brand attachment, particularly feelings of commitment, will motivate BMA users to share their positive BMA experiences with their friends and in online reviews. Harrison-Walker (2001) found that individuals with a stronger sense of commitment are more likely to share positive WOM, and since commitment is a component of attachment, we predict:

H6. Brand attachment is positively related to consumers' WOM recommendations in BMAs.

Method

Sampling and procedure

A survey was developed and administered using Qualtrics, and subjects were recruited through Amazon's Mechanical Turk for compensation. At the beginning of the survey, the following definition of BMAs was provided:

A branded app is a mobile application created by a company to promote its brand. Branded apps typically reflect the brand's identity and feature its values, colors, logo, visual identity and style, slogan, and more. With a branded app, companies can increase brand exposure, stay connected with customers and give customers more access to companies' business.

That was followed by a screening question "have you used a branded app to purchase in the past?" Those who answered no were directed to the end of the survey. Eligible respondents were asked to think about a BMA that they had used to make a purchase and provide the name of that app.

Participants were told to think of this app when answering the survey which started with questions relating to their motivation for using the app, their sense of attachment and continuance intention, purchase intention and WOM. Demographic questions were asked at the end. Out of 301 responses collected, 228 responses were fully completed and used for data analysis. Participants were relatively young (61 per cent between 20 and 30 years old), were equally divided between male and female (51 per cent were male). The majority of respondents had obtained or were pursuing a bachelor's degree (68 per cent).

Measurements

The measurement scales are adopted from existing literature with some adjustments for the BMA context. All scales employed a seven-point Likert scale with 1 being "strongly disagree" and 7 "strongly agree" except brand attachment where 1 represents "not at all" and 7 "very well." Items for hedonic and utilitarian motivation were adopted from Stocchi *et al.* (2018), social motivation from Ou *et al.* (2014), brand attachment from Thomson *et al.* (2005), continuance intention from Bhattacherjee (2001), purchase intention from Yoo *et al.* (2000) and WOM from Tseng and Lee (2018) (Table 1).

For high order constructs like utilitarian, hedonic and social motivation, as well as brand attachment, the scores of items are averaged to serve as indicator variables for later analysis (Zeugner-Roth *et al.*, 2015; Steenkamp *et al.*, 2003). In addition, three control variables were added to the model including age, gender and brand love (Carroll and Ahuvia, 2006). Brand love was selected as a covariate since if one loves a brand; it is very likely that one develops a strong attachment with that brand.

The PLS approach

PLS-SEM was selected for this study for two reasons: (1) the conceptual model is relatively complex and captures not only direct effects but also indirect effects, and (2) this method is not strictly bound by the normal distribution assumption. Furthermore, our model explores how three sources of motivation affect brand attachment which in turn affects desired consumer outcomes (see Figure 2). Hence, it is appropriate to use the variance-based PLS-SEM – a method designed to maximize prediction power of related variables. The data were analyzed with SmartPLS 3 (Ringle *et al.*, 2014).

Assessment of measurement model

Different from covariance-based SEM, the requirement of data normality in PLS-SEM is less demanding. However, a preliminary test was conducted to be sure data distribution was not a concern via two steps: Skewness and Kurtosis, and multicollinearity. The results of the first step revealed an acceptable range of Skewness (– 3 to + 3), and for Kurtosis (−10 to +10) that was acceptable when it comes to structural equation modeling (Griffin and Steinbrecher, 2013). The second step tests for multicollinearity. If VIF is smaller than 5, there is no evidence of multicollinearity (Ringle *et al.*, 2014). The finding showed that the highest VIF was 3.586, suggesting that multicollinearity was not a concern.

After the preliminary tests, we proceeded to test internal consistency reliability and construct validity. First, four criteria were employed to test internal consistency reliability: Factor loadings, Cronbach alpha, Dijkstra–Henseler's reliability coefficient (rho_A) and composite reliability with the threshold value of 0.7. The results showed that factor loadings ranged from 0.74 to 0.93, Cronbach alpha from 0.72 to 0.92, rho_A from 0.73 to 0.92, and composite reliability from 0.87 to 0.95, suggesting internal consistency reliability.

Second, construct validity was assessed with two criteria: Convergent validity and discriminant validity. According to Hair *et al.* (2016), construct validity is indicated by an AVE of greater than 0.5. In our sample, the lowest value of AVE was 0.682 (continuance intention), and the maximum was 0.863 (brand attachment), suggesting construct validity. Discriminant validity was assessed by comparing AVE of one construct with a squared correlation between that construct and another construct (Fornell and Larcker, 1981). All AVE values were higher than the corresponding correlations, supporting discriminant validity (see Table 1).

Assessment of structural model

As suggested by Hair *et al.* (2016), the assessment of the structural model is conducted in two phases: R^2 (or coefficient of determination) and path coefficients. First, the R^2 for brand attachment (0.56), continuance intention (0.28), purchase intention (0.46), and WOM (0.39) indicate medium or high predictive power of corresponding constructs. Second, the results of path coefficients showed that all hypotheses are supported, except H1 (UTI → ATT) and H3 (SOC → ATT). More specifically, out of three motivation sources, only hedonic motivation is positively associated with brand attachment ($\beta = 0.210$, $p < 0.05$) (*H2* is supported) whereas utilitarian motivation, and social motivation are not significantly associated with brand attachment ($\beta = -0.028$, $p > 0.05$, $\beta = 0.098$, $p > 0.05$, respectively) (*H1* and *H3* are not supported). Brand attachment is positively associated with the three outcome variables: continuance intention, purchase intention, and WOM communication ($\beta = 0.506$, $p < 0.05$, $\beta = 0.671$, $p < 0.05$, and $\beta = 0.612$, $p < 0.05$, respectively) (or *H4*, *H5* and *H6* are supported) (Table 2).

Common method bias

Common method bias should be tested in a cross-sectional study (Podsakoff *et al.*, 2003). We tested for common method bias following Liang *et al.* (2007), and results showed that the requirements of both criteria were met, therefore there is no evidence of common method bias (Table 3).

Importance-performance map analysis

Importance-performance map analysis (IPMA) was performed. In this analysis, the total effect of the structural model on a specific dependent variable is compared with the average score of antecedents of that variable. The total effect refers to importance, and the average score indicates performance.

Table 1 Loadings, reliability and validity

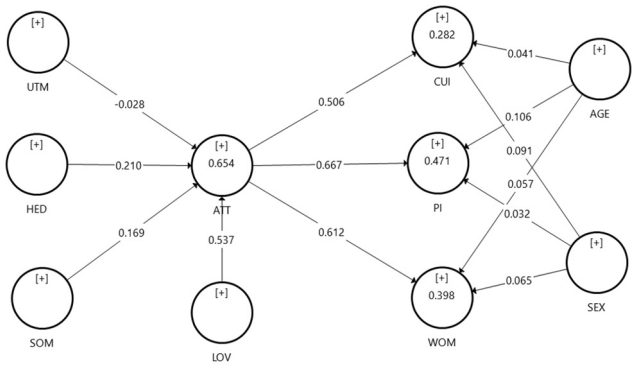
Scale items	α	rho_A	CR	AVE	AVE > Corr^2	Loadings	Mean	SD	*t*-value
Utilitarian motivations (Stocchi *et al.*, 2018)	0.829	0.829	0.898	0.745	0.863 > 0.460				
Average scores of items of "security"						0.876	0.875	0.019	45.863
Average scores of items of "usefulness"						0.847	0.847	0.027	31.872
Average scores of items of "ease of use"						0.868	0.867	0.036	23.841
Hedonic motivations (Stocchi *et al.*, 2018)	0.811	0.869	0.885	0.721	0.682 > 0.446				
Average scores of items of "interpersonality utility"						0.887	0.886	0.022	39.486
Average scores of items of "attachment with device"						0.755	0.753	0.054	13.968
Average scores of items of "entertainment"						0.898	0.899	0.016	57.326
Social motivations (Liu, 2003; Ou *et al.*, 2014)	0.760	0.764	0.893	0.806	0.721 > 0.444				
Average scores of items of "interactivity"						0.907	0.907	0.018	50.622
Average scores of items of "social presence"						0.889	0.888	0.016	56.023
Brand attachment (Thomson *et al.*, 2005)	0.921	0.923	0.950	0.863	0.709 > 0.460				
Average scores of items of "affection"						0.931	0.931	0.01	93.273
Average scores of items of "passion"						0.929	0.929	0.016	58.503
Average scores of items of "connection"						0.926	0.927	0.012	74.694
Continuance intention (Bhattacherjee, 2001)	0.780	0.862	0.865	0.682	0.806 > 0.549				
I intend to continue using the branded app rather than discontinue its use						0.743	0.74	0.053	14.052
I intend to increase my use of the branded app in the future						0.88	0.881	0.02	44.137
If I could, I would like to continue my use of the branded app						0.849	0.847	0.029	29.537
Purchase intention (Yoo *et al.*, 2000)	0.863	0.865	0.907	0.709	0.745 > 0.549				
It makes sense to buy this brand instead of any other brand, even if they are the same						0.833	0.831	0.025	32.729
Even if another brand has the same features as this brand , I would prefer to buy this brand						0.853	0.854	0.024	36.19
If there is another brand as good as this brand , I prefer to buy this brand						0.855	0.854	0.022	38.426
If another brand is not different from this brand in any way, it seems smarter to purchase this brand						0.827	0.826	0.037	22.623
Willingness to recommend (Tseng and Lee, 2018)	0.718	0.727	0.876	0.779	0.780 > 0.494				
How likely are you to recommend this app to friends and family?						0.866	0.865	0.024	36.822
How likely are you to provide feedback on this app through online ratings and/or reviews?						0.899	0.898	0.02	45.644

In our model, there are three dependent variables, CUI, PI and WOM. First, we ran an IPMA test on CUI with four antecedents, UTM, HED, SOC and ATT. Results indicate that ATT is most important, followed by SOM, HED, and UTM. However, the performance index of ATT and UTM is highest, followed by HED, and SOM. In this case, ATT is the most important variable and it achieves the highest performance. Therefore, there is no room for improvement from this standpoint. Similar tests were performed with PI and WOM. The observations were the same. This suggests that our model is appropriate (Figure 3 – Panel A, B, C).

Discussion and conclusion

Our results demonstrate relationships between hedonic motivation, brand attachment and the three consumer outcomes: Continuance intention, purchase intention, and WOM. Hypotheses 2, 4, 5 and 6 are supported, highlighting the influence of hedonic motivations on brand attachment, and the influence of brand attachment on several consumer outcomes in the BMA context. Our failure to find that utilitarian motivations are related to brand attachment is surprising. This is possibly explained by the lack of emotions involved for utilitarian motivations. As brand attachment is driven by feelings of passion, connection, and affection, utilitarian motivations in BMA use do not result in strong emotions unlike tasks that are driven by hedonic or social motivations. This explanation is consistent with Zinko *et al.* (2020), who found that online reviews that include images are more effective at fostering reviewer's trust product is hedonic rather than utilitarian. They attribute this finding to emotional differences in the way consumers' process information about

Figure 2 Evaluated model



Notes: UTI: utilitarian motivations, HED: hedonic motivations, SOM: social motivations, ATT: brand attachment, PI: Purchase intention, CUI: Continuance Intention, WOM: Word of Mouth, LOV: Brand Love

products based on their motivation: When the motivation is utilitarian, consumers experience weaker emotional reactions, and tend to be more rational in their information processing. Furthermore, we were not able to support a relationship between social motivation and attachment. One explanation for this finding might be that the enjoyable aspects of socialization, which we predicted would trigger feelings of closeness to the brand, were less strong than hedonic motivations. The two types of motivation did not have a high intercorrelation, but their effects may have confounded each other. Also, it is possible that our definition of BMAs led consumers to select apps that were designed for hedonic use, reducing the number of respondents who selected an app with strong social or utilitarian functionality (potentially partly explaining the lack of support for *H1* as well). Finally, it is possible that consumers perceive brand management efforts, particularly advertising, as obtrusive when they engage in social activities, thus mitigating the positive emotional responses which we predicted would facilitate feelings of attachment.

Theoretical and practical implications

This study contributes to the consumer behavior literature as well as the increasingly relevant mobile computing literature, including WOM and purchase intention (Tan *et al.*, 2017). Further, it extends the existing MASS paradigm. Mobile computing researchers have developed a research stream aimed at understanding the factors that influence users' propensity to delete apps that they have downloaded (Furner *et al.*, 2018). One motivation underlying these efforts is the belief that continued use of the apps will result in more brand exposure and subsequently increase purchase intention (Shang and Wu, 2017). Our finding that brand attachment influences continuance intention could serve as an extension to MASS in a future study. Our employment of app usage motivations builds on Kim *et al.'s* (2016) conceptualization of MASS, which include a playful engagement component but did not include motivations. Future studies may further investigate the influence of app usage motivations, particularly hedonic motivations, on playful engagement. By understanding the brand factors which influence app loyalty in conjunction with other factors highlighted in the MASS paradigm (mobile self-efficacy, privacy concerns, and perceptions of interactivity), it is possible to develop new and more effective models for predicting stickiness.

Several of our findings are specifically relevant to consumer researchers. Our finding that brand attachment increases purchase intention, WOM, and continuance intention is consistent with studies in other areas, demonstrating that relationships identified in traditional consumer behavior contexts also hold in a mobile computing context. The finding further suggests that research which employs well established marketing models are potentially also applicable to mobile contexts. While we were able to identify these relationships, researchers may choose to look deeper into the mechanisms which foster these relationships, with the goal of identifying consumer, application, and task characteristics which improve these outcomes. Our findings imply that exploration of the differences between the mobile computing context and other consumer contexts may yield additional informative findings.

While limited literature has studied brand attachment in a BMA context, these studies focused on the affective component (Li and Fang, 2019). Our study models the influence of brand attachment using a broader view which consists of not only affection but also connection and passion. Furthermore, our findings extend earlier work by Tseng and Lee (2018) in the mobile brand management domain. While Tseng and Lee (2018) find that both affective and utilitarian factors influence the three outcome variables (continuance intention, purchase intention, and WOM), the results of our study augment their conceptualization of motivation by introducing the concept of social motivation, which is particularly relevant in the context of BMAs. Second, our

Table 2 Hypotheses testing

Path	Coefficient	Sample mean	SD	*t* value	*p* value	Bias corrected 95% CI Low	Bias corrected 95% CI High	Hypotheses
UTM → ATT	−0.028	−0.029	0.106	0.264	0.791	−0.244	0.171	*H1*: not supported
HED → ATT	0.210	0.214	0.066	3.185	0.001	0.089	0.344	*H2*: supported
SOM → ATT	0.169	0.174	0.098	1.728	0.084	−0.017	0.364	*H3*: not supported
ATT → CUI	0.506	0.513	0.046	11.079	0.000	0.409	0.587	*H4*: supported
ATT → PI	0.667	0.671	0.035	18.930	0.000	0.587	0.727	*H5*: supported
ATT → WOM	0.612	0.618	0.043	14.237	0.000	0.51	0.684	*H6*: supported

Notes: UTI: utilitarian motivations, HED: hedonic motivations, SOM: social motivations, ATT: brand attachment, PI: Purchase intention, CUI: Continuance Intention, WOM: word of mouth

Table 3 Common method bias analysis

Construct	Indicator	Substantive factor loading (R1)	Square (R1)	Method factor (R2)	Square (R2)
Attachment	AFF	0.937**	0.878	−0.006	0.000
	CON	0.821**	0.674	0.122*	0.015
	PAS	1.033**	1.067	−0.120*	0.014
Continuance Intention	CUI1	0.975**	0.951	−0.207**	0.043
	CUI2	0.601**	0.361	0.276**	0.076
	CUI3	0.929**	0.863	−0.077	0.006
Purchase Intention	PI1	0.820**	0.672	0.016	0.000
	PI2	0.697**	0.486	0.174*	0.030
	PI3	0.937**	0.878	−0.091	0.008
	PI4	0.917**	0.841	−0.102	0.010
WOM	WOM1	0.906**	0.821	−0.033	0.001
	WOM2	0.861**	0.741	0.032	0.001
Utilitarian Motivation	EAS	0.989**	0.978	−0.137	0.019
	SEC	0.943**	0.889	−0.072	0.005
	USE	0.652**	0.425	0.216	0.047
Hedonic Motivation	DEV	0.970**	0.941	−0.213**	0.045
	ENT	0.706**	0.498	0.208**	0.043
	UTI	0.902**	0.814	−0.024	0.001
Social Motivation	INT	0.645**	0.416	0.303**	0.092
	SPE	1.156**	1.336	−0.309**	0.095
Average		*0.870*	*0.777*	*−0.002*	*0.028*

Notes: **< 0.01, *< 0.05

model differs from Tseng and Lee's, as brand attachment plays a central role in our model, thus augmenting our understanding of the mechanisms which moderate the relationships between app usage motivations and consumer outcomes.

Our findings have several practical implications. As noted by Tan and Ooi (2018), mobile computing has become commonplace. Not only are more consumers shopping on mobile devices, but consumers are also exposed to additional brand building activities via mobile devices. Our findings provide BMA developers with a framework for developing desirable consumer outcomes based on both brand and app characteristics. In conjunction with the MASS theory, our findings can be of value to marketers who are developing a mobile branding strategy.

Specifically, our finding that the motivation of consumers influences brand attachment when apps are hedonic suggests that it is the entertainment and emotional responses which hold the most potential for increasing brand attachment and thus consumer outcomes. Further, the finding that brand attachment substantially increases all three outcomes (continuance intention, purchase intention, and WOM) highlights the importance of not only effective brand building for firms who seek to operate in the mobile space, but also the importance of fostering a sense of connection, affection, and passion among mobile consumers. When the goal is fostering brand attachment, app developers can expect better outcomes when the apps serve an entertaining purpose then when the apps serve a practical yet uninteresting purpose.

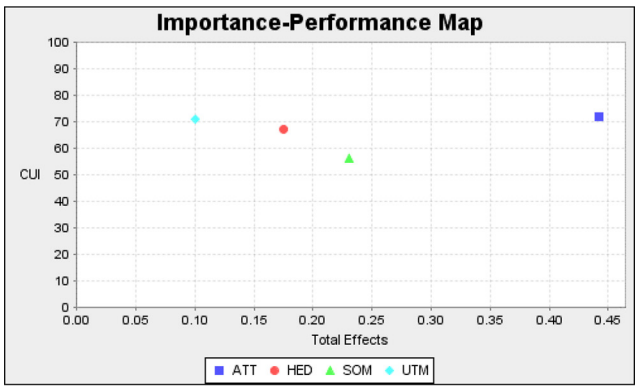
Limitations and future research

Although the paper has theoretical and practical implications, the paper is not without limitations. The first limitation of this work is that respondents were not users of a single BMA. Instead, we used a scenario where respondents had to recall their experience with a BMA (Albinsson *et al.*, 2016). This process could, however, be viewed as a strength since we found significant associations in the model for multiple types of user experiences with BMAs.

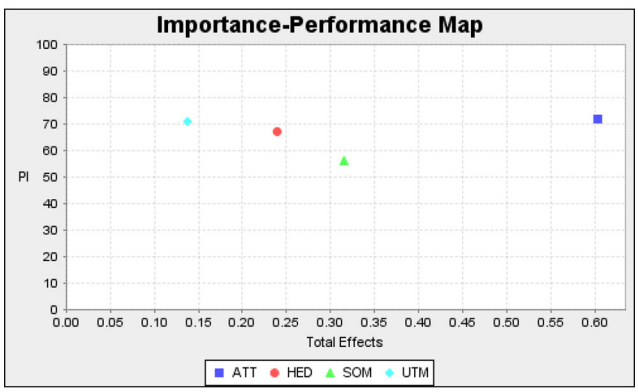
Next, although the three-dimensional motivation construct that we applied in this study by including social motivation is widely used in online community and e-commerce research, we believe that it is still relatively simple given the complexity of consumer motivation. We expect that understanding the specific (i.e. more detailed than hedonic/utilitarian) motivations of app users should provide more explanatory power and strengthen implications for app developers and brand managers; therefore, we propose that future studies could employ more granular conceptualizations of consumer motivation to this end. Given the meteoric rise in mobile computing and substantial information processing differences inherent between mobile and e-commerce (Furner *et al.*, 2015), a new conceptualization of mobile app user motivation may be appropriate. Next, since motivation is related to goal pursuit (Zhang *et al.*, 2019), future researchers could further increase explanatory power and implications for brand managers by including individual information processing goals when modeling mobile consumer behavior.

While the consumer outcomes that we included are widely studied in e-commerce, they are not exhaustive. Future studies could include additional customer satisfaction measures, perhaps from the service quality literature (Wang *et al.*, 2019), or more outcomes associated with the MASS paradigm. Finally, data were collected via Amazon's Mechanical Turk. Although mTurk data has been widely used in marketing research (Ketron, 2018; Lin *et al.*, 2019) and Berinsky *et al.*

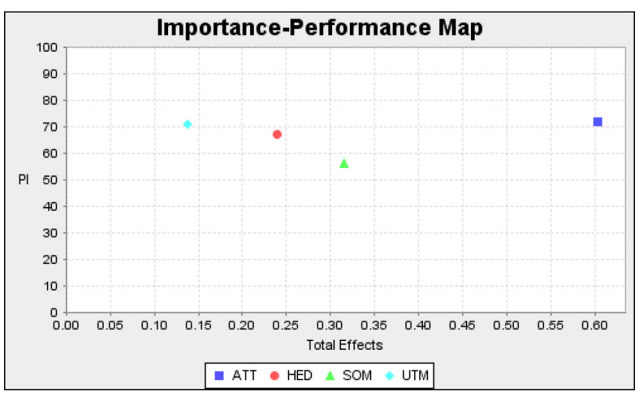
Figure 3 (a) Panel A: IPMA Test for CUI, (b) Panel B: IPMA Test for PI, (c) Panel C: IPMA Test for WOM



(a)



(b)



(c)

(2012) argue that data collected from mTurk is more representative of the US population than the typical sample of convenience, future studies may consider expanding the sampling pool to augment generalizability.

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