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# Effect of perceived value and social influences on mobile app stickiness and in-app purchase intention

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## ABSTRACT

Recently, there has been a dramatic proliferation of mobile apps, many of which allow for in-app purchases; however, little research has focused on what motivates a user to make such purchases. Based on the Affect–Behavior–Cognition model (ABC model) of attitudes, we developed a model involving perceived value and social influences. The model is then empirically evaluated using survey data collected from 485 users regarding their perception of mobile apps. The findings indicate that stickiness and social identification significantly influence a user's intention to make in-app purchases. Specifically, significant differences were found between users and potential users in terms of antecedents to forming stickiness and making in-app purchases. The results may provide further insights into the development of effective mobile app business models and adoption strategies.

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## 1. Introduction

Global mobile device penetration continues to proliferate at a phenomenal rate, driving the robust growth of mobile commerce applications. According to comScore (Siwicki, 2013), as of June 2013 mobile devices accounted for 55% of total time spent interacting with online retail outlets, with desktop and laptop computers accounting for the remaining 45%. Most mobile interactions take place via mobile apps designed to fulfill specific user demands for shopping, entertainment, information, and social interaction. To achieve viability, the developers and publishers of mobile apps must create suitable business models.

The “freemium” approach has transformed the mobile apps sales market. More than 90% of apps offered in the Apple App Store in 2013 were free (Golden, 2013), prompting initial downloads which paved the way to in-app purchases later. Earlier generation apps depended mostly on advertisements to produce revenue; however more and more publishers are building in-app purchase functions as a primary means of monetizing their work. In-app purchases are defined as the purchase of digital products or services within a specific app via a mobile device. The usual scenario is that consumers download and try out the basic, free version of the app, and then become willing or develop the need to pay for premium access to enhanced features/contents.

Such features/content can be categorized as: 1) permanent enhancements to the app usage experience (e.g. removal of advertisements or unlocking more options); 2) expendable updates such as buying extra lives, coins, and food in games; and 3) temporary subscriptions to content or services (MacFarlane, 2015).

Though in theory in-app purchase seems a sensible method to monetize free apps, implementation has proved challenging. Unlike in conventional shopping contexts, in-app purchases require apps to first attract users to download the trial version before subsequent in-app purchase can take place, and only regular (sticky) users are likely to make such purchases (Yaloz, 2015). Therefore, the key element to the success of mobile app is stickiness (Drell, 2013). However, few previous studies have investigated the antecedents and effects of stickiness in the context of mobile apps. Therefore, this study examines factors that influence app user behavior (i.e. stickiness), attitudes, and in-app purchase intention. These are key considerations for app developers given that, in 2013, in-app purchases accounted for more than 70% of US iPhone app revenue and as much as 90% of revenues in Asian markets (Koekkoek, 2013) and is expected to grow steadily (eMarketer, 2015).

Past studies have shown that product value is one of the important factors in promoting app usage and purchases (e.g. Lin and Wang, 2006; Turel et al., 2007a, b; Chang and Tseng, 2013). According to motivation theory, both utilitarian and hedonic values have a strong influence on purchasing behaviors in both conventional and e-commerce shopping settings. In addition, prior studies have confirmed that consumer purchasing decisions may be affected by the opinions of his/her

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peers (Bearden and Etzel, 1982; Engel et al., 1993; Yang et al., 2007). How this actually influences purchase decisions in the context of in-app consumption is still unknown. Therefore, this study will address the following research questions:

1. To what extent does perceived value affect user's affective responses (i.e. attitude and satisfaction) toward a mobile app?
2. How do social influence and an app user's preference/dependence on a mobile app affect his/her willingness to pay for extra functions?
3. How does purchase experience affect in-app purchasing behaviors in this new mobile market?

To achieve the research goals, this study seeks to examine in-app purchase intention by proposing and empirically testing a behavioral model based on theories of perceived value and social influence. Moreover, given that in-app purchases occur after a user is already familiar with the specific app, the user's prior experiences—attitudes, satisfaction, and likelihood to continue using the app—play an important role in user's willingness to pay for extra functions. Previous studies have verified that the determining factors of information technology and information system (IT/IS) adoption differ between potential users and experienced users (Dwivedi and Irani, 2009; Hsu et al., 2007). Hence, this study also aims to identify factors that influence in-app purchase intention for experienced users (i.e., users who have previously made in-app purchases) and potential users (users who have no prior in-app purchase experience).

This study used a structural equation model (SEM) to assess the empirical strength of the relationships in the proposed model. In-app purchases have proven to be an effective monetization strategy for freemium apps. Examining antecedents and the effects of stickiness on mobile app users' in-app purchase intention from the perspectives of perceived value and social influences will provide valuable insights into in-app purchasing behavior as well as additional implications for theory of stickiness in the mobile app context. In addition, the results of this research can also help app developers devise effective mobile apps to improve their competitiveness.

## 2. Conceptual model and research hypotheses

Fig. 1 illustrates the research model which is adapted from the ABC model of attitudes. It asserts that user intention to make in-app purchases is determined by attitude, satisfaction, social norms, social identification and stickiness. Furthermore, attitude and satisfaction mediated the impact of beliefs about perceived value (i.e., hedonic and utilitarian values) on stickiness. Perceived value has been identified as a possible measure of experience of mobile technology usage (Turel et al., 2007a,b; Minna, 2005; Kim, 2010; Kuo et al., 2009; Kim and

Han, 2009). Different users value mobile apps for different reasons, such as productivity enhancement or entertainment. Therefore, perceived value, including utilitarian value and hedonic value, is proposed as a motivation for app usage. In addition, app users can interact to create online communities and thus enhance their social relationships. For example, social networking apps such as Facebook and the LINE SMS platform (Naver, Inc.) allow users to exchange information through text, images, video and audio via mobile devices. Therefore, social influences, including social norms and social identification, are included as additional beliefs and play a significant role as direct determinants for a user's intention to use apps and make in-app purchases. Fig. 1 shows the network of relationships in the model. The remaining section explains the theoretical foundations and rationale of the proposed links along with definitions of each construct.

### 2.1. ABC model of attitudes

According to the ABC model of attitudes, attitude is made up of three components: affect, behavior, and cognition. As shown in Fig. 2, cognitive response influences affective response, which in turn shapes behavioral response. Cognitive response refers to the beliefs a person has about performing the target behavior. Affective response is categorized into attitude and satisfaction (Al-Gahtani and King, 1999). Attitude is defined as an individual's positive or negative feelings about performing the target behavior whereas satisfaction is defined as the degree to which a user favorably perceives the overall assessment of performing the target behavior. Behavior is a measure of the strength of one's intention to perform a specified behavior. In the past decades, many theories such as the theory of reasoned action (TRA), the technology acceptance model (TAM) and the theory of planned behavior (TPB) have adapted the cognition–affect–behavior causal chain to predict user behavior (Fishbein and Ajzen, 1975; Davis, 1989; Ajzen, 1991).

The ABC model of attitudes is a general model and does not specify the beliefs that are operative for a particular behavior. Moreover, attitude formation is closely related to the specific characteristics of a particular product and service. Therefore, while researchers have adapted the ABC model of attitudes to explain user behavior, salient beliefs need to be considered in a specific context. For example, in the TAM model, Davis (1989) proposed that user beliefs about perceived usefulness and ease of use had an impact on user attitudes toward IT/IS acceptance behavior within an organization. In the TPB model, the social norms and perceived behavioral control are both types of beliefs which influence user behavior. Prior studies based on these theories also proposed specific beliefs to improve understanding of user behavior for specific contexts, such as WWW, online games, electronic commerce and mobile commerce (Moon and Kim, 2001; Hsu and Lu,

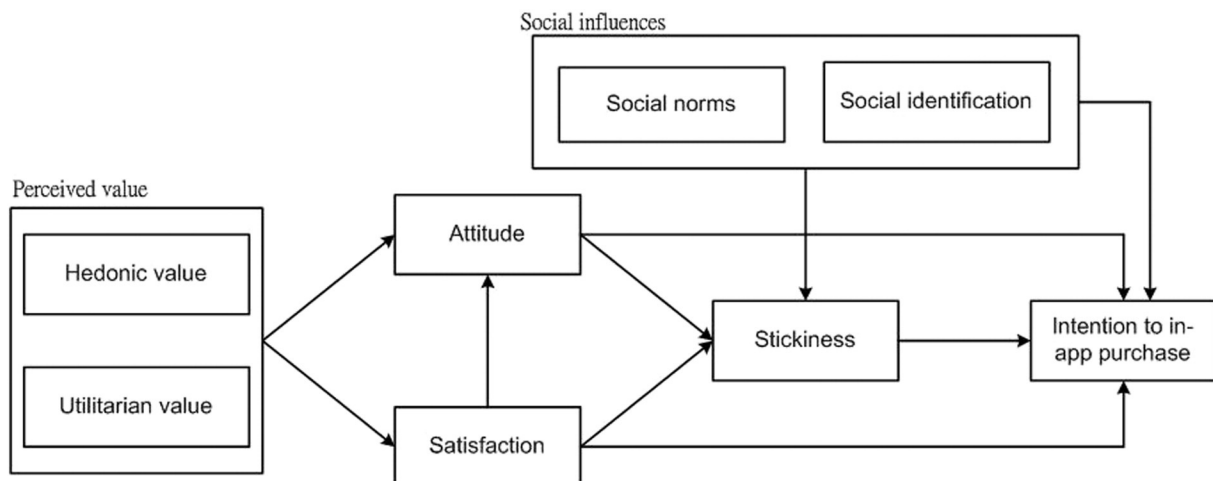


Fig. 1. Research model.

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