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Factors Driving Mobile App Users to Pay for Freemium Services

Completed Research Paper

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Abstract

With the popularity of smart mobile devices, mobile applications (most commonly referred to as an App) have gradually grown up to be a huge commercial market. Therefore, as the variety and download counts of Apps in the application stores of the two biggest operating systems increase, how to make a profit from Apps has become the most concerned issue for developers. Today the freemium strategy is widely observed in mobile App markets. Freemium is a business model by which an App is offered free of charge, but a premium is charged for advanced features. Hence, the purpose of this study is to explore the factors driving mobile App users to pay for freemium services based on value-based adoption model. An online survey was conducted to collect empirical data in order to test the research model. The results of PLS analysis indicate that an App user's intention to pay is determined by perceived value, a thorough comparison of benefits and sacrifices, and trust of developer. Furthermore, perceived value will be affected by perceived effort and perceived usefulness while the App user has no experience on premium service. Finally, the implications for practitioners and researchers are discussed.

Keywords: Mobile Applications, Freemium, Purchase Intentions, Value-based Adoption Model

Introduction

With the popularity and portability of smart mobile carriers such as mobile phones and tablets, most people now have a smart phone. The biggest feature of smartphones is the ability to install and run “mobile applications” (Apps). Users can download a variety of Apps to make life easier or more fun. For example, users can check the bus arrival time through the bus App to reduce the waiting time at the bus station or use Apps for stock trading and financial management. In addition, App can be used in the work environment, such as Mobile Instant Messaging (MIM) can be used for not only keeping friends and relatives in contact, but also for colleagues, supervisors and customers to communicate. However, the downloads of Google Play were higher than the App Store, but the global revenue of App Store in the first quarter of 2016 was about 90% higher than Google Play. It indicates that the number of downloads is not proportional to that of revenue. High number of App downloads does not equal to high income because the user's willingness to pay is not high. Not all services in the App market are free, some Apps need to be paid to be downloaded and used, some are available for free download or trial, but you will then be charged for the added value or continue use. When the App is free to download and installed, the user may be willing to download or try, but when the App is required to pay in order to download, the user needs think again before making a purchase decision. According to an investigation report made by eMarket, only 35.8% of all US smartphone users will purchase Apps in 2015, totaling 65.2 million people. It can be concluded that while most mobile carriers have the option to download and use App, only a small percentage of users are willing to pay, and most users are only willing to use "free" or ad-supported Apps.

There are four common App business models, including In-App Advertising, Freemium, Paid Apps and Subscriptions. Based on the role of payer, the App's profit model can be divided into user-paid model and advertiser-paid model. The scope of this study falls into the user-paid model and explores the factors driving mobile App users to pay for freemium services. Freemium is a free and premium English compound word, representing a business model, aiming to provide consumers with free download software, but subsequent value-added services or feature updates requires pricing (Liu et al. 2012). According to App Annie's survey (<https://www.appannie.com>), Freemium pricing strategy can successfully attract users to download for personal experience, and help users to better understand the function and quality of App. However, users have to be willing to pay for value-added to make a profit. In the past, some literature explored the factors that affected the willingness to pay for App users (Hsu et al. 2015; Racherla et al. 2011; Wang et al. 2013) The impact of the user from the trial to willing-to-pay between the conversion of the factors is slightly less, so the purpose of this study is to explore the factors influencing free App trial users' intention to pay for premium services, including the purchase of value-added features, removing advertising features, the purchase of game points and access to continuous use and so on. Since how to enhance App trial users' willingness to pay is a challenge that the current App market operators and App developers face, the expected findings of this study will contribute to existing knowledge on App marketing strategy.

Theoretical Background

Previous studies have explored the factors influencing users' willingness to pay for App. For instance, Racherla et al. (2011) investigated the impact of pay-what-you-want (PWYW) pricing strategy in the mobile App market. PWYW is a strategy of seller providing products to customers, and customers can decide their own price (including zero). Hsu et al. (2015) investigated the purchase intention of App users by modifying and extending the expectation confirmation model (ECM), which is adapted by the Expectation Theory (ECT). The results show the degree of confirmation will positively affect perceptual value and user satisfaction, among which perceived value includes four types: performance / quality value, value-for-money value, emotional value, social value, in which the monetary value and the positive rating will positively affect the purchase intention of the user. On the other hand, the emotional value will also positively affect the user satisfaction, but the free alternative to paid App will be a negative impact on users' willingness to pay.

Some previous studies have investigated the factors influencing the willingness to pay for App, but the research which focused on factors influencing switching intention from the trial to the payment are rare. In the past, the study of influencing factors on App-paying was mainly based on social cognition theory, motivation theory (Wang et al. 2013) or expectation confirmation model (Hsu et al. 2015). Social cognitive theory is proposed by Albert Bandura and used to explain human behavior, which is the result of the interaction of people, behavior and environment (Bandura 1977). Individual influence will vary according to the nature of the situation and behavior. Motivation theory is studying the

nature of behavioral motivation in the information system (IS) from the psychological point of view, which in this field, users' intention of using information technology (IT) intention is based on intrinsic and extrinsic motivation. Intrinsic motivation can be measured by perceived usefulness, and extrinsic motivation is measured by perceived enjoyment. Expectation confirmation model (ECM), based on expectation confirmation theory (ECT) proposed by Oliver (1980), is used to forecast and explain the intention of continuous use of IT / IS, and the two factors that affect the persistence of intention are perceived usefulness and confirmation degree. According to the theory, App users expect the App to have the expected psychological performance before purchasing, then the App's performance will have a new cognition after purchasing and using the App. The users start to compare the expectation before and after the purchase. The higher the purchase satisfaction, the higher the consumer's repurchase intention will be.

However, the theories mentioned above are mainly used to explain the intention to pay, but the purpose of this study is to investigate the process of free App users switching to paying users. We argue that the decision process of a trial user is different to an user who has no usage experience. For example, when buying clothes online, people will consider the quality of the product, the reputation of the store, the material, the size of the clothes, the return policy, and so on. For this kind of merchandise that can not be tried on, many factors need to be considered before making a purchase. However, when the user has tried the App, they would have a certain degree of experience and understanding to this App. Thus, the factors they evaluate whether to pay or not differ from those who never experienced the product. Li et al. (2014), based on the status quo bias theory, explores the factors influencing consumer's intention to switch from "free" to "fee" from the context of hybrid revenue model. The status quo bias theory explains the consumer's preference for maintaining current behavior. The hybrid revenue model is an attempt to explore how consumers can switch from free to paid content online. In this model, content providers offer free trial content to attract users. By providing higher quality services to attract consumers to pay, the study assumes that loss aversion, social norms, cognitive inertia, cognitive lock-in, perceived sacrifices, and perceived benefits can indirectly or directly affect the consumer's intention to switch. Besides, the consumer's level of adaptation to mediation also mediates the relationship between perceived sacrifices and switching intentions, as well as the relationship between perceived benefits and switching intention. The results showed that perceived value can enhance the consumer's switching intentions by lowering sacrifices and increasing interest, and cognitive locking indirectly reduces the switching intention by influencing perceptual benefits positively and perceptual sacrifices negatively, and loss avoidance can increase perceptual sacrifice. Social norms can increase perceptual benefits and increase cognition locking by loss avoidance and cognitive inertia. Finally, the consumer's adaptability to advertising will moderate the relationship between perceived sacrifices and switching intentions, and their relationship becomes strong when they are highly adaptable. Therefore, this study argues that the higher the benefit of the paid App over the cost, the higher the likelihood that the user will pay. This study constructs a conceptual model to analyze the factors that may influence the user's intention to pay based on the value-based adoption model (Kim et al. 2005).

Value is a trade-off between give and get, and perceived value is defined as the overall evaluation of the consumer's perception of the received and the given from the utility of the product (Zeithaml 1988, p.14). The interest component consists of the intrinsic, extrinsic, and perceived value of the product. The intrinsic attribute means the physical components of the product, while the extrinsic attribute refers to the physical component related to the product but not the product, such as the brand, price, etc. The sacrificial portion includes monetary costs and non-monetary costs (Kim et al. 2005). Since perceived value is the overall evaluation of the utility of a product or service by the consumer and is determined by the perception received and given by the consumer, it can be applied to the measurement of the value of digital goods or services. Perceived value can be increased by increasing the benefits of the product/service or by reducing the cost of buying and using it. In social networking research, it is found that the emotional value, the social value, the price/value for money, and the performance/quality value are positively impacting the overall perceived value of web services (Lu and Hsiao, 2010). Hsu et al. (2015) argue that the perceived value of a user's product/service is derived from the trade-off between perceived benefits and perceived costs. When the user thinks that the benefits exceed costs, the perceived value will be enhanced. From the consumer choice perspective, consumers estimate the value of the choice object by considering all relevant benefit and sacrifice factors (Kim et al. 2005). In this study, perceived value is defined as the App user's overall assessment of the utility of the premium services pertaining to an App based on perceptions of what is received and what is given. Since consumers' adoption behavioral intention would be influenced by the perceived value (Wang et al. 2013), we propose hypothesis H1 here:

H1: Perceived value will positively affects an App user's intention to pay for premium services.

Perceived sacrifices are both monetary cost and non-monetary cost (Kim et al. 2005). Monetary spending can be measured by App users' perceptions of the actual price paid. However, since the prices of premium services are different, this study adopts perceived risk to measure App user's perceptions of the monetary cost. When an App's price is higher than the price of substitute, the user will perceive higher risk. Non-monetary costs usually include time and effort which is adopted by this study. We argue that both perceived risk and perceived effort will decrease an App user's perceived value. Hence, hypothesis H2 and hypothesis H3 are proposed here:

H2: Perceived risk will negatively affects an App user's perceived value toward premium services.

H3: Perceived effort will negatively affects an App user's perceived value toward premium services.

Regarding to relevant benefit, this study proposes two constructs that would enhance App users' perceived benefit. First one is usefulness which has been used extensively in information systems adoption research to predict users' adoption intention (Mathieson 1991). Second one is assurance. We argue that assurance will be a predictor of perceived value because previous study revealed that privacy assurance motivate consumers to adopt and pay for mobile Apps (Racherla et al. 2011). Hence, two hypotheses: H4 and H5 are proposed as follows,

H4: Perceived usefulness will positively affects an App user's perceived value toward premium services.

H5: Perceived assurance will positively affects an App user's perceived value toward premium services.

Furthermore, the seller trust will affect consumers' purchasing at electronic marketplaces (Verhagen 2006). Developer trust is adopted to be a control variable in the research model.

Research Method

Since the features of Apps are different, this study sampled the users who have used at least one of LINE, Dropbox, and KKBOX for survey. LINE is a freeware App for instant communications on electronic devices. LINE users can exchange texts, images, video and audio, and conduct free VoIP conversations via App. LINE users can purchase virtual stickers to enhance the communication quality and amusements without time limit. Dropbox is a file hosting service. Basic users of Dropbox are offered a free account with a set of storage size, while the paid users are offered more capacity and additional features. KKBOX is a music streaming service. KKBOX uses a freemium business model, where free service listeners can listen to over 20-million tunes (kkbox) on smartphones with time limit. KKBOX subscribers can pay per month to continue using the App. In order to test research model, this study adopted empirical survey to collect data. All measures of each construct were adapted from previous research (Wang et al. 2013, Lin et al. 2012) and measured using a five-point Likert scale with anchors on strongly agreed and strongly disagreed, respectively. Each questionnaire item was validated by two professional translators to ensure that no syntax or semantic biases occurred in the translation from English to Chinese. In order to ensure the content validity of the questionnaires, pretests were conducted by asking several App users and information management professors to evaluate the instruments. A few ambiguous words were modified as a result. Then, to ensure validity and reliability, a pilot test was conducted with samples of representative respondents.

An online survey was conducting to collect empirical data from November 23, 2016 to December 30, 2016. Finally, 399 valid questionnaires were collected except 56 invalid questionnaires. The demographic profile of respondents was listed in Table 1. In addition to content validity, which was evaluated prior to distributing the questionnaires, the validity of multiple-item constructs in this study was assessed in terms of both convergent and discriminant validity. The convergent validity of each dimension was assessed based on the factor loading of each item, composite reliability, and average variance extracted (AVE). The first test was performed using confirmatory factor analysis. The mean and standard deviation of each item and the factor loading of items in each construct are presented in Table 2. In addition, the composite reliabilities of each construct exceeded the criterion of 0.7. All AVEs for these constructs exceeded the criterion of 0.5. Finally, the square root of all AVEs exceeded all other cross correlations (Table 3). Therefore, the findings indicate adequate convergent and discriminant validity. Structural equation modeling using the partial least squares (PLS) method with bootstrap estimate were used for model evaluation, since PLS makes minimal demands in terms of sample size and residual distribution while validating a model.

Table 1 – Demographic profile of respondents (n = 399)

Variable	Count	Percentage	Variable	Count	Percentage		
Gender	Female	174	43.6%	Daily time spent on App usage	Less than 1 hour	7	1.8%
	Male	225	56.4%		1-2 hours	39	9.8%
Age	20 or less	34	8.5%	3-4 hours	103	25.8%	
	21-30	184	46.1%	5-6 hours	152	38.1%	
	31-40	108	27.1%	7-8 hours	57	14.3%	
	41-50	66	16.5%	9-10 hours	26	6.5%	
	51-60	7	1.8%	More than 10 hours	15	3.8%	

Table 2 Descriptive statistics and factor loading

Construct	Indicator	Mean	S.D.	Loading
Intention to pay	IP-1	3.07	0.960	0.802
	IP-2	3.08	0.945	0.767
	IP-3	3.14	0.906	0.805
Perceived value	PV-1	3.51	0.921	0.834
	PV-2	3.48	0.918	0.816
	PV-3	3.56	0.943	0.840
Perceive risk	PR-1	3.95	0.865	0.876
	PR-2	3.98	0.816	0.892
	PR-3	4.03	0.823	0.846
Perceived effort	PE-1	2.78	1.065	0.918
	PE-2	2.79	1.101	0.922
	PE-3	2.87	1.072	0.893
Perceived usefulness	PU-1	3.76	0.888	0.963
	PU-2	3.72	0.920	0.927
	PU-3	3.74	0.986	0.871
Perceived assurance	PA-1	4.25	0.738	0.862
	PA-2	4.23	0.734	0.864
	PA-3	4.20	0.747	0.777
Developer trust	DT-1	3.98	0.903	0.883
	DT-2	3.87	0.889	0.896
	DT-3	3.92	0.863	0.910

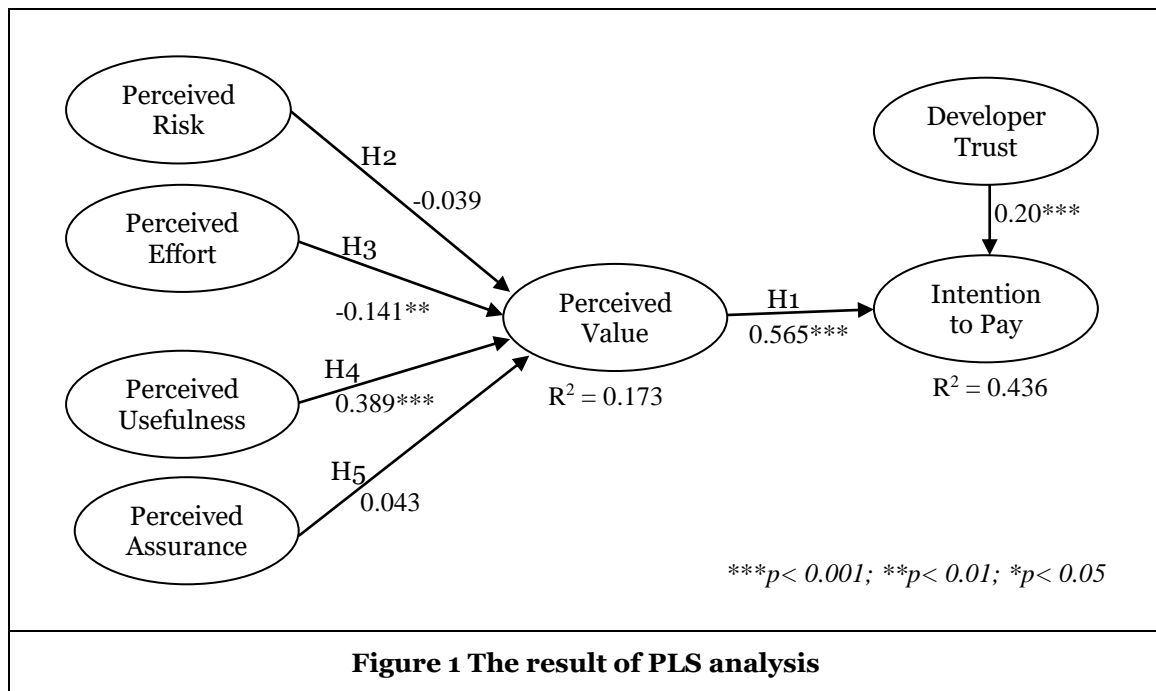
Table 3 Correlation matrix and average variance extracted for the principal constructs

Construct	Composite reliability	IP	PV	PR	PE	PU	PA	DT
Intention to pay (IP)	0.952	0.932						
Perceived value (PV)	0.954	0.633	0.935					
Perceive risk (PR)	0.910	0.061	-0.036	0.878				
Perceived effort (PE)	0.954	-0.072	-0.145	0.121	0.935			
Perceived usefulness (PU)	0.951	0.252	0.384	0.056	0.007	0.930		
Perceived assurance (PA)	0.830	0.055	0.035	-0.034	-0.039	-0.039	0.791	
Developer Trust (DT)	0.959	0.393	0.341	0.147	-0.016	0.296	-0.072	0.941

Note: The shaded numbers in the diagonal row are square roots of the average variance extracted.

Findings

The standardized PLS path coefficients and explained variances for the research model are presented in Figure 1. Statistical results demonstrate that all path coefficients are significant with the exception of the path from perceived risk to perceived value and from perceived assurance to perceived value. The results indicate that all hypotheses are significantly supported, with the exception of H2 and H5. The explanatory power of intention to pay is 0.436 while the developer trust significantly affect intention to pay. This implies that an App user's intention to pay for premium services can be well explained by perceived value and developer trust. However, the explanatory power of perceived value is 0.173. The other important factors which will influence an App user's perceived value toward premium services should be explored.



Conclusion

This study proposes a research model based on the “net value” concept from the value-based model to explore the factors driving mobile App users to pay for freemium services. Based on the research results, we found that an App user's intention to pay is determined by perceived value, a thorough comparison of benefits and sacrifices, and trust of developer which is also an important factor influencing users' online payment. This study suggests that the App users' perceived value affect whether App users are willing to switch from a trial user to a paid user when they trust developers. For example, in the case of rational decision making, if the user pays more than the get back, the user will prefer to maintain the status quo and abandon the transition to the paid service. Therefore, benefits and sacrifices should be taken into account so as to clarify the antecedents of perceived value. App users' perceived value is high when they perceived that operating effort is low and App is useful. App developers have to investigate users' need in order to design useful functions. On the other hand, App developers have to understand users' usage behavior in order to design friendly user interface.

However, we are surprised that the impact of perceived risk and perceived assurance on perceived value is not significant. The arbitrary reason is that the respondents have no experience on premium services. Since the features inside the App are unavailable until you pay for them, users could not recognize the degree of risk and assurance. Hence, the users of three Apps, i.e., LINE, Dropbox, and KKBOX, who have experience on premium services will be investigated in the future in order to test the effects of users' experience.

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