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ORIGINAL ARTICLE

User adoption and purchasing intention after free trial: an empirical study of mobile newspapers

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Abstract Marketing stimuli such as free trial has been widely used to increase user acceptance and intention to purchase information services. Information technology (IT) acceptance theories, such as the technology acceptance model and the unified theory of acceptance and use of technology, have been widely used to explain information system (IS) usage. These theories, however, do not explicitly consider the effect of marketing stimuli that would influence and shape user beliefs, attitude and behavior towards the use and purchase of new IS/IT. Echoing calls for advancing knowledge in technology acceptance, we propose a theoretical model based on expectation conformation theory to investigate the effect of marketing stimuli in the form of free trial and price of using IS on consumers' acceptance decision process. In this study, free trial of mobile newspaper is used as the research context. A survey sample of 192 responses is used to test the model. Results suggest that the trial experience has an impact on post-trial beliefs and attitude. Perceived fee also has an effect on the acceptance of the information service when the users need to pay for the service.

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1 Introduction

Consumer acceptance is an important research topic as it determines the success of an innovation. Although information technology (IT) acceptance research has drawn extensively from theories development in various perspectives, with several models proposed and empirically tested by a fairly significant body of research, a common ground of these research findings is that they are all mainly focused on the effects of users' beliefs and attitudes on usage/continuance intention and behavior (Bhattacherjee and Premkumar 2004). Most individual-level IT acceptance studies merely considered individual beliefs/perceptions such as perceived usefulness, perceived ease of use and perceived enjoyment as independent variables while attempting to understand acceptance, but did not specifically examine how those beliefs/perceptions can be influenced in the first place (Bhattacherjee and Sanford 2006).

In many individual-level adoption studies, the manipulation of belief/perception formation is embedded in the process of data collection. Data is either collected from users who have already voluntarily used the system (e.g. Burton-Jones and Hubona 2005) or from participants who have participated in the training of a system in a lab setting (e.g. Davis 1989), or from potential users who have been given knowledge about the target system (e.g. Hu et al. 1999). The belief/perception formation mechanism does not appear explicitly in the adoption model. Some studies considered user beliefs/perceptions to be influenced by external factors such as the specific task, the technology and user differences (Burton-Jones and Hubona 2005). However, there is no clear pattern with respect to the choice of the external variables as well as the role of these external factors in facilitating the development of beliefs/perceptions (Legris et al. 2003). For many innovative commercial products or services, marketing is an effective way to expose the services to consumers, and marketing strategies play an important role in the development of user beliefs/perceptions (Bettinger et al. 1979; Kempf and Smith 1998). However, marketing strategy has seldom been considered as an external factor in most existing adoption studies.

Most IT innovations investigated in previous acceptance research are traditional IT used for business (e.g. enterprise resource planning, decision support systems etc.), and the cost of using the system is paid by organizations, rather than by the individual end-users (Kim et al. 2007). Although some services are designed for personal use (such as e-mail, search engine, online shopping, online banking etc.), users generally do not need to pay for the service directly. In these cases, adoption studies usually do not consider cost as a factor for adoption. However, nowadays many information services or software products are no longer free to end-users, and users have to pay for the cost of service.

In this case, how to promote user acceptance for paid IT services? How to reduce the uncertainty for users to make an acceptance decision for paid services? How can users gain knowledge about the system before making the decision to pay for the

service? To address these questions, the free trial marketing strategy in which a service is provided free of charge, either with limited functionalities or with full function for a limited time seems applicable (Cheng and Tang 2010). Once a user accepts a free trial and gains some experience, the subsequent decision is whether to pay the fee for continued use of the service. Typically, individual acceptance for paid IT innovations involves two stages of decisions: (1) the acceptance decision for using the service free with limited time or functionalities to gain experience; (2) the purchasing decision for continuing to use the service for a longer time or for full functionalities.

In this paper, we investigate user acceptance of paid IT innovation in the context of free trial marketing strategy for mobile newspapers delivered to users via mobile messaging service (MMS). In the setting of free trial marketing strategy, the first stage, the acceptance decision to enroll in the free trial, could be explained by the existing adoption model, while the second stage, the purchasing decision after free trial with the intention to continue using the system has seldom been investigated. We focus on the second stage in this study. Since the second stage involves both continued usage and free trial marketing strategy, a model based on the post-adoption model and the trial processing is proposed to explore the purchase decision-making process after free trial. The remaining part of the paper is organized as following: In Sect. 2 we discuss the theoretical background. In Sect. 3 we propose a research model and develop the hypotheses. In Sect. 4 we discuss the research methodology. In Sect. 5 we perform data analysis and present the results. In Sect. 6 we offer some theoretical and practical implications.

2 Theoretical background

2.1 Adoption and post-adoption beliefs

Individual beliefs have long been used to investigate user's adoption as well as post-adoption intention and behavior toward IT. Perceived usefulness and perceived ease of use are two key beliefs specified in technology acceptance model (TAM) that would shape users' intention to use system either directly or indirectly via attitude towards using the technology (Davis 1989; Davis et al. 1989). Van der Heijden (2004) extended the belief set of TAM with perceived enjoyment to investigate the acceptance of hedonic IS. The salient effect of these beliefs has been tested in considerable IT acceptance research with regarding to different kinds of technologies and applications in various domains (see Venkatesh et al. 2003; Venkatesh 2006, for a review and synthesis). These beliefs have also been proved to have significant predictable effect on the continued IT usage (e.g. Bhattacherjee 2001; Bhattacherjee and Premkumar 2004; Hong et al. 2006; Thong et al. 2006).

In IT adoption context, users' adoption beliefs are generally based on second-hand information, such as communication via mass media or interpersonal, industry reports or vendor claims. Original TAM uses the construct "external variables" to represent all the possible external influences that may affect IT acceptance behavior and states that these external influences can be fully mediated by user beliefs. Thus,

user beliefs are regarded as the independent variables in most individual-level IT acceptance models without specifying the antecedents of these beliefs (e.g., Wu and Wang 2005; Kim and Garrison 2009), and there is considerably less work done in examining how information is obtained and how this further leads to the development of beliefs about an innovation.

However, post-adoption beliefs are much more likely to develop from real usage experience rather than just based on second-hand information. According to the cognitive dissonance theory (CDT; Festinger 1957) in the social psychology literature, users' beliefs and/or behavior would change when there is a dissonance between their cognition and reality. As users gain first-hand experience with IT usage, they evaluate their initial cognition with actual experience, and revise their cognition to lessen the dissonance (Bhattacherjee 2001; Bhattacherjee and Premkumar 2004). Information from first-hand usage is the key leading to the differences in user perception shaping of IT between post-adoption stage and adoption stage. The expectation confirmation model of IT continuance (ECM), which is based on expectation confirmation theory (ECT; Oliver 1980) extended from CDT (Festinger 1957) suggests a reasonable mechanism of how users' beliefs and/or behavior are being changed, and has been widely used to investigate IT continuance usage (Bhattacherjee 2001; Bhattacherjee and Premkumar 2004; Hong et al. 2006; Thong et al. 2006).

2.2 Marketing stimuli and product trial

Marketing and consumer psychology researchers have attempted to understand users' adoption behaviors by investigating consumer's response to marketing stimuli (e.g., Smith and Swinyard 1983; Berger and Mitchell 1989; Wright and Lynch 1995). Research in marketing and psychology has consistently shown that product trial is a powerful source of information for the formation of brand beliefs and attitudes. In the process of product trial, consumers get the real product, experience the product with some combination of sensory indicators, visual, tactile, olfactory, auditory and/or taste sensory, then encode the thought towards product and brand according to these sensory stimuli with personal elaboration. In a traditional "buy and try" consumption model, product trials will have strong implications for post-purchase brand evaluations and future behaviors (Kempf 1999). With increasingly intensified market competition and product diversification, consumers are experiencing a change from "buy and try" to "try and buy". Free trial marketing has become a common and important tool for many products (Bawa and Shoemaker 2004). A trial serves an informational function, and the trial experience has potentially powerful influences on product/brand evaluation and purchase (Kempf and Smith 1998). Nowadays, "try and buy" model is also widely used in information software and services. However, it has not been adequately studied in the IS literature.

Free trial reduces the risk and threshold to adopt a product, it enables potential customers to become familiar with products and have first-hand understanding of their functions before they make the purchase decision. A prior experience that closely resembles actual product usage helps consumers make more reasonable

evaluation of innovation that leads to a more stable decision behavior. Smith and Swinyard (1982, 1983, 1988) show that experiences from product trial would form stronger beliefs than advertising, and can further lead to stronger attitude and attitude-behavior consistency. Information obtained from product trial would also affect consumers' expectation, demand and price (Goering 1985).

2.3 Cost considerations in IT adoption research

A review of IT adoption research papers published in leading IS journals and conference proceedings between 2000 and 2006 reveals that TAM plays a dominating role in adoption research (Liu et al. 2008). TAM was originally developed to explain individuals' usage behavior and predict future usage of computer-based tools (e.g., word processing program, email, software development tool) in an organizational setting (Davis 1989; Davis et al. 1989). Organizations invest in computer-based tools to support planning, decision-making, and communication processes, the reward of these investments is primarily based on the usage of these systems by end-users (Swanson 1988). In this setting, IT is usually a one-time investment by the organization, and the cost of end users' mandatory adoption and usage is borne by the organization (Kim et al. 2007). With software-as-a-Service (SaaS) emerging as a viable outsourcing option for clients interested in paying for the right to access a standardized set of business software functions through the network (Xin and Levina 2008), companies or individuals often need to pay for the IT service if they want to use it. Hence, IT service providers are directing more attention toward consumer's acceptance behavior toward paid IT. Given the major difference between free IT and paid IT, cost factor is becoming an important consideration in IT adoption. Furthermore, consumer's final purchasing behavior is the key to IT success. Price of the technology has became an important consideration for users in their purchasing decision of paid IT. Perceived price of IT should be included as a technology-specific perception to investigate user adoption behavior towards paid IT.

Recognizing the potential difference in IT adoption decision between free IT and paid IT, as well as the effect of marketing strategy on inducing the perceptions of target IT, this study develops an integrated framework that takes into account the marketing strategy (free trial) into consumer decision process to investigate consumer purchase behavior of paid IT.

3 Research model and hypotheses development

Studies based on information diffusion theory(Rogers 1995) have suggested that information content or information source plays an important role in shaping user perceptions of new technologies, and would lead to IT acceptance (e.g. Agarwal and Prasad 1998; Zmud 1983; Nilakanta and Scamell 1990). As an important way to exposure new technologies to users, product trial has been tested to be a powerful source of information for the formation of brand beliefs and attitudes. To promote user acceptance for the paid IT services, free trial marketing strategy has often been

employed to help users gain knowledge about the system before making the decision to pay for the service.

Product trial is defined as a consumer's first usage experience with a brand/product(Kempf and Smith 1998). Trial usage is a key source of experience. According to consumer behavior research (Howard and Sheth 1969) and cognitive dissonance theory (Festinger 1957), usage experience may change one's perceptions, attitudes, and needs with respect to use of the product, beliefs after use of the product may not be the same as the set of beliefs that have led to initial adoption. A cross-sectional comparison of pre-adoption and post-adoption beliefs and behaviors conducted by Karahanna et al. (1999) confirms that pre-adoption and post-adoption behaviors are determined by different factors; pre-adoption beliefs are formed primarily based on indirect experience (affect or cognition) with IT, while post-adoption beliefs are formed based on past experience. Further, Bhattacherjee and Premkumar (2004) asserts that beliefs, attitude, intention, and usage of IT innovations change over time as users experience IT usage first-hand and learn from such use. Given users' beliefs, attitude, intention change over time as users gain IT usage experience via trial, we regard post-trial behavior (purchase behavior) as relating to the post-adoption/continued usage, and the initial decision to enroll in the trial as an initial adoption behavior.

Bhattacherjee (2001) proposes the ECM to investigate IT continuance usage by addressing the user beliefs and/or behavior change mechanism caused by usage experiences. ECM points out that users will update their beliefs towards using the IT as they gain first-hand experiences from using it. After assimilating these first-hand experiences, individual beliefs would be very different from initial beliefs prior to using the IT. These beliefs based on direct experiences are major predictors of users' satisfaction with the IT. Individual's intention to continue using the IT would be dependent on users' satisfaction, post-usage beliefs and the extent of confirmation of pre-usage beliefs. In paid IT free trial context, users will first accept a free trial and gain some experience, then valuate the trial experience and form post-trial beliefs and attitude toward target IT, and further decide whether to pay the fee for continued use. This is quite similar with the individual's continued IT usage decision. Thus, ECM would be employed as the theoretical basis for this research.

We focus on the post-trial decision of paid IT acceptance: the purchasing decision for continuing to use the innovation for a longer time or for full functionalities. After the free trial, the cost of target IT becomes an extremely important factor that influences the purchase(continued use) decision. Consumer would get an evaluation about the attributes of IT after free trial, and then perform a mental accounting with regard to the price, and finally make the purchase decision. Thus, perceived fee would be incorporated to investigate consumer's purchasing decision process of paid IT under a free trial marketing strategy. Figure 1 shows the proposed conceptual model.

3.1 Evaluation of trial experience

When a trial serves an informational function, consumer can be expected to evaluate the overall quality of the trial experience as an information source about the product

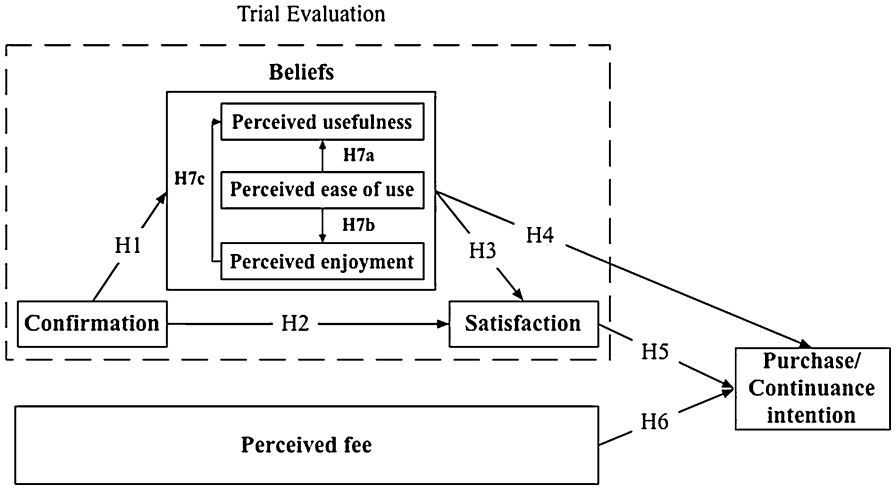

Fig. 1 The conceptual model

(Kempf and Smith 1998). We focus on the evaluation of actual trial experience with initial expectation. Confirmation is defined as the degree that trial experience meets initial expectation. Beliefs refer to the post-trial cognitions towards IT. Satisfaction is defined as "consumer's response to the evaluation of the perceived discrepancy between prior expectations (or some other form of performance) and the actual performance of the product as perceived after its consumption" (Tse and Wilton 1988, p. 204).

In IT free trial marketing contexts, user's pre-trial cognitions (e.g., beliefs, attitude) are generally based on second-hand information, such as industry reports, mass media communication and interpersonal communication. Such indirect information may be exaggerated or unrealistic, resulting in cognitions that are less reliable or stable. As users gain first-hand experience with IT from free trial usage, they evaluate the extent to which their initial cognition is consonant or dissonant with actual experience, and revise their cognition and/or behavior to achieve greater consonance (Bhattacherjee and Premkumar 2004). Product's performance influence is fully mediated by confirmation. Consumers obtain the expected benefits through the trial usage, and these further positively lead to the arousal of the feelings of satisfaction (Thong et al. 2006). Thus, in free trial marketing context, the confirmation of initial expectations following the trial usage would determine consumer's post-trial beliefs and satisfaction toward the IT. Beliefs based on consumers' direct experience were found to be the major determinants of consumer satisfaction (LaTour and Peat 1980). The greater the confirmation of IT use expectation, the more likely the consumers would be satisfied with the trial experience and the product (Bhattacherjee 2001). Thus,

H1 Users' extent of IT usage confirmation is positively related to their IT post-trial beliefs.

H2 Users' extent of IT usage confirmation is positively related to their IT satisfaction.

H3 Users' post-trial beliefs of IT are positively related to their IT satisfaction.

3.2 Effect of trial experience

IT satisfaction and post-trial beliefs are the consequences of trial experience evaluation. The effect of free trial on sales would be influenced by the impact of these two on purchase behaviors. Although adoption and continuance behaviors are affected by different beliefs set, beliefs are salient antecedent of behavioral intention in both adoption research and post-adoption research. Beliefs based on direct experience predict the attitude-behavior better than beliefs based on indirect experience (Karahanna et al. 1999).

Satisfaction with prior use is the major factor leading to the repurchase or continued use of that product or service. User's IS continuance intention is determined primarily by their satisfaction with prior IS use (Bhattacherjee 2001), and this relationship between satisfaction and continuance intention has also been established in other contexts (Karahanna et al. 1999). Thus, we expect that:

H4 Users' post-trial beliefs of IT are positively related to their IT purchase intention.

H5 Users' satisfaction is positively related to their IT purchase intention.

3.3 Effect of perceived fee

It is important to note that consumer would have to bear the price of target IT for the continued usage after the trial. A cost-benefit calculation would be performed in the process of consumer decision after the trial has ended and this plays an important role in consumers' decision making (Thaler 1985). Subjective perceived price is an indicator of the amount of sacrifice related to the purchase of a product (Monroe and Krishnan 1985), and perceived monetary value affects consumers' intention to use a product (Cronin et al. 2000) as well as the continued usage intention (Hong et al. 2008). The more the monetary sacrifice gets rewarded with product value, the more reasonable the fee paid for the product would be perceived, further, the more consumers are willing to continue use the product. Thus, perceived fee is an important variable that needs to be taken into account as a determinant of purchase behavior after the trial. The more reasonable the perceived fee of target IT is, the more customers are willing to pay for the price after trial.

H6 Reasonable perceived fee of IT has a positive influence on users' purchasing intention.

3.4 Post-trial beliefs

Attitude formation of trial has been largely investigated by marketing researchers; both affective and cognitive response to trial plays an important role in the

evaluation process of product trial (Kempf 1999). Perceived usefulness and perceived ease of use are cognitive beliefs most consistent and salient to IT use (Venkatesh et al. 2003).Perceived usefulness is defined as the degree to which a technology is perceived as providing benefits in performing certain activities, and perceived ease of use is defined as the extent to which a technology is perceived as being easy to understand and use (Davis 1989). Van der Heijden (2004) points out that the affective beliefs (perceived enjoyment) play a more important role in hedonic IS usage. Perceived enjoyment is defined as the extent to which the activity of using an innovation is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Davis et al. 1992). ECM employed perceived usefulness as the surrogate for post-usage beliefs (Bhattacherjee 2001), while a comparison of ECM, TAM and extended ECM (integrating ECM and TAM) in the context of mobile Internet reveals that the extended ECM-IT has the highest explanatory power on continued IT usage (Hong et al. 2006). Thus, perceived usefulness, perceived ease of use and perceived enjoyment should all taken into account as our post-trial beliefs set to gain a more comprehensive view of IT continuance behavior after trial. Furthermore, as theorized in TAM, perceived ease of use is expected to also indirectly influence usage intention via perceived usefulness (Davis 1989, Davis et al. 1989), as well as perceived enjoyment (Van der Heijden 2004). Hence, perceived enjoyment would contribute to extrinsic motivation, which is perceived usefulness in our research model (Starbuck and Webster 1991).

H7a Users' perceived ease of use is positively related to their perceived usefulness.

H7b Users' perceived ease of use is positively related to their perceived enjoyment.

H7c Users' perceived enjoyment is positively related to their perceived usefulness.

4 Research methodology

4.1 Research context

The proposed paid IT acceptance model in free trial marketing context was tested empirically using a survey study on mobile newspaper acceptance by China Mobile users. Mobile newspaper is a new kind of newspaper that news and information are distributed via mobile communication technology and read on mobile devices. As a kind of mobile commerce application, mobile newspapers are paid IT services. They can be subscribed and viewed anytime and anywhere, and can be retrieved and forwarded to others easily. Furthermore, mobile newspaper also possesses the unique advantage of delivering 'breaking news' to readers and sending customized news to readers based on their preferences.

China Mobile, the largest telecommunication service provider in China offers a MMS-based mobile newspaper service named M-News as one of its value added services. Consumers can subscribe mobile newspapers by sending short messages to

China Mobile customer service center. Once consumers have subscribed to a newspaper, a MMS-based mobile newspaper would be sent up to twice a day for a fee ranging from 5 to 25 RMB (equivalent to approximately USD $0.75 to $3.8) per month according to the types of newspapers they have subscribed. The basic M-News service costs 5 RMB/month and typically contains about 10-15 pages of most recent headline news, weather and photos from across China and around the world. A sample is presented in Appendix 1.

To rapidly expand the market for this service, China Mobile implemented a free trial marketing strategy. Almost every existing user of China Mobile received a call from China Mobile customer service representative telling them about M-news, and giving them the option to try the basic M-News service. If users agreed to enroll in the trial, they would receive basic M-News free for 2 months. After the trial, they were then required to subscribe to and pay for the service if they wanted to continue to receive the MMS-based mobile newspapers. Thus, consumer's intention to purchase/continue use M-news after the trial would be an important factor for China Mobile to make a profit from providing this service. Given the above scenario, mobile newspaper was deemed a very suitable application to test the effect of free trial marketing strategy on paid IT adoption.

4.2 Construct operationalization and data collection

There were seven constructs measured in the study. Multi-item scales were used to measure these constructs by either adopting or adapting from extant validated scales found in IS or ECT research. All the constructs were measured using a seven-point Likert scales anchored between "strongly disagree" and "strongly agree", except the satisfaction items, which were based on seven-point semantic differential scales. The scales of continuance intention, satisfaction and confirmation were adapted from Bhattacherjee (2001). Perceived fee measurement items were adapted from Sweeney and Soutar (2001). Perceived usefulness, perceived ease of use, and perceived enjoyment used adapted items from Moon and Kim (2001).

Our survey was conducted in Chinese. While all scales items adopted or adapted from extant validated scales were originally in English, a double-translation procedure was employed for the questionnaire development. The questionnaire was pre-tested through a focus-group session consisting of 10 students. The questionnaire was revised according to the feedback in order to ensure that the questionnaire description was clear and targeted, and a pilot testing of the survey was conducted by selecting 40 mobile newspaper users. Measurement items were further adjusted according to the reliability and validity analysis results of a pilot study. The final measurement scale items are listed in Appendix 2.

Empirical data for this study was collected via a survey of mobile newspaper trial users. 200 undergraduate students who had received mobile newspaper promotion and enrolled in the trial were randomly selected from four large universities in Northwestern China. A total of 192 usable responses were received. Demographically 68.6 % of the respondents were male and 31.4 % were female. We choose undergraduate students as our survey participants because young consumers represent the biggest segment of cell phone users in China. Furthermore, highly educated young

people are more likely to be innovators and early adopters and are more sensitive to technological innovation (Mackintosh and Heikkonen 2001).

5 Data analysis and results

The proposed model and hypothesis testing were conducted using Smart-PLS software version 2.03 (Ringle et al. 2005). Partial least square (PLS) has been widely used in recent IS studies. The PLS approach can assess measurement model parameters and structural path coefficients simultaneously similar to other structural equation modeling techniques. As PLS has the minimal demands on sample size and measurement scales (Chin 1998), it is suitable for this study due to our relatively small sample size.

5.1 Reliability and convergent validity

As shown in Table 1, all item loadings to their corresponding latent variables were above 0.8 (Fornell et al. 1982), as well as the Cronbach's alpha for all constructs exceeded 0.9 (Rivard and Huff 1988), indicating that the item reliability were judged to be adequate. We used composite reliability and average variance extracted (AVE) to test the convergent validity of the seven constructs. Every construct's composite reliability exceeded Nunnally's (1978) criterion of 0.7, finally AVE for each construct was above 0.5. Thus, each latent construct was deemed reliable.

5.2 Discriminant validity

The square root of AVE for each construct was used to examine discriminant validity by comparing the correlation of that construct with other constructs. As shown in Table 2, the square root of AVE was greater than all of the inter-construct correlations, showing evidence of sufficient construct discriminate validity (Fornell and Larcker 1981). Therefore, our model exhibited satisfactory discriminate validity (Barclay et al. 1995).

5.3 Assessment of structural model

After assuring the good psychometric properties in the measurement model, we assessed the structural model to determine its explanatory power and the significance of the hypothesized paths. Figure 2 shows the results of the PLS analysis for the research model. Our model explained 54 % of total variability of continuance intention to use mobile newspaper, 64 % of total variability of user satisfaction, 47 % of variance in perceived usefulness, 26 % of the variance in perceived ease of use and 36 % of variance in perceived enjoyment. The R^2 of the endogenous construct (purchase/continuance intention to use) was used to assess the explanatory power of estimated model. For our study, R^2 was 0.54 and exceeded the threshold recommended by Falk and Miller (1992), therefore, homological validity of our research model was satisfactory. As recommended by Chin and Todd (1995),

Table 1 Reliability and convergent validity of constructs

Construct	Item	F.L.	SE	AVE	C.R.	Cronbach's alpha	Construct	Item	F.L.	SE	AVE	C.R.	Cronbach's alpha
CON	CON1	0.90	0.02	0.83	0.94	0.90	PE	PE1	0.87	0.03	0.76	0.95	0.94
	CON2	0.93	0.01					PE2	0.87	0.02			
	CON3	0.90	0.02					PE3	0.87	0.02			
PF	PF1	0.90	0.02	0.83	0.96	0.95		PE4	0.88	0.03			
	PF2	0.92	0.01					PE5	0.84	0.03			
	PF3	0.92	0.01					PE6	0.90	0.02			
	PF4	0.92	0.01				PEOU	PEOU1	0.81	0.03	0.71	0.94	0.92
	PF5	0.87	0.02					PEOU2	0.81	0.04			
SA	SA1	0.92	0.02	0.816	0.96	0.95		PEOU3	0.88	0.03			
	SA2	0.92	0.02					PEOU4	0.81	0.03			
	SA3	0.88	0.02					PEOU5	0.81	0.04			
	SA4	0.94	0.01					PEOU6	0.93	0.01			
	SA5	0.88	0.03				PU	PU1	0.86	0.02	0.72	0.93	0.90
	SA6	0.88	0.02					PU2	0.84	0.02			
CUI	CUI1	0.92	0.01	0.84	0.94	0.90		PU3	0.81	0.02			
	CUI2	0.93	0.01					PU4	0.90	0.02			
	CUI3	0.90	0.02					PU5	0.83	0.02			

FL factor loading, *CR* composite reliability, *CON* confirmation, *PE* perceived enjoyment, *PEOU* perceived ease of use, *PU* perceived usefulness, *PF* perceived fee, *SAT* satisfaction, *CUI* continued usage intention

Table 2 Discriminant validity of construct

	CON	PE	PEOU	PU	PF	SAT	CUI
CON	**0.91**	0	0	0	0	0	0
PE	0.58	**0.87**	0	0	0	0	0
PEOU	0.51	0.42	**0.84**	0	0	0	0
PU	0.63	0.53	0.50	**0.85**	0	0	0
PF	0.53	0.58	0.43	0.48	**0.91**	0	0
SAT	0.68	0.64	0.60	0.65	0.61	**0.90**	0
CUI	0.59	0.59	0.53	0.57	0.57	0.65	**0.92**

CON confirmation, *PE* perceived enjoyment, *PEOU* perceived ease of use, *PU* perceived usefulness, *PF* perceived fee, *SAT* satisfaction, *CUI* continued usage intention; diagonals are square root of AVEs; off-diagonals are inter-construct correlations

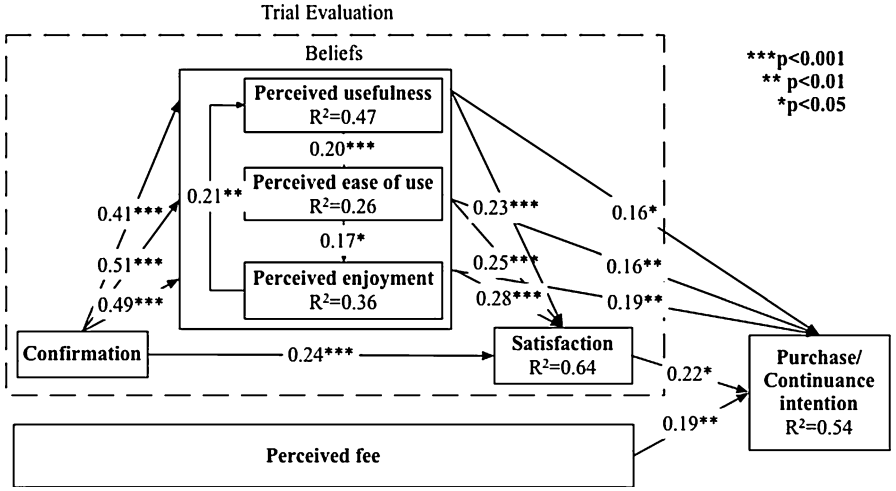

Fig. 2 PLS analysis of research model

bootstrapping was performed to test the statistical significance of each path coefficient. As shown in Table 3, all of the path coefficients were significant at the $p < 0.05$ significance level, and all the hypotheses were supported.

6 Discussion

6.1 Key findings

In this study, a conceptual model of user acceptance and consumer purchase behavior for paid IT in a free trial marketing context has been proposed and empirically tested. The findings provide preliminary empirical evidence of the viability of the research model within the context of mobile newspaper. Results of

Table 3 Results of hypotheses testing

Hypotheses	Casual path	Path coefficient	T-values	Supported
H1a	Confirmation → perceived usefulness	0.41***	5.64	Yes
H1b	Confirmation → perceived ease of use	0.51***	9.27	Yes
H1c	Confirmation → perceived enjoyment	0.49***	7.61	Yes
H2	Confirmation → satisfaction	0.24***	3.96	Yes
H3a	Perceived usefulness → satisfaction	0.23***	3.70	Yes
H3b	Perceived ease of use → satisfaction	0.25***	4.32	Yes
H3c	Perceived enjoyment → satisfaction	0.28***	4.12	Yes
H4a	Perceived usefulness → continuance intention	0.16*	2.52	Yes
H4b	Perceived ease of use → continuance intention	0.16**	2.61	Yes
H4c	Perceived enjoyment → continuance intention	0.19**	2.75	Yes
H5	Satisfaction → continuance intention	0.22*	2.46	Yes
H6	Perceived fee → continuance intention	0.19**	2.61	Yes
H7a	Perceived ease of use → perceived usefulness	0.2***	3.49	Yes
H7b	Perceived ease of use → perceived enjoyment	0.17*	2.20	Yes
H7c	Perceived enjoyment → perceived usefulness	0.21**	3.17	Yes

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

this purchase-after-trial study are in line with prior research employing the expectation-confirmation paradigm to investigate IT continuance (e.g. Bhattacherjee 2001; Thong et al. 2006). Findings suggest that users would modify their beliefs of whether the target IT is useful, easy to use and enjoyable as they experience IT usage first-hand and the modifications are based on the degree to which their initial expectations are confirmed during the usage of target IT. The extent to which usage experience meets or exceeds pre-usage expectation significantly influence user's post-usage beliefs. Additionally, both the extent of confirmation and post-usage beliefs significantly affect users' satisfaction. Users' satisfaction and post-usage beliefs, such as perceived usefulness, perceived ease of use and perceived enjoyment, significantly determine user's IT continuance intention. In this study, free trial is the way whereby users obtain first-hand experience with target IT, it is the information source that forms user's perceptions. By performing a process of trial evaluation, users form post-trial beliefs and a satisfied or unsatisfied attitude toward the target IT thereby further inducing their purchase behavior of target IT.

More importantly, the results reveal that the impact of perceived fee on behavioral intention is significant and important. This has not received much attention in previous IT adoption research as users are merely technology users in most prior studies who did not pay for the IS/IT directly. As users are experiencing a change from merely technology user to assuming duo roles of both technology user and service consumer, understanding their purchase behavior is becoming more important. Consumers are more deterred by costs than they are attracted by benefits (Kim et al. 2007). For a new technology,

consumers will not risk committing time, effort and money to it without having some assurance of its benefits. Even if consumers recognize that the new technology is beneficial, they may still not purchase it unless they perceive the cost to be less than the benefits they receive. Though free trial reduces consumers' risk and provides consumers the actual experience to evaluate the benefits of target IT, the perception of value to price is still a very important determinant of paid IT adoption.

The results of this study also reveal that there are some differences in relative influence of the determinants of satisfaction as well as behavioral intention towards target IT after the trial. In mobile newspaper research context, perceived ease of use and perceived enjoyment play more important roles than perceived usefulness in explaining satisfaction and purchase intention, and they are more influenced by the conformation of trial experience. Moreover, perceived usefulness is strongly influenced by perceived ease of use and perceived enjoyment. According to the adoption research on mobile data services (Hong and Tam 2006), mobile data services are innovations that extend beyond work settings, and perceived enjoyment is one of the constructs that captures this specific usage context. It reflects an intrinsic motivation. In the current research context, if a user needs to kill time while he or she waits for a bus or train, mobile newspaper can be perceived as very useful because it can be instrumental in providing an outlet for passing the time. While restricted by the capability of mobile devices (e.g. small screen and keypad) and various device types, the usability becomes extremely important. Mobile newspaper can be perceived as very useful when it can be received and read at any time the user wants.

6.2 Theoretical implications

From a theoretical point of view, we have proposed and verified a theoretical model that integrates user adoption and consumer purchasing behavior study under a free trial marketing strategy context. Previous adoption research has focused on whether people want to use the IT. However, purchase behavior could be induced not only by whether people are willing to use the IT, but also by the extent they are willing to pay for IT. This study has served to broaden our understanding of user adoption and consumer purchase behavior for paid IT by emphasizing the important role of marketing strategy. A trial marketing approach is taken into account to investigate how consumers evaluate the trial experience and how this evaluation further affects their purchase/continued usage intention in the context of mobile data services. This helps us to gain a comprehensive understanding of consumer purchase behavior of paid IT, as well as the trial marketing performance for IT artifacts. The impact of marketing strategies has not received much attention in previous IT adoption research because most prior studies focused on user behavior of work-related IT in organizational settings, where users did not have a direct consumption of IS/IT, and were not the direct marketing target. However, ITs are no longer only work-related, and users are no longer merely technology users, but also service consumers. ITs can now be

more targeted to individuals directly and therefore more marketing strategies can be used to promote individual IT adoption. This study is the one of earliest attempts to include marketing strategies in IT adoption research.

Furthermore, this study takes into account the perception of usage fee in the theoretical framework, hence contributing some theoretical advances in IT acceptance and continuance. Many IS studied in prior studies are either free or not paid by the users. As more IT services charged based on the usage (e.g. mobile data services), perceived fee would be a critically important factor that needs to be taken into account to investigate the acceptance and continued usage of these paid ITs. The results of this study reveal that perceived fee would directly and significantly influence consumers purchase intention for paid IT. This study also echoes the views of Benbasat and Zmud (2003) that IS studies should include and emphasize factors and phenomena closely associated with target IT artifacts.

Last, our results confirm that the salient effect of perceived usefulness, perceived ease of use and perceived enjoyment on intention and their role in shaping consumers' adoption decision. Taking into account the impact of information sources on user perception formation, findings suggest that ECT-IT is suitable to be used to understand the effect trial experience on user perception as well as purchase behavior after trial. An implication arising from this is that both intrinsic and extrinsic beliefs should be included to predict consumer behavior of multipurpose information application.

6.3 Practical implications

The theoretical model can be used to analyze consumer adoption and purchasing behavior for a variety of IT services. Today free trial has been widely used by IT industry to promote IT services to individuals as well as companies. For example, software is provided to users without payment on a trial basis and is often limited by any combination of functionality, availability, or usage convenience. Software such as Microsoft Office Professional allows users to try the product for 60 days; RealPlayer, a free media player that is some kind of ''light'' version of RealPlayer Plus. RealPlayer Plus offers many more advanced features, such as advanced CD burning, accelerated video download, accelerated mobile transfer; and MathType, a consumer can download the equation editor for free. It would work in full functionality for 30 days, but after that it becomes a limited functional version if the user does not pay. This study provides important implications for paid IT service providers. A trial promotion practice could be very successful as satisfaction and post-trial beliefs, results of trial evaluation, have positive impact on purchase intention. IT service providers could follow this marketing strategy when the quality of target IT can only be ascertained after usage. However, it should be noted that the target IT's quality need to be high as post-trial beliefs and user satisfaction largely determined by the extent of confirmation. Perceived fee is found to be a significant determinant of continuance intention, this indicates that practitioners should understand the important role of monetary fee and pay close attention to the pricing strategy for

paid IT. Perceived enjoyment is found to be a powerful determinant of consumer satisfaction and purchase intention, and it has strong impact on perceived usefulness, suggesting that for hedonic IT, affective responses are more important than cognitive responses in trial evaluation process.

7 Limitation and further research directions

There are several limitations to this research. First, we only studied the after trial user behavior, and our study is cross-sectional, rather than longitudinal. Therefore, we could not capture consumers' perceptions prior to the trial process to compare to pre-and-post trial analysis, which would allow us to fully understand the effect of trial promotion practice on user perception formation. It would be better to compare before and after trial behavior in a longitudinal study. Second, we only investigated a case of free trial with limited time offer in mobile newspaper context. Further research may be conducted to investigate other kinds of free trial, such as limited function version trial. The beliefs set formed after trial with limited function would be different from trial with full function but limited time. Also, further research could be conducted in different kinds of context to test the model. There are many different kinds of IT products employing free trial marketing in practices either targeting companies (e.g. Microsoft Dynamics CRM) or individuals (e.g. computer games). Further, this research did not study the effect of habit on purchase/continued usage because according to Limayem et al. (2007), habit is a variable that moderates the predictive power of intention to continued usage, and the process of habit formation is complex. Future research could address the limitation to gain a better understanding of consumer behavior for paid IT in a marketing context.

8 Conclusion

This study investigates consumer purchase behavior for paid IT in a trial marketing context. A theoretical framework considering perceived monetary fee for target IT and consumers' decision process has been proposed and validated using a survey of mobile newspaper acceptance among mobile newspaper trial participants in China. 192 trial users had participated in the survey, and the data was analyzed using Smart PLS. Our study shows that the trial promotion practice could lead to strong marketing performance, and perceived fee should be taken into consideration in user adoption and continued usage decision-making process when the target IT is not free to users. This research also confirms that post-usage beliefs are different from pre-usage beliefs, and usage experience has a great impact on post-adoption beliefs.

Appendix 1: a sample of mobile newspaper—Shanghai daily

Weather, and a list of the content including latest headline news, traffic news, business news and news from world is presented on top of the newspaper.
Press the updown buttons to read through the newspaper.

Corresponding photos of the news would also be displayed in the newspaper just like other print and online newspapers

Appendix 2: scale items

Confirmation: (Bhattacherjee 2001)

CON1: My experience with using Mobile Newspaper was better than what I expected.

CON2: The service level provided by Mobile Newspaper was better than what I expected.
CON3: Overall, most of my expectations from using Mobile Newspaper were confirmed.

Perceived usefulness: (Moon and Kim 2001)

PU1: Using Mobile Newspaper enables me to get the news more quickly.
PU2: Using Mobile Newspaper enhances the effectiveness of getting news.
PU3: Using Mobile Newspaper makes it easier to get the news.
PU4: Using Mobile Newspaper saves me time and effort in getting news.
PU5: Using Mobile Newspaper gives me more news.

Perceived ease of use: (Moon and Kim 2001)

PEOU1: Learning to operate Mobile Newspaper is easy for me.
PEOU2: Using Mobile Newspaper does not require a lot of mental effort.
PEOU3: It does not take too long a time to learn to use Mobile Newspaper.
PEOU4: My interaction with Mobile Newspaper is clear and understandable.
PEOU5: It is easy to remember how to use Mobile Newspaper.
PEOU6: It is easy for me to become skillful at using Mobile Newspaper.

Perceived enjoyment: (Moon and Kim 2001)

PE1: When reading Mobile Newspaper, I do not realize the time elapsed.
PE2: When reading Mobile Newspaper, I am not aware of any noise.
PE3: Using Mobile Newspaper gives enjoyment to me for my life.
PE4: Using Mobile Newspaper is pleasurable.
PE5: I have fun with using Mobile Newspaper.
PE6: I find using Mobile Newspaper to be interesting.

Satisfaction: (Bhattacherjee 2001)

How do you feel about your overall experience of using Mobile Newspaper?

SAT1: Very dissatisfied—very satisfied
SAT2: Very displeased—very pleased
SAT3: Very frustrated—very contented
SAT4: Absolutely terrible—absolutely delighted
SAT5: Absolutely unwise choice—Absolutely wise choice
SAT6: Absolutely wrong choice—Absolutely right choice

Perceived fee: (Sweeney and Soutar 2001)

PF1: Mobile newspaper is reasonably priced
PF2: Mobile newspaper offers value for money
PF3: I am pleased with the fee that I have to pay for the use of mobile newspaper
PF4: Mobile newspaper is economical
PF5: Mobile newspaper appears to be a good bargain

Continuance intention: (Bhattacherjee 2001)

CUI1: My intentions are to continue using mobile newspaper than use any alternative means (printed and online newspaper or magazine).
CUI2: I intend to continue using mobile newspaper in the future.
CUI3: If I could, I would like to continue my use of mobile newspaper.

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