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**Abstract**
*The adoption of mobile services is often studied at a generic level and limited research has addressed personalisation service adoption. This paper proposes a framework for assessing the likely success or failure of personalisation mobile services. It was found that enjoyment and usefulness are the most important factors in attracting users to adopt personalisation services. Comparing these findings with those of similar studies in the literature we suggest that predictors of mobile service adoption may vary depending on the type of services. Furthermore, explanations and predictions based on rational and intuitive models of consumer behaviour in the mobile space may be insufficient and inadequate for determining investments in novel mobile services.*

**Key words:** Mobile services, personalisation, consumer, adoption, Australia

# 1 Introduction

Mobile technologies and services are heralded to create a tremendous spectrum of business opportunities. With the rapid proliferation of mobile devices, including mobile phones, PDAs, and handheld computers, mobile commerce is widely considered to be a driving force for next-generation m-commerce. However, many attempted m-commerce applications have failed to meet expectations (Informa, 2005a, Informa, 2005b, Informa, 2006a). Therefore, it is important to understand why promising technologies succeed or fail and the contributing factors. Moreover, the characteristics of mobile services are important for the mobile services sector. Thus, discussing mobile services at a generic level is insufficient. For example, mobile services, such as mobile banking, games, ringtone or adult content downloads provide different type of functionalities. Therefore, the characteristics of mobile services may determine the factors that contribute to their adoption.

One type of mobile services that deserves attention is personalisation mobile services. There are a number of reasons for this. Firstly, technological advances continue to enable information personalisation (Choeh and Lee, 2008, Kim and Jun, 2008). Mobile operators have realised that personalisation services may enable them to gain customer loyalty by increasing switching costs (Informa, 2005b). Secondly, both the adoption and development of personalisation services is on the rise. Content that personalises a phone or a user's interaction with it has proven to be an incredibly successful category of content (Clark, 2004, Mackay and Weidlich, 2007). For example, substantial demand for mobile wallpapers and screensavers (i.e. animated wallpapers) has emerged to allow mobile subscribers to further differentiate their phone from those of their friends and colleagues. Advances in internet tools and mobile phone features also allow users to personalise ringtones, phone interface and style, screensavers, SMS alerts, address books, picture albums and MMS services. In the mid 90s, the market for ringtones was quickly established and has proven to be a big revenue generator for the companies involved in delivering them to market. This appears to be the first category of content to take off in each geographic market (Informa, 2005a, Informa, 2005b, Informa, 2006a, Mackay and Weidlich, 2007). Recently, truetones, mastertones or real-tones (three different terms used for MP3 quality music typically sourced from original recording artists) are commonly supported on most new handsets. Some analysts have suggested that the sale of truetones now represents approximately 10% of the total revenue being generated by the music recording industry (Informa, 2005a, Informa, 2005b, Informa, 2006a).

This paper develops a model that attempts to predict the adoption of personalisation type of mobile services. Specifically, we use ringtones as an example of personalisation mobile services and examine their adoption amongst young Australians, the target market of this type of mobile service in Australia. The rest of the paper is structured as follows. Firstly, we review extant literature and propose a new framework applicable to personalisation type mobile services. Then the methodology that was used to collect data is discussed. This paper concludes with discussions and implications that could be useful for both marketers and designers of mobile services.

# 2 Literature review

Many studies have been conducted concerning users' intentions for adoption of mobile services, most of which have been based on Davis's (1989) technology acceptance model (TAM). Although, parsimony has been one of TAM's strengths, it is also its major weakness. TAM has limited use in explaining users' attitudes and behavioural intentions to adopt mobile services (Venkatesh and Davis, 2000). Consequently, when studying their adoption, many authors have extended TAM with additional constructs, such as, subjective norm (Hung *et al.*, 2003, Teo and Pok, 2003), perceived expressiveness, enjoyment, and behavioural control (Nysveen *et al.*, 2005a, Nysveen *et al.*, 2005b), facilitating conditions (e.g. low price offering and prepaid schemes) (Pedersen, 2005), perceived entertainment and perceived flexibility (Cheong and Park, 2005, Bouwman *et al.*, 2007, Bouwman *et al.*, 2007a).

Although existing models focus on several antecedents of mobile service adoption, limited research has addressed personalisation services. Personalisation type mobile services make their adoption somewhat different from other services (Rao and Troshani,

2007, Troshani and Rao Hill, 2008). Three main reasons contribute to this. First, there is a strong relationship between the mobile devices, the underlying services and their users as the former always carry the identity of the latter (Chae and Kim, 2003, Chae and Kim, 2004). Second, the lifecycle of personalisation services is generally short. That is, new personalisation services may become rapidly obsolete, and are likely to be replaced by newer ones. This may create a certain amount of recurring learning before adopters can be confident and satisfied in using new services (Saaksjarvi, 2003). Third, personalisation services are used mainly to meet hedonic, experiential and identification needs, factors which while being increasingly incorporated in mobile services adoption models, have not been examined with regards to personalisation services (Mathwick *et al.*, 2001, Kleijnen *et al.*, 2004). This means that applying extant adoption models outright for determining attitude towards and the subsequent adoption of personalisation services may be inadequate. Consequently, further research is required in this area (Carlsson *et al.*, 2005, Carlsson *et al.*, 2006).

# 3 Adoption model for personalisation type mobile services

This section discusses constructs that are commonly included in adoption models and builds a new model that is specific in explaining consumer adoption of personalisation mobile services. The constructs are discussed next.

Firstly, we consider two of the most prevalent constructs in technology adoption models, namely, usefulness and ease of use. Performance expectancy of an innovation has been found to have a strong direct effect on the intention of adopters to use the innovation (Davis, 1989, Adams *et al.*, 1992). Although it is fair to state that "a system that does not help people perform their jobs is not likely to be received favourably" (Nysveen, Pedersen, and Thornbjørnsen, 2005b, p. 537), the performance enhancing aspect of personalisation mobile services seems to be a less important factor in their adoption. Similarly, the impact of perceived ease of use on a user's intention to adopt an innovation either directly or indirectly through perceived usefulness has been documented well in the literature (Davis, 1989, Taylor and Todd, 1995, Venkatesh, 1999, Venkatesh and Davis, 2000). Simply put, the lesser effort is needed when using a particular innovation, the more likely it is to be adopted.

In the mobile setting, perceived ease of use represents the degree to which individuals associate freedom of difficulty with the use of mobile technology and services in everyday usage (Knutsen *et al.*, 2005). For example, there is evidence in the media that using certain services on a mobile device can be quite tedious, especially when browsing Internet-like interfaces on mobile devices (Teo and Pok, 2003). Together with relatively small screen sizes and associated miniaturized keypads, the overall usage experience may be adversely affected. In addition, user-friendly and intuitive man-machine interfaces, including clear and visible steps, suitable content and graphical layouts, help functions, clear commands, symbols and meaningful error messages are likely to influence adoption as well (Condos *et al.*, 2002). In fact, perceived ease of use can be explained by usability characteristics and guidelines which was empirically validated in (Lederer *et al.*, 2000). Hence, a mobile service which is perceived to be easier to use than another is more likely to be accepted (Pikkarainen *et al.*, 2004). As a consequence, we hypothesise:

H1: Usefulness is positively related to intention to adopt personalisation services.

H2: Ease of use is positively related to intention to adopt personalisation services.

Intuitively, intrinsic motivators such as enjoyment may be the primary need when consumers adopt personalisation services. Play or fun, enjoyment, escapism and aesthetic value gained by participating in service experiences satisfy pleasure-oriented or hedonic needs and operate outside extrinsic motivations, such as enhanced job performance and increased pay (Mathwick *et al.*, 2001, Moon and Kim, 2001). Because the market for mobile services is comprised of both corporate users and personal use consumers, perceived enjoyment constitutes an important consideration (Pagani, 2004, Carlsson *et al.*, 2005). Previous research suggests that perceived enjoyment is one of the most important types of user needs (Anckar and D'Incau, 2002). In fact, because mobile services can be accessed anywhere and anytime, many mobile users prefer to use them to "kill time" (Perry *et al.*, 2001) or for fun and pleasure (Xu *et al.*, 2003). Within mobile technology environments, enjoyment and fun are also found as strong motivators for mobile services adoption (Pura, 2005, Kim *et al.*, 2007). Thus we hypothesise:

H3: Perceived enjoyment is positively related to intention to adopt personalisation services.

Perceived behavioural control, a dynamic and socio-cognitive concept, has attracted a lot attention in adoption literature. Perceived behavioural control is an individual's belief about the "presence or absence of requisite resources and opportunities" (Ajzen and Madden, 1986). A more recent definition reflects user perceptions of both internal and external constraints of adopting an innovation (Yi *et al.*, 2006). Recent empirical research suggests that perceived behavioural control is comprised of two distinct components. Self-efficacy which is an individual's judgement of their capability to perform a behaviour and controllability which constitutes an individual's belief if they have the necessary resources and opportunities to adopt the innovation (Hung *et al.*, 2003, Wang *et al.*, 2006). In original technology acceptance models, the financial cost of adopting an innovation was not considered to be a relevant construct because the actual users in an organisational setting did not have to pay for the technology. However, in the context of individual adoption, cost becomes a relevant factor. The cost of accessing mobile services includes handset acquisition costs, subscription, services and communications fees (Wang *et al.*, 2006). Thus, as part of controllability, perceived financial resources required to adopt mobile services relative to available means affect behavioural intention (Kleijnen *et al.*, 2004, Lin and Wang, 2005). For example, perceived financial cost was found to adversely affect users' behavioural intention to use mobile banking (Luarn and Lin, 2005). This is particularly relevant in the adoption of personalisation services which may be 'nice-to-have', but not absolutely necessary. Based on these arguments, we hypothesise:

H4: Degree of behavioural control is positively related to intention to adopt personalisation services.

The next factor that is related to personalisation mobile services is image. Image refers to the degree to which adoption and use of innovations is perceived by users to enhance their image or status in their social system (Moore and Benbasat, 1991, Al-Gahtani and

King, 1999). In the Innovation Diffusion Theory, image is included as an important aspect of relative advantage (Rogers, 1983, Lee *et al.*, 2003). For some innovations, "the desire to gain social status" may be the one of the most important motivations (Lee et al., 2003, p. 215). Individual mobile phone users are likely to be cognizant of the image that they project in their social networks. Many adopt mobile services because they believe that these services may help them create, alter or preserve a positive image and social status for themselves within their social setting rather than for addressing a necessity (Teo and Pok, 2003, Yi *et al.*, 2006). For example, early adopters of WAP services were either trendy or technology savvy and mobile phone users who wanted to be associated with these groups had the propensity to adopt WAP services (Mackenzie and O'Loughlin, 2000). Research has indicated that use of mobile phones is a way of expressing personality, status and image in a public context and amongst peers (Leung and Wei, 2000, Moon, 2002). Hence, it is hypothesised that:

H5: Better image is positively related to intention to adopt personalisation services.

Personal innovativeness is the innate willingness of an individual to try out and embrace new technologies. Also known as technology readiness, personal innovativeness embodies the risk-taking propensity which exists in certain individuals and not in others (Agarwal and Prasad, 1998, Parasuraman, 2000, Massey *et al.*, 2005). This definition helps segment potential adopters into innovators, early adopters, early and late majority adopters and laggards. Personal innovativeness represents a confluence of technology-related beliefs which jointly contribute to determining an individual's predisposition to adopt mobile services. Therefore, given the same level of beliefs and perceptions about an innovation, individuals with higher personal innovativeness are more likely to develop positive attitudes towards adopting it than less innovative individuals (Agarwal and Prasad, 1998). Therefore, it is hypothesised:

H6: Personal innovativeness is positively related to intention to adopt personalisation services.

Social influence constitutes the degree to which individuals perceive that important or significant others believe they should use an innovation (Venkatesh *et al.*, 2003). Rogers (1995) argues that individuals learn and use behaviours based upon what they see in their social groupings. That is, behaviours observed in others influence the observer to emulate them (Bandura, 1977). Therefore, social influence can play a significant role in affecting personalisation service adoption decisions as these services can be used to enhance social self-concept (Sweeney and Soutar, 2001).

For these reasons, the opinions of important referents, including peers, friends, superiors, computer and technology experts, could constitute the basis for a user's feelings concerning the utility of an innovation. Research on young consumers adoption of mobile services suggests that the use of mobile services is a "group marker or social identifier" (Weilenmann and Larsson, 2000). The ringtones they use and the number and quality of messages stored on their mobile sets enhances their social status. Apart from social influence, external influences, including mass media reports, expert opinions, and other non-personal influences, may also be taken into account by adopters

when making their acceptance decisions (Bhattacherjee, 2000). Given that strong support for social influence, we make the following propositions:

H7: Interpersonal influence is positively related to intention to adopt personalisation services.

H8: External influence is positively related to intention to adopt personalisation services.

The existence of a trusting environment can be vital for adoption of personalisation services. These conditions determine the user's expectations from the relationship with their service providers, and increase their perceived certainty concerning the provider's expected behaviour. Generally, trust is essential in all economic activities where undesirable opportunistic behaviour is likely to occur (Gefen *et al.*, 2003). However, trust becomes vital in a mobile environment, where situational factors such as uncertainty or risk and information asymmetry are present (Ba and Pavlou, 2002). Adopters of mobile services are unable to judge the trustworthiness of mobile operators and service providers. For example, service providers may illegally sell or share their users' personal and transactional information. In order to create trust, both security and privacy are required. Evidence shows that both security and privacy can become obstacles for the adoption of mobile services (Pikkarainen *et al.*, 2004, Fang *et al.*, 2005). As a result, we propose the hypothesis that follows:

H9: Perceived security is positively related to intention to adopt personalisation services.

# 4 Methodology

A field study was conducted to test the model discussed in the previous section. The research context for this study constitutes the consumer adoption of one type of personalisation service, namely, ringtones which consumers purchase from their operators or service providers. The unit of analysis in this study is the individual adopter of personalisation ringtone services. The population of interest is comprised of individuals who use ringtones to personalise their mobile usage experience. A questionnaire was administered to 1500 students taking undergraduate and postgraduate business-related degrees in lecture theatres in an Australian university prior to the commencement of lecture sessions. Respondents who were unable to complete surveys then were asked to return completed questionnaires to designated university professional staff within two weeks of receiving them. A total of 593 completed valid questionnaires were returned, producing a response rate of 39.53 per cent which is well above the average response rate for surveys of this nature.

Table 1 shows the demographics and mobile phone usage characteristics of the respondents. Respondents' average age is 19.4 years old. Most of the respondents (89%) have had a mobile phone for more than 4 years. The majority (83%) use their mobile services more than 5 times per week and 83% pay at least AUD$20 per month for mobile services.

**Table 1:** Respondents' profile

| Variable | | Percentage |
|---|---|---|
| Gender | Male | 47 |
| | Female | 53 |
| Ringtone purchased | Yes | 78 |
| | No | 22 |
| Mobile phone usage length | 1 or less year | 3 |
| | 2-3 years | 8 |
| | 3-4 years | 19 |
| | 4-5 years | 30 |
| | 6-7 years | 27 |
| | 8 years and above | 14 |
| Frequency of using mobile phone per week | 1 or less time | 5 |
| | 2-4 times | 12 |
| | 5-7 times | 16 |
| | 8 or above | 67 |
| Monthly mobile phone bill (in AUD$) | <$10 | 8 |
| | $11-20 | 9 |
| | $21-30 | 25 |
| | $31-40 | 17 |
| | $41-50 | 16 |
| | $51-100 | 17 |
| | $100 and above | 9 |

Although convenience sampling was employed, the respondents constitute a typical target of marketing campaigns of mobile operators and services providers. Additionally, our respondents' profile is consistent with that of avid users of selected personalisation services (Informa, 2005a, Informa, 2005b, Informa, 2006a, Mackay and Weidlich, 2007). Respondents were asked to address questions about factors that influence their adoption of personalisation mobile services (i.e. ringtones) as well as their intention to use these types of services.

# 5 Results

In this section we present our results by discussing measurement and construct reliability and hypotheses testing.

## 5.1 Measurement and construct reliability

All focal constructs were measured using multi–item scales based on past research in technology/innovation adoption. All items were placed on seven-point semantic differential Likert scale format and ranged from 1 (strongly disagree) to 7 (strongly agree). 7-point scales were preferred to 5- or 3-point scales in order to increase the sensitivity and precision of the constructs. The initial version of the questionnaire was tested in a pilot study with a sample of 16 respondents who were asked to comment on the wording of items, response formats, and questionnaire layout. Two out of 42 questions were dropped from the original questionnaire as a result.

Descriptive statistics including means, standard deviations as well as the construct reliabilities and variance extracted for all perceptual constructs are summarized in table 2. Factor analysis has been performed using the principle components method, and the result has been rotated using the Varimax approach. The rotated component matrix has then been reviewed, and the way in which the various questions load onto the

components investigated. This review confirms that in the main theoretical constructs described above are supported.

**Table 2:** Descriptive statistics and construct reliability

| Construct | Mean | S.D | A (Cronbach alpha) | Variance extracted |
|---|---|---|---|---|
| 1. BehaviouralControl | 4.34 | 1.33 | 0.65 | 0.67 |
| 2. PersonalInnovativeness | 4.21 | 1.25 | 0.65 | 0.72 |
| 3. Enjoyment | 4.28 | 1.50 | 0.92 | 0.80 |
| 4. Usefulness | 4.26 | 1.39 | 0.91 | 0.82 |
| 5. EaseofUse | 4.66 | 1.33 | 0.88 | 0.80 |
| 6. Social | 3.70 | 1.54 | 0.82 | 0.78 |
| 7. External | 3.56 | 1.50 | 0.68 | 0.81 |
| 8. Image | 3.53 | 1.39 | 0.80 | 0.68 |
| 9. Security | 3.83 | 1.27 | 0.87 | 0.75 |
| 10. Intention to adopt | 4.14 | 1.48 | 0.90 | 0.89 |

We identified constructs and items that had already been developed and tested in prior studies investigating the adoption of mobile services. Multi-item constructs were deliberately selected in order to enhance reliability and decrease possible measurement error. Slight wording modifications were made to each item of selected constructs for the questionnaire to fit with the ringtone adoption investigation context of the study. In adapting items, we aimed at making them simple and clear. Additionally, we avoided using jargon, ambiguous, leading and double-barrelled items. In order to avoid automatic-rhythm responses, some items were also reverse-coded.

Specifically, behavioural control, ease of use and external influence all have three items and were developed and tested by Hung, Ku, and Chang (2003). Personal innovativeness and usefulness have four items and were adopted from Yi et al. (2006). Enjoyment and security were adopted from Pikkarainen et al. (2004). There are four items measuring social influence, image, and the dependent variable – intention to adopt – which were based on those developed and tested by Teo and Pok (2003).

Both construct reliability and variance extracted scores should exceed 0.5 for constructs to be acceptable (Fornell and Larcker, 1981, Hair *et al.*, 2006). As shown in Table 2, the constructs used in this study exhibit good reliabilities with Cronbach's alpha values greater or equal to 0.65. Likewise variances extracted values for all constructs are above 0.65 showing acceptable convergent validity for all constructs.

## 5.2 Hypotheses testing

We conducted a Pearson correlation analysis. Pearson correlation was calculated for the constructs measured by interval scales. The simple correlations among all the constructs are shown in table 3.

**Table 3:** Correlation matrix

| Construct | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. BehaviouralControl | 1.00 | | | | | | | | | |
| 2. PersonalInnovativeness | 0.38** | 1.00 | | | | | | | | |
| 3. Enjoyment | 0.28** | 0.36** | 1.00 | | | | | | | |
| 4. Usefulness | 0.32** | 0.41** | 0.71** | 1.00 | | | | | | |
| 5. EaseofUse | 0.50** | 0.47** | 0.31** | 0.47** | 1.00 | | | | | |
| 6. Social | 0.15** | 0.15** | 0.43** | 0.42** | 0.14** | 1.00 | | | | |
| 7. External | 0.15** | 0.23** | 0.42** | 0.44** | 0.18** | 0.58** | 1.00 | | | |
| 8. Image | 0.07** | 0.20** | 0.42** | 0.42** | 0.17** | 0.55** | 0.59** | 1.00 | | |
| 9. Security | 0.26** | 0.24** | 0.28** | 0.32** | 0.36** | 0.24** | 0.32** | 0.44** | 1.00 | |
| 10. Intention to adopt | 0.24** | 0.31** | 0.79** | 0.75** | 0.32** | 0.44** | 0.44** | 0.45** | 0.32** | 1.00 |

**Correlation is significant at the 0.01 level (2-tailed).

The regression model was further tested for multicollinearity by examining the collinearity statistics, the variance inflation factor (VIF) and tolerance. As a rule of thumb, if the VIF of a variable exceeds 10, that variable is said to be highly collinear and will pose a problem to regression analysis (Hair *et al.*, 2006). Although several variables showed significant correlations, their tolerance values and VIF values are within the acceptable range, indicating that multicollinearity is not a likely threat to the parameter estimates in our study. To determine the extent to which these factors explain adoption of ringtones, multiple regression was performed (table 4). Multiple regression is deemed to be suitable for the purpose of this research because we are finding the linear combination set of predictors that provides the best point of estimates of the dependent variables. The magnitude of $R^2$ and the statistical significance of the overall model are indicative of the predictive accuracy.

**Table 4**: Summary of multiple regression results

| Construct | Dependant variable: attitude toward adopting ringtones | | | |
|---|---|---|---|---|
| | B | T | $R^2$ | F value |
| | | | .707 | 156.350*** |
| Behavioral Control (H4) | .026 | .973 | | |
| Personal innovation (H6) | .040 | 1.494* | | ` |
| Enjoyment (H3) | .493 | 14.923*** | | |
| Usefulness (H1) | .373 | 10.497*** | | |
| Ease of Use (H2) | .007 | .250 | | |
| Social influence (H7) | .027 | .898 | | |
| External influence (H8) | .024 | .799 | | |
| Image (H5) | .048 | 1.532* | | |
| Security (H9) | .049 | 1.857** | | |

***significant at the 0.01 level
** significant at the 0.05 level
* significant at the 0.1 level

As demonstrated in table 4, 5 of 9 hypotheses are significantly supported. However, there is insufficient evidence to support the remaining four hypotheses, including H2, H4, H7, and H8. For all of the hypotheses tested, no gender difference was found.

# 6 Discussion

This study found that the strongest predicators as to whether individuals might adopt personalisation type mobile services are enjoyment (t= 14.93) and usefulness (t=10.50). Both H1 and H3 are supported with the highest T value suggesting that these two predictors are the primary factors in predicting Australian young consumers' adoption of personalisation mobile services. That is, when choosing services for personalising their mobile experience, both the enjoyment and usefulness are considered to be very important determinants of adoption. This is consistent with prior research in the mobile domain related to both mobile information and entertainment services (Xu, 2007, Tan and Chou, 2008) and with the personalisation of appearance theory (Blom and Monk, 2003, Monk and Blom, 2007). Consistent with extant research in mobile marketing (Peng, 2006), an additional factor perceived to be important in determining personalisation services adoption attitudes is security as suggested in H9. The association between security and attitude is significant albeit somewhat weaker relative to first two relationships. Two other less significant predictors are personal innovativeness and image as suggested by H5 and H6 respectively. In table 4, supportive evidence suggests a relatively weak association of personal innovativeness and image with intention to adopt ringtone services. This is somewhat inconsistent with prior research where strong supporting evidence is provided for the same associations in the ambit of mobile internet services (Teo and Pok, 2003). This may suggest that personal innovativeness is more relevant in identifying various categories of mobile service adopters (Brancheau and Wetherbe, 1990, Yi *et al.*, 2006) than explaining adoption intentions.

There was insufficient evidence to support the hypothesised relationship between social influence and adoption intention of personalisation mobile services (H7) which counters findings in extant research (Teo and Pok, 2003). This may be explained by the fact that consumers may adopt personalisation services to satisfy their individualism needs rather than to conform to their social groups. The highly personalised nature of the mobile phone has meant that its form and use have become important aspects of the individuality of mobile phone users.

Also, the relationships between external influence and behavioural control with intention to adopt personalisation services are not supported empirically which is consistent with earlier findings in the mobile internet domain (Hung *et al.*, 2003). One possible explanation could be that mobile phones have now become so pervasive and relatively inexpensive to acquire by most consumers that the decision to adopt personalisation services, such as ringtones, might be perceived as a personal and trivial matter and entirely within consumers' own behavioural control. Further, evidence also suggests that adopters of mobile services attempt to assess the value of adoption by comparing perceived costs against the benefits or even available means (Crawford, 2002, Lu *et al.*, 2003, Pagani, 2004). In mobile phone contexts, customers can hold internal, previously encoded reference prices (e.g. prices of mobile phone calls and stationary internet access), compare these prices with the ones they are quoted and the comparison result forms the customers' perception of the fee (Kim *et al.*, 2007). Thus perceived value may be a construct that explains the adoption intention more than behavioural control.

It is worth noting that there is no significant empirical evidence to support the association between perceived ease of use and intention to adopt personalisation mobile services. This is inconsistent with results of most adoption studies both in the mobile services domain (Hung *et al.*, 2003, Tan and Chou, 2008) and in technology/innovation domains (Davis, 1989, Davis *et al.*, 1989a, Venkatesh, 1999, Venkatesh and Davis, 2000, Venkatesh *et al.*, 2003). One possible explanation for this outcome may be related to the fact that most respondents in the sample have used mobile phones for at least 4 years and the majority are already familiar with how services of this nature work. That is, consumers are likely to become easily familiar with how ringtones work which may suggest that perceived ease of use considerations might, therefore, be inconsequential in determining adoption intentions.

From a theoretical viewpoint, this research contributes by broadening our understanding of factors influencing new mobile services from the consumers' perspective; it is a direct response to growing calls for more in-depth consumer-oriented research in the mobile services domain (Carlsson *et al.*, 2005, Carlsson *et al.*, 2006, Bouwman *et al.*, 2007a). The findings of this study suggest that predictors of mobile service adoption may vary depending on the type of services, e.g. commercial services (e.g. mobile banking), entertainment services (e.g. games) versus personalisation services. Furthermore, explanations and predictions based on rational and intuitive models of consumer behaviour in the mobile space may be insufficient and inadequate for determining investments in novel mobile services development.

# 7 Conclusions

Developments in wireless technology have expanded opportunities for additional mobile services. The extent and nature of personalization of the mobile phone is now essential to individual identity, particularly among the youth (Srivastava, 2005). This paper examines factors relating to users' attitude towards personalisation type mobile services. It was found that enjoyment and usefulness are the most important factors in attracting users to adopt personalisation services. Security is a concern but is not as important as enjoyment and usefulness. Although consistently highlighted to be important in past research, perceived ease of use does not appear to influence adoption attitude for personalisation services.

These findings provide practical implications and insights for the development, design and marketing of personalisation type mobile services. For example, the functionality of novel personalisation type mobile services needs to be aligned with both intrinsic and extrinsic motivation issues, such as, perceived enjoyment and usefulness attributes if consumer attitudes toward these services are to be positively enhanced. Additionally, understanding of determinants adoption intentions of mobile services can provide insights to marketers in designing high-quality and effective promotional campaigns for their personalisation services offerings.

There are limitations in this study which may restrict the generalisability of the findings. For example, the respondents were recruited using convenience sampling. Moreover, the respondents were between 17 and 25 years old and might be constrained by monetary and cost issues more than other potential respondent that are holding full-time jobs and drawing steady incomes. However, although sampling was opportunistic, the

demographics of our respondents are consistent with the profile of typical users of personalisation services (Informa, 2005a, Informa, 2005b, Informa, 2006a, Netsize, 2009). This might suggest that generalisation of our findings, though limited, may not be unreasonable. Nevertheless, although we call for further research examining the adoption of other personalisation type mobile services in other contexts, with this study we have validated previously developed constructs for personalisation type mobile services which constitutes a contribution to existing body of knowledge.

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