Exploring Technical Knowledge, Perceived Risk and the Innovative Characteristics in the Adoption of Mobile Marketing

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Abstract

Understanding the adoption process of an innovation is very important for acceptance of the new idea. This paper explores the relationship between technical knowledge, perceived risk and the innovation characteristics for the adoption of mobile marketing. Data from 444 respondents collected through self-administered questionnaire were used to test the proposed model using SEM. Based on the results, technical knowledge was found to not influence perceived risk. However, perceived risk is significant to all innovation characteristics. A key finding in this research is that not all innovation characteristics (i.e. relative advantage and complexity) can be used to form a favourable or unfavourable attitude towards the innovation.

Keywords: Mobile marketing, perceived risk, technical knowledge, innovation characteristics, adoption process.

1. Introduction

The evolution of electronic commerce (e-commerce) also has brought with it a new marketing channel known as mobile marketing (m-marketing). According to Leppäniemi (2006, p.10), *"*mobile marketing is the use of the mobile medium as a means of marketing communications". Companies are constantly looking for ways and means to expand or maintain their market share. According to Pousttchi (2006), marketing experts consider the mobile device as an extremely promising marketing tool to overcome major challenges in getting time and attention from consumers. It also provides opportunities to target messages at customers in much better ways than the present mass media (Barwise & Strong, 2002). The importance of mobile phones to end user has certainly been recognised by marketers who view this as a communication channel with huge potential (Kavassalis et al., 2003; Norris, 2007; Nysveen, Pedersen, & Thorbjørnsen, 2005).

Although high mobile phone penetration rates do not necessarily mean high mobile marketing use, the potential of communicating marketing messages through mobile phones does exist. For example, in Malaysia, although the penetration rate of mobile phones in 2008 was 93.9 per cent (26,126,000 users) (MCMC, 2008), only 7 per cent of mobile phone subscribers registered for mobile banking services and 13.7 per cent accessed the Internet through their mobile phones (MCMC, 2007). According to Marriott (2007), based on a research by the Mobile Marketing Association (MMA) in December 2006, the overall consumer attitudes toward mobile marketing trended down with 21 per cent reporting consumers are highly or moderately interested in mobile marketing as compared to 25 per cent in 2005. The major contribution of this paper provides discussion for the innovation-diffusion theory (IDT) and acknowledges the innovative characteristics deemed important in diffusion research. The innovative characteristics in Rogers' (2003) Diffusion of Innovation (DoI) Theory have been used extensively to explain adoption intention and acceptance of mobile marketing in previous studies, but this paper looks at the adoption process from the perspective of technical knowledge, perceived risk and the innovative characteristics in forming favourable or unfavourable attitude towards mobile marketing in the decision stage.

2. Literature review

Statistically, the mobile marketing industry grew from US$4 billion to US$16 billion from 2003 to 2005, serving over 500 million users world-wide (Carroll, Barnes, Scornavacca, & and Fletcher, 2007). The downside of this high mobile phone penetration rate is accompanied by high unwanted text messaging or unsolicited Short Message Service (SMS) growing by 21.3 per cent per year in the European Union (_, 2008) alone.

In Malaysia, a total of 51.3 per cent of mobile phone users received unsolicited SMS with 6.4 per cent of users receiving more than 10 SMSes in a week, while 44.9 per cent receiving between one to ten per week in 2007 (MCMC, 2007). However, despite the increasing number of companies investing in mobile marketing campaigns, there is, as yet, little academic research on mobile marketing and the implications of using this channel for marketing purposes are not understood fully (H. H. Bauer, Reichardt, Barnes, & Neumann, 2005). Mobile spam (i.e. unsolicited SMS messages) raises privacy concern related to the utilisation of the personal and location data used to personalise mobile marketing messages (Leppäniemi et al., 2006). Consumers may be reluctant to trust the innovation as a marketing communication channel because they perceived risk regarding the safety of their personal data and privacy.

Privacy issues are particularly sensitive with respect to mobile marketing due to the intimate nature of mobile devices (Brown, 2006). Besides worries of intrusion into one's private space, mobile spam raises privacy concerns related to the utilisation of the personal and location data used to personalise mobile marketing messages (Leppäniemi et al., 2006). Banerjjee (2008) also reported that mobile phones are poised to develop relationship-marketing in consumers' lives, offering mass produced products and services on a customised level. However, studies that look at the use of mobile marketing tend to ignore the adoption process of mobile marketing. Researchers have investigated the adoption of innovation process in a variety of context for over four decades. One model used to explain adoption of technology was Rogers' (1983) innovation-decision process model. But researchers have tended to focus on some aspects of the full model (e.g. perceived innovation characteristics in the persuasion stage). The persuasion stage is based on the perceived characteristics of the innovator (i.e. relative advantage, compatibility, complexity, trialability and observability). Past research only concentrated on the innovation characteristics stage of the Rogers' modal (Nysveen et al., 2005; Wu & Wang, 2005) which may lead to the intention to adopt mobile marketing. However, to date the Rogers' (1983) full innovation-decision process model has not been used to understand the adoption process of mobile marketing. Adoption process is defined as "the mental process through which an individual passes from first learning about an innovation to final adoption" (Amstrong & Kotler, 2009, p.148).

3. Research model and hypotheses

The seminal model used to understand the adoption process is the innovation-decision process model (Rogers, 1983). The innovation-decision process model is a hierarchy of effects type model posited by Rogers (1983) to explain the stages that consumers go through when adopting an innovation (see Figure 1.0). *Knowledge* occurs when an individual is exposed to the innovation's existence and gains some understanding of how it functions. *Persuasion* occurs when an individual forms a favourable or unfavourable attitude towards the innovation. *Decision* occurs when an individual engages in the activities that lead to a choice to adopt or reject the innovation. *Implementation* occurs when an individual puts an innovation into use and *Confirmation* occurs when an individual seeks reinforcement of an innovation-decision already made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation.

However, there are some weaknesses in the Rogers (1983) innovation-decision process model, though. In particular, it does not include privacy, and security issues which may be crucial in the adoption process of mobile marketing contexts. Mobile marketing is well suited to enhancing time and place benefits in customers' service experiences. If customers can also be encouraged to co-create value, then the third dimension of marketing value – possession – could also be enhanced. However, the diffusion of mobile marketing innovations will be stymied unless concerns about privacy and security are assuaged. Hence, there is a need to conduct further research into the role of consumers' perceived risk in influencing the formation of favourable or unfavourable attitude toward the innovation. This paper will only look at the innovation-decision process model from the knowledge stage – perceived risk – persuasion stage and decision stage (see Figure 2.0).

3.1 Technical knowledge

Knowledge will be represented by existing technical knowledge the consumer has regarding mobile phones experience which determines his ability to understand the features and usage the innovation (mobile marketing services).

How-to knowledge consist of information necessary to use an innovation properly and Rogers (2003) pointed that adopter must understand what quantity of an innovation to secure and how to use it correctly because when an adequate knowledge of how-to knowledge is not obtained prior to the trial and adoption of an innovation, rejection and discontinuance are likely to result. Therefore, this paper will focus on how-to knowledge and will refer to it as *technical knowledge*. At this stage the relationship between technical knowledge and perceived risk will be assessed, therefore building the below hypothesis:

$H_{1a.}$ Technical Knowledge has a direct effect on perceived risk

3.2 Perceived risk

Perceived risk is important at explaining consumer's behaviour because "consumers are more often motivated to avoid mistakes than to maximise utility in purchasing" (Mitchell, 1999). Despite many consumers being concerned with transaction security, merchant information, online privacy, and personal data, these problems are often ignored by e-commerce providers (Wu & Wang, 2005). Thus, empirical investigation for privacy risk and personal data security is needed (Leppäniemi et al., 2006) to address consumers' perceived risk in technological adoption perspective.

$H_{2a.}$ Perceived Risk has a direct effect on Relative Advantage
$H_{2b.}$ Perceived Risk has a direct effect on Complexity
$H_{2c.}$ Perceived Risk has a direct effect on Compatibility
$H_{2d.}$ Perceived Risk has a direct effect on Trialability

3.3 Innovation characteristics

According to Teo (2003) one of the key elements in the entire process of innovation diffusion is the innovation's perceived characteristics embedded in the persuasion stage. There were five perceived innovation characteristics proposed by Rogers (1983), but Moore (1991), argued that the original construct of observability was defined in a complex manner by Rogers (1983, p.232) in which the results of an innovation are visible and communicable to others, and it also included the idea of the innovation being visible. Moore (1991) further explained that, "based on the definition of observability it was decided to split the construct and focus on each dimension independently, one dimension was named Results Demonstrability and the other was Visibility" (Moore & Benbasat, 1991, p.203). One of the difficulties concerning the dimension of observability is its obvious potential for confounding with other perceived attributes. "It is unclear whether observability *per se* is being assessed, or observability of cost, compatibility, effects, etc" (Tornatzky & Klein, 1982, p.38). The paper will not include "observability" because of the above arguments and will maintain the original four out of five perceived innovation characteristics proposed by Rogers (1983); Relative Advantage, Complexity, Compatibility and Trialability.

The paper therefore hypothesizes:

H_{3a}. Relative Advantage has a direct effect on intention decision
H_{3b}. Complexity has a direct effect on intention decision
H_{3c}. Compatibility has a direct effect on intention decision
H_{3d}. Trialability has a direct effect on intention decision

4. Research methods

The data were collected from the field using a questionnaire survey. The study is conducted in an International Campus, located in Labuan Federal Territory, Malaysia fulfilling the requirement of diffusion studies. According to Rogers (2003, p.35) "diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system". In this paper, the innovation that is being explored is mobile marketing and exposure of the services is being made through a 35 minutes power point presentation for all respondents participating within the International Campus. For this study, the approach to develop a questionnaire as recommended by Churchill Jr. (1979) were applied. The processes of developing better measurement were divided into eight main steps namely: specify domain of construct, generate sample of items, collect data, purify measure, assess reliability, assess validity, and develop norms. Researcher must be exact in delineating what is considered in the definition and what is excluded by consulting the literature when conceptualizing construct and what is not included in the domain. In this research, definition of each construct is given in Table 1.0.

4.1 Generate sample of items

To generate sample items for the questionnaire, five main articles were used to complement the present study namely Nysveen (2005) (Decision Intention), Wu (2005) (Perceived Risk), Karahanna (1999) and Moore and Benbasat (1991) (Relative Advantage, Compatibility, Complexity and Trialability). New item measures based on previous literature (Technical Knowledge and Perceived risk) were also incorporated in the research to fulfil the research requirements of the model. The questionnaire was later pre-tested using Malaysian post-graduate candidates throughout New Zealand, United Kingdom and Malaysia. Participants were asked to comment on the language used, translation and the relevance of the questions in the questionnaire apart from filling the questionnaire. Based on their feedback some changes were made on the translation and in relation to using simple instruction in each of the sub-headings to help respondents to easily understand the requirements of the questionnaire.

4.2 Pilot Testing

Following Churchill Jr's (1979) recommendation, to further test the questionnaire empirically, a pilot test was conducted within the targeted population (Labuan International Campus). A total of 87 respondents participated in the pilot testing and 61 questionnaires were returned but only 58 questionnaires were usable for the pilot testing. Based on the pilot testing several items were removed from the questionnaire to improve the reliability score. For early stages of basic research, Nunnally (1967) suggests reliabilities of .50 to .60 would be suffice and that increasing reliabilities beyond .80 is probably wasteful. The reliability for each construct ranging between Cronbach's Alpha value of .633 to .906 fulfilling the recommendation from Nunnally (1967) reliabilities of .50 to .60 would be suffice (refer to Table 2.0) for basic research.

4.3 Data Collection

A total of 785 questionnaires were distributed and 500 questionnaires were returned, but only 444 questionnaires were usable. For potential respondents who want to undergo the trial for mobile marketing, a token of RM 5.00 was given to each respondent via a class representative. A trial period of one-week was given to all potential adopters and completed questionnaire were collected after the trial period.

4.4 Statistical analysis

All data analysis was conducted using SPSS v.15 and AMOS 7. A descriptive analysis will be used to portray a general picture of the survey respondents. Two main type of statistical analysis used in this research were Factor Analysis Method and Structural Equation Modelling (SEM). There are two discrete classes of factor analysis: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) (Gorsuch, 1983). To explore data patterns, an Exploratory Factor Analysis (EFA) is used to reveal patterns among the inter-relationships of the items. Exploratory factor analysis (EFA) begins with no explicit model (Hoyle, 1995). In EFA researcher may not have any specific expectations regarding the number or the nature of underlying constructs or factors (Thompson, 2004). The major goal of an EFA is to extract the minimum number of factors needed to reproduce the variation present in a set of observed variables (Heck, 1998). According to Coughlin (2007) statistician advocates for a different extraction method for EFA other than Principle Component (PC) method and suggested Principle Axis Factoring (PAF) as the appropriate method of extraction using Exploratory Factor Analysis.

According to Thompson (2004, p.6) "confirmatory factor analysis requires researcher to have specific expectations regarding (a) the number of factors, (b) which variables reflect given factors, and (c) whether the factors are correlated". This means that CFA explicitly and directly tests the fit of factor models. Heck (1998) also mentioned that CFA begins with the researcher specifying the set of relationships in the model such as the number of common factors, the factors which the observed variables are to be associated, the relationship among unique factors and observe variables. The exercise of model specification is central in SEM and no analysis can take place until the researcher has specified a model of the relations among the variable to be analyzed (Hoyle, 1995). CFA requires a proposed theoretical model that the researcher must specify prior to actually testing it with the data (Heck, 1998). The most common model-fitting procedure is maximum likelihood estimation and if the data seriously lack multivariate normality, asymptotically distribution free estimation is recommended (Coughlin & Knight, 2007).

5. Results

Majority of the respondent were in the 18 – 23 age group (81.5%) and 66.7 percent (296 respondents) were female as compared to 33.3 percent (148 respondents) male respondents. 348 respondents (78.4%) indicated their monthly budget for mobile phone bills were between RM 50 – RM 100. A total of 185 respondents (41.7%) indicated they would be willing to accept mobile marketing messages in exchange of free mobile phone calls and the three highest ranked reasons for having a mobile phone were; Convenient Device, Keeping in Touch and Basic Needs. Majority of the respondent (71.6%) stated the average use of SMS/MMS per day were less than 50 and 431 respondents (97.1%) needs SMS/MMS features in their mobile phone. In terms of communication channels that influence respondents' opinion about mobile phone technology, 28.4 percent (126 respondents) indicated their friends as the main influence, and 23.9 percent respectively for influence coming from the Internet and Television.

5.1 Exploratory Factor Analysis (EFA)

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy generally indicates whether the variables can be grouped into a smaller set of underlying factors. High values (close to 1.0) generally indicate that a factor analysis may be useful for the data. If the value is less than .50, the results of the factor analysis probably will not be useful (Coughlin & Knight, 2007). For this paper the KMO measure of sampling adequacy was .889, indicating the data clearly support the use of factor analysis and suggest that the data may be grouped into a smaller set of underlying factors. Six major factors were identified representing 60.817 % of total variance explained.

5.2 Confirmatory Factor Analysis (CFA)

In CFA, Thompson (2004, p.6) stated "confirmatory factor analysis requires researcher to have specific expectations regarding (a) the number of factors, (b) which variables reflect given factors, and (c) whether the factors are correlated". This means that CFA explicitly and directly tests the fit of factor models. At this stage, the number of factors will be fixed as seven, and based on the pervious literature review, "Relative Advantage" and "Compatibility" will be correlated in the model. Seven factors were identified representing 67.243 % of total variance explained. The composite reliability evaluates the internal consistency of the measurement model. The Cronbach alpha measures included in the model ranged from 0.707 to 0.883 (see Table 3.0). All values were greater than the benchmark of .60 as recommended by Bagozzi (1988). This shows that all constructs had strong and adequate reliability and discriminate validity.

5.3 Structural Equation Modelling (SEM)

The structural equation modelling (SEM) is to consider the rational and significant relationship between technical knowledge, perceived risk and innovative characteristics in the innovation decision-process model. "The primary interest in structural equation modelling is the extent to which a hypothesized model "fits" or, in other words, adequately describes the sample data" (Byrne, 2001, p.75), which focus on the adequacy of (a) the parameter estimates and (b) the model as a whole. In the fit of individual parameters in the model, three aspects are important: (a) the feasibility of the parameter estimates, (b) the appropriateness of standard of errors, and (c) the statistical significant of the parameter estimates (Byrne, 2001). The test statistic for statistical significance of parameter estimates is the critical ratio (c.r), which represent the parameter estimate divided by its standard error.

5.4 Goodness-of Fit Statistics

The CFA model provided the above Goodness-of-fit indexes (Table 4.0). Although the RMSEA, GFI and AGFI is above the cut-off point, two indexes (CFI and TLI) were below the recommended criteria. At best this model may not fit with the data collected. However, some lessons may be learned from this model. Jöreskog (1993, p.297) stated, "every correlation between error terms must be justified and interpreted substantively" and Byrne (2001, p.134) further emphasize, "the decision to reparameterize a model on the basis of MI information must make sound substantive sense; error covariances are no exception to this edict." This would mean that it is not recommended to change a model only based on high correlation value proposed by the MI, leading to over fitting a model, but a justification of that relationship needs to be upheld. For this paper, the decision to not reparameterize the model was made because the purpose of this paper is to explore the relationship between technical knowledge, perceived risk, compatibility, complexity, trialability, relative advantage and decision intention in the context of mobile marketing.

6.0 Discussion

Technical knowledge do not have a significant relationship towards perceived risk (c.r. = .202) therefore do not supports the first hypothesis H_{1a}. This finding is inconsistent with Wu (2005, p.727) who implied that "consumers are more aware of the existence of potential risk because they use mobile commerce more and have better understanding of the mobile commerce context". The ability to understand and apply complex technical knowledge is needed to cope with a high degree of uncertainty about an innovation (Rogers, 2003). Perceived risk in this paper was based on the security and privacy issues from the consumers' perspective surrounding mobile marketing. Perceived risk have a positive significant relationship with relative advantage (regression weight = .85), complexity (regression weight = .65), compatibility (regression weight =.80) and trialability (regression weight =.68). These results supports hypothesis H_{2a}, H_{2b}, H_{2c} and H_{2d} (Refer to Table 5.0).

The findings were consistent with to Im (2007) who noted that users who perceived a higher risk about adopting the technology will be affected by how easy it can be used. Although, the risks of discouraging complexity of innovation are not presence when dealing with psychological measure, the mind can always and easily process this kind of information (Ulivieri, 2004) through trial of the innovation. Relative advantage and complexity did not generate significant effect towards decision intention (regression weight of .13 and .07 respectively) hence the results do not support H_{3a} and H_{3b}. However, compatibility and trialability indicated significant relationship towards decision intention (regression weight .42 and .22, respectively). The findings supports Rogers' (2003) perceived characteristics of innovation attributes where the above two constructs can be used to form a favourable or unfavourable attitude toward the innovation.

6.1 Conclusion and Recommendation

The paper has led to a discussion of the innovative characteristics in the innovation-decision process model to understand the adoption process of mobile marketing. The finding thus introduce a cautionary note, that although the seminal innovation-decision process model by Rogers (2003) can be used in general to understand adoption process of any innovation in general, the proposed model in this paper only focuses on a single innovation (mobile marketing) based on a single social society. This paper only looks at the adoption process from technical knowledge to the decision stage.

The present research was developed to explore m-marketing adoption process and the study only looks into technical knowledge (*how-to-knowledge*) and does not include the awareness-knowledge (awareness about the existence of the innovation) and principle knowledge (information dealing with the functioning principles underlying how an innovation works) which combined originally represent the knowledge stage in Rogers' (1983) Innovation Decision Process Model. Although users of mobile phones are aware of m-marketing through unsolicited messages received through their mobile phones and it is usually possible to adopt an innovation without principle–knowledge, but the danger of misusing a new idea is greater and discontinuance may result (Rogers, 2003). Future research may be conducted by using all three components of the knowledge stage to test the relationship between the stages in the Innovation Decision Process Model. Future research may also include mobile devices such as the tablets and mobile gadgets. Second, future research should also include principle-knowledge and awareness-knowledge in order to explore the 'knowledge stage' in an in-depth matter. Awareness about the innovation (awareness-knowledge) can be seen as a very important component of knowledge is the new mobile devices are examined in future research. Issues of trust and consumers' permission in mobile marketing should also be included for future research.

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Figure 1.0 Stages in the Innovation-Decision Process Model (Rogers, 1983, p.165)

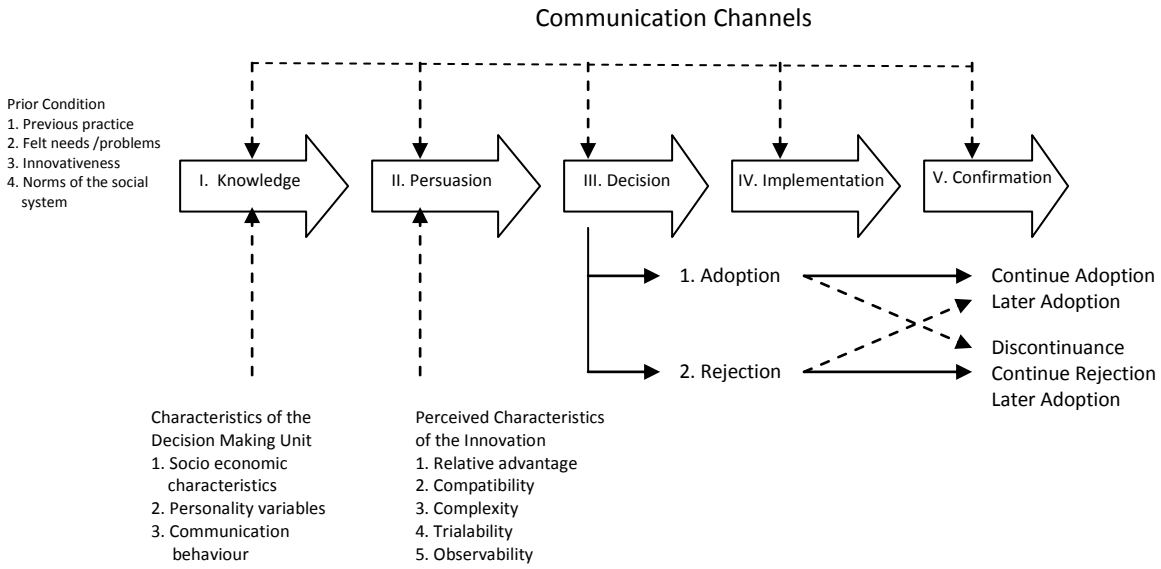

Figure 2.0 Theoretical Research Framework and Hypothesis Paths

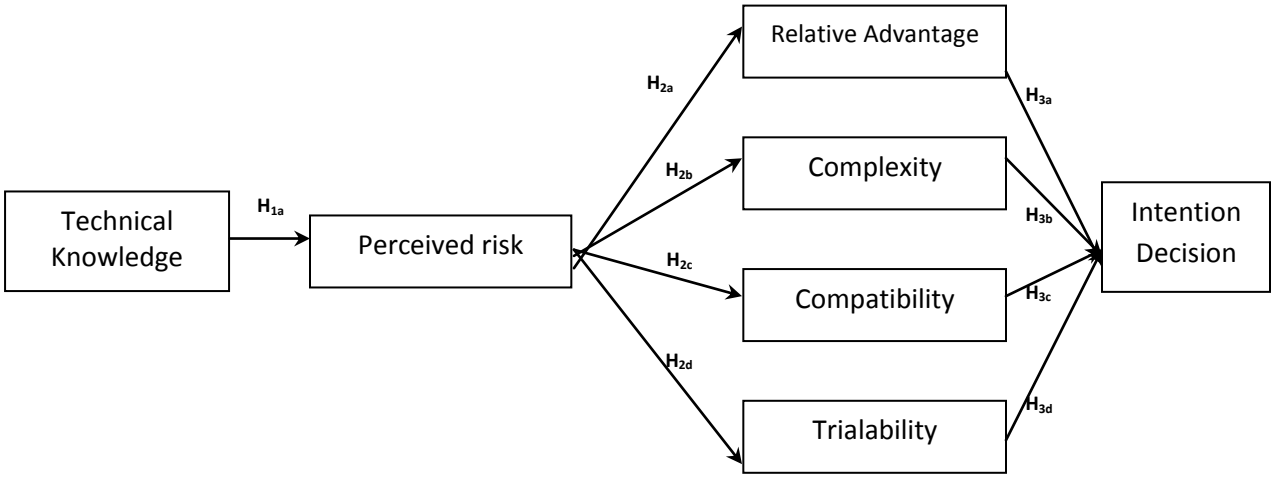

Table 1.0 Definition of Constructs

Variables	Definition of Construct	Adapted from
Adoption process	The mental process through which an individual passes from first learning about an innovation to final adoption	(Amstrong & Kotler, 2009, p.148).
Mobile marketing	**T**he use of the mobile medium as a means of marketing communications	(Leppäniemi et al., 2006).
Perceived risk	Consumers' subjective belief of suffering a loss in pursuit of a desired outcome. Risk in this context is related to subjective assessment of potential risk (i.e. security and privacy) rather than "real world" (objective) risk	(R. A. Bauer, 1960)
Technical knowledge	how-to knowledge consist of information necessary to use an innovation properly and Rogers	(Rogers, 2003, p.229)
Relative advantage	the degree to which an innovation is perceived as being better than the idea it supersedes	(Rogers, 2003, p.229).
Compatibility	the degree to which an innovation is perceived as consistent with the existing values, past experiences, and the needs of potential adopters	(Rogers, 2003, p.240).
Complexity	the degree to which an innovation is perceived as relatively difficult to understand and use	(Rogers, 2003, p.257).
Trialability	the degree to which an innovation may be experimented with on a limited basis	(Rogers, 2003, p.258).
Intention to Use (Decision Stage)	when an individual (or other decision –making unit) engages in activities that lead to a choice to adopt or reject an innovation	(Rogers, 2003, p.177).

Table 2.0 Reliability Analyses by Sections

Section	Cronbach's Alpha	N of Items	Source
A. Technical Knowledge	.686	5	New measurements
B. Risk	.654	3 (omit item RISK2, RISK5 and RISK6)	Wu (2005) (H. H. Bauer et al., 2005) New measurements
E. Innovativeness (Relative Advantage)	.906	3	Moore and Benbasat (1991)
E. Innovativeness (Compatibility)	.887	3	Moore and Benbasat (1991)
E. Innovativeness (Complexity)	.853	3	Moore and Benbasat (1991)
E. Innovativeness (Trialability)	.891	3	Moore and Benbasat (1991)
F. Decision	.733	5	Nysveen (2005)
G. Demographics			
		26 items	

Source: SPSS output

Table 3.0 Assessment of Construct Reliability

	ITEMS	*Standardized Factor Loadings >.50*
	Factor 1 - Decision Stage (Cronbach's alpha reliability = .817)	
DS1	I intend to accept mobile marketing messages ***occasionally*** from my current service provider in the next 6 months.	.526
DS2	I intend to accept marketing messages from my current service provider ***frequently*** in the next 6 months.	.557
DS3	I intend to use my mobile phone to get relevant marketing messages in the next 6 months.	.674
DS4	I intend to change my shopping habit based on the mobile marketing messages sent by the service providers.	.677
DS5	I intend to utilise relevant and personalised mobile marketing messages to gain information.	.724
	Factor 2 - Trialability (Cronbach's alpha reliability = .877)	
TRY1	Before deciding on whether or not to adopt mobile marketing services, I would be able to use it on a trial basis.	.736
TRY2	Before deciding on whether or not to adopt mobile marketing services, I would be able to test the suitability of the services.	.838
TRY3	I would be permitted to use mobile marketing services on a trial basis long enough to see what it can do.	.736
	Factor 3 - Complexity (Cronbach's alpha reliability = .877)	
CPLX1	Learning to use mobile marketing services would be easy for me.	.809
CPLX2	If I were to adopt mobile marketing services, it would be easy for me to adapt.	.822
CPLX3	If I were to adopt mobile marketing services, it would be easy due to my previous experience with mobile phone usage.	.663
	Factor 4 - Technical Knowledge (Cronbach's alpha reliability = .725)	
KS1	My knowledge of how use a mobile phone correctly	.598
KS2	My knowledge of the types and capabilities of a mobile phone.	.586
KS3	My knowledge of accepting, forwarding, deleting and storing of mobile marketing messages.	.542
KS4	My knowledge of my mobile phone usage pricing package.	.679
KS5	My knowledge of the user package offered by other service providers (e.g. MAXIS, Celcom and DiGi).	.517
	Factor 5 - Compatibility (Cronbach's alpha reliability = .883)	
COM1	If I were to adopt mobile marketing services, it would be compatible with my internet searching methods.	.673
COM2	If I were to adopt mobile marketing services, it would fit my product and services information gathering style.	.781
COM3	If I were to adopt mobile marketing services, it would fit well with the way I like to seek relevant product and services information.	.647
	Factor 6 - Relative Advantage (Cronbach's alpha reliability = .880)	
RA1	If I were to adopt mobile marketing services, it would enable me to get information more quickly.	.583
RA2	If I were to adopt mobile marketing services, the quality of my information would improve.	.752
RA3	If I were to adopt mobile marketing services, it would enhance my effectiveness on information gathering.	.756
	Factor 7 - Perceived Risk (Cronbach's alpha reliability = .707)	
RISK1	It is safe to accept and reply to mobile marketing messages via mobile phone	.702
RISK3	There is no more privacy risk involved in receiving marketing messages via mobile phone than there is when getting marketing messages via email or TV advertisement.	.584
RISK4	I do not consider mobile marketing to be a privacy risk way to receive marketing messages.	.640

Figure 3.0 Structural test statistics for intention to adopt mobile marketing

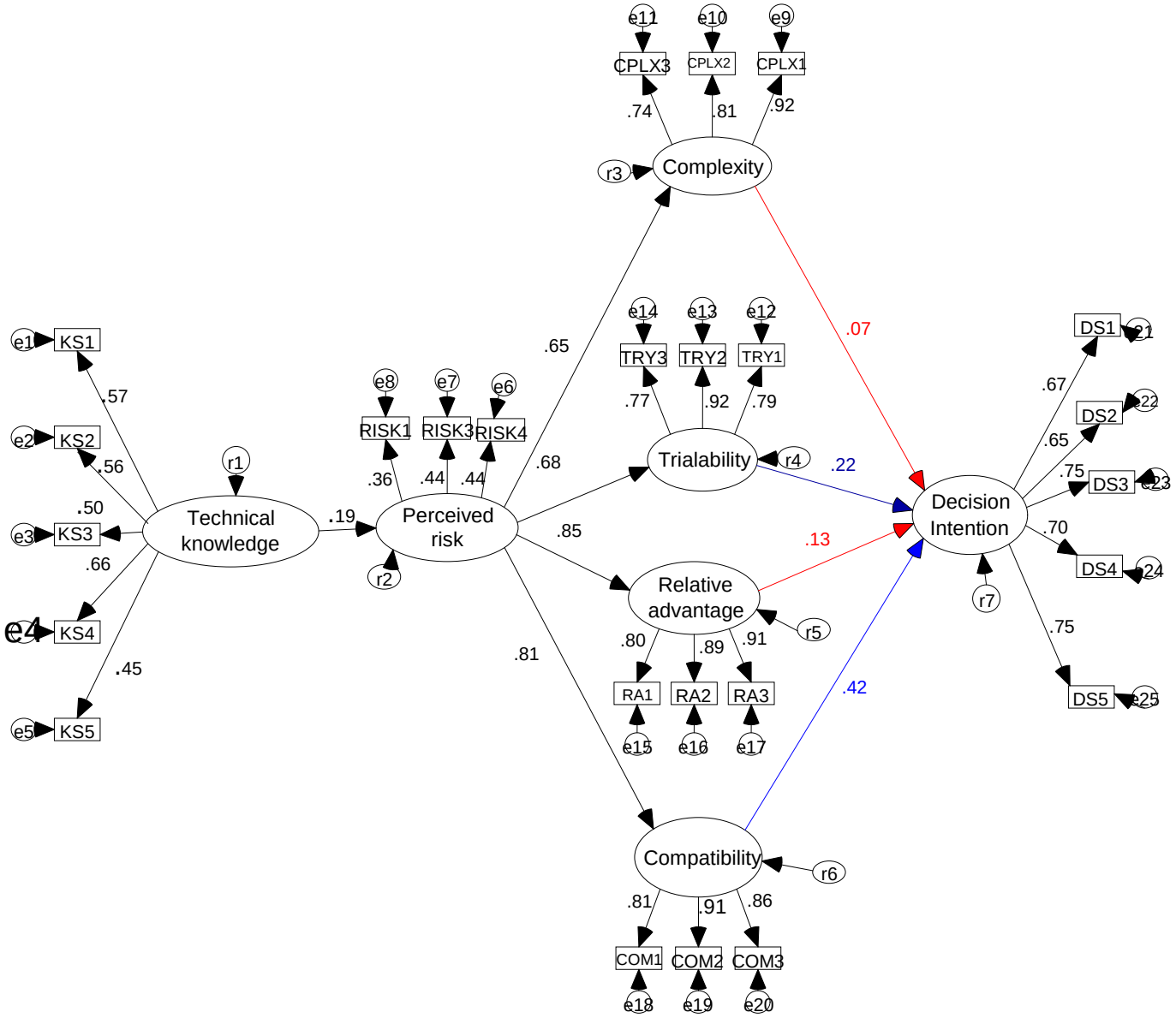

Table 4.0 Goodness-of-Fit Statistics

Statistic	Recommended criteria	Value
Normed chi-square (χ^2 / *df*)	<3	1.356
Goodness-of-fit index (GFI)	>.90	.935
Adjusted goodness-of-fit index (AGFI)	>.90	.920
Comparative Fit Index (CFI)	>.95	.879
Tucker –Lewis index (TLI)	>.95	.864
Root mean square of approximation (RMSEA)	<0.05	.028

Source: AMOS 7.0 output

Table 5.0 Summary of Research Findings

Hypothesis	**Dir**	**Critical ratio**	**Findings**
$H_{1a.}$ Technical Knowledge has a direct effect on perceived risk	+	.202	Not
$H_{2a.}$ Perceived Risk has a direct effect on Relative Advantage	+	6.282**	Supported
$H_{2b.}$ Perceived Risk has a direct effect on Complexity	+	*	Supported
$H_{2c.}$ Perceived Risk has a direct effect on Compatibility	+	5.675**	Supported
$H_{2d.}$ Perceived Risk has a direct effect on Trialability	+	*	Supported
H_{3a}. Relative Advantage has a direct effect on intention decision	+	6.066**	Supported
H_{3b}. Complexity has a direct effect on intention decision		*	Not
H_{3c}. Compatibility has a direct effect on intention decision		.073	Supported
H_{3d}. Trialability has a direct effect on intention decision		.243	Supported
		11.446**	Supported
		*	
		9.711**	
		*	

The results of structural equation modelling are standardized maximum likelihood path coefficient for the hypothesized model. ***Significant at the p<0.01 level