


Hedonic and Utilitarian Propositions of Mobile Data Services in Sri Lanka: Development of a Consumer Technology Adoption Model

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ABSTRACT

This research article investigates the adoption of mobile data services with utilitarian and hedonic value propositions in Sri Lanka. This study attempts to develop a conceptual model and related hypotheses and its behavior within the Sri Lankan user context. The findings related to the perceived usefulness has reported that a strong relationship between the attitudes and adoption intention even in the context of products with predominantly hedonic values propositions. Further, it was noted that the utilitarian motives of usefulness, ease of use, and comparative advantage were more strongly present than hedonic motives even in mobile ringtone users. The utilitarian motives had strong correlations with the attitude towards attitudes and adoption intention.

KEYWORDS

Hedonic, Mobile Data service, Technology Adoption, Utilitarian

1. INTRODUCTION

Mobile technology has taken rapid strides in its diffusion across the global. These quantum leaps in penetration are not only global phenomenon but one also experienced in the local context of Sri Lanka. In 1992 Sri Lanka had 2,644 mobile phone subscribers. Today 27 years later the number stands at 24.43 million (Telecommunication Regulatory Commission of Sri Lanka, 2018). While mobile penetration rates are impressive, with 50%-60% average annual growth rates experienced in Sri Lanka, the strategic prospects of the mobile telecommunication industry are up for discussion. Across the globe the average revenue per unit (ARPU) are significantly depreciating (Mälarstig, 2007). These issues are compounded with increase competitive structures and global market competition. The industry seized on an emerged opportunity in the early 1990 with a new application called Short Messaging Service (SMS). The mobile phone and its use were viewed in a different light than a simple communication device, rather the gateway to a plethora of mobile data services. The industry spent the next decade investing in high bandwidth, high capacity and new mobile data services product lines, awaiting the next killer application (Carlsson, 2005). SMS still remains the most popular

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mobile data service in Sri Lanka due to economic feasibility of the community. It is expected that a behavioral model can be produced which can identify scientifically the relationships between the drivers of consumer attitude to adopt and intention to adopt mobile data services. While there are models researched and developed in countries like Finland (Carlsson, 2006), Korea (Kim, 2018) and USA, development of an indigenous technology adoption model is essential in the context of Sri Lanka because of the different socio-economic cultural paradigms. Further due to the regional similarities in South East Asia, the inter-portability of this model may help diffusion of mobile data services in similar regional countries.

Information technology adoption including empirically tested models such as the Technology Adoption Model (Davis, 1989) and diffusion of innovation models (Rogers 2005). Further as this model involves operations within the consumer context, it is proposed that research into better understanding the variables that influence the attitude towards adoption and intention to adopt be researched. Further, research done on developing a unified theory for technology adoption (Kulviwat, 2007; Kulviwat, 2008;) provides an important starting point. Therefore, it was decided that the study would focus on the logical motives and hedonic motives of 'Fun and entertainment'. While motives guide the decision, what nature of value propositions influence these motives. The second focus of the research would be on value propositions and their interrelation to technology adoption.

It was decided that the research would study two mobile data services products. One which has primarily a cognitive utilitarian value proposition and another that has primarily a hedonic value proposition. This study would then enable a better understanding of the behavior of the model in a different context.

The mobile data services adoption in Sri Lanka remains at a very low rate in comparison to the penetration of mobile phone technology which is estimated to be at 50% (Telecommunication Regulatory Commission of Sri Lanka, 2018). Research indicates that the future revenues of mobile telecommunication industry will depend on the provision of mobile data services rather than on voice calls (Carlsson, 2005). The dramatic drops in average revenue per user on voice calls across the globe are an indication of future trends. Further in most matured telecommunication markets, where mobile penetration has exceeded 60% reach of the general population, the industry was compelled to look for more viable sources of revenue other than voice and new subscriber connection fees (Mälärstig, 2007). While the strategic response of the mobile industry was to invest in expensive 3G technology, the global adoption rates of mobile services that use this platform remains very low. To proposition an analytical model that identifies the key attitudinal influences involved in the adoption of selected Mobile Data Services in the Sri Lankan market context. This model could be used by the telecommunication industry and mobile data services (MDS) application vendors to identify key consumer relationship variables that influence the adoption and diffusion of their products and services and behavior of existing relationships between cognitive utilitarian motives, hedonic motives, social influences and their impact on the consumer's attitude and intention to adopt key mobile data services and short message services (SMS's) in Sri Lanka.

LITERATURE REVIEW

Technology Acceptance Models

Technology acceptance models explain the acceptance and use of Information technology (IT) and other related technology in the context of organizational level and individual level. These models are used to explain how users come to use or accept the specific technology or system. At the individual level, most prominent models used to explain the intention were the Theory of Reasoned Action and Theory of Planned Behavior. In explaining the technology acceptance, both technological attributes and contextual factors have an important role to play. Davis (1989) was the first scholar who put forward the concept of technology acceptance to explain the use behavior towards a technology or system. The

result of the study was the Technology Acceptance Model (TAM). TAM is a useful model to identify the acceptance behavior of technology and information-based systems and it is widely used by the researchers to understand the information system adoption. Perceived usefulness and perceived ease of use are the two belief variables in TAM which is used to understand the user acceptance of new information technology. According to Davis (1989), perceived usefulness is “the degree to which a person believes that using a particular system would enhance his or her job performance” and perceived ease of use is “the degree to which a person believes that using a particular system would be free of effort”. Even though the TAM has dimensions fairly same as TPB, it “decomposes” mainly three dimensions into its belief structure in the context of technology adoption as attitude, subjective norm and behavioral control (Venkatesh, Morris, Davis, & Davis, 2003).

With the availability and application of different kind of theories to explain the technology adoption, Venkatesh (2003) argued that the researchers are in ‘pick and choose’ constructs for their researches and thus, there is a need for a unified model that includes dimensions from other technology acceptance models. Thus, they have developed the unified theory of acceptance and use of technology (UTAUT) based on eight theories. They are theory of reasoned action, the technology acceptance model, motivational model, the theory of planned behavior, a model combining the technology acceptance model and the theory of planned behavior, the model of PC utilization, the innovation diffusion theory and social cognitive theory (Venkatesh, 2003). As mentioned above, UTAUT based on eight prominent theories which were widely used for explaining technology acceptance. A questionnaire developed from adapted items from all those eight models were used in the study. Seven-point scale was used in the measurement scale and longitudinal data collection schedule was used to avoid limitations of prior studies. It was a six-month study of four organizations. By investigating all the dimensions of each of these models, Venkatesh (2003) have theorized four determinants which play a significant role in user acceptance and usage behavior namely, performance expectancy, effort expectancy, social influence and facilitating conditions. Thus, it covers both technological attributes and contextual factors which is essential to explain the technology acceptance. The original research of Venkatesh (2003) shows that the model can explain 70% of the variance in explaining users’ intention.

Since the introduction of the UTAUT model, it has been employed widely in technology adoption and diffusion research as a theoretical base (Williams, 2015). Williams (2015) have categorized the areas which UATUT was used in previous researches such as communication systems, general purpose systems, office systems and specialized business systems. The UTAUT model has been used for studying individual technology acceptance and use across variety of settings in different user types. For instance, different user types (consumers, employees and citizens), industry sectors (manufacturing/service, public/private), different types of technologies (Internet, agile IS, digital learning contexts, mobile banking, e-governance systems), different types of tasks (idea generation and decision making in technology design, filing of income tax, medical diagnosis), technology use at different times (its adoption, initial use, post- adoptive use) (Venkatech, Thong, & Xu, 2013). The reason behind the wide usage of the model includes its simplicity, parsimony and robustness (Venkatech, 2013).

Moreover, Samaradiwakara, and Gunawardena (2014) have highlighted few reasons for the appropriateness of UTAUT model among other technology acceptance models to explain the intention to accept a particular technology. Firstly, the explanatory power of the UTAUT model is higher among the other technology acceptance models i.e. 0.69 which is closer to 70%. Secondly UTAUT model had developed by Venkatesh (2003) with the base of eight specific models that have been used by wide range of studies to explain technology acceptance behavior together with different explanatory variables. Thirdly, in constructing the UTAUT model Venkatesh (2003) have done the comparison of selected models by using a longitudinal data from four organizations from four different industries namely, entertainment, telecom services, banking and public administration. Further, these data were cross validated with two additional organizations from financial services and retail electronics. With

this base of reasons, they have argued that UTAUT model as solid model to understand the users' acceptance or rejection of the technology in a specific perspective.

Perceived Usefulness

Davis (1989) in defining perceived usefulness states that it is the degree to which using an information system is thought to improve the activities they are performing. In the context of TAM, perceived usefulness is considered to be the most powerful predictor of behavioral intent (Taylor & Todd, 1995). In its original application within organizational context, this variable represented the individual belief that its adoption and usage would result in an increased performance of the job (Davis, 1989). In fact, Davis (1989) suggests that the variable of perceived usefulness is more important than that of perceived ease of use, this contention was supported by Hu (1999). However, as MDS represents the consumer context, the validity of the variable may be debatable. Bruner and Kumar (2005) in their research on the applicability of TAM in consumer context found that usefulness could be considered an important variable even in consumer context.

Perceived Ease of Use

Jenson (2006) in his critique of the MDS industry points to “default thinking” in designing and implementing products and services. In his example of the MMS, Jenson points to the failure of MDS industry to comprehend the value proposition and complexity of using MMS, and instead proposing it as a natural extension to SMS. This suggestion of industry pushing forth technology innovations and line extensions without considering their practical usability and specifically ease of use is propositioned by him for the failure of many MDS. Carlsson (2006) supports this proposition in the Finnish MDS market by point to mismatches of expectations between industry experts and consumers. The survey identifies that while the industry has been introducing new and more complex applications for MDS, consumers in general have been slow in their adoption and continued usage of MDS. Davis (1989) defines perceived ease of use as “the degree to which a person believes that using a particular system would be free of effort”. This variable points to expectation of effort involved in using product or service. Kulviwat (2007) while accepting the importance of perceived ease of use as a determinant in influencing attitude, considers the influence as indirect.

Relative Advantage

Rogers (2005) included relative advantage as a part of the product variables that influence the diffusion of innovation. In analyzing the characteristics of innovation to include relative advantage, compatibility, complexity, tradability and observability, Rogers (2005) note that an innovation being “better” than its existing alternatives is essential. The decision by Kulviwat (2007) to incorporate relative advantage as a variable in their research model is interesting because of very little new research literature on the empirical testing of this variable. Plouffe (2001) in testing the Perceived Components of Innovation model which Moore and Benbasat (1991) proposed, states that relative advantage is the most important predictor of adoption intention.

Pleasure

While there is a wide body of research that acknowledges hedonic motives (Bina, 2007; Carlsson, 2005; Childers, 2001; Heijden 2004; Heinonen & Pura, 2006; Hong, 2006; Kim, 2009) they do not attempt to proceed beyond motives of fun, entertainment. The research proposition of Kulviwat (2007) is unique in that they attempt to develop a deeper analytical model towards hedonic motives by incorporating Mehrabian and Russell (1974) empirically tested Pleasure-Arousal-Dominance scales. Lee (2003) describes the pleasure emotion as “the extent to which a person feels good.” They note research which indicates that the emotion of pleasure, in combination with arousal and dominance, has been identified as a stimulus in increasing purchasing behavior of customers. The research conducted by Lee (2003) confirmed the validity of pleasure in the context of online shopping. Wu

(2008) in their research into the influence of pleasure and arousal in the context of online shopping note the validity of these measures in predicting consumer buying behavior.

Arousal

Arousal formulates the second bipolar variable in assessing hedonic motives as proposed by Mehrabian and Russell (1974). This bipolar nature is represented within the continuum of feeling of being aroused to that of un-aroused. Kulviwat (2007) notes that the state of arousal is a result of a reaction of an individual to presented stimuli, influenced primarily by the emotion of excitement. Wu (2008) has identified and incorporated arousal as an essential element in combination with pleasure to influence use buying behavior in the online shopping and website designing context. These findings were confirmed in an earlier research into stimulating consumer buying behavior in internet shopping malls undertaken by Lee (2003). While this research identifies the variable of arousal and its influence and interplay in the consumer buying decision, a more unique approach to appreciate arousal was proposed by Wirtz (2000). They introduce the concept of target level arousal as a moderating variable in the satisfaction of consumers. They proposition that the satisfaction felt by the consumer is based on their expectation of a given situation or environment.

Dominance

This bipolar continuum extends from emotional state of Dominance in which the individual feels greater control over the innovation to Submissiveness. During the emotional state of Submissiveness, the range of emotion experienced by the individual include those of anger, fear, frustration, confusion (Russell & Mehrabian, 1977). Kulviwat (2007) when incorporating dominance as part of the Consumer Acceptance of Technology model noted that there has been significant debate among researchers on the validity of this variable. This issue of validity was once again raised when dominance was rejected based on it weak influence on attitude towards adoption.

Social Influences

In defining the social factor “social factors try to capture the congruency between social norms and individual beliefs and how the human part of an individual’s environment affects one in performing a specific behavior”. Venkatesh and Davis (2000) have incorporated ‘subjective norms’ as an extension to the Technology Adoption Model, in recognition of influence from the cultural and norms. The lead researchers of Technology Adoption Model also made further research on the moderating effects of public and private consumption and adoption of technology. The importance of social influences has also been highlighted in Rogers (2005) Diffusion of innovation theory. Here social systems variable is a key variable that influences the inception stage, identified as Knowledge stage, of the adoption process. Among the sub-variables that have been identified by the researcher are social systems norms, tolerance of deviancy, communication integration.

Attitude and Intention

The relationship between attitude and intension information systems research was established as a result of the work done by Davis (1989); Davis (1989) in the technology adoption model based primarily on the findings of theory of reasoned action. Kim (2009) defines attitude in terms of Information Systems as “a psychological tendency expressed by evaluating a particular entity in terms of the degree of positivizes about IS”. Kulviwat (2007) in analyzing the attitude toward the act in the context of Technology Adoption Model, identifies the cognitive dimension of the variable by stating that this “refers to the evaluative judgment of adopting a piece of technology”. Therefore, attitude in the context of its role in influencing the intension of consumers could be viewed as decision or ‘judgment’. However, Cohen and Areni (1991) (as cited by Kulviwat, (2007)) also point to the fact that like all human emotions, instead of being completely cognitive, hedonics also play a role in this

judgment. This interplay between cognition and hedonics has also been the basis of the subsequent proposition of Consumer Acceptance of Technology model by Kulviwat, (2007).

Cognitive Utilitarian Value Proposition for MDS and SMS

This study intends to study the behavior and influence of utilitarian and hedonic motives, social influences on selected mobile data services with utilitarian and hedonic value propositions. The mobile data service selected to represent utilitarian value proposition is the popular Short Message Service. This service is known as the “killer application” which was responsible for the identification of the mobile data services industry and subsequent investments into 3G technology (Carlsson, 2005; Kunin, 2005). Pedersen (2002) in their research into mobile data services classified SMS as having predominantly utilitarian value propositions. This was primarily due to the recognition that SMS was used to achieve a specific purpose and the intended value derived from using the product is task oriented. This classification of SMS within the value propositions of utility has been confirmed by researchers such as (Carlsson, 2005). It was therefore decided to use SMS as the basis for testing the behavioral model on utilitarian mobile data services.

Hedonic Value Proposition in Mobile Ringtone

Carlsson, (2005) in their classification of mobile data services identified that mobile ringtones are of the entertainment category. Further using the classifications matrix used by Pedersen, (2002) to categorized data services, mobile ringtones can be considered to fall within the category of “Entertainment/ Transaction” the transaction classification is relevant to mobile ringtone as they are used based on fee. Further the hedonic motives of mobile ringtones were accepted by Heinonen and Pura (2006). However, in Verkasalo (2006)’s techno-centric mobile data service classification mobile ringtone was not recognized. However, it was decided to use this product as the basis of assessing hedonic value proposition because users adopt this product primarily due to its entertainment value.

These motivational influences were selected primarily based on the core propositions of the Consumer Acceptance of Technology (Kulviwat, 2007) which was based on the Technology Adoption Model (Davis, 1989) and Diffusion of innovation (Rogers, 2005). The variables of Pleasure, Arousal and Dominance were selected based on the Consumer Acceptance of Technology model. The second element of the research is the study of the behavior of the selected variables in the context of short message services (SMS) which has an established utilitarian value proposition (Pedersen, 2002; Carlsson, 2006) and Mobile Ringtones (Carlsson, 2005; Carlsson, 2005; Pedersen, 2002) which has an established hedonic utilitarian value proposition.

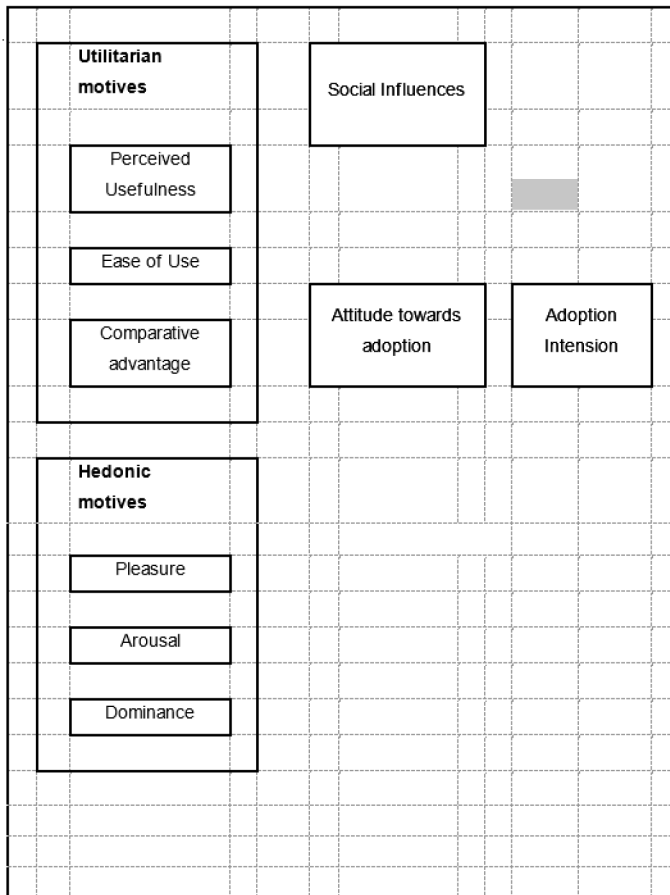
RESEARCH FRAMEWORK AND HYPOTHESES

There are many designs of the conceptual framework that researchers have designed and utilized in their studies. However, this study is based on literature based conceptual framework namely a utilitarian and hedonic motive towards the adoption intention on mobile data center (Figure 1).

HYPOTHESES

Hypotheses are formed in perceived usefulness, ease of use, influence of relative advantage, social influences, pleasure and dominance in the context of attitude towards adoption of utilitarian and Hedonic Mobile Data Services in Sri Lanka. The hypothesis testing was done using Pearson correlation and hypothesis were accepted or rejected based on 95% confidence level.

Figure 1. Research framework



METHODOLOGY

Determining the Sample and Sample Size

The study is based on the total population of Census and Statistics Department in Sri Lanka. Total population on 2018 was 20 million. Mobile usages are more than the population due to multiple mobile phone used by the users. Out of which the effective population (between the ages of 18-64) has been identified as 13,863,950. Saunders (2007) further states that a minimum sample of 384 is needed with a margin of 5% error or in other words with a confidence level of 95% for a population above 10 million. Hence, looking at an estimated response rate between 40 – 45%, approximately 1100 questionnaires were distributed among the different provinces of Sri Lanka.

In the provinces, a total of 29 coordinators were appointed and trained to assist the questionnaire respondents to coordinates and present clarifications. The questionnaire was distributed among the volunteers who attended a training workshop conducted by the researcher. Each volunteer was given five questionnaires to fill with their family and specific instructions not to distribute the responses among office colleagues. Further it was instructed to the volunteers that any person between the age range of 18-65 could participate in filling the responses, irrespective of their ownership of mobile phones. The questionnaire was designed to enable even participant who did not have mobiles to respond.

Table 1. Questionnaire distribution

Province	No. Distributed	Number of Trained Provincial Coordinators	Actual Responses Received by the Deadline and Used for the Research	Actual Responses Received After the Deadline and Not Used for the Research
Western	350	7	230	50
Southern	100	3	25	15
Central	250	7	160	25
North Western	100	3	40	15
North Central	100	3		25
Sabaragamuwa	100	3		20
Uva	100	3		20
	1100	29	455	170

The questions to measure perceived usefulness were developed on a five point Likert scale with points between ‘Strongly Agree’, ‘agree’, ‘no comment’, ‘disagree’, ‘strongly disagree’. Coding of the responses were done from left to right starting with 5 marks for ‘Strongly agree’ and 1 mark for ‘Strongly disagree’. 3 marks were awarded for the response ‘no comment’.

Mobile Data Services Awareness

Table 2 indicates that majority of the respondents are aware of the availability of mobile data services. This high awareness level may be attributed to the high general literacy rate in Sri Lanka estimated to be 96%. Out of the selected mobile data services surveyed knowledge of SMS was the highest at 96.6%. While awareness of Book movie tickets through mobile (55%), mobile baking (77%) and MMS (77) were low in comparison. These mobile data services are considered technical and require more complex knowledge. Jenson (2006) commenting on the complexity and stages involved in using MMS identifies that unlike SMS, using this technology is difficult and there is a high degree of complexity.

HYPOTHESIS TESTING

The hypothesis testing was done using Pearson correlation and hypothesis were accepted or rejected based on 95% confidence level. The correlation matrix provides an overview of the nature of correlations between the tested variables. This information is provided in Table 3 on Utilitarian model testing using SMS and hedonic model testing using Mobile Ringtone.

Correlation Matrix for hedonic motives in attitude towards adoption (Mobile Ring tones) are shown in Table 4.

Perceived Usefulness

The mean value of the responses was measured at 3.4 with a standard deviation of 1.28. This response mean indicates that the majority of respondents agreed with the variables assigned to measure perceived usefulness in the context of SMS usage. The internal consistency and reliability of the variable were tested using Cronbach’s alpha, which was measured at 0.919 indicating a very good fit as noted by Hair (1998) (as cited by Kulviwat (2007)). The two tailed Pearson Correlation test between the variable and Attitude towards adoption indicated a correlation of 0.785 with p value less than 0.05. This indicated that there is significant correlation between the two variables at 95%

Table 2. Mobile data services awareness

	Mobile Data Service	Percentage (%)		
		Aware	Not Aware	No Comment
1	Small Message Service (SMS)	96.6		3.4
2	Multimedia message (MMS)	77	13.2	9.8
3	Local language messaging	86.3	4.4	9.3
4	Mobile E-mail	84.4	5.9	9.8
5	Ringtones	89.2	1	9.8
6	Download Icons, Logos and wallpapers	82.2	7.1	10.8
7	Mobile Games	88.3	2.4	9.3
8	Listen to music/radio	83.9	2.9	13.2
9	Ask/ Send credit	76.3	11.5	12.2
10	Book movie tickets through mobile	55.3	33	11.7
11	Mobile Banking	77.3	11.7	11
12	Mobile internet	81.9	7.1	11

Table 3. Correlation Matrix for SMS Correlation Matrix for Utilitarian motives in attitude towards adoption (SMS)

Construct	PU	EOU	RA	SI	PL	AR	DO	ATA	AI
Perceived Usefulness (PU)	1								
Perceived Ease of Use (EOU)	0.81*	1							
Relative Advantage (RA)	0.82*	0.83*	1						
Social Influences (SI)	0.40	0.45	0.33	1					
Pleasure (PL)	0.41	0.37	0.33	0.27	1				
Arousal (AR)	0.35	0.30	0.28	0.21	0.68*	1			
Dominance (DO)	0.25	0.13	0.17	0.15	0.30	0.34	1		
Attitude toward adoption (ATA)	0.79*	0.74*	0.71*	0.41	0.52*	0.53*	0.30	1	
Adoption Intension (AI)	0.45	0.49*	0.41	0.17	0.14	0.21	0.57*	0.38	1

*significant at 0.05 level

confidence level. Therefore, the Null hypothesis was rejected and alternative hypothesis of strong influence of perceived usefulness in the context of attitude towards adoption of utilitarian Mobile Data Services in Sri Lanka was accepted.

Perceived Ease of Use

The mean value of the responses was measured at 3.5 with a standard deviation of 1.3. This mean value indicates that the majority of respondents agreed with the variables assigned to measure perceived ease of use in the context of SMS service usage. The internal consistency and reliability of the variable were tested using Cronbach's alpha, which was measured at 0.96 indicating a very good fit. The two tailed Pearson Correlation test between the variable and Attitude towards adoption indicated a correlation of 0.739 with p value less than 0.05. This indicated that there is significant correlation

Table 4. Correlation Matrix for hedonic motives

Construct	PU	EOU	RA	SI	PL	AR	DO	ATA	AI
Perceived Usefulness (PU)	1.00								
Perceived Ease of Use (EOU)	0.96	1.00							
Relative Advantage (RA)	0.94	0.97	1.00						
Social Influences (SI)	0.96	0.98	0.97	1.00					
Pleasure (PL)	0.90	0.92	0.94	0.92	1.00				
Arousal (AR)	0.78	0.74	0.75	0.79	0.72	1.00			
Dominance (DO)	0.51	0.51	0.51	0.51	0.48	0.49	1.00		
Attitude toward adoption (ATA)	0.92	0.93	0.97	0.92	0.94	0.74	0.54	1.00	
Adoption Intension (AI)	0.69	0.71	0.72	0.72	0.68	0.59	0.42	0.67	1.00

*significant at 0.05 level

between the two variables at 95% confidence level. Therefore, the Null hypothesis was rejected and alternative hypothesis of strong influence of perceived ease of use in the context of attitude towards adoption of utilitarian Mobile Data Services in Sri Lanka was accepted.

Comparative Advantage

The mean value of the responses was measured at 2.9 with a standard deviation of 1.1. This response indicates that the majority of respondents did not agree with the proposition. The internal consistency and reliability of the variables were tested using Cronbach's alpha which was measured at 0.85 indicating a very good fit. The two tailed Pearson Correlation test between the variable and Attitude towards adoption indicated a correlation of 0.711 with p value less than 0.05. This indicated that there is significant correlation between the two variables at 95% confidence level. Therefore, the Null hypothesis was rejected and alternative hypothesis of strong influence of relative advantage in the context of attitude towards adoption of utilitarian Mobile Data Services in Sri Lanka was accepted.

Social Influences

The mean value of the responses was measured at 2.39 with a standard deviation of 1.1. This response indicates that the majority of respondents did not agree with the proposition. This notion is confirmed as 65% of the respondents disagreed with the influence of social factors as a reason for using SMS. The internal consistency and reliability of the variables were tested using Cronbach's alpha which was measured at 0.836 indicating a very good fit. The two tailed Pearson Correlation test between the variable and Attitude towards adoption indicated a correlation of 0.407 with p value less than 0.05. This indicated that there is no significant correlation between the two variables at 95% confidence level. Therefore, the Null hypothesis was accepted. The result is weak influence of social influences in the context of attitude towards adoption of utilitarian Mobile Data Services in Sri Lanka.

Pleasure

The internal consistency and reliability of the variables were tested using Cronbach's alpha which was measured at 0.66. The mean value of the responses was measured at 0.44 with a standard deviation of 0.44. This response mean indicates that the majority of respondents did not feel any emotion associated with pleasure when using SMS. Three additional rounds of cross matching the responses were conducted to assess if the Cronbach's alpha could be improved if certain responses were removed. But this effort was a failure as none of these cross matching improves the level beyond 0.66. The

two tailed Pearson Correlation test between the variable and attitude towards adoption indicated a correlation of 0.524 with p value less than 0.05. This indicated that there is significant correlation between the two variables at 95% confidence level. Therefore, the Null hypothesis was rejected and alternative hypothesis of strong influence of pleasure in the context of attitude towards adoption of utilitarian mobile data services in Sri Lanka was accepted.

Arousal

The mean value of the responses was measured at 0.36 with a standard deviation of 0.46. This response indicates that the majority of respondents did not feel any emotions associated with arousal when using SMS. The internal consistency and reliability of the variables were tested using Cronbach's alpha which was measured at 0.71. The two tailed Pearson Correlation test between the variable and Attitude towards adoption indicated a correlation of 0.527 with p value less than 0.05. This indicated that there is significant correlation between the two variables at a 95% confidence level. Therefore, the Null hypothesis was rejected and alternative hypothesis of strong influence of arousal in the context of attitude towards adoption of utilitarian Mobile Data Services in Sri Lanka was accepted.

Dominance

The internal consistency and reliability of the variables were tested using Cronbach's alpha which was measured at 0.859. The mean value of the responses was measured at 0.48 with a standard deviation of 0.58. This response mean indicates that the majority of respondents did feel any emotions associated with arousal when using SMS. In a detailed analysis of the frequency charts and histogram indicates that 51% of the sample respondents registered a response associated with the variable of dominance in using SMS, while 48% of the respondents indicate that they did not have any emotions identified with arousal when using SMS.

The two tailed Pearson Correlation test between the variable and Attitude towards adoption indicated a correlation of 0.303 with p value less than 0.05. This indicated that there is no significant correlation between the two variables at 95% confidence level. Therefore, the Null hypothesis was accepted. The accepted null hypothesis is weak influence of dominance in the context of attitude towards adoption of utilitarian mobile data services in Sri Lanka.

Attitude Towards Adoption and Intension

Commenting on this point Carlsson (2005) notes that the mobile telecommunication industry is still focused on selling handset instead of on mobile data services diffusion. The focus on mobile data services in Sri Lanka also remains at an embryonic stage. The mean value of the responses for attitude towards adoption was measured at 1.22 with a standard deviation of 0.54. This indicates that the attitude towards adoption was low. The mean value for intension to adopt was measured at 4.62 with a standard deviation of 0.81. The internal consistency and reliability of the variables were tested using Cronbach's alpha which was measured at 0.534 for Attitude towards adoption and 0.273 for intension. Both of these tests indicate that the internal consistency of these variables is poor.

The two tailed Pearson Correlation test between the Attitude towards adoption and intension to adopt is 0.383 with p value less than 0.05. This indicated that there is no significant correlation between the two variables at 95% confidence level. Therefore, the Null hypothesis was accepted. The accepted null hypothesis is weak influence of attitude towards adoption and adoption intension in the context utilitarian Mobile Data Services in Sri Lanka.

The area of mobile data services truly remains a blind spot within the regulatory and industry context in the island. This weakness in industry focus is indeed concerning considering that the future survival of the telecommunication industry will depend on mobile data services as indicated by the steadily declining average revenue per user on voice charges across the global telecommunication industry.

CONCLUSION

The research findings indicate that the Sri Lanka consumer acceptance of technology model which is conceptually hypothesized in Figure 1 is a valid basis for analysis and prediction of technology adoption intention. It is hoped that this study would lay the foundation towards building of a localized adoption model for the country. The correlation of dominance to attitude towards adoption (0.742) and intention (0.595) was significantly higher than in the context of SMS. It has also maintained significantly strong relations with utilitarian and hedonic motives. While this study has identified the behavior of dominance in the context of utilitarian and hedonic products, it is indeed difficult to explain the implications of this motive on the overall relationship. The researcher agrees with the notion of Kulviwat (2008), that this variable has a hidden nature to it. Rather than discounting its importance, it is suggested that future research focus on better understanding dominance.

REFERENCES

- Adams, D., Nelson, R., & Todd, P. (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. *Management Information Systems Quarterly*, 16(2), 227–247. doi:10.2307/249577
- Babin, B., Darden, W., & Griffin, M. (1994). Work and/or Fun: Measuring Hedonic and Utilitarian Shopping. *The Journal of Consumer Research*, 20(4), 644–656. doi:10.1086/209376
- Bina, M., Karaiskos, D., & Giaglis, G. M. (2007, July). Motives and barriers affecting the use of mobile data services. In *Proceedings of the International Conference on the Management of Mobile Business (ICMB 2007)* (pp. 15-15). IEEE.
- Bruner, G. C. II, & Kumar, A. (2005). Applying T.A.M. to consumer usage of handheld Internet devices. *Journal of Business Research*, 58(5), 553–558. doi:10.1016/j.jbusres.2003.08.002
- Bwalya, K. (2010). Towards a Knowledge-Based Economy – the Case of Botswana A Discussion Article. *International Journal of Sociotechnology and Knowledge Development*, 2(2), 53–62. doi:10.4018/jskd.2010040103
- Bandura, A. (2001). Social cognitive theory of mass communication. *Media Psychology*, 3(3), 265–298. doi:10.1207/S1532785XMEP0303_03
- Carlsson, C., Carlsson, J., & Walden, P. (2006). Nice Mobile Services do not Fly. Observations of Mobile Services and the Finnish Consumers.
- Carlsson, C., Hyvönen, K., Repo, P., & Walden, P. (2005a). Adoption of mobile services across different technologies. In *Proceedings of the 18th Bled eConference: eIntegration in Action*. Academic Press.
- Carlsson, C., Hyvonen, K., Repo, P., & Walden, P. (2005b, January). Asynchronous adoption patterns of mobile services. In *Proceedings of the 38th annual Hawaii international conference on system sciences* (pp. 189a-189a). IEEE.
- Chau, P., & Hu, P. (2001). Information technology acceptance by individual professionals: A model comparison approach. *Decision Sciences*, 32(4), 699–719. doi:10.1111/j.1540-5915.2001.tb00978.x
- Childers, T., Carr, C. L., Peck, J., & Carson, S. (2001). Hedonic and Utilitarian Motivations for Online Retail Shopping Behavior. *Journal of Retailing*, 77(4), 511–535. doi:10.1016/S0022-4359(01)00056-2
- Clarke, I., & Flaherty, T. (2003). Mobile Portals: The Development of M-Commerce Gateways. In *Mobile Commerce: Technology, Theory, and Applications* (pp. 185–201). Hershey, PA: IGI Global. doi:10.4018/978-1-59140-044-8.ch010
- Cohen, J., & Areni, C. (1991). Affect and consumer behavior. In *Handbook of consumer behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *Management Information Systems Quarterly*, (September), 318–340.
- Davis, F., Bagozzi, R., & Warshaw, P. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003. doi:10.1287/mnsc.35.8.982
- Du, H., Zhu, G., Zhao, L., & Lv, T. (2012). An empirical study of consumer adoption on 3G value-added services in China. *Nankai Business Review International*, 3(3), 257–283.
- Fernández, R. S., & Bonillo, M. Á. I. (2007). The concept of perceived value: A systematic review of the research. *Marketing Theory*, 7(4), 427–451. doi:10.1177/1470593107083165
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Boston: Addison-Wesley.
- Guirado, C. E., Zorita, C. M., & Casto, C. G. (2018). Beyond Signed T-Shirts: A Socio-Technological Model of Equity Crowdfunding Adoption. *Journal of Innovation Economics and Management*, 137-172.
- Hair, J. F., Tatham, R.L., Anderson, R.E. & Black, W. (1998). *Multivariate Data Analysis with Readings* (5th ed.). Englewood Cliffs, NJ: Prentice Hall.

- Heijden, V. (2004). User acceptance of hedonic information systems. *Management Information Systems Quarterly*, 28(4), 695–704. doi:10.2307/25148660
- Heinonen, K., & Pura, M. (2006). Classifying mobile services. In *Proceedings of Helsinki Mobility Roundtable*. Academic Press.
- Hong, S., Thong, J. Y., & Tam, J. Y. (2006). Understanding continued information technology usage behavior: A comparison of three models in the context of mobile internet. *Decision Support Systems*, 42(3), 1819–1834. doi:10.1016/j.dss.2006.03.009
- Katta, R., & Patro, C. S. (2017). Influence of Perceived Benefits on Consumers' Online Purchase Behaviour: An Empirical Study. *International Journal of Sociotechnology and Knowledge Development*, 9(3), 38–64. doi:10.4018/IJSKD.2017070103
- Katta, R. M. R., & Patro, C. S. (2017). Influence of Perceived Risks on Consumers' Online Purchase Behaviour: A Study. *International Journal of Sociotechnology and Knowledge Development (IJSKD)*, 9(3), 17-37. doi:10.4018/IJSKD.2017070102
- Katta, R., & Patro, C. S. (2017). Influence of Web Attributes on Consumer Purchase Intentions. *International Journal of Sociotechnology and Knowledge Development*, 9(2), 1–16. doi:10.4018/IJSKD.2017040101
- Kim, J. (2018). Platform Adoption Factors in the Internet Industry. *Sustainability*.
- Kim, S. D., & Jeon, I. (2017). Influencing Factors on the Acceptance of Crowdfunding- Focusing on Unified Theory of Acceptance and Use Behavior. *Journal of Korean Institute of Intelligent Systems*, 150-156.
- Krueger, N. F. Jr, & Brazeal, D. V. (1994). Entrepreneurial Potential and Potential Entrepreneurs. *Entrepreneurship Theory and Practice*, 18(3), 91–104. doi:10.1177/104225879401800307
- Kim, B., Choi, M., & Han, I. (2009). User behaviors toward mobile data services: The role of perceived fee and prior experience. *Expert Systems with Applications*, 36(4), 8528–8536. doi:10.1016/j.eswa.2008.10.063
- Kim, H., Chan, H. C., & Gupta, S. (2007). Value-based Adoption of Mobile Internet: An empirical investigation. *Decision Support Systems*, 43(1), 111–126. doi:10.1016/j.dss.2005.05.009
- Kulviwat, S., Bruner, G. C. II, & Al-Shuridah, O. (2008). The role of social influence on adoption of high tech innovations: The moderating effect of public/private consumption. *Journal of Business Research*, 62(7), 706–712. doi:10.1016/j.jbusres.2007.04.014
- Kulviwat, , Bruner, G. C. II, Kumar, A., Nasco, S. A., & Clark, T. (2007). Toward a Unified Theory of Consumer Acceptance Technology. *Psychology and Marketing*, 24(12), 1059–1084. doi:10.1002/mar.20196
- Lu, J., Yao, J., & Yu, C. (2005). Personal innovativeness, social influences and adoption of wireless internet services via mobile technology. *The Journal of Strategic Information Systems*, 14(3), 245–268. doi:10.1016/j.jsis.2005.07.003
- Nunnally, J. C., & Bernstein, I. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.
- Mathieson, K. (1991). Predicting user intentions: Comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research*, 2(3), 173–191. doi:10.1287/isre.2.3.173
- Mälärstig, Y., Holmström, O., & Davidsson, P. (2007). The Swedish Telecommunications Market 2007. Stockholm, Sweden: National Post and Telecom Agency.
- Samaradiwakara, G. M. & Gunawardena, C. G. (2014). Comparison of Existing Technology Acceptance Theories and Models to Suggest a Well-improved Theory/Model. *International Technical Sciences Journal*, 21-36.
- Sancak, E. (2016). Applicability and readiness of crowdfunding in Turkey. *International Journal of Business and Social Science*, 7(1), 99–110.
- Schwiebacher, A., & Larralde, B. (2010). Crowdfunding of Small Entrepreneurial Ventures. In *Handbook of Entrepreneurial Finance*. Oxford University Press. doi:10.2139/ssrn.1699183
- Shneor, R., & Munim, Z. H. (2019). Reward Crowdfunding Contribution as Planned Behavior: An Extended Framework. *Journal of Business Research*, 103, 56–70. doi:10.1016/j.jbusres.2019.06.013

- Soreh, W. C. (2017). Awareness and Attitude towards Crowdfunding in Nigeria. *International Journal of African and Asian Studies*, 1-8.
- Stasik, A., & Wilczyńska, E. (2018). How do we study crowdfunding? An overview of methods and introduction to new research agenda. *Journal of Management and Business Administration. Central Europe*, 26(1), 49–78.
- Thuran, A., & Tunc, A. (2015). A Theoretical Model Proposal: Personal Innovativeness and User Involment as Antecedents of Unified Theory of Technology Acceptance and Use of Technology. *Procedia: Social and Behavioral Sciences*, 210, 43–51. doi:10.1016/j.sbspro.2015.11.327
- Taylor, S., & Todd, P. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, 6(2), 144–176. doi:10.1287/isre.6.2.144
- Tjan, A. (2001). Finally, a Way to Put Your Internet Portfolio in Order. *Harvard Business Review*, (February): 76–85. PMID:11213700
- TRC-SL. (2018). Statistical Overview - 2018 December, Sri Lanka: Telecommunication Regulatory Commission of Sri Lanka. Retrieved from <http://www.trc.gov.lk/images/pdf/stodec1.pdf>
- Venkatesh, V. (2000). Determinants of Perceived Ease of Use: Integrating Perceived Behavioral Control, Computer Anxiety and Enjoyment into the Technology Acceptance Model. *Information Systems Research*, 11, 342–365. doi:10.1287/isre.11.4.342.11872
- Venkatesh, V., & Davis, F. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186–204. doi:10.1287/mnsc.46.2.186.11926
- Versakalo, H. (2006, November). Mobile Data Service Evolution–Empirical Observations on Packet Data Service Adoption. In *Proceedings of the 3rd International CICT conference: Mobile and wireless content, services and networks, short-term and long-term development trends*. Academic Press.
- Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *Management Information Systems Quarterly*, 24(1), 115–139. doi:10.2307/3250981
- Venkatesh, V., Thong, J. Y., & Xu, X. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the Association for Information Systems*, 17(5), 328–376.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Towards a Unified View. *Management Information Systems Quarterly*, 27(3), 425–478. doi:10.2307/30036540
- Wu, C., Cheng, F., & Yen, D. C. (2008). The atmospheric factors of online storefront environment design: An empirical experiment in Taiwan. *Information & Management*, 45(7), 493–498. doi:10.1016/j.im.2008.07.004
- Wulf, K. (2006). The role of pleasure in Web site success. *Information & Management*, 43(4), 434–446. doi:10.1016/j.im.2005.10.005
- Williams, M. D., Rana, N. P., & Dwivedi, Y. K. (2015). The Unified Theory of Acceptance and Use of Technology: A Literature Review. *Journal of Enterprise Information Management*, 28(3), 443–488. doi:10.1108/JEIM-09-2014-0088

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