

# Impact of Mobile Banking Services on Customer Satisfaction: A Study on Sri Lankan State Commercial Bank

Kumari Kahandawa  
Department of Information Technology  
People's Bank  
Colombo, Sri Lanka

Janaka Wijayanayake  
Department of Industrial Management  
University of Kelaniya  
Sri Lanka  
Janaka {at} kln.ac.lk

**Abstract**—Mobile phones have created a platform to expand commercial transactions in a very easy manner and have created a wide array of business opportunities through the expansion of wireless communication. These developments facilitate business transactions, trading, and purchasing of goods and services without much effort. Hence, it is clear that mobile banking would be an astringent way of providing banking services and it also could contribute to the development of the nation through promotion of better financial services. However, determining the characteristics of mobile banking services and how banks could achieve a proper relationship with customers through mobile banking is vital for development of mobile banking. Therefore, this research focuses primarily on identifying the factors that affect customer satisfaction in mobile banking services. The main variable considered in the study consists of usefulness, ease of use, relative advantages, perception of risk and user's life style and current needs. The research methodology mainly focused on gathering primary data using a questionnaire. Hypothesis developed based on the variables that affect the consumer acceptance of mobile banking services and its relationship to the customer satisfaction. The conclusions of the study revealed that mobile banking services customer satisfaction is influenced by usefulness, ease of use, relative advantage, perception on risk and user lifestyle and current needs of customers.

**Keywords** - Mobile banking; Customer satisfaction

## I. INTRODUCTION

At present in Sri Lanka, the number of mobile phone account is higher than the population due to the speedy development in wireless technology. It is also a fact that at present mobile communications is not considered as luxury as it has reached the grass root of the society where everybody could own a mobile phone. Further, the mobile operators come up with various kinds of services to expand their network to fill any gap that exists. Hence, mobile phones have created a platform to expand commercial transactions in a very easy manner and have created a wide array of business opportunities through the expansion of wireless communication. These developments facilitate business transactions, trading, and purchasing of goods and services

without much effort. As a result of this, mobile phone has become a very vital in day to day life of banking customers.

In this cashless society, majority of people would not like to spend their valuable time at a bank branch for financial transactions. Specially, young customers feel that they should enjoy latest technology even in banking activities. According to researches 68% of the customers leave a bank due to bad customer service and 19% of them leave due to dissatisfaction with their products [1]. They further found that cost of attracting a new customer is 5-6 times higher than to keep old ones. As a solution for this problem some banks in Sri Lanka have already initiated mobile banking services. There have been a number of products introduced by Sri Lankan banks to encourage mobile banking. The main advantage this service offers is that customer can do their transactions or pay their bills at any hour during the day which saves their valuable time. The system is cost effective as facilities are provided at a very low cost compared to the procedures that have to be followed in banking. However, the success of mobile banking in Sri Lanka remains an issue. Therefore, mobile banking services and customer satisfaction are two critical issues in the banking sector. Many researches point out that there is a gap in the practical knowledge available in testing the relationship between customer satisfaction and mobile banking services [2, 3, 4]. Hence, the main objective of this research is to identify the factors that affect customer satisfaction in mobile banking services. Thus, using the results of this study, the stake holders in the industry would be able to focus their attention on characteristics of their products in a very effective and successful manner so that it will help them to reach for an optimum return on their investment.

The section 1 provides an introduction followed by section 2 which provides details on the past research which has been carried out targeting on achieving the set research objectives. The section 3 describes the relevant methodology selected to carry out the research and rationale for selection of variables and how the collected data quantifies in achieving research objectives. Results of the data analysis are presented in section 4 followed by conclusions and future research directions.

## II. RELATED WORK

The basic idea of mobile services is to improve the access of information services when travelling [5]. It also can be described as the latest way of bring transactions through E-commerce and it gives facilities to mobile handsets so that it is possible to get transactions done through wireless telecommunication and E-commerce technology [6]. At present the available mobile service delivery platform provides various services such as Multimedia Messaging Services (MMS), Short Messaging Services (SMS), online games, news alerts and emails. In addition to those there are many other services such as weather forecasts, location based services such as Global Positioning Services (GPS), etc. All these can be collectively described as Mobile commerce (M-commerce) [7] which facilitate easy way of passing messages in buying and selling activities of products and services through mobile devices. These services can be accessed by customers very easily at anytime anywhere based on the availability of mobile network services. According to research the major factors that influence the success of implementation of M-commerce services are convenience, trust, ubiquity and ease of use [8]. The use of mobile services by customers are highly sensitive to the distance of the location where the services are provided and the amount of time saving that can be gained by customers [9]. The handset gives all the facilities required to access mobile networks, central processing and enable to carryout database access in Mobile commerce transactions. Hence, M-commerce can facilitate access to databases with adequate security for networks and embedded systems access [10]. All these transactions could be done swiftly and instantly by transmitting data back and forth between servers and the handset. Further, whenever a customer needed to pass sensitive information, having high security connection between a consumer and seller is very essential. Specially, in financial services, privacy and information protection are the key successful factors of the industry [11, 12, 13, 14]. Therefore information security is a critical success factor that leads to establish trust on the systems and platforms among consumers.

Mobile banking is considered to be one of the most value added services in banking [15]. Facilities provided by mobile banking services have helped financial institutions to reduce traditional face to face banking transactions through automated services where ever possible. Furthermore, when mobile phones become more popular, it is expected that whatever the banking transactions that has been done through online fixed terminals should be migrated to mobile based technologies. According to Lee and Chung, mobile banking would completely change the way that customers do bank transactions when electronic banking systems start providing efficient automated banking services through wireless networks [16]. Mobile banking has the ability to redesign and also redefine total area of the business and business models of financial services sector [17]. In the current business world, customers expect services twenty four hours a day and three

hundred sixty five days per year. All these will become a reality due to higher ownership of mobile phones than the personal computers. Hence, majority of transactions between banks and customers will be through mobile phones in the near future.

According to Cruz and Laukkanen, mobile phone would be a frontline technology in banking as it provides consumers facilities to get done their banking services through electronic channels [18]. There are many different mobile banking facilities such as account balance retrieval, transaction history retrieval, transfer of funds between an individual's own accounts or third party accounts, stock trading, portfolio management, and bill settlements, etc. [19]. There are many advantages that mobile banking brings to customers. Among those benefits, ease of use, low cost, privacy and convenience are the factors that lead to fruitful implementation of mobile banking requests [20]. It has also been said that mobile banking services can be accepted as a powerful marketing tool to keeps close connections between the customer and management in financial institutions [21]. Nevertheless, research has found that main reasons for internet banking users to switch into mobile banking are processing power, screen size, speed and security of mobile baking services [22]. When considering mobile banking in western countries, it can be said that the industry is at its' highest expectations. Therefore, it is very important to identify the factors that affect poor customer satisfaction which prevents more adoptions by consumer [23].

## III. CONCEPTUAL FRAMEWORK

Technology Acceptance Model (TAM) tries to establish a relationship and it also describe the intention of users and how users are influenced by a product or service. It emphasizes the importance of perceived usefulness and ease of use in technology adoption [24]. Innovation Diffusion Theory (IDT) describes that the adoption of an innovation by consumers is not a straight forward process [25]. Relative advantage also can be described as an innovation that provides greater service to customers when it is compared with its predecessors [26]. Perceived risk also has some serious points to be considered on mobile banking. Earlier studies have suggested that the user's perception on risk is a main factor in the adoption of new technology [3]. When the new innovation is done, it helps to develop the life style of the users and it will be more if the adoption increases satisfaction [27]. It is also a fact that a progressive image could be created among the community using mobile banking services and they get self-respect and it will play a great role in adoption of the technology. On the other hand McLean and DeLone [28] also updated the modern view and they considered the user's satisfaction as the key measure in assessing the successfulness on a system

The conceptual model for this research has been developed mainly based on Technology Acceptance Model [24] and Innovation Diffusion Theory [25]. Main factors identified are usefulness, ease of use, relative advantage, perception of risk

and user's life style and current needs. The five factors mentioned above are hypothesized to have a direct effect on influencing the satisfaction of mobile banking customers. In a successful long term relationships with consumers customer satisfaction is the key of any organization.

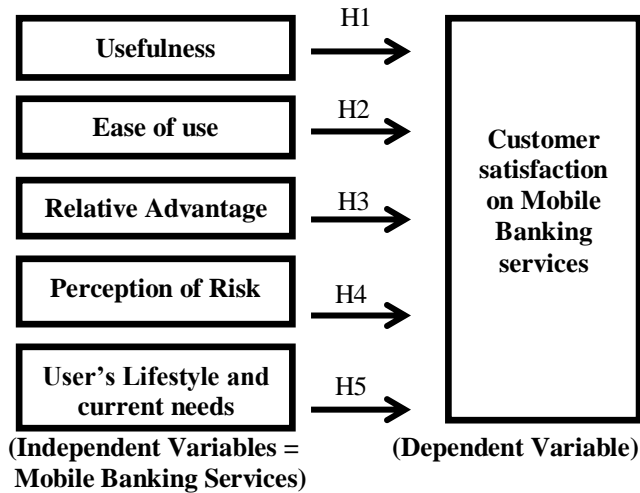


Figure 1: Conceptual Model

Usefulness is a key factor in recognizing the links related to information system and computing [29] and it is same for the area of Mobile commerce [4]. Therefore, if the mobile banking is useful customers can be motivated to use the facilities and services very frequently and thereby improve their satisfaction level. Thus, it can be hypothesized that

**H1: A higher usefulness of mobile banking services could have a positive impact on the customer satisfaction.**

When considering the technology link to the product, the ease of use of it has always been very critical issues in customer satisfaction. When comparing mobile banking with internet banking and ATM, it could be seen that the mobile handsets as a device which has a great effect though it is relatively small and complex. When a customer finds that any system is easy to study, it creates a positive impact towards the customer and it will lead to his/her satisfaction. Therefore, it can be hypothesized that

**H2: A higher ease of use of the mobile phone for banking services will have a positive impact on the customer satisfaction.**

Relative advantage states that customer should be able to understand very simply the benefit of mobile banking over its predecessors. When customers are fully convinced that mobile banking services offer more benefit than the old technologies (i.e. Internet Banking, ATM, Debit and credit cards), it gives them a better customer satisfaction. The relative benefit can come in many different ways for example improves the strength in economic benefit, convenience and

the quality of individual image. All these lead to customer satisfaction [27]. Thus, it can be hypothesized that

**H3: A higher relative advantage of mobile banking could have a positive impact on the customer satisfaction.**

When making the customer satisfaction there is a higher risk which plays a main role in offering services to them. When it comes to taking the risk it is very low where the willingness to use and satisfaction is at the highest [30]. In Taiwan, Wu and Wang [31] have found that there is a very clear statistically significant relationship between the risk and the intention to use Mobile commerce by customers and it is always to their satisfaction. Therefore it can be hypothesized that

**H4: A negative perception on risk of mobile banking should have a negative impact on customer satisfaction.**

By adapting new technology and linked services, customer could get the services that they needed at any hour. They should find that this mobile banking goes with their lifestyle and with their current needs. Factors such as acceptance of society, self-respect, high quality admiration from the society will affect the users' satisfaction. Thus, it can be hypothesized that

**H5: A higher well-suitability of mobile banking services to customer's lifestyle and current needs would have a positive impact towards customer satisfaction.**

#### IV. DATA COLLECTION AND ANALYSIS

Questionnaire is the main data collection tool that was used in this study to collect quick, inexpensive, flexible, accurate and efficient information about the population. The population selected for the research is the mobile banking service users in Colombo who are customers of a large state sector commercial bank in Sri Lanka. The main reason for selecting the particular population is that, the relevant service has been first adapted by the selected population in the Colombo vicinity. When compared with other customers in the bank, they are the early adopters of the mobile banking service which have been going through for a lengthier period of time. Therefore, they are in a better position to response on the service and the customer satisfaction when compared with other customers. The questionnaire was distributed among 70 mobile banking customers and 64 customers responded with the response rate of 91%.

According to data analysis, out of 64 respondents 51.56% are male and balance 48.44% are female customers. It can be noted that 56.25 % of the respondents are married and 43.75 % of them live as single. The majority of the respondents (64.06 %) are employed and 35.94 % are business owners. 5% of the respondents are less than 20 year of age, 34.38% are between 20-40 years, 45.31% are between 41-50 and balance 15.62% are more than 50 years old. It is noted that majority of them are customers for more than 5 years of the bank.

However, 26.56% of the respondents are customers of 1-5 years and 10.94% of the respondents are less than 5 years customers.

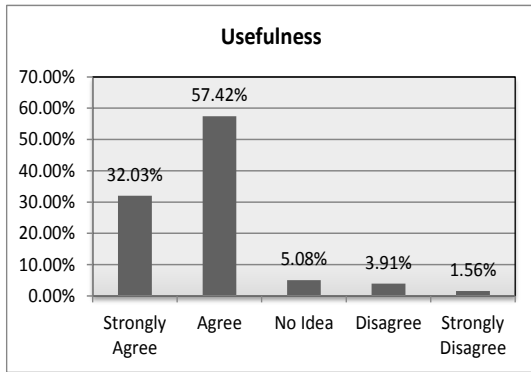


Figure 2: Usefulness of Mobile Banking Services

Figure 2 shows the summarized results of answers related to usefulness of mobile banking services. According to the data analysis little more than 89% of responded either strongly-agree or agree that mobile banking is useful for them while only more than 5% either strongly-disagree or disagree, indicating that mobile banking is a very useful service for them.

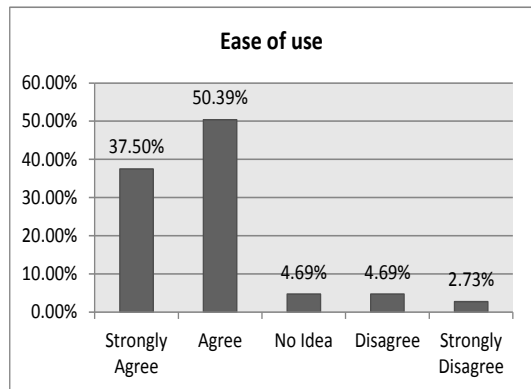


Figure 3: Ease of use of Mobile Banking Services

Figure 3 shows the summarized results of answers related to ease of use of mobile banking services. According to the data analysis nearly 88% of responded either strongly-agree or agree that ease of use of mobile banking is a factor that affects the satisfaction of banking services. Out of respondents only little more than 7% either strongly-disagree or disagree that ease of use of mobile banking is a factor that affect customer satisfaction.

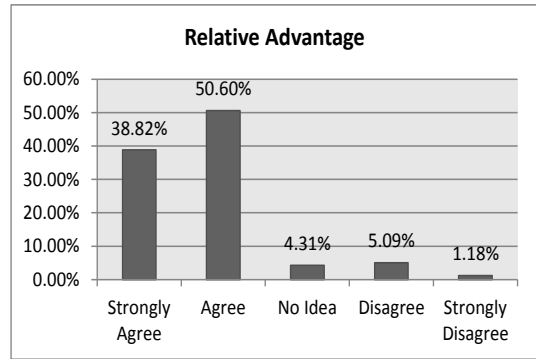


Figure 4: Relative Advantage of Mobile Banking Services

Figure 4 shows the summarized results of answers related to relative advantage of mobile banking services. According to the data analysis more than 89% of responded either strongly-agree or agree that relative advantage of mobile banking is a factor that affects the satisfaction of banking services. However, little more than 6% either strongly-disagree or disagree that relative advantage of mobile banking is a factor that affects customer satisfaction.

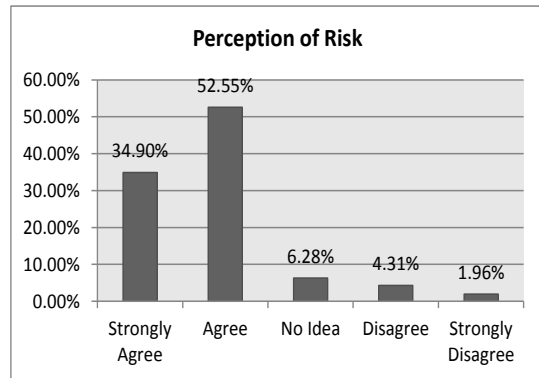


Figure 5: Perception of Risk of Mobile Banking Services

Figure 5 shows the summarized results of answers related to customer perception of risk of mobile banking services. According to the data analysis nearly 87% of responded either strongly-agree or agree that perception of risk of mobile banking is a factor that affect the customer satisfaction of banking services while only little more than 6% either strongly-disagree or disagree indicating that perception of risk is a very important factor of customer satisfaction.

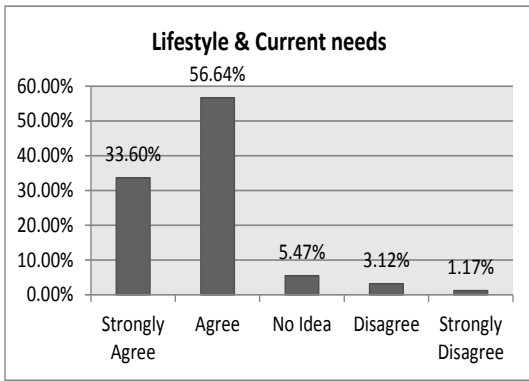


Figure 6: Suitability of Mobile Banking on Lifestyle and Current needs

Figure 6 shows the summarized results of answers related to suitability of mobile banking services on lifestyle and current needs of customers and their satisfaction. According to the data analysis more than 70 % of responded either strongly-agree or agree that mobile banking suite their lifestyle & current needs and hence affects the satisfaction of banking services. However, littler more than 4 % either strongly-disagree or disagree that mobile banking suite their lifestyle & need.

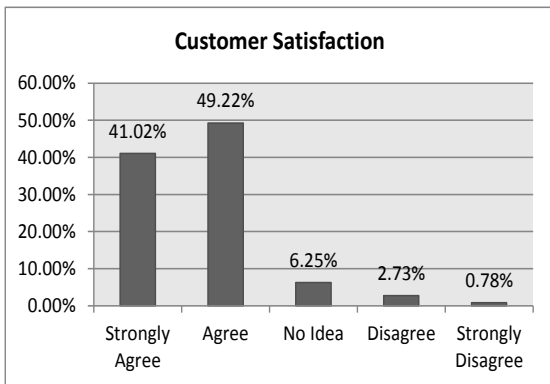


Figure 7: Customer Satisfaction of Mobile Banking Services

Figure 7 shows the summarized results of answers related to customer satisfaction of mobile banking services. According to the data analysis 90 % of responded either strongly-agree or agree that they are satisfied with mobile basking services while only little more than 3 % either strongly-disagree or disagree with the level of satisfaction that they get from mobile banking.

## V. HYPOTHESIS TESTING

Primary data collected for this research is non-parametric data and therefore, Spearman’s Correlation Coefficient and its significance value were used for hypothesis testing. The values of correlation coefficient are given in table 1.

Table I Correlation Matrix

Variables	Spearman’s Correlation	Significance
Usefulness and Customer Satisfaction	0.762	0.000
Ease of Use and Customer Satisfaction	0.731	0.000
Relative Advantage and Customer Satisfaction	0.741	0.000
Perception on Risk and Customer Satisfaction	0.695	0.000
Users Lifestyle & Current needs and Customer Satisfaction	0.757	0.000

Table 1 depicts the correlation between customer satisfaction in relation to mobile banking and independent variables. A strong positive relationship can be seen between usefulness and customer satisfaction with the correlation coefficient value of 0.762 and significance level is 0.000. Therefore, hypothesis H1 “A higher usefulness of mobile banking services could have a positive impact on customer satisfaction can be accepted”. Relationship between ease of use and customer satisfaction has also derived a strong positive relationship with a Spearman’s correlation coefficient value of 0.731with a significance value 0.000, Therefore, hypothesis H2 “A higher ease of use of the mobile phone for banking services will have a positive impact on the customer satisfaction” can be accepted. Moreover, a strong positive relationship can be seen with Spearman’s correlation coefficient value of 0.741 and significance value 0.000 between relative advantage and customer satisfaction. Therefore, hypothesis H3 “A higher relative advantage of mobile banking could have a positive impact on customer satisfaction” can be accepted. The relationship between perception on risk and customer satisfaction has also resulted in a moderate positive correlation with the Spearman’s correlation value of 0.695 and significance value is 0.000. Therefore hypothesis H4 “A negative perception on risk of mobile banking should have a negative impact on the customer satisfaction” can too be accepted. Moreover, the correlation coefficient result between user lifestyle and customer satisfaction too indicates a strong positive relationship with a value of 0.757 and significant value of 0.000. Therefore H5 “A higher well-suitability of mobile banking services to customer’s lifestyle and current needs could have a positive impact towards customers” too can be accepted.

## VI. CONCLUSIONS AND FUTURE DIRECTIONS

At present mobile communications is not considered as luxury as it has reached the grass root of the society where everybody could own a mobile phone. Mobile phones have created a platform to expand commercial transactions in a very

easy manner and have created a wide array of business opportunities through the expansion of wireless communication. Therefore, mobile banking has been identified as one way of expanding banking services. There have been a number of products introduced by Sri Lankan banks to encourage mobile banking. However, the success of them remains an issue. Therefore, measuring the factors influencing customer satisfaction in mobile banking services was the main objective of the study. Results of this study revealed that in mobile banking services' customer satisfaction is influenced by usefulness, ease of use, relative advantage, perception on risk and user lifestyle and current needs of customers.

As the study brings out a positive relationship for the hypothesis tested, it highlights the factors which any bank or financial institutions should focus on improving mobile banking services. When designing a mobile product, bank should customize their product and services according to customer requirements and consider usefulness, ease of use, relative advantage and risk level to make the service successful. According to the finding one factor that affects customer satisfaction is lifestyle and needs of customers. Identifying lifestyle and needs of customers would be a real challenge to banks. Banking industry is a highly competitive industry and identifying and understanding lifestyle & needs of consumers and how those can be supported with mobile banking would be a competitive advantage.

Mobile banking has a higher potential and opportunity in rural areas. However this research focused on customers' from urban areas only and therefore, a future research could be carried out with a population of balance representation from both rural and urban communities.

## REFERENCE

- [1] Why customers leave, [ONLINE] Available at: [www.tipsmakemoney.com/why-customers-leave/][Accessed 27 Aug 2013].
- [2] P. Luarn, and H. H. Lin, "Toward an understanding of the behavioral intention to use mobile banking", *Computers in Human Behavior*, 2005, 21 (6), 873-891.
- [3] S. Laforet and X. Li, "Consumers' attitudes towards online and mobile banking in China", *International Journal of Bank Marketing*, 2005, Vol. 23 Nos 4/5, pp. 362-80.
- [4] Y. S. Wang, H. H. Lin and P. Luarn, "Predicting consumer intention to use mobile service", *Information systems Journal*, 2006, Vol. 16 No. 2, pp. 157-79.
- [5] G. Drennan and J. Mort, J., "Mobile Communications: A Study of Factors Influencing Consumer use of m-services", *Journal of Advertising Research*, 2007, 47, 3, pp. 302-312,
- [6] SiauKeng, Lim Ee-Peng, Shen Zixing., "Mobile Commerce: Promises, Challenges, and research agenda", *Journal of Database Management*, 2001, 12, 3: ABI/INFORM Global pg. 4.
- [7] Okazaki Shintaro, "New Perspectives on M-commerce Research", *Journal of Electronic Commerce Research*, 2005 VOL. 6, NO.3.
- [8] Xu Gordon, Gutierrez A. Jairo, "An Exploratory study of killer applications and critical success factors in M-Commerce", *Journal of Electronic Commerce in organizations*, 2006, 4(3), pp. 63-79.
- [9] Balasubramanian Sridhar, Robert A Peterson, Srikka L Jarvenpaa., "Exploring the implications of m-commerce for markets and marketing", *Academy of Marketing Science. Journal 2003 ABI/INFORM Global* pg. 348.
- [10] U. Varshney and R. Vetter, "Mobile commerce: Framework, Applications and networking support", *Mobile networks and applications*, 2002, 7(3),pp. 185-198
- [11] H. M. P. S. Herath, and W. M. J. I. Wijayanayake, "Modelling business readiness frameworks" *International Journal of Business Continuity and Risk Management*, 2010, Vol. 1. No 3, pp. 211-221.
- [12] H. M. P. S. Herath, and W. M. J. I. Wijayanayake, "Computer misuse in the workplace" *Journal of Business Continuity & Emergency Planning*, 2009, Vol. 3. No. 3, pp. 259-270.
- [13] H. M. P. S. Herath, and W. M. J. I. Wijayanayake, "The Status of Business Continuity & Crisis Management (BCCM) in Large Scale Financial Information Systems in Sri Lanka", 8<sup>th</sup> Annual Research Symposium , University of Kelaniya, Sri Lanka, 2007.
- [14] H. M. P. S. Herath, and W. M. J. I. Wijayanayake, "Analysis of End User ICT Security Behaviour in Sri Lankan Financial Organisations: Organizational Perspective" *International Research Conference on Management & Finance*, Sri Lanka, 2008
- [15] M.S.Y. Lee, P. F. McGoldrick, K. A. Keeling, and J. Doherty, "Using ZMET to explore barriers to the adoption of 3G mobile banking services", *International Journal of Retail & Distribution Management* 2003 31(6), pp. 340-348.
- [16] K.C.Lee and N. Chung, "Understanding factors affecting trust in and satisfaction with mobile banking in Korea: a modified Delone and McLean's model perspective", *Interacting with Computers*, 2009, Vol. 21 Nos 5/6, pp. 385-92.
- [17] M. Dholakia and N. Rask, "Next to the customer's heart and wallet: frameworks for exploring the emerging m-commerce arena", *American Marketing Association*, 2001, 12, 372-378.
- [18] T. Cruz and P. Laukkanen, "Comparing consumer resistance to mobile banking in Finland and Portugal", in Filipe, J. and Obaidat, M.S. (Eds), *e-Business and Telecommunications*, Springer, Berlin, 2009, pp.89-98
- [19] M. Suoranta and M. Mattila, "Mobile banking and consumer behavior: new insights into the diffusion pattern", *Journal of Financial Services Marketing*, 2004, Vol. 8 No. 4, pp. 354-366
- [20] A. Herzberg, "Payments and banking with Mobile Personal Devices", *Communications of the ACM*, 2003, Vol. 46. No. 5.
- [21] J. Sinisalo, J. Salo, H. Karlajuoto and M. Leppaniemi, "Mobile customer relationship management: underlying issues and challenges", *Business Process Management Journal*, 2007, Vol. 13 No. 6, pp. 771-87.

- [22] T. Laukkanen, S. Sinkkonen, M. Kiviraj and P. Laukkanen, “Innovation resistance among mature consumers”, *Journal of Consumer Marketing*, 2007, Vol. 24 No. 7, pp. 419-27.
- [23] N. Koennig-Lewis, A. Palmer and A. Moll, “predicting young consumers’ take up of mobile banking services”, *International Journal of Bank Marketing*, 2010, Vol. 28 No. 5, pp. 410-32.
- [24] F. D. Davis, R. P. Bagozzi and P. R. Warsaw, “Perceived usefulness, perceived ease of use, and user acceptance of information technology”, *MIS Quarterly*, 1989, Vol.13 no. 3, pp.319-39.
- [25] H. Bouwman, C. Carlsson, F. J. Molina-Castilo and P. Walden, “Barriers and drivers in the adoption of current and future mobile services in Finland”, *Telematics and Informatics*, 2007, Vol. 24 No. 2, pp. 145-60.
- [26] D. Karayanni, “Web-shoppers and non-shoppers: compatibility, relative advantage and demographics”, *European Business Review*, 2003, Vol. 15 No. 3, pp. 141-52.
- [27] E. M. Rogers, *Diffusion of Innovations*, 4<sup>th</sup> ed., The free press, New York, NY. 1995.
- [28] W. H. DeLone and E. R. McLean, “The DeLone and McLean model of Information system success: a ten year update”, *Journal of Management Information Systems*, 2003, 19 (4), 9-30.
- [29] V. Venkatesh and F. D. Davis, “A model of the antecedents of perceived ease of use: development and test”, *Decision Sciences*, 1996, Vol. 27 No. 3, pp. 451-82.
- [30] C. H. Lovelock, P. G. Patterson and R. Walker, *Services Marketing*, 2<sup>nd</sup> ed., Pearson Education, Franchs Forest , 2001.
- [31] J. H. Wu and S, C. Wang, 2005, “What drives mobile commerce? An empirical evaluation of the revised technology acceptance model”, *Information & Management*, 2005, Vol. 42, pp. 719-23. Consumer acceptance of M-banking 567.