

*Full Length Research Paper*

# Determinants of low-income non-users' attitude towards WIG mobile phone banking: Evidence from South Africa

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**The slow adoption rate of mobile phone banking remains a dilemma for marketing managers globally. Previous studies on mobile phone banking adoption behavior lack investigation on low-income non-users' adoption behavior and adoption behavior with regard to a specific type of mobile phone banking application. Therefore, this study investigates the attitude formation of low-income non-users towards Wireless Internet Gateway (WIG) mobile phone banking. A non-probability sample of 465 low-income non-users was drawn. The results of the assessment of the structural model indicate that considering the total effects, ease of use and usefulness almost influence attitude with the equivalent strength. Other findings include that cost and ease of use influence usefulness of WIG mobile phone banking for low-income non-users, facilitating conditions and self-efficacy influence ease of use, and that the total effect of facilitating conditions on ease of use is relatively strong. Based on these findings practical suggestions are presented to enhance the adoption rate of WIG mobile phone banking in the low-income market segment.**

**Key words:** TAM, low-income earners, non-users, cost, self-efficacy, facilitating conditions.

## INTRODUCTION

Mobile phone banking is considered by some commentators to be one of the most value-adding and important mobile services available to consumers (Lee et al., 2003). Although large investments have been made in the development of mobile phone banking systems, reports on mobile phone banking utilization show that potential users are not adopting the electronic service at the expected rate (Luarn and Lin, 2005). According to the Gartner Hype cycle for consumer mobile applications (Gartner, 2007) report, the penetration rate of mobile phone banking is only about 1 to 5% of the target audience. From the perspective of banks that developed the mobile banking systems, a vastly improved number of customers must use mobile phone banking in order to justify their investments and operational expenditure. Thus, understanding the determinants in the adoption

behavior of non-adopters of mobile phone banking is of high importance to marketing managers.

The study of Crabbe et al. (2009) revealed two important findings regarding the role of income in mobile phone banking adoption. Firstly, the study found that a significant relationship exists between income and intention to adopt mobile phone banking. This is understandable as lower income consumers often resist services with continuing costs (Porter and Donthu, 2006). But, mobile phone banking transactions cost far less than transactions costs at the ATM and the bank branches (Pickens and Ivatury, 2006) and therefore, intuition suggests that it should appeal to lower income consumers. Secondly, in the study the non-users were over-represented in the lower income groups. This finding can also serve as a sign of the role of income in adoption of mobile phone banking.

In the past few years a number of studies have been done on mobile phone banking adoption behavior such as Crabbe et al. (2009); Gu et al. (2009); Lee and Chung (2009) and Luarn and Lin (2005). However, previous

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studies did not investigate mobile phone banking adoption behavior of low-income non-users of mobile phone banking. For example, in Luarn and Lin (2005) the respondents were attendees at an e-commerce exposition and in Lee and Chung (2009) the respondents were users of mobile phone banking. Furthermore, in previous studies in the mobile commerce field of study such as Shin (2009) and Serenko et al. (2006), the moderating effect of income has been investigated. However, the aim of those studies was not to determine the determinants of Usefulness and Ease of use for low-income earners, but to assess the moderating effects of income on relationships depicted in the structural model. For example, in Shin (2009) no determinants of Usefulness and Ease of use are included in the structural model. Thus, although the study of Shin (2009) found that the influences of Attitude on Intention, Intention on Behavior, Perceived usefulness on Attitude, Self-efficacy on Intention and Trust on Intention are stronger for high-income earners than for low-income earners, it does not provide more insight into the determinants of Usefulness and Perceived ease of use.

Previous mobile phone banking adoption studies also did not take into consideration the various types of mobile phone banking such as Wireless Application Protocol (WAP) or Wireless Internet Gateway (WIG) mobile phone banking when studying adoption behavior. According to Lee and Chung (2009), mobile phone adoption behavior can be better studied by limiting the study to a specific type of mobile phone banking. In this study WIG mobile phone banking is of interest as WIG mobile phone banking costs less than WAP mobile phone banking (Brown et al., 2003) and therefore may appeal more to low-income customers of banks. Against this backdrop the research question addressed in this study is: What are the determinants of low-income non-users' attitude formation towards WIG mobile phone banking? The primary objective of the study is therefore to determine by means of structural equation modeling the determinants of attitude formation towards WIG mobile phone banking of low-income non-users of mobile phone banking.

In general, studies into low-income consumers as a segment in consumer marketing is limited (Gbadamosi, 2009). By examining the behavior of non-adopters of WIG mobile phone banking, managers can gain an understanding of the determinants of adoption behavior, which is crucial in the formulation of effective strategies to enhance the adoption rate. Therefore, the findings of the study should be of interest to managers of WIG mobile phone banking services.

## BACKGROUND

Mobile phone banking is part of the upper level construct 'e-banking' (Lassar et al., 2005) and is also part of the

upper level construct 'Mobile commerce' or 'M-commerce'. M-commerce can be defined as "the use of mobile hand-held devices to communicate, inform, transact and entertain using text and data via connection to public and private networks" (Saljoughi, 2002). This definition points out an important characteristic of mobile phone banking that differentiates it from internet banking and other self-service banking technologies, namely at least one part of the transaction is conducted via a mobile device, commonly a mobile telephone. Mobile phone banking, therefore, is defined as the delivery of financial services with mobile devices such as cellular phones and portable data assistants (PDA). Mobile phone banking can be delivered in various formats to bank customers. Bank customers can, for example, use WAP mobile phone banking or WIG mobile phone banking. WAP mobile phone banking allows the customer to access his/her bank account via the internet from a mobile phone. The look and the feel of WAP mobile phone banking are very similar to that of internet banking. On the other hand, WIG mobile phone banking allows the customer to transact from his/her bank account via secure short message service. A banking menu is downloaded onto the customer's SIM card, allowing convenient selection of transactions with a press of a button.

The benefits of mobile phone banking that usually draw attention to in studies are the ubiquity of mobile banking (Yang, 2009; Zarifopoulos and Economides, 2009), ease of use (Laukkanen and Lauronen, 2005) and the cost-effectiveness (Lee and Chung, 2009). The ubiquity benefit is most likely the major benefit as bank customers can now do their banking not only every day of the week at any time, but also from any place. This makes mobile phone banking very convenient for bank customers to do their banking transactions. Mobile phone banking also offers a wide range of banking services for bank customers such balance and statement enquiries, payment of beneficiaries, purchasing of pre-paid services, the transfer of funds between accounts, payment notifications and payment reminders. The variety of services customers have access to through mobile phone banking, together with the advantages of mobile phone banking ought to be perceived by customers as unparalleled value. Irrespective of the 'unparalleled value' of mobile phone banking, the adoption rate remains relatively low as already pointed out.

## DETERMINANTS OF ATTITUDE TOWARDS WIG MOBILE PHONE BANKING

The technology acceptance model (TAM) theorizes that two internal beliefs, perceived usefulness and perceived ease of use, are instrumental in explaining attitude towards a technology and that perceived ease of use influences perceived usefulness (Davis, 1989). According

to Davis (1989), the Usefulness construct in information systems (IS) implies that a system can be used advantageously and that the user believes in the existence of a positive user-performance relationship. On the other hand, Ease of use refers to “freedom from difficulty or great effort”. Therefore, according to the TAM, systems perceived to be easier to use are more likely to be accepted by users (Davis, 1989). The TAM also proposes that the easier a system is to use, the more advantageous it is to use the system, that is, Perceived ease of use influences Perceived usefulness. Drawing on the definitions of these two internal beliefs in Davis (1989) Perceived usefulness and Perceived ease of use are defined in this study as “the degree to which a person believes that using WIG mobile phone banking will enhance his/her performance of banking activities,” and “the extent to which a person believes that using WIG mobile phone banking will be free of effort”. Based on TAM theory the following hypotheses are included in the study:

- H<sub>1</sub>: Perceived usefulness will positively influence Attitude towards WIG mobile phone banking  
 H<sub>2</sub>: Perceived ease of use will positively influence Attitude towards WIG mobile phone banking  
 H<sub>3</sub>: Perceived ease of use will positively influence Usefulness towards WIG mobile phone banking.

Determinants of Perceived ease of use are Self-efficacy and Facilitating conditions (Venkatesh and Bala, 2008). In the IS context, self-efficacy refers to an individual's perceptions of his or her ability to use technology in the accomplishment of a task (Compeau and Higgins, 1995). Individuals who consider a technology as too complex to use and believe that they will in all probability not be able to control the technology will prefer to avoid it, or are less likely to use it (Igbaria and Iivari, 1995). Therefore, in the context of WIG mobile phone banking, users will perceive it as easy to use when they recognize that they have a high self-efficacy (i.e. strongly believe that they have the ability to accomplish specific banking tasks through WIG mobile phone banking). Thus, it is proposed that Self-efficacy will positively influence Ease of use. Furthermore, an individual's self-efficacy judgments can also exert an influence on the outcome expectations he or she has. The influence of self-efficacy on outcomes is because the outcomes one expect are derived largely from judgments as to how well one can execute the required behavior (Compeau et al., 1999; Compeau and Higgins, 1995). Therefore, the stronger an individual believes in his or her ability to use WIG mobile phone banking, the more positive their beliefs would be about the Usefulness of it for banking. Gu et al. (2009) define Facilitating conditions as the “external environments of helping users overcome barriers and hurdles to the use of IT”. According to Gu et al. (2009), users will perceive mobile banking as easy to use when they recognize that there are environmental conditions to help them to learn

how to use mobile banking, even though they cannot use it skillfully. As a result, Facilitating conditions should positively influence Ease of use and Self-efficacy beliefs. Given that Facilitating conditions helps users to use technology, it is expected that Facilitating conditions will positively influence Usefulness. Considering the above arguments, the following hypotheses are considered in the study:

- H<sub>4</sub>: Perceived self-efficacy will positively influence Perceived ease of use of WIG mobile phone banking  
 H<sub>5</sub>: Perceived self-efficacy will positively influence Perceived usefulness of WIG mobile phone banking  
 H<sub>6</sub>: Facilitating conditions will positively influence Perceived usefulness of WIG mobile phone banking  
 H<sub>7</sub>: Facilitating conditions will positively influence Perceived ease of use of WIG mobile phone banking  
 H<sub>8</sub>: Facilitating conditions will positively influence Perceived self-efficacy of WIG mobile phone banking

In the original TAM, Perceived cost was not considered as a determinant of Attitude, Intention or Usage, since it was developed in an organizational context and the actual user was not the same person who was paying for the technology. However, when transferring the model to a private consumption context, cost becomes an important consideration in the evaluation process (Kleijnen et al., 2007). Indeed, the study of Luarn and Lin (2005) provided empirical evidence that Cost influences mobile phone adoption behavior negatively. From a customer value perspective, Cost is an important factor in determining the perceived value of an offer. Zeithaml and Bitner (2003) define customer value as a trade-off between the qualities or benefits buyers perceive in the product relative to the sacrifices they perceive by paying the price. Thus, the Perceived cost of using WIG mobile phone banking could lower the perceived value of the service, which in turn may influence Perceived usefulness of the self-service. This negative influence of Cost on mobile phone banking adoption behavior is likely to be more significant for low-income earners as they often resist services with continuing costs. Therefore it is argued in this study that the Perceived cost of WIG mobile phone banking will negatively influence the Perceived usefulness of WIG mobile phone banking. The following hypothesis is therefore included in the study.

- H<sub>9</sub>: Perceived cost will negatively influence Perceived usefulness of WIG mobile phone banking

Perceived risk can be an important barrier to consumer acceptance of e-services (Featherman and Pavlou, 2003). Most of the scholars who have studied Perceived risk in customer decision-making view Perceived risk as a multi-dimensional construct that consists of components or types of risks such as financial, social, physical, privacy and time-risk (Lee, 2009). According to Wu and

Chen (2005) and Wu and Wang (2005), previous research indicates that Perceived risk is an important determinant of consumers' attitude towards online transaction. In the case of online purchasing, three types of risks are influential: financial risk, product risk and information risk (security and privacy) (Kim et al., 2008). If consumers perceive some risk in using an electronic service it will reduce the Usefulness of the service (Lu et al., 2005). Drawing on the definitions of Perceived risk in Featherman and Pavlou (2003) and Lee (2009), Perceived risk, for the purpose of this study, is defined as "the subjective determined expectation of loss by a bank customer in contemplating the use of WIG mobile phone banking". We thus hypothesize that:

H<sub>10</sub>: Perceived risk will negatively influence Perceived usefulness towards WIG mobile phone banking

## METHODOLOGY

### Sampling

The study population was low-income non-users of mobile phone banking without access to the Internet at home or at the office. The criterion used for classifying a respondent as a low-income earner was based on South African banks' guideline when considering home mortgage loans. Bank customers can choose not to adopt mobile phone banking because they have access to the internet at home or the office and therefore they are currently using internet banking. Alternatively, bank customers may choose not to adopt mobile phone banking because they have access to the Internet and intend to adopt internet banking in future. On the other hand, bank customers may have no access to the Internet (at home or at the office) and therefore it may be more beneficial for them to adopt mobile banking. Access to the Internet could therefore influence beliefs about mobile phone banking, which could impact mobile banking adoption behavior. To control for possible influences related to access to the Internet on mobile phone banking adoption, the study population can be described as non-users of mobile phone banking without access to the Internet at home or the office. To confirm that respondents conform to the criterion, screening questions were included in the survey. From the study population a non-probability sample of 465 respondents was drawn.

### Data collection

Data were collected at the place of employment of the respondents. A 40-item questionnaire was designed containing 9 items relating to demographic and general questions and 31 items to user-acceptance behavior. In the survey 'WIG mobile phone banking' was replaced with the non-technical and more general name of the application 'SMS mobile phone banking'. In the cover letter of the survey the following definition of SMS mobile phone banking was provided "SMS-mobile phone banking allows customers to do a number of bank activities (transactions) from their bank accounts via secure text messages. Such bank activities (transactions) include paying accounts, transferring money to another account, requesting a statement, viewing account balances amongst others". Questions relating to beliefs were measured using a five-point Likert-type scale (1=absolutely disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=absolutely agree). The scale used

to measure Attitude was based on the scales used by Grabnet-Kräuter and Kaluscha (2003) and Kuo and Yen (2009). The items used by Davis (1989) to measure Ease of use were adapted to the context of the study, as well as the items by Wang and Wang (2008) to measure Self-efficacy towards a specific mobile service. A more context-specific scale was used for Perceived usefulness, based on the scale used by Davis (1989) and online mobile phone banking marketing materials of banks. The scale for Perceived risk was based on the scale used in Featherman and Pavlou (2003) and Wu and Wang (2005), and the scale for Perceived cost was based on the scale used in Luarn and Lin (2005) and real-world costs of WIG mobile phone banking. The scale used for Facilitating conditions was based on the scale used in Pedersen (2005) and Akinci et al. (2004) and Cheung et al. (2000). The initial items used to measure each construct are listed in Annexure A.

## RESULTS

### Descriptive statistics

The descriptive data were analyzed with PASW 18. As can be seen from Table 1, both genders are well represented in the sample. Females represented 57% of the respondents and males 43% of the respondents. Furthermore, the respondents also represent various age groups. 211 respondents (48% of the respondents) were in the age group 18–30 years, followed by 145 respondents (31%) in the age group 31–40. Therefore, 21% of the respondents were 41 years of age and older.

According to the banks' criteria any customer who earns a salary of ZAR11 000 a month or less is classified as a low-income earner. In Table 2 the income per month categories are cross-tabulated with gender. Of the 465 respondents, 269 respondents (almost 58%) earned ZAR5 000 a month and less, whilst 72 respondents (15%) earned a salary of between ZAR5 001 and ZAR6 000 a month. The rest of the respondents, 114 respondents, which represent almost 26% of the sample, earned between ZAR6 001 and ZAR11 000.

### Measurement model assessment

The assessment of the structural model was preceded by an assessment of the measurement properties of the scales by means of confirmatory factor analysis (CFA) using AMOS 17.0. A CFA based on the original measurement scales showed acceptable fit (Table 3). Although the model fit was acceptable, the standardized structural weights for FC1 ← Facilitating conditions, SE4 ← Self-efficacy and R3 ← Risk were below the ideal value of 0.7 and were subsequently excluded from the measurement model (see Annexure A for the items represented by FC1, SE4, R3 and other items labels referred to in this section). Furthermore, the modification indices for error co-variances between PEOU1 and PEOU2 (MI=58.467, Par change=0.066) and ATT4 and ATT5 (MI=25.720, Par change=0.126) were the two largest modification indices.

**Table 1.** Age of the respondents.

Gender	Age groups (years)				Total
	18 to 30	31 to 40	41 to 50	Older than 50	
Male	88	69	32	9	198
Females	123	76	48	20	267
Total	211	145	80	29	465

**Table 2.** Income of respondents.

Gender	Income per month (ZAR 000's)							Total
	ZAR 5 and less	ZAR 5.001 – 6	ZAR 6.001 – ZAR 7	ZAR 7.001 – ZAR 8	ZAR 8.001 – ZAR 9	ZAR 9.001 – ZAR 10	ZAR 10.001 –ZAR 11	
Male	105	35	9	13	15	6	15	198
Female	164	37	5	14	22	11	14	267
Total	269	72	14	27	37	17	29	465

**Table 3.** Model fit of the measurement model.

Fit indices	Original measurement model	Modified measurement model
$\chi^2$	915.759	535.151
df	413	278
$\chi^2/df$	2.217	1.925
CFI	0.943	0.964
TLI	0.936	0.958
RMSEA	0.051	0.045

largest modification indices. Possible reasons for these high modification indices could be a high degree of overlap in item content from the perspective of the respondents (a possibility for PEOU1 and PEOU2) or yea-/nay-saying by respondents (a possibility for ATT4 and ATT5 as these two questions were the last two questions on the survey). Therefore, PEOU1 and ATT5 (of

both pairs these items had the lowest standardized weights) were deleted from the measurement model. The modifications to the measurement model improved the model fit significantly (Table 3).

The next step was to assess the construct reliability and validity of the measurement model. Construct reliability was assessed by dividing the

squared sum of factor loadings with the sum of the squared factor loadings and the error variance terms for a construct (Hair et al., 2006). The cut-off value of >0.07 was used as an indication of acceptable construct reliability (Hair et al. 2006). The construct reliability value for every construct in Table 4 was well above 0.7. Construct validity was examined by considering the average

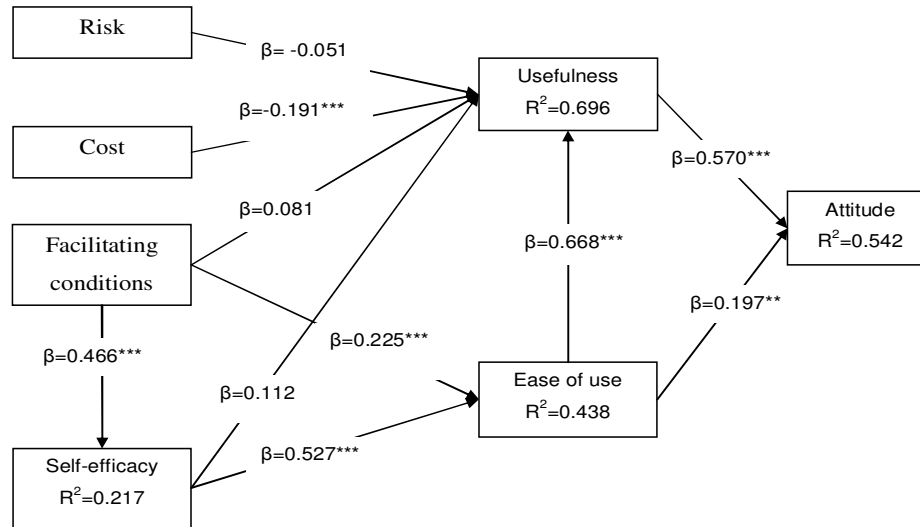
**Table 4.** Construct reliability and validity.

Constructs	Items	Standardized regression weight	Variance extracted	Construct reliability
Attitude	ATT1	0.764	0.724	0.950
	ATT2	0.891		
	ATT3	0.853		
	ATT4	0.890		
Cost	C1	0.828	0.656	0.932
	C2	0.834		
	C3	0.827		
	C4	0.750		
Facilitating conditions	FC2	0.782	0.641	0.919
	FC3	0.787		
	FC4	0.808		
	FC5	0.756		
Ease of use	PEOU2	0.779	0.647	0.930
	PEOU3	0.802		
	PEOU4	0.804		
	PEOU5	0.831		
Usefulness	PU1	0.718	0.585	0.908
	PU2	0.781		
	PU3	0.799		
	PU4	0.760		
Risk	R1	0.785	0.613	0.894
	R2	0.804		
	R4	0.786		
Self-efficacy	SE1	0.734	0.578	0.878
	SE2	0.736		
	SE3	0.808		

extracted variance of each construct in the model and the factor loadings. In the measurement model the average extracted variances of all constructs were above 0.5, which suggests adequate convergence (Hair et al. 2006). Furthermore, in the measurement model the indicator variables loaded significantly onto the intended constructs and were above the recommended 0.7 (the ideal). Thus, the results in Table 4 provide considerable evidence of construct validity. Discriminant validity was examined by comparing the variance-extracted percentages for any construct with the squared interconstruct correlations associated with that factor (Fornell and Larcker, 1981). If the variance-extracted estimate is greater than the squared correlation estimate it could be interpreted as evidence of discriminant validity. Of the 21 squared correlations in the measurement model only one squared correlation did not meet the criteria for discriminant validity. The squared correlation between Usefulness and ease of use was 0.661, whilst the variance extracted

for Usefulness was 0.585 and Ease of use 0.647.

Following the commentary of Farrel (2010) on the different methods to assess discriminant validity, two other methods to assess discriminant validity were applied to present on the weight of evidence support for discriminant validity between the Usefulness and Ease of use constructs. Firstly, the method proposed by Bagozzi and Phillips (1982) was applied, which entails comparing the chi-square value of a two-factor model where the correlation is freely estimated with the chi-square value of the sample factor model where the correlation is constrained to one. For evidence of discriminant validity the chi-square value of the unconstrained model must be significantly lower than the chi-square value of the constrained model. The result of this method (Table 5) produced some evidence of discriminant validity between the Usefulness and Ease of use constructs. Then the method proposed by Bagozzi et al. (1991) was applied, which entails examining the confidence interval for the



**Figure 1.** AMOS analysis results of the research model. \*\*Path is significant at  $p < 0.05$ ; \*\*\*path is significant at  $p < 0.001$ .

**Table 5.** Result of the assessment of discriminant validity according to Bagozzi and Philips (1982).

Constructs	$\chi^2$ Unconstrained model (df)	$\chi^2$ Constrained model (df)	$\chi^2$ difference test		
			$\Delta\chi^2$	$\Delta$ df	$p$
Ease of use and Usefulness	29.632 (19)	117.277	87.645	1	<0.001

estimated correlation between two constructs. Two constructs are distinct when the 95% confidence interval for the correlation between two constructs does not contain unity. The confidence interval ( $\pm 2$  standard errors) around the disattenuated correlation did not contain a value of 1.0, which was further evidence of discriminant validity. Thus, two out of the three methods used provided evidence of discriminant validity between the Usefulness and Ease of use constructs.

### Structural model assessment

AMOS 17.0 was used to create the covariance-based structural equation model. The  $\chi^2/df$  ratio of the structural model was 2.110, the GFI 0.913, the CFI 0.956, the TLI 0.949 and the RMSEA was 0.049. Considering the guidelines set in Hair et al. (2006) for model fit indices, it can be concluded that the hypothesized model fits acceptably with the observed data. The standardized path coefficients of the proposed research model are shown in Figure 1. The results of the assessment of the structural model indicate that the hypothesized model explains approximately 54% of the variance in Attitude, whilst the determinants of Usefulness explain approximately 70% of the variance in Usefulness. The determinants of Ease of use and Self-efficacy respectively explain more or less 44 and 22% of the variance in the constructs. Of the 10

hypothesized relationships only three hypotheses are not supported by the empirical assessment of the structural model. These three hypotheses are Hypothesis 5 (Self-efficacy on Usefulness), Hypothesis 6 (Facilitating conditions on Usefulness), and Hypothesis 10 (Risk on Usefulness). In accordance with TAM theory, Usefulness has a stronger direct influence on Attitude than Ease of use. Although both Facilitating conditions and Self-efficacy significantly influence Ease of use, the influence of Self-efficacy on Ease of use is stronger than the influence of Facilitating conditions on Ease of use (0.527 vs. 0.225). With regard to the determinants of Usefulness in the structural model, only Cost has a significant influence (-0.191) in the hypothesized direction.

### DISCUSSION

The statistical results were strongly supportive of the study's goal of modeling low-income non-users' attitude formation towards WIG mobile phone banking. Firstly, the results of the empirical study validate the use of an extended TAM in studying non-users' attitude towards WIG mobile phone banking. Secondly, the findings of the study provide insights into the determinants of Attitude towards WIG mobile phone banking of low-income non-users of this self-service technology. For non-users of

WIG mobile phone banking the Perceived usefulness of WIG mobile phone banking exerts a strong influence on their attitude towards this self-service technology. In line with TAM theory, Usefulness is a stronger direct predictor of Attitude than Ease of use. Furthermore, the Perceived ease of use of WIG mobile phone banking is also a strong determinant of Usefulness. However, the total effect of Ease of use on Attitude is 0.578 ( $0.197 + 0.668 \times 0.570$ ). Therefore, Ease of use can be overall as strong predictor of Attitude as Usefulness is a predictor of Attitude. This result underpins the importance of Ease of use perceptions in the formation of low-income non-users of WIG mobile phone banking attitude towards WIG mobile phone banking. According to the results of the study, Self-efficacy is a strong predictor of the Perceived ease of use of WIG mobile phone banking. Moreover, facilitating conditions also has a significant influence on Self-efficacy and explains 22% of the variance in the Self-efficacy construct. Considering the direct and indirect influences of Facilitating conditions on Ease of use, the total effect of Facilitating conditions on Ease of use is 0.471 ( $0.225 + 0.466 \times 0.527$ ). Therefore, the availability and presence of Facilitating conditions will strongly influence perceptions of the Ease of use of WIG mobile phone banking, which is an important predictor of Usefulness. Given that the study population was low-income earners, it was hypothesized that the perceptions of Cost related to the use of WIG mobile phone banking would influence Usefulness negatively. The results of the study supported this hypothesis. Unexpectedly, considering the body of knowledge on the negative influence of risk perceptions on technology adoption behavior, Perceived risk did not influence the Perceived usefulness of WIG mobile phone banking. This finding may be due to the fact that the respondents are non-users of WIG mobile phone banking and therefore the absence of direct experience with WIG mobile phone banking does not enable them to form an opinion on the potential risk in using this type of mobile phone banking.

## THEORETICAL AND MANAGERIAL IMPLICATIONS

The goal of this research is to expand one's understanding of the determinants of attitude formation of low-income non-users of WIG mobile phone banking. In accordance with TAM theory, Attitude towards WIG mobile phone banking is influenced by usefulness and ease of use. The other findings of the study have confirmed the significant effects that Cost and Ease of use have on Usefulness for low-income non-users of WIG mobile phone banking. Furthermore, Facilitating conditions and Self-efficacy influence Ease of use and the total effect of Facilitating conditions on Ease of use is relatively strong. The theoretical contribution of this study is two-fold. Venkatesh and Bala (2008) pointed out that Usefulness

and Ease of use are the two key determinants in technology adoption and that establishing the determinants of these two internal beliefs is of high importance in technology adoption research. In line with the view of Venkatesh and Bala (2008), this study makes a contribution to the body of knowledge on mobile commerce, since it provides insights into the determinants of Usefulness and Ease of use of low-income non-users of WIG mobile phone banking, which is a text-based mobile commerce application. Secondly, as pointed out at the beginning of the study, previous mobile phone studies did not focus on low-income earners. This study addresses this gap in literature by controlling for income in the sample.

The results of the study offer useful information that managers of mobile phone banking services can use in the formulation of marketing strategies to enhance the adoption of WIG mobile phone banking among low-income earners. The first important finding for managers is that, considering the total effects, Usefulness and Ease of use are more or less equally important in the formation of Attitude towards WIG mobile phone banking. Therefore, the marketing communication strategy must focus on conveying the benefits of WIG mobile phone banking such as the convenience due to any time/anywhere banking and time saving. Moreover, considering the strong influence of Ease of use on Usefulness, the ease of use of WIG mobile phone banking must be promoted as a major reason why it is useful. Managers can use various marketing communication media such as displays in banks, advertisements in newspapers, advertisements on ATM screens and text messages to make low-income non-users more aware of the benefits of WIG mobile phone banking. Given the significance of the influence of Ease of use on Attitude formation towards WIG mobile phone banking, it is important that marketing activities should also focus on the determinants of Ease of use. The presence and availability of Facilitating conditions are mostly within the direct control of the manager. Therefore, managers should see to it that appropriate instruction leaflets and manuals are developed and distributed to the target market and that an accessible helpdesk is available. Lastly, since the target market is low-income earners, managers should pay attention to the cost of using mobile phone banking. Managers can develop special packages for low-income earners that offer them lower mobile phone banking charges, or even renounce some/all of the charges if the bank customer makes use of other banking services.

## LIMITATIONS OF THE STUDY

One limitation of the study is that only one determinant for Self-efficacy was included in the study. Given the strong influence of Self-efficacy on ease of use, a better understanding of the determinants of Self-efficacy would



have been of value in the study. Therefore, future studies can add to this study by investigating the determinants of Self-efficacy for the low-income non-user of mobile phone banking. Another possible avenue for future research is to assess invariance in structural weights across different types of mobile banking applications. Findings of such studies can be useful for marketing managers in developing effective marketing strategies for different types of mobile phone banking.

## Conclusion

The purpose of this study was to investigate attitude formation of low-income non-users of WIG mobile phone banking. The empirical study confirmed that Cost, Facilitating conditions, Self-efficacy, Usefulness and Ease of use beliefs play an important role in attitude formation towards WIG mobile phone banking of low-income non-users of WIG mobile phone banking. These findings provide marketing managers and practitioners with more insight into mobile phone banking adoption behavior which is very useful in developing effective marketing strategies for WIG mobile phone banking. It is therefore imperative for marketing managers and practitioners of WIG mobile banking services to take cognizance of these findings and to consider the recommendations of this study.

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**ANNEXURE A**

Facilitating conditions: I would use or consider SMS mobile phone banking if:

- 
- FC1 There is network coverage at all times.  
 FC2 There is a substantial support from the banks (manuals, demonstrations).  
 FC3 Clear instructions are provided to use SMS mobile phone banking effectively.  
 FC4 SMS mobile phone banking is readily accessible.  
 FC5 Helpdesk is available to assist with any SMS mobile phone banking difficulties.
- 

Risk:

- 
- R1 I think using SMS mobile phone banking puts personal details at risk for confidentiality.  
 R2 I think using SMS mobile phone banking for paying bills has a potential risk.  
 R3 I think SMS mobile phone banking is open for information interception.  
 R4 I think SMS mobile phone banking is more risky than other banking options.
- 

Cost:

- 
- C1 I think bank charges are expensive when using SMS mobile phone banking.  
 C2 I think SMS charge is expensive when using SMS mobile phone banking.  
 C3 I think SMS alerts from the bank are expensive when using SMS mobile phone banking.  
 C4 I think SMS mobile phone banking is more expensive than other banking options.
- 

Self-efficacy:

- 
- SE1 I would easily understand how SMS mobile phone banking works.  
 SE2 I would be able to use SMS mobile phone banking even if there could be no-one around to show me how to use it.  
 SE3 I would feel comfortable using SMS mobile phone banking on my own.  
 SE4 I could complete SMS mobile phone banking if I had enough time.
- 

Perceived ease of use:

- 
- PEOU1 Learning to use SMS mobile phone banking will be easy.  
 PEOU2 SMS mobile phone banking will be easy to understand.  
 PEOU3 Getting the information I want from SMS mobile phone banking will be easy.  
 PEOU4 Becoming skilful at using SMS mobile phone banking is easy. (Knowing shortcut keys or Advanced options.)  
 PEOU5 SMS mobile phone banking will be easy to use.
- 

Perceived usefulness:

- 
- PU1 Using SMS mobile phone banking will save me time.  
 PU2 Using SMS mobile phone banking will save me money.  
 PU3 Using SMS mobile phone banking is convenient.  
 PU4 Using SMS mobile phone banking is useful for banking.
-

## Attitude:

- 
- |      |  |
|------|--|
| ATT1 | In my opinion it is desirable to use SMS mobile phone banking.     |
| ATT2 | I think it will be good for me to use SMS mobile phone banking.    |
| ATT3 | Overall, my attitude toward SMS mobile phone banking is favorable. |
| ATT4 | I think using SMS mobile phone banking is a good idea.             |
| ATT5 | Generally speaking, I like the idea of SMS mobile phone banking.   |
-