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Mobile Phone SMS Alert Banking Services: Perception of Customers that Determine Subscription in Northern Ghana

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Abstract: *This study investigated perceptions of bank customers that determine their decision to subscribe to the mobile phone SMS alert banking services and its benefits to bank customers in Northern Ghana. Descriptive statistics with likert technique was used to assess bank customers' perceptions of the mobile phone SMS alert services benefits, while logistic regression (logit) model was used to estimate customers' perceptions that determine their decision to subscribe to the mobile phone SMS alert banking services. The key findings were that quality of service, value of service; customer loyalty and eagerness to get salary payment information on time were perceptions that determine customers' decision to subscribe to the mobile phone SMS alert banking services. Also, time and cost savings from travelling as well as relief from anxiety due to lack of up-to-date information on accounts were perceived to be the main benefits of the mobile phone SMS alert banking services to customers.*

Keywords: *SMS alert, banking services and customer perception*

1. INTRODUCTION

The high risk involved in the banking industry has made information to both customers and bankers crucial. The customers need careful information on their accounts and how to access this information easily (Hoppe et al, 2001). Banks therefore strive to satisfy customers in this regard in the face of heavy and increasing pressure of costs and the quest of banks to maintain or increase customer base for higher profits. These have led to the exploration of new channels of providing services to customers through electronic banking (Hemandez and Mazzon, 2006). Electronic banking (e – banking) includes all electronic channels which the customers use to access their accounts and transfer money between accounts or payment of bills. These channels include internet, ATMs (Automated Teller Machine), mobile phone, telephone and digital television (Lu et al, 2003). One of the most important and recent applications of electronic banking channels is the use of mobile phone in banking. The mobile banking concept was propounded and presented in Europe since 1992 and was used in 1999 with the entry of WAP (Wireless Application Protocol).The use of mobile phone Short Messaging Service (SMS) in banking has been one of the first applications of mobile phone in banking. SMS banking is defined as a banking transaction through short messaging service (SMS) using mobile phone. Previously, SMS evolved among people as a key social memo to connect with family members, friends, and teachers. At present, SMS has evolved as a medium of disseminating banking information to make individual contact with banks better (Amin, 2007). SMS banking was first introduced in 2004 in Malaysia. Since then, SMS banking has become an interesting topic of research in other countries to establish factors that inform customers' decision to adopt SMS banking services. This new channel has gained much popularity in the banking industry among customers probably due to reasons such as ease of access and use as well as usage without any

special software or hardware (Lu et al, 2003). Mobile phones have clearly become omnipresent and a standard aspect of the daily lives of people. Ongoing innovations in mobile finance show some potential to change the way people conduct financial transactions by offering customers new services. Yet, many people remain skeptical of the benefit of mobile financial services and the level of security provided along with such services (Federal Reserve Board Report, 2012). Critical examination of previous studies has revealed mixed outcomes with regards to the adoption of e-banking technologies by customers, making customers' willingness to subscribe to future e-banking facilities or services inconclusive. This observation has provided the basis for the present study to evaluate the perception of customers that determine their decision to subscribe to the mobile SMS alert banking services introduced by some banks in Ghana.

2. LITERATURE REVIEW

There exists a strong assertion that people have weak understanding of managing the use of e-banking facilities at the best conduct of practice (Pikkarainen et al., 2004; Roboff and Charles, 1998). This has affected customers' accounts privacy as well as the security and tendency to be hacked by irresponsible parties (Amin and Ramayah, 2010). Ramayah and Ling (2002) conducted a survey on adoption of e-banking services and reported that customers placed security as one of the most important factors when adopting e-banking services than anything else. Wang et al. (2004) investigated internet banking acceptance in Taiwan and found that PSP (perceived security and privacy or perceived credibility of service/product provider) had significant positive effect on behavioural intention of customers to use electronic banking services. Ramayah et al. (2006) also examined users' and non-users' perceptions of internet banking usage and confirmed that security and PSP are key predictors to measure internet banking usage by users. Amin and Ramayah (2010) then asserted that bank customers have the tendency to simply avoid the use e-banking facilities if a bank disregards the need to provide proper measures to promote the PSP of the facilities. Owing to these studies, it is argued that people tend to utilize e-banking facilities when the bank management prioritizes the issue of PSP. Essentially, the legitimate concerns of the level of security of mobile SMS banking services have come up in many researches (Wang et al., 2003; Mattila, 2003; Kleijnen et al., 2004; Laforet and Li, 2005) conducted in different parts of the world on customers' adoption behaviour of mobile SMS banking services. Lee (2010) confirmed that factors affecting customers' perception on mobile banking in Korea are customers' trust and satisfaction of the service which depends on system and information quality. Taleghani et al. (2001) reported that speed, mobility access, advanced directions, self-efficacy adoption, usefulness and ease of use of these services have positive effects on customers' perceptions in mobile banking services. Kleijnen et al. (2004) studied wireless finance in Netherlands and reported that perceived ease of use was a significant factor in the development of peoples' intention to use the service. While level of customer' education is perceived as a factor which could influence customers' decision to e-banking services, Laforet and Li (2005) reported that customers' level of education did not influence their decision to use mobile SMS banking transactions in China. Also the benefits customers expect to derive from the use of e-banking facilities inform their decision to subscribe. For instance, Mattila (2003) investigated the factors influencing customers' decision to use mobile phone for banking transactions and discovered that cheaper bill payment and transfer of money between accounts were the beneficial factors which made customers to use SMS banking services.

3. METHODOLOGY

The study purposively sampled customers from the Agriculture Development Bank (ADB), a state owned bank with wider geographical area of coverage in almost all parts of Northern region. A sample of 200 bank customers was drawn from five branches across four major commercial district capitals (Tamale Metropolis, Yendi Municipality, Savelugu-Nanton Municipality and Walewale in the West Mamprusi district) in the northern region.

The study employed mainly descriptive statistics (frequencies and percentages) and the likert technique of eliciting responses regarding subjects' perceptions on key issues to assess customers' perception on the benefits of the SMS alert. The likert technique assessed customers level of

agreement on the benefits of the SMS alert ranging from (Strongly agree, Agree, Agree somehow, strongly disagree, Disagree, to somehow disagree).

The study also investigates the perceptions' of customers that determine their decision to subscribe to the mobile SMS alert banking services using a logistic regression (logit) model in which, customers' decision to or not to subscribe is a dependent variable and perceptions of customers are the independent variables. The logit model is a binary choice model used to determine qualitative responses in which the dependent or the response variable is an indicator of a discrete choice such as a 'yes' or 'no' decision. Binary models are analyzed in the general framework of probability models (Greene, 2003 and Gujarati, 2004).

The logit model has a logistic distribution function for the stochastic error term (e) and is predicted base on the random utility models (Greene, 2003). Given that the utility a customer derives from the decision to subscribe is Ui1 and the decision not to subscribe is Ui0, then, the utilities are:

$Ui1(X) = \beta 1Xi + ei1$ decision to subscribe (1)
$Ui0(X) = \beta 0Xi + ei0$ decision not subscribe (2)

where X is ith customer's decision to or not to subscribe and Xi is the ith customer's perceptions of mobile SMS alert banking services. Assuming that the utilities are random, then, the ith customer will subscribe to the SMS alert if the utility from the decision to subscribe is equal to (1), that is, $Ui1>Ui0$, and not to subscribe if the utility is equal to (0), that is, $Ui1\leq Ui0$.

If Y = 1 denotes the ith customer's decision to subscribe, then the probability that the ith customer subscribes will be given by:

$$Prob[Y = 1/x] = Prob[Ui1 > Ui0] \quad (3)$$
$$= Prob[\beta 1Xi + ei1 > \beta 0Xi + ei0]$$
$$= Prob[ei0 - ei1 < \beta 1Xi - \beta 0Xi]$$
$$= Prob[ei - \beta Xi]$$
$$= ø[\beta Xi]$$

where (ø) is the cumulative distribution function of the stochastic or error term (ei).

Also $[\beta Xi]$ is equal to the regressor vector ($\beta'X$) where $Prob(Y = 1/x) = 1$, as $\beta'X \rightarrow +\infty$ and $Prob(Y = 0/x) = 0$, as $\beta'X \rightarrow -\infty$

Implies,

$$Prob\ (Y = 1/x) = ø\ (\beta'X) \quad (4)$$

In logit model, the cumulative distribution function (ø) is a logistic distribution specified as:

$$Prob(Y =1/x) = e\beta' X / (1 + e\beta' X) = \Lambda(\beta'X) \quad (5)$$

where $\Lambda(.)$ is the cumulative logistic distribution function.

Considering the above, the expectation therefore is:

$$E[Y = 1/x] = 0[1-F(\beta'X)]+ 1[F(\beta'X)] = F(\beta'X) \quad (6)$$

To estimate this model, we use the maximum likelihood estimator (MLE) specified as:

$$InL = [yiInF(\beta'Xi) + (1-yi)In(1-F(\beta'Xi)] \quad (7)$$

Empirical Specification of Model:

The logit model employed is empirically specified as follows:

$$In(Y = 1/x) = \beta 0 + \beta 1X1 + \beta 2X 2+ \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \beta 7X7 + \beta 8X8 \quad (8)$$

where: Y = Customer's decision to subscribe, X1 = Saves time, X2 = Saves cost, X3 = Saves anxiety, X4 = Salary information, X5 = Quality of service, X6 = Value of service, X7 = Loyalty to bank, X8 = Satisfaction of service and $\beta 0 - \beta 8$ are the parameter estimates.

As noted by Greene (2003), the parameter estimates of logit model, like any other nonlinear regression model, are not the marginal effects. Thus in line with Greene the marginal effects are obtained as:

$$dE[y/x]/dx = \Lambda(\beta Xi)[1 - (\beta Xi)]\beta \quad (9)$$

We use the marginal effects to determine the percentage change in the explanatory variables, given a unit change in the regressor. For estimating this model, the study collected primary data on mobile SMS alert subscribers and non-subscribers perceptions of bank customers from five branches of ADB across four commercial districts in northern region.

4. RESULTS AND DISCUSSION

4.1. Socio-Economic Characteristics of Respondents

4.1.1. Gender and Age Distribution

Majority 60.5 percent of the customers interviewed were males with 39.5 percent being females, suggesting that males in the northern region patronize banking services as compared to females.

The age distribution of the customers interviewed show that most, 36.5 percent, of the customers were between the ages of 26-32years, while just a few 4.0 percent were greater than 46years (Table 1). This means that a greater chunk of the bank customers' interviewed are within the economic active age of production.

Table1. *Age distribution*

Sex	Frequency	Percent (%)
Male	121	60.5
Female	79	39.5
Age (yrs.)	**Frequency**	**Percent (%)**
18-25	54	27.0
26-32	73	36.5
33-39	34	17.0
40-46	31	15.5
>46	8	4.0

Source: *Field Survey Data, 2013*

4.1.2. Occupation of Respondents

The results also showed that the occupation of most of the customers, 33.5percent, were teachers/lecturers, followed by others such as students, drivers, civil servants and accountants consisting of 32.0percent (Table 2). This indicates that the clientele base of the bank in the region is salary earners and students.

Table2. *Major occupation of respondents*

Occupation	Frequency	Percent (%)
Teacher/Lecturer	67	33.5
Farmer	11	5.5
Doctor	7	3.5
Trader	51	25.5
Others(students, drivers, civil servants and accountants)	64	32.0

Source: *Field Survey Data, 2013*

4.2. Type of Accounts Operated by Customers

Majority 39.5percent of the customers operate current accounts, which is closely followed by 38.0percent that operate mainly savings accounts (Table 3). This confirmed the earlier finding by the present study that most of the clientele base of the bank is salary workers/earners. Even though the results did not indicate that customers operate more than one bank account in the same bank, it however, portrays that a sizable number of customers operate their savings accounts as their salary accounts at the same time.

Table3. *Accounts type operated by customers*

Accounts Type	Frequency	Percent (%)
Savings	76	38.0
Current	79	39.5
Salary	18	9.0
Others(savings/salary)	27	13.5

Source: *Field Survey Data, 2013*

4.3. Customers' Means of Obtaining Information from the Bank before the SMS Alert

The results showed that before the mobile SMS alert service which currently alert bank customers on transactions such as withdrawal, payment due and accounts credit information, majority of the customers used to either travel to the bank or message their friends to obtain such information from the bank (Table 4). Majority of the customers who used to travel to the bank for information spent an average of GH□ 5 to get to the bank. On the other hand, customers who used to message their friends to obtain such information had at least ever been disappointed once by those friends. To the customers who are subscribed to the SMS alert service and are now receiving SMS alert on the information they need to know from the bank on their accounts now consider the product beneficial to them. This could be a reason for such customers to subscribe to the SMS alert service.

Table4. *Customers' means of obtaining information on transactions/services from the Bank before the SMS alert*

Type of Transaction information	Traveling to the bank		Messaging a friend		Travel to bank/Message a friend	
	Frequency	Percent (%)	Frequency	Percent (%)	Frequency	Percent (%)
Withdrawal	135	67.5	42	21	23	11.5
Payment due	125	62.5	45	22.5	30	15.0
Accounts credit	139	69.5	41	20.5	20	10.0
Withdrawal	145	72.5	40	20.0	15	7.5

Source: *Field Survey Data, 2013*

4.4. Customers' Perception on the SMS Alert Service Benefits after Subscription

Most of the customers agreed that the mobile SMS alert service save them a lot of expenditure and time from traveling to the bank to obtain information as well as relief them from anxiety from lack of information on transactions going on with ones account in the bank. On the other hand, a few number of customers disagreed with the assertion that SMS alert service did save them some expenditure, time and anxiety from lack of information (Table 5). This implies that most customers may have subscribed to the SMS alert service with the perception that the service will save them some expenditure and time from traveling to the bank and perhaps, the anxiety they sometime have to go through for not having information from the bank on transactions going on pertaining to their accounts.

Table5. *Customers' perception of SMS alert benefits*

Level of Agreement	Saves Expenditure		Saves Time		Reduced Anxiety	
	Frequency	Percent (%)	Frequency	Percent (%)	Frequency	Percent (%)
Agree	76	38.0	58	29.0	89	44.5
Agree somehow	29	14.5	17	8.5	21	10.0
Strongly Agree	52	26.0	85	42.5	42	21.5
Disagree	9	4.5	6	3.0	8	4.0
Somehow disagree	29	14.5	29	14.5	35	17.5
Strongly disagree	5	2.5	5	2.5	5	2.5

Source: *Field Survey Data, 2013*

The results again showed that customers pay an average of GH□ 1 as monthly subscription charges for the alert service. However, a good number of customers hold the view that the amount

they pay is moderate because they feel they are getting value for their money, while some of the customers remained undecided.

4.5. Determinants of Customers' Decision to Subscribe to the SMS Alert Banking Services

The study proceeded to analyze customers' perceptions which determine their decision to subscribe to the SMS alert banking services using a logistic regression analysis and the results shown in Table 6.

Table6. *Determinants of customers' decision to subscribe to SMS alert banking services*

Variable	Coefficients	Standard Errors	Marginal Effects	Probabilities
Constant	-4.400	1.401	0.01	0.002
Time saving	24.442	7736.6	0.00	0.997
Expenditure saving	0.832	1.985	2.30	0.675
Relief of Anxiety	-18.152	7736.6	0.00	0.998
Peer influence	-1.502	1.288	0.22	0.243
Salary information	-4.107	1.688	0.16	0.015**
Bank policy	0.639	0.947	1.90	0.500
Quality service	2.961	1.137	19.31	0.009***
Value of service	3.446	0.965	31.36	0.000***
Customer loyalty	3.455	1.037	31.66	0.001***
Customer satisfaction	0.283	0.941	1.33	0.764

*** and ** mean 1% and 5% level of significant respectively. Source: Field Survey Data, 2013

Where: Dependent variable: (1 = Yes, customer subscribed) or (0 = No, customer did not subscribed), Sample size (N) = 200, -2Logliklihood = 48.391, Nagelkerke R2 = 0.872 or 87.2%, Model Predictability = 95.0%.

The logistic regression analysis results showed that factors that met our a priori expectations and were significant are quality of service, value of service, customer loyalty and provision of salary information by the alert service. This implies that the perception of customers that inform their decision to subscribe to the bank SMS alert services are quality of service, value of service, customer loyalty and provision of salary information by the alert service. The marginal effects implies that, when customers' perception about the quality of the SMS alert service increased by one unit, customers' decision to subscribe to the alert service will increase by 1931percent and also when customers' perception about the value of the SMS alert service to them increased by one unit, will lead to a corresponding increase of 3136percent chance of customers subscribing to the alert service. It further implies that, when the perception of customers' loyalty to the bank increased by one unit, the probability of customers subscribing to the alert service will also increase by 3166percent and when the perception of customers getting timely and reliable information about salary payment is reduced by one unit, will also lead to a corresponding reduction of 1.5percent chances of customers subscribing to the alert service.

The results of the analysis further showed that other factors met our a priori expectations but were not significant. These factors are time saving, expenditure saving, bank policy and customers satisfaction. Even though these factors are not significant, yet they are very critical to customer service provision and profit maximization motive of businesses, hence this study considers the factors worthy for interpretation. The marginal effects implies that, when customers' perception about the SMS alert service saving customers extra expenditure increase by one unit, the probability of customers subscribing to the alert service will increase by 67.5percent and when that of perception of saving customers some time increase by one unit, although very infinitesimal, will increase the probability of customers subscribing to the alert service. Furthermore, the marginal effects also indicate that when perception of customers' about the SMS alert service being a bank policy that all customers must comply with increase by one unit, customers subscription to the alert services will increase by 50percent and when customers satisfaction of the service offered by the SMS alert services increased by one unit, the probability of customers subscribing to the service will also increase by 76.40percent.

5. CONCLUSION

The study established that customers who have subscribed to the SMS alert service considered the service beneficial because they perceived that the service saved them time and expenditure as well as relief them of unnecessary anxieties. It is also established that males dominate the clientele base of banks in Northern Ghana as compared to females probably due to their dominant in the formal sector compared to their female counterparts who are mostly in the informal sector. Banks in this region should roll out products that are tailored towards the informal sector to expand their clientele base. The study also found that customers' perception of quality and value of the alert service as well as their loyalty to the bank grossly influenced their decision to subscribe to the mobile SMS alert service. This calls for banks in the region to invest on improving the quality of the SMS alert platforms as well building customer loyalty since these factors enhance customers' subscription to the banks' electronic services. Another perception of customers for subscribing to the mobile SMS alert banking services was that the service will provide them with timely and reliable alert information on salary payment.

REFERENCES

Amin H., Extending TAM to SMS Banking: Analyzing the Gender Gap among Students, Int. J. Business and Society, 8(1), 45 (2007).

Amin H. and Ramayah, T., SMS Banking: Explaining the Effects of Attitude, Social Norms and Perceived Security and Privacy, Elect. J. Info. Sys. in Developing Countries, 41(2), 15 (2010).

Federal Reserve Board Report, Consumers and Mobile Financial Services, Board of Governors of the Federal Reserve System March 2012 Report, Washington, DC (2012).

Hernandez C. J. M. and Mazzon J. A., Adoption of Internet Banking: Proposition and Implementation of an Integrated Methodology Approach, Int. J. Bank Marketing, 25(2), 88 (2006).

Hoppe R., Newman P. and Mugera, P., Factors Affecting the Adoption of Internet Banking in South Africa: A Comparative Study, An Empirical Research Paper Presented to the Department of Information Systems, University of Cape Town (2001).

Kleijnen M., Wetzels M. and de Ruyter K., Consumer Acceptance of Wireless Finance, J. Financial Services Marketing, 8:206-217 (2004).

Laforet S. and Li X., Consumers' Attitudes Towards. Online and Mobile Banking in China, Int. J. Bank Marketing, 23, 380 (2005).

Lee H. S., Factors Influencing Customer Loyalty of Mobile Phone Service: Empirical Evidence from Koreans. J. Internet Banking and Commerce, 15(2), 14 (2010).

Lu J., Yu C.S., Liu C. E. and Yao J., Technology Acceptance Model for Wireless Internet. Electronic Networking Applications and Policy, 13(3), 72 (2003).

Mattila M., Factors Affecting the Adoption of Mobile Banking Services, J. Internet Banking and Commerce, 8, (2003). http://www.arraydev.com/commerce/JIBC/0306-04.htm

Pikkarainen T., Pikkarainen K., Karjaluoto H. and Pahnila S., Consumer Acceptance of Online Banking: An Extension of the Technology Acceptance Model, Internet Research, 14(3), 235 (2004).

Ramayah T., Taib F. M. and Ling K.P., Classifying Users And Non-Users of Internet Banking In Northern Malaysia, Journal of Internet Banking and Commerce, 11, 2 (2006). http://www.arraydev.com/commerce/JIBC/0306-04.htm.

Ramayah T., and Ling K.P., An Exploratory Study of Internet Banking in Malaysia, Conference Proceedings, 3rd Int. Conference on Management of Innovation and Technology, China, (2002)

Roboff G. and Charles C., Privacy of Financial Information in Cyberspace: Banks Addressing What Consumers Want, J. Retail Banking Services, 20(3), 56 (1998).

Taleghani M., Gilaninian S., Rouhi A. and Mousavivian S. J., Factors Influencing on Customers' Decision to Use of Cell Phone Banking Based on SMS Services. Int. J. Contemporary Research in Business, 3(5), 97 (2011).

Wang Y., Lo H. P. and Yang Y., An Integrated Framework for Service Quality, Customer Value, Satisfaction: Evidence from China's Telecommunication Industry, Information Systems Frontiers, 6(4), 340 (2004).

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