

# Applying Logistic Regression to E-Banking Usage in Kumasi Metropolis, Ghana

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## Abstract

**Purpose:** The main focus of this paper is to ascertain whether customer's decision to use e-banking is influenced by socioeconomic classifications. It further seeks to identify the kinds of e-banking services provided to customers, and also examines the most frequently patronized e-banking service.

**Methodology/approach:** In all, 241 customers of three state-owned retail banks from Kumasi Metropolis, one of the most urbanized metropolis in Ghana, were used as sample for the survey. A well-structured questionnaire was used to obtain relevant information from the customers. Responses gathered from the customers were mainly analyzed using a binary logistic regression.

**Findings:** Internet banking, ATM, E-Zwich and mobile phone banking were the commonly identified e-banking services offered by the banks. Among such services, ATM was the most frequently patronized service whereas internet banking recorded very low patronage. From the chi-squared test of association, customer's operational bank and occupational status were found to have significantly informed the decision to use e-banking. With respect to the logit analysis, customer's operational bank, occupational status and monthly income were significant socioeconomic classification variables that informed customer's decision to use e-banking.

**Practical implications:** This paper may serve as scientific basis for banks to consider customers' socioeconomic classifications, in designing any e-banking marketing strategies in targeting customers in urban communities in Ghana.

**Originality/value:** With the use of a logit regression, this paper has identified occupational status, customer's bank and monthly income as significant socioeconomic variables that inform a Ghanaian customer's decision to use e-banking.

**Keywords:** socioeconomic, binary regression, e-banking, Ghana

## 1. Introduction

Globalisation and rapid technological advancement in Information and Communication Technology (ICT) has generally brought vigorous transformation and competition into the banking industry. According to Tandrayen-Ragoobur and Ayrga (2011), with rising globalisation, as well as fierce competition and technological developments, the trading and investment environment have changed dramatically over the years. This progress in ICT has directly or indirectly affected the way every organization performs its business. Gallivan (2004) stated that changes in technology do affect the routine activities of professionals, managers and everyone in the structural setup of organizations. A number of studies have concluded that information technology has appreciable positive effects on bank's productivity; cashiers' work, banking transaction, bank patronage, and bank services delivery to customers (Hunter & Stephen, 1991; Yasuharu, 2003). The banking industry in Ghana has seen a dynamic change in recent years, not only in the minimum set-up capital for the banks, but also in the way the banks transact businesses. The banking industry is constantly responding to changes in customer preferences and needs; increasing competition from non-banking institutions, changes in demographic and social trends, information

technology advancement, channel strategies, and government deregulations of the financial service sector (Giannakoudi, 1999; Byers & Lederer, 2001).

The continual development or advancement in technology has brought a new way of transacting businesses in the banking industry through electronic means. This act of banking via electronic channels is popularly termed as electronic banking or simply put, e-banking. The evolution of e-banking into the banking industry has fundamentally transformed the means by which banks traditionally conduct their businesses, and has also redirect the manner in which consumers transact their banking activities (Sayar & Wolfe, 2007; Eriksson et al., 2008;). E-banking can be simply defined to mean a process where banks create platform for its customers to generally access information and to transact businesses electronically through an electronic device without necessarily being present at the bank. The concept of e-banking has been defined by (Daniel, 1999; Karjaluoto, 2002) to also mean the delivery of banks' information, as well as new and traditional banking products to customers via different delivery platforms that can be used with different terminal devices such as personal computers and mobile phones with browser or desktop software, telephone or digital television. Daniel (1999) further advances the use of e-banking by ascribing that it provides alternative channels for routine banking services that readily allow customers the opportunity to gain access to their accounts, execute transactions or buy products online, or via other electronic means such as TV, telephone and automated teller machines (ATM). Examples of these e-banking services include Automated Teller Machine (ATM), Credit card, Debit card, Internet banking, Mobile or Telephone banking, etc.

Currently, most banks in Ghana are offering at least one of these e-banking services; namely ATM, Debit card, E-Zwich (National Switch Card), Internet banking, Mobile or Telebanking. According to Abor (2004), the first bank in Ghana to have introduced any form of e-banking service was The Trust Bank (TTB). The bank pioneered the provision of ATM services to the Ghanaian banking industry in 1995. This was later adopted by several banks across the length and breadth of the country. In collaboration with the Agriculture Development Bank (ADB), the Ghana Commercial Bank (GCB) also started the provision of ATM services in 2001. From the early 2000's to date, several kinds of e-banking services have been increasingly introduced into the Ghanaian banking industry. However, Abor (2004) identified ATM as the most revolutionary electronic innovation in Ghana and the world over. The introduction of e-banking in the Ghanaian banking industry has increasingly changed business transactions from the orthodox paper base of transacting business to the paperless base; all aimed at reducing the waiting time by customers in the banking halls for transacting businesses such as shopping, withdrawals, deposits, etc.

Generally, the benefits of e-banking are well-spelt in many multi-country studies around the globe. Paper cheques are gradually being supplemented with electronic images, permitting greater storage capacity, reducing costs and improving customer services (Rose & Hudgins, 2005). E-banking is intended to speed operations, reduce cost and human factor, and to make available twenty-four hour service for transacting businesses. It is being asserted that a simple transaction cost for a non-cash payment at a branch is likely to cost a bank as much as eleven (11) times more than the same transaction over the internet (Jayawardhena & Foley, 2000). From the customers' point of view, e-banking allows them easier access to financial services and offers them a leeway of time saving, in terms of managing their financial transactions (Tan & Teo, 2000; Almazari & Siam, 2008).

With the numerous transaction benefits derived from e-banking services, the question one may then ask is, how well are people adopting these services? Several works (Akinci et al., 2004; Laforet & Li, 2005; Wan et al., 2005, Hernandez & Mazzon, 2007) have attempted to identify factors that possibly influence peoples' adoption of e-banking services. For example, Gan et al. (2006) employed a logit model to examine consumers' choices between electronic banking and non-electronic banking in New Zealand. Cairo and Staten (1999) also used a logistic regression model to investigate the preferences of consumers using debit cards, credit cards, and cash for gasoline purchases.

In Ghana, not much has been done on e-banking and its adoption. The few works that exist includes the work carried out by Abor (2004), who examined the perception of bank customers pertaining to the effects of technological innovations on banking services in Ghana. In a similar work, Marfo-Yiadom and Ansong (2012) assessed customers' perception of innovative banking products in a metropolis in Ghana. Other existing works have much concentrated on the use of ATM, by either assessing its intended objective of increasing effectiveness of customer service provision and reducing workload of bank tellers (Sanda & Arhin, 2011), or by measuring the standard and service quality of ATM's (Asabere et al., 2012). To the best of our knowledge, none of these works has attempted to investigate the factors that may possibly influence the decision of people to use e-banking in the Ghanaian banking market.

Despite increases in studies about e-banking in Ghana, no work has been identified that attempts to ascertain whether socioeconomic classification or grouping of people based on socioeconomic characteristics, explicitly affects adoption of technological innovations in the banking markets for developing economies such as Ghana. Socioeconomic as used in this context is a classification or grouping of people based on key variables such as education, income, employment, etc. The core objective of this study is to ascertain whether usage of e-banking within urban communities in the Kumasi Metropolis, is influenced by socioeconomic status of bank customers. The study again seeks to identify the kinds of e-banking services being offered by the banks. Lastly, the study examines the most frequently used e-banking services among bank customers in the metropolis.

## 2. Materials and Method

The data used for this study was obtained through a well-structured questionnaire (accessible from the author upon request), administered to customers at the banking hall of three selected commercial retail banks. The study purposely considered state-owned commercial retail banks that operate in urban communities in the Kumasi Metropolitan Area. The metropolis readily serves as a haven for the rapid urbanization in Ghana. Several categories of people; skilled and non-skilled, educated and non-educated, rapidly drift from the northern part and the coastal areas of Ghana to seek real or perceived better economic opportunities in urban communities within the metropolis. With its highly commercialized communities, it is best described as one of the few most economically vibrant metropolis in Ghana. The Kumasi Metropolis was chosen to fairly represent all manner of people or group of people, based on varied socioeconomic statuses. Moreover, the main reason for the use of state-owned commercial retail banks was as a result of their broad base customer population. A second reason was a widely held perception of state banks' ability to provide greater security to customers on all transactions. The state-owned commercial retail banks considered for the study had altogether sixteen (16) branches within the metropolitan area. Out of this, Ghana Commercial Bank Ltd (GCB) had nine (9) branches, Agriculture Development Bank (ADB) with five (5) branches and National Investment bank Ltd (NIB) with two (2) branches. A branch each of GCB, ADB and NIB was randomly selected for the study. Some of the customers who were found within the banking hall of each selected branch at the time of the survey were used as sample for the study. At the banking halls, customers were engaged whiles they were in queues to access various services within the service points in the halls. Questionnaires were administered to every third (3rd) person in respective queues at the banking halls of the selected branches. The survey was conducted in April, 2013. It lasted for three (3) weeks within the said month. In all, 300 questionnaires were administered to customers in the three (3) selected branches of the banks. Out of the 300 administered questionnaires, 241, representing 80.3% were completed. The successfully completed questionnaires were initially considered for the analysis. However, further checks on the completed questionnaires indicated that only 188, representing 62.7% were fully completed and could be used for the final analysis. The unusable percentage of questionnaires (37.3%) in this study was not significantly higher than the reported thirty-four percent (34%) in a similar study on electronic service delivery in the UK retail banking sector (Ibrahim et al., 2006). The survey questionnaires generally sought to gather information on the usage and non-usage of e-banking among bank customers within urban communities in the Kumasi Metropolis. To ascertain whether the usage or non-usage of e-banking by customers is influenced by their socioeconomic groupings, the survey questionnaire gathered information on customers, with respect to their formal educational attainment level, monthly income, customer's operational bank and occupational status. Other variables included customer's account preference, duration as a customer to a bank, ICT educational status and easy internet access by customers. Some demographic characteristics (age, gender, marital status) were also collected. Customers' responses were mainly analyzed using a binary logistic regression.

The binary logistic regression is a special case of generalized linear models (McCullagh & Nelder, 1989). It is generally used to model binary responses. It was employed in this study to assess whether a customer's decision to use or not to use e-banking is influenced by the customer's socioeconomic groupings and some demographic characteristics. This statistical technique was used because of the dichotomous response to customer's decision to the usage or non-usage of e-banking. Agresti (2007) defined a binary logistic regression model with multiple explanatory variables as:

$$\text{Logit}[P(Y=1)] = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k \quad (1)$$

In this study, we specified the binary logistic regression model as:

$$\text{Log} \left[ \frac{P(Y=1)}{1-P(Y=1)} \right] = \text{Log} \left( \frac{\pi}{1-\pi} \right) = \text{Logit}(\pi) = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k, 0 \leq \pi \leq 1 \quad (2)$$

where  $\alpha$  is the constant term of the model,  $\beta's$  denote the regression coefficients of the covariates and  $x's$  represent a set of covariates or independent variables. The covariates in any regression model can either take the form of categorical, continuous or both. From equation (2),  $P(Y=1)$  or  $\pi$  describes the probability of the usage of e-banking by customers, while  $1-P(Y=1)$  or  $(1-\pi)$  denotes probability of non-usage of e-banking. This binary response by customers was modeled using a log transformation,  $Logit(\pi)$  of the probabilities and by incorporating a set of categorical covariates. Here, the set of covariates or independent variables comprises an earlier specified socioeconomic groupings and some demographic characteristic of the customers. For easy interpretation of each covariate effect on the response variable, an exponential transformation of the estimated coefficients was undertaken. This transformation of the regression coefficients is popularly known as odds ratio. The odds ratio reported in this study gives an indication of the likelihood of a customer to use e-banking with emphasis on a chance in the covariates incorporated in the specified logit model.

### 3. Results

#### 3.1 Sampled Characteristics of E-Banking Usage

Out of the 188 bank customers who participated in this study, 99 (52.7%) were using some form of e-banking services, whereas 89 (47.3%) do not use any of the e-banking services in their banking transactions. Among the users of e-banking, it was realized that ATM was the most frequently used (62.6%) service. This was followed by mobile phone banking (18.2%). E-Zwich banking (17.2%) took the next position, while internet banking recorded the lowest (2%) patronage by bank customers.

Table 1. Descriptive statistics of e-banking usage

Variables	Users		Non-Users		Total
	N	(%)	N	(%)	
Age					
Below 40	87	(53.4)	76	(46.6)	163
40 and Above	12	(48.0)	13	(14.6)	25
Gender					
Male	68	(53.5)	59	(46.5)	127
Female	31	(50.8)	30	(49.2)	61
Marital Status					
Single	67	(54.9)	55	(45.1)	122
Married	32	(48.5)	34	(51.5)	66
Highest Educational Level					
No Formal Education	3	(33.3)	6	(66.7)	9
Basic level	2	(18.2)	9	(81.8)	11
Second Cycle Level	25	(55.6)	20	(44.4)	45
Tertiary Level	69	(56.1)	54	(43.9)	123
Occupational Status					
Student	51	(60.0)	34	(40.0)	85
Employed	37	(59.7)	25	(40.3)	62
Unemployed	3	(23.1)	10	(76.9)	13
Trader	8	(28.6)	20	(71.4)	28
Monthly Income Level					
Non-Income Earner	31	(32.6)	64	(67.4)	95
Below 500	18	(48.6)	19	(51.4)	37
500-999	19	(57.6)	14	(42.4)	33
1000-1499	5	(41.7)	7	(58.3)	12
1500 and Above	6	(54.5)	5	(45.5)	11
Customer's Bank					
ADB	28	(65.1)	15	(34.9)	43
GCB	57	(55.3)	46	(44.7)	103
NIB	14	(33.3)	28	(66.7)	42
Customer's Account					
Savings	80	(51.9)	74	(48.1)	154
Current	15	(57.7)	11	(42.3)	26

Others	4	(50.0)	4	(50.0)	8
Period as a Customer					
1-3yrs	54	(50.9)	52	(49.1)	106
4-6yrs	28	(51.9)	26	(48.1)	54
7-9yrs	7	(58.3)	5	(41.7)	12
10yrs and Above	10	(62.5)	6	(37.5)	16
ICT Educational Status					
ICT Illiterate	20	(46.5)	23	(53.5)	43
ICT Literate	79	(54.5)	66	(45.5)	145
Easy Internet Access					
Never	62	(48.4)	66	(51.6)	128
Always	37	(61.7)	23	(38.3)	60
	99	(52.7)	89	(47.3)	188

The results in Table 1 present descriptive statistics on e-banking users, as well as non-users with respect to some demographic characteristics and socioeconomic groupings of customers. From the table, users of e-banking were highly recorded among customers below age 40 (53.4%), unmarried customers (54.9%), and male customers (53.5%). In terms of educational attainment, bank customers who had no formal education were found to have less (33.3%) patronized e-banking services, compared to customers who attain second cycle (55.6%) and tertiary (56.1%) levels of education. Results from the table clearly indicate that traders (28.6%) and unemployed (23.1%) bank customers recorded lower percentages in the usage of e-banking services than those employed (59.7%) and students (60%). This later finding might not be much surprising as Lewis *et al.*, (1994) ascribed that banks and building societies regard young people as key market for financial services. The group of unemployed customers comprises of people who were not actively engaged in any kind of job at the time of the survey. Furthermore, it was realized that lower income earners (Below GH¢ 500) fairly patronizes e-banking services than that of the moderately higher income earners (GH¢ 1000 and 1499). In a sharp contrast, middle income earners (GH¢ 500–999) were to be the majority users (57.6%) of e-banking services in the metropolis, relative to the percentage of usage recorded by other monthly income groupings. However, non-income earners recorded the lowest percentage of patronage. With respect to the banks, ADB recorded the highest (65.1%) users of e-banking among its customers. This was followed by GCB (55.3%). NIB had the lowest (33.3%) patronage of e-banking users among its numerous customers. From the customer's account preference, it can be deduce that current account users had higher percentage (57.7%) of using e-banking services. It could further be inferred from Table 1 that, the longer a customer stays with a bank, the higher the percentage of such a customer to adopt its newly introduced innovative services; for this case, e-banking services. In terms of ICT background, customers with no knowledge in ICT recorded lower percentage (46.5%) of e-banking usage, whereas those classified as ICT literates had greater percentage (54.5%) of e-banking usage. Similarly to this situation, customers with easy internet access recorded high rate (61.7%) of e-banking usage than among their colleague customers (46.5%) who generally have difficulties in accessing internet.

### 3.2 Bivariate Analysis of E-Banking Usage

To examine significant association between each socioeconomic or demographic variable, and usage of e-banking by bank customers, the likelihood-ratio chi-squared test of association was employed for this bivariate analysis. In testing for association in any ( $I \times J$ ) contingency table, the likelihood-ratio statistic is given as:

$$G^2 = 2 \sum n_{ij} \log \left( \frac{n_{ij}}{\hat{\mu}_{ij}} \right) \quad (3)$$

where  $n_{ij}$  are the observed cell counts or frequencies (row and column totals) and  $\hat{\mu}_{ij}$  are the estimated expected frequencies. The test statistic has approximately a chi-squared distribution with  $(I-1)(J-1)$  degrees of freedom. The evidence of association is clearly seen if the test statistic ( $G^2$ ) gives a value which can be observed at the far end of the chi-squared distribution ( $p < 0.05$ ).

Table 2. Likelihood ratio Chi-squared test of association

<b>Dependent Variable: E-Banking Usage</b>			
<b>Independent Variable</b>	<b>Value</b>	<b>DF</b>	<b>Sig.</b>
Age	0.251	1	0.617
Gender	0.123	1	0.726
Marital Status	0.711	1	0.399
Highest Educational Level	7.696	3	0.053
Occupational Status	14.518	3	0.002
Monthly Income Level	1.535	4	0.820
Customer's Bank	9.394	2	0.009
Customer's Account	0.319	2	0.852
Period as a Customer	0.864	1	0.353
ICT Educational Status	0.844	1	0.358
Easy Internet Access	2.890	1	0.089

Generally, Table 2 presents the chi-squared values, degrees of freedom for the cell counts and the statistical significance of each socioeconomic and demographic variable, as associated or otherwise with usage of e-banking. From the table, none of the selected demographic characteristics (age, gender, marital status) of customers were significantly associated with their choice to use e-banking. With respect to the socioeconomic variables, grouping of people based on their respective banks of operation (customer's bank) and occupational status were found to have significantly influenced the choice to use e-banking among bank customers in urban communities in Kumasi Metropolis.

### 3.3 Analysis of the Specified Logistic Regression Model

The results of the specified logistic regression model, with multiple categorical independent variables are presented in Table 3. The table shows the estimated regression coefficients, the standard errors of the coefficients and the statistical significance of each covariate. It also shows an exponential transformation of the regression coefficients (odds ratio) and some diagnostic tests on the fit of the regression model. The fit of the final model over the null model was examined using the likelihood-ratio test. From the table, the final fitted logit model significantly far improves upon the null model.

To assess the fit of the final logit model against actual outcomes, the Hosmer and Lemeshow test results, with  $\chi^2(7)$  of 5.809 and  $p > 0.05$ , suggest clearly that the data fit the model quite well. In building the logit model, covariates with 0.25 significant levels were initially considered using the purposeful selection of variables, which was proposed by Hosmer and Lemeshow (2000). In all, eight (8) covariates and confounders were selected for the final logit model. These entirely accounted for about twenty-one percent (21%) of the decision to use e-banking. The finally selected variables included customer's age, marital status, occupation, monthly income and duration or period as a customer. Others include customer's operational bank, account preference and easy internet access. However, only significant covariates, based on 0.05 (5%) level have been reported in Table 3.

Table 3. Parameter estimates for the logit model

Variable	Coefficients	Standard Error(S.E)	Sig.	Odds ratio(OR)	95% CI(OR)	
					Lw	Up
Constant	-1.352	0.536	0.012	*****	*****	*****
<b>Occupational Status</b>						
Student [Ref]	*****	*****	*****	*****	*****	*****
Unemployed	-0.705	0.589	0.231	0.494	0.156	1.567
Employed	2.027	0.771	0.009	7.588	1.673	34.419
Trader	0.853	0.576	0.139	2.346	0.759	7.250
<b>Monthly Income Level</b>						
Non-income [Ref]	*****	*****	*****	*****	*****	*****
Below 500	0.975	0.564	0.084	2.652	0.879	8.003
500-999	0.738	0.574	0.199	2.092	0.679	6.447
1000-1499	2.012	0.881	0.022	7.476	1.330	42.023
1500 and Above	1.071	0.817	0.190	2.917	0.588	14.468

<b>Customer's Bank</b>						
ADB [Ref]	*****	*****	*****	*****	*****	*****
GCB	0.915	0.488	0.061	2.497	0.959	6.500
NIB	1.596	0.544	0.003	4.935	1.698	14.347
			$\chi^2$	DF	Sig.	
<b>Overall Model Evaluation</b>						
Likelihood Ratio Test			32.892	15	0.005	
<b>Goodness-of-fit Test</b>						
Hosmer and Lemeshow			5.809	7	0.562	
Nagelkerke $R^2 = 0.214$						

The results of the logit model, as reported in Table 3, clearly indicate that customer's operational bank, occupational status and monthly income level were the socioeconomic factors that significantly influence bank customers' decision use e-banking. With the exception of customer's monthly income, these findings confirm an earlier bivariate analysis which also revealed statistical significance for customer's operational bank and occupational status, on the choice to use e-banking. From the table, traders and employed customers in the urban communities are respectively 2.346 and 7.588 times more likely to use e-banking in their banking transactions, than students. Moreover, customers who are unemployed are 0.494 times less likely to use e-banking in their banking operations than students. With respect to classification by customer's monthly income, it was evident that customers who earn low incomes (below GH¢ 500) are 2.652 times more likely to use e-banking than non-income earners. Also, middle income earners (GH¢500–999) in the metropolis are 2.092 times more likely to use e-banking than non-income earners. Customers classified as moderately higher income earners (GH¢1000–1499), are more likely (*OR: 7.476, CI: 1.330–42.023*) to use e-banking than those classified as non-income earners. Compared to non-income earners, higher income earners (GH¢1500 and above) are 2.917 times more likely to be users of e-banking. In terms of classifying customers by their operational banks, customers who transact businesses with GCB are 2.497 times more likely to use e-banking, as compared to their counterpart customers of ADB. It can further be observed from the table that, customers of NIB are 4.935 times more likely to use e-banking than customers of ADB.

#### 4. Discussion

From the descriptive statistics, it was generally observed that moderate proportion of the sampled customers (52.7%) uses e-banking in their banking transactions. Although, e-banking is believed to provide transaction related benefits such as easy transfer, relatively less cost, speedy transaction and time saving from long queues, quite a huge proportion (47.3%) of the customers still uses only the traditional banking services. This relatively high rate of non-adoption of e-banking services by bank customers in developing countries has been reported by several studies (Njuguna et al., 2012; Al-Smadi, 2012; Mughal et al., 2012) around the globe. Among the e-banking services, ATM was the most frequently patronized service, followed in that order by mobile phone banking, E-Zwich and internet banking. In a work by Abor (2004) and Marfo-Yiadom and Ansong (2012), ATM was again discovered as the most popular innovative product in the Ghanaian banking market. However, Marfo-Yiadom and Ansong (2012) discovered a very low patronage for telephone and internet banking usage. The foregoing situation was much similar in a study to evaluate customers' use of e-banking systems in Nigeria (Okechi and Kepeghom, 2013). This adoption trait is usually common among bank customers in many developing countries. With respect to gender, greater proportion of male customers in urban communities in Ghana uses e-banking, compared to female customers. The aspect of gender differences to e-banking adoption is much shown in a study by Olalekan (2011). It was again realized from the descriptive statistics that, the proportion of e-banking users fairly increases as customer's formal educational attainment level increases. This was also the same for customers with knowledge in ICT. In a write-up on customer behaviour, Schiffman and Kanuk (2009) asserted that, the young and educated cohorts in society are usually the first to adopt new technological products. Furthermore, it was evident that the longer customers stay with a bank, the higher the proportion of such customers to adopt the e-banking services offered by the bank. This finding is similar to a study by Bowen and Chen (2001), which established that customers who are loyal readily consume more products. Also, the study revealed greater proportion of e-banking adoption among bank customers who easily have internet access at either their work or places of abode.

From the logit model, the study generally identified occupational status, monthly income and customer's operational bank as the dominant socioeconomic variables that significantly influence customers' choice of e-banking adoption. In consonance to these findings, different studies on adoption of e-banking have also reported employment or occupational status (Gan et al., 2006) and level of income (Adapa et al., 2009) as significant factors

that influence the use of e-banking services. In contrast to the study's findings, other works (Izogo et al., 2012; Polasik & Wisniewski, 2009) have identified variables such as age, gender, religion, marital status, ethnic groupings, education, etc., and behavioural factors (Singh, 2012) as major contributing factors that influence the adoption of several e-banking services. In addition to these already identified variables, this study have demonstrated that the grouping of customers according to their respective banks of operation also have significant influence on customer's decision to use e-banking.

## 5. Conclusion and Recommendations

The study identified internet banking, ATM, E-Zwich and mobile phone banking as the commonly offered e-banking services by GCB, ADB and NIB. From the 188 sampled bank customers, a little above 50% were found to be users of e-banking. This obviously suggests that, quite a huge number of bank customers have still not embraced the usage of e-banking. Among the popularly identified e-banking services, ATM was realized to have been the most patronized service, whereas internet banking recorded the least frequency of patronage. With respect to the bivariate analysis, customer's operational bank and occupational status were statistically significant socioeconomic classification variables that influence the choice to use e-banking. This was further confirmed by the logit model, which in addition, added customer's monthly income level, as yet, another significant socioeconomic classification variable that influence the choice to use e-banking in urban communities in Kumasi Metropolis.

Based on the findings of this study, we recommend the banks to sensitize and generally educate customers to widely embrace the use of e-banking, as innovative alternative to the over reliance on the traditional banking services through media advertisement, the use of screens at the banking halls and setting up personnel-assisted unit to easily manage customers' challenges or difficulties towards e-banking usage. Seeing to an extensive adoption of e-banking may help bank customers and tellers to transact business with ease and as a result, reduce unproductive hours and unnecessarily long queues at banking halls. In a quest to meet the changing technological trends in the banking industry, we again recommend the banks to broaden the scope of the e-banking services they offer, so as to attract and maintain present and future customers.

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