Journal of Energy and Natural Resource Management (JENRM), Vol. 8, No. 1, 17-26, 2022
DOI: 10.26796/jenrm.v8i1.194 (Research Article)

Modelling Customer Switching for Banks in Ghana

Bright Karim-Abdallah[1*], Emmanuel Harris[2], and Reginald Djimatey[3]

Abstract
This paper examines the customer switching data of Ahantaman Rural Bank with particular interest in predicting customers who are very likely to switch bank in the near future. The objective of the study was to design a model to predict the likelihood of a customer switching banking services. A model to predict customers in Ghanaian banks has not received the needed attention in an era where the survival of a bank depends on high retention rate of its customers. The data used was a primary data obtained from interviewing 476 customers of a bank in a banking hall. Logistic regression model was considered as an appropriate statistical tool for analyzing data since the variables were categorical in nature. Analysis of data revealed that customer satisfaction,pricing, reliability and employee competence constructs made significant contribution to customer switching intentions in a bank. A baseline model was created using the "training data" and the model tested on the "validation data". The results showed further that 51.3% of customers who do banking transactions at the head office of Ahantaman Rural Bank have intended to switch services with the bank. These findings suggest that policies aimed at improving customer satisfaction, pricing, reliability and employee competence in the banking sector can reduce customer switching in the financial sector. We recommend that managements of banks make use of a model to predict their customers in order to come out with tailored products to retain customers who have intention to switch to another bank.

Keywords
Logistic regression; Ahantaman Rural Bank; customer switching behavior

[1]Quality Assurance and Academic Planning Directorate, UENR, Sunyani-Ghana
[2]Department of Statistics and Actuarial Science, KNUST, Kumasi-Ghana
[3]Department of Entrepreneurship and Business Sciences, UENR, P. O. Box 214, Sunyani-Ghana
***Corresponding author**: bright.karim-abdallah@uenr.edu.gh
DOI: 10.26796/jenrm.v8i1.194
Received: 16 February 2022 ; **Received in revised form:** 05 April 2022; **Accepted:** 15 April 2022; **Published:** 30th April 2022

Contents

1. Introduction

The Ghanaian banking industry has passed through stages of financial deregulations with the purpose of making the industry vibrant and competitive. These reformations, apart from competition, have changed the market structure with the type of financial services and products that are delivered (Bawumia et al., 2005). The sector during the 1990's was full of government interferences. Most banking institutions in this period were owned by the Government with a few foreign ones controlled by the Bank of Ghana as regards interest rates. A lot of reforms were introduced in the past to address these restrictions, namely, Financial Sector Adjustment Program (FINSAP) in 1989; New Banking Act in 1989; Universal Banking License in 2003. The Government in 1989 implemented the Financial Sector Adjustment Programme (FINSAP) in collaboration with the IMF and World Bank. The objective of FINSAP was to make the sector resilient and responsive.

Most of the hindrances were removed by FINSAP, an example is that the interest rates were controlled by the Central Bank, allowing the market to determine the equilibrium interest rates (Brownbridge and Gockel, 1996). The New Banking Act in 1989 empowered the Central Bank to determine the capital requirement for banking institutions, issue new license and revoke license of banks when laws are violated. These deregulations stimulated and stabilized the banking industry. From 1994 to 2013, the list of commercial banks increased from 14 to 24 (Survey of Ghana Banking, 2012). In 2003 the Universal Banking License was introduced and Banking

Act was re-enacted in 2004, leading to the establishment of more banks (Ghana Banking Survey, 2008). This resulted in the establishment of Nigerian owned banks in the country and the emersion of 447 microfinance establishments by 2014. In 2019, the central bank began reforms aimed at strengthening the banking and financial sectors, among other things. As a result of the implementation of these changes, which varied from corporate governance to capital requirements, a number of banks and financial organizations had their licenses withdrawn, which were fraudulently obtained in some cases.

According to the Bank of Ghana Notice of Revocation of Licenses of Insolvent Savings and Loans Companies and Finance Houses, the number of banks has decreased from 34 to 23, with 347 microfinance firms, 15 savings and loans, and 8 finance houses having their licenses withdrawn as a result of the clean-up. Apart from the direct financial cost and the economic impact, the clean-up has a direct and indirect impact on bank clients. These effects on customers could be favorable or unfavorable. One of the effects of the banking sector clean-up is that it has given some sanity to the investing climate by weeding out investment firms that behaved like ponzi schemes. Individuals have learned some painful lessons regarding investment decisions as a result of the clean-up. The clean-up has brought to light certain fundamental flaws in some individual investment selections.

The industry today is very competitive and their only way to survive is to retain their customers. The modern customer is sharper, savvier, and more informed than ever before, and they expect their banking experience to be highly personalized and convenient. The competition in the banking sector is so keen that banks are not only facing internal competition but also with microfinance institutions and mobile money operators (Hull, 2002). It has been established that competition in the banking sector does not only promote innovation and efficiency of financial services but also erode bank's profits (Tan, 2017) and increases banks' risk-taking (Kabir and Worthington, 2017) because banks need to adopt policies that aimed at improving competition strategy to attract new customers and retain the existing ones. These policies come with a cost and a bank needs its customers' loyalty to survive (Dako et al., 2021).

In order to keep customers, their satisfaction and loyalty become an important issue to the management of a bank. Customer loyalty is the result of long-term client relationships that begin with getting to know the customer and their needs, as well as adopting a client-centric strategy (Wingard,2022). Financial institutions may maximize interactions by knowing their customers and engaging with them appropriately, resulting in higher customer satisfaction and wallet share, as well as a reduction in customer switching.

Previous studies in bank customers' switching suggest that customers' satisfaction led to low rate of customer attrition, increasing sales profit (Levesque and McDougall, 1996; Kish, 2000). Improvement of services, efficient bank management and introduction of innovative products have been established by others to significantly influence customer switching (Beckett et al., 2000; Kish,2000). It is critical that banks deliver quality services which result in customer satisfaction in today's competitive banking environment. Beckett et al. (2000) concluded that in order to match your competitors, a bank management has to continually interact with customers to have a fair knowledge of their problems to prevent them from switching to other banks. According to Farah (2017), consumer views toward a product or a financial service, particularly in terms of cost and reliability, impact banking clients' switching intentions. It has been established that customer loyalty is enhanced and improved if a bank carefully implements customers' views and helps customers perceive that their views are important in the day-to-day running of the bank (Andreasen, 1988; Lees et al., 2007; Wingard, 2022). According to Lin et al. (2017), perceptual characteristics such as value, quality, employee competence, and social value, as well as trust variables, have a substantial impact on switching intention. With the emergence of mobile money and convenient nature, in the next few years, the competition between the mobile money operators and banks would be a threat for the survival of banks.

Now the mobile money operators are offering interest on the money in their customer's mobile account and this will reduce the profit base of the banks. A customer of a bank has to go through a lot of activities in the banking hall to get his/her own money which is not the case in the mobile money business. A mobile money customer can transact business on weekends and even in the night when the banks are closed. It follows that if banks want to survive, it is important for them to continually find out from their customers what makes them to continue doing banking business with them.

Due to financial deregulations, competitive nature of the industry and technological advancement, a bank customer can now decide to switch to another bank with least provocation. It is very important that banks spend some of their resources to study their customers and find out factors that stimulate a customer to switch banks. Although, are some studies on customer retention or customer switching in different countries, especially in the New Zealand, Australia, Greece (Colgate et al.,1996; Lymperopoulos et al., 2006) and these focused narrowly on customer loyalty, customer satisfaction and other factors without linking them in a model to predict customer switching intention. In 2010, determinants of Customer Defection Behavior in Private Banking Sector of Pakistan were investigated (Ghouri et al., 2010). Their study combined seven factors (Price, Reputation, Service Quality, Effective Advertising Competition, Involuntary Switch-

ing, Distance and Switching Cost) of customer switching which effects retail banking operations in Pakistan. Their goal was to establish which of the seven variables have least and most effect on customers' defection behavior. Ghouri et al. (2010) interviewed 302 respondents and their findings showed that all considered variables have impact on customer defection. However, 'advertising competition' and 'price' were identified as least important and most significant influential variables respectively as regards customer defection. In these papers the researchers did not establish a model to predict customer switching. Also, other studies in Ghana have failed to present a model that can predict a banking customer. It is against this background that this paper seeks to design a model that has power to predict a customer as regards switching so that tailored or customized services can be designed for the customers.

2. Materials and Method

2.1 A Case study

Ahantaman Rural Bank Limited was set up in 1984 in Ghana. The Bank remains the leading Rural Bank in Ghana, meets stakeholder expectations, and strengthens stakeholder relationship by providing the right solutions that combine technologies, expertise and financial strength to create customer loyalty, shareholder value and employee satisfaction. The Bank currently operates in four districts in the Western Region with a network of sixteen connected Branches. The Bank is competing with two other banks and microfinance institutions in the Ahanta West Municipal, namely, Agricultural Development Bank and Rubber Outgrowers Association Cooperative Credit Union (ROACCU). ROACCU was set up to serve as a credit union for rubber out-growers in the Municipal but now registered as financial institution offering banking services. Ahantaman Rural Bank has been dominating in the Municipal until the establishment of these two banks about few years ago which has affected a lot of their customers to switch their banks to either Agricultural Development Bank or ROACCU.

2.2 Data sources and sample size

Data for this survey was obtained through a well-structured questionnaire administered to only customers of Ahantaman Rural Bank in the Ahanta West Municipal of Ghana. The customers were interviewed in the banking hall of Ahantaman Rural Bank at their head office after the ethical clearance had been given. The customers who could read and write were given the questionnaire to tick the appropriate responses, and those not literate, the questions in the questionnaire were read out to them and their responses were recorded by the interviewers. A period of three days was used to gather data and any customer who visited the banking hall within the period was interviewed. A method proposed by Yamane (1967) was used to compute the sample size based on the accessible population of 833 total customers of the bank in two branches in the Ahanta West Municipal. The method gives minimum sample size a researcher can use when his/her outcome variable is nominal in nature. As shown in equation 1, a sample size of 476 was obtained from the calculation: N is the total population size; e is the precision level which indicates the accuracy of our sample size from the population, the original formula used 5% precision level indicating 95% confidence level. This study used 3% precision level that comes with 97% confidence level which eventual resulted in a bigger sample size:

$$n = \frac{N}{1+N(e)^2} \tag{1}$$

$$n = \frac{833}{1+833(0.03)^2} \tag{2}$$

$$n = 476$$

In all 476 customers were interviewed, comprising 255 males and 221 females, six (6) cases were removed from the data because their standardized residuals for outliers exceeded cut-off point of 2.58.

2.3 Survey instrument used and the choice of variables

A survey questionnaire was designed to collect personal details of customers, namely, age of a customer, gender, marital status, educational level, occupation, number of years a customer has spent with a bank and customer rating of a bank's services and products; employee competence construct, reliability construct, product innovation construct, pricing construct, convenience construct, customer satisfaction construct, physical evidence construct, effective advertising and competition construct. The foregoing constructs were chosen based on similar works done by previous studies (Kish, 2000; Levesque and McDougall ,1996; Colgate et al., 1996; Lymperopoulos et al., 2006; Ghouri et al., 2010; Taylor and baker, 1994; Fornell, 1992; Gerrard and Cunningham ,2004; Wingard, 2022; Lin et al., 2017; Farah, 2017). Each construct has two to three questionnaire items under it. A five-point Likert-scale ranging from 1-5 was used to rate a bank's services and products, and mean score was computed to represent each construct.

2.4 Data analysis

Data for this study was analyzed using descriptive statistics and binary logistic regression. Selected personal details of respondents were analyzed using descriptive statistics. Moreover, the specified logistic regression model was critically examined and tested for adequacies based on the data obtained from the survey. SPSS version 20.0 was used to generate all the results reported in this paper.

Logistic regression is one of many multivariate statistical methods or tools available for analyzing data with categorical response variable. The method is used to analyze data with dependent variable being nominal or categorical in nature and independent variables can be categorical and metric in nature or both. The purpose of logistic regression is to group outcomes on the bases of some variables by estimating probabilities using a logistic function, which is the cumulative logistic distribution. When a response variable has two outcomes, the method is called binary logistic regression. Logistic regression analyzes binomially distributed data of the form;

$$Y_i \sim \beta(n_i, p_i), \ \ for \ \ i = 1, ... \ ... \ ...m, \tag{3}$$

where the number of Bernoulli trials ni are known and the probabilities of success pi are unknown. An example of this distribution is the fraction of seeds p_i that germinate after ni are planted. The model proposes for each trial i there is a set of explanatory variables that might inform the final probability. These explanatory variables can be thought of as being in a k-dimensional vector X_i and the model then takes the form

$$p_i = E(\frac{Y_i}{n_i}|X_i) \tag{4}$$

The binary logistic regression models the natural log of the odds ratio called logit (p). The logit model solves these problems (Hosmer & Lemeshow,2000):

$$logit(p) = In(\frac{p}{1-p}) = \beta_0 + X_1\beta_1 + ...\beta_k X_k \tag{5}$$

where p is the probability that the event (y) occurs, $p(y=1)$, $P/(1-p)$ is the "odds ratio", $In(p/(1-p))$ is the log odds ratio, or "logit", β_0 is the intercept, $\beta_1, \ldots \beta_k$ are logistic coefficients and $X_1, \ldots X_k$ are predictor variables. P can be calculated with the following formula (formula 6) which is simply another rearrangement of formula 5:

$$p = \frac{exp^{(\beta_0+\beta_1\beta_1+\beta_2\beta_2+.....\beta_k\beta_k)}}{1+exp^{(\beta_0+\beta_1\beta_1+\beta_2\beta_2+.....\beta_k\beta_k)}} \tag{6}$$

In this study, the likelihood of a customer switching bank was used as response variable (Y). The response variable has two outcomes: *Yes, very likely to switch* and *No, very unlikely to switch.* Customers personal details or customer demographics are age of a customer, gender, marital status, educational level, occupation, number of years a customer has spent with the bank and customer rating of bank's services and products; employee competence construct, reliability construct, product innovation construct, pricing construct, convenience construct, customer satisfaction construct, physical evidence construct, and effective advertising competition construct were used as explanatory variables (x) in the logistic regression model.

2.4.1 Assumptions

1. Assumes a linear relationship between the logit of the independent variables and dependent variables. However, it does not assume a liner relationship between the actual dependent and independent variables
2. The sample is 'large'- reliability of estimation declines when there are only a few cases
3. Variables are not linear functions of each other
4. Normal distribution is not necessary or assumed for the dependent variable.
5. Normally distributed description of errors is not assumed.
6. The independent variables need not be interval level
7. Logistic regression is sensitive to multicollinearity. Under normal circumstances the dependent variable should be correlated with independent variables. If one of the independent variables is highly correlated with another, or one is a function of other independents, multicollinearity is said to exist.

2.5 Assessing the fit of the model

The fit from logistic regression model was assessed for adequacies. In this study, the adequacy of the logistic regression model is assessed based on Model summary table and Hosmer and Lemeshow Test. Hosmer and Lemeshow (2000) proposed grouping based on the values of the estimated probabilities. The Hosmer–Lemeshow test is a statistical test for goodness of fit for logistic regression models. The test assesses whether or not the observed event rates match expected event rates in subgroups of the model population. Table 1, Model summary, indicates that 67.4% of the variation in the customer switching intentions is accounted for by the logistic regression model and Nagelkerke R-Square statistic of 0.898 indicates a very strong relationship of 89.8% between the independent variables and the prediction.

Table 1. Model Summary

Step	-2Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	124.844	0.674	0.898

Table 2 tests the null hypothesis, Ho: The model with predictors fit the data, against the alternate hypothesis

that, H_1: The model has no effect on the data. The result is goodness-of-fit- test for logistic regression. Based on the table, the test statistic of Chi-square 2.447 with 8 degrees of freedom has a significance of 0.964 which implies that it is not statistically significant and therefore we refuse to reject the null hypothesis, implying the model is quite a good fit

Table 2. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	2.447	8	0.964

3. Results

3.1 Descriptive statistics of respondents' characteristics

Table 3 presents descriptive statistics of customer switching intent compared with demographics of respondents. Customer switching intent was grouped into two (2) categories: very likely to switch and very unlikely to switch. Out of the 470 valid respondents, 51.3% (241) reported that it is very likely that they will switch services with a bank and 48.7% (229) said it is very unlikely that they will switch services with a bank. Moreover, 68% of the respondents interviewed were below 40 years representing the majority. More than fifty-three percent (53.4%) of customers interviewed were males and 46.6% being females. 92.6% of customers interviewed were 'high educated' and 7.4% of them being 'low educated'. The high education group were customers with Senior High School Certificate and above, and those with Junior High School and below were the low education group. Little above fifty-seven percent (57.4%) of customers interviewed have spent more than four years doing business with their banks. The table revealed that customer switching intent was high (29.6%) in the customers who have spent more than 4 years with a bank. It can also be seen that switching intents were high (48.5%) in Higher Education group.

Table 3. Characteristics of Response to Customer Switching Intent by Bank Customers

Variables		Do you intend switching bank in a near future?		Total
		No, very unlikely	Yes, very likely	
Age of Respondent	below 40 yrs.	142 (30.2%)	179 (38.1%)	321 (68.3%)
	40yrs. & over	87 (18.5%)	62 (13.2%)	149 (31.7%)
Sex	Male	153 (32.6%)	98 (20.9%)	251 (53.4%)
	Female	76 (16.2%)	143 (30.3%)	219 (46.4%)
Marital Status of Respondent	Single	117 (24.9%)	119 (25.3%)	236 (50.2%)
	married	112 (23.8%)	122 (26%)	234 (49.8%)
Edu. Level of Respondent	low education	22 (4.7%)	13 (2.8%)	35 (7.4%)
	Higher education	207(44%)	228 (48.5%)	435 (92.6%)
No. of yrs. spent with the bank	4 yrs. and below	98 (20.9%)	102 (21.7%)	200 (42.6%)
	above 4 yrs.	131 (27.9%)	139 (29.6%)	270 (57.4%)
		229 (48.7%)	**241 (51.3%)**	**470 (100%)**

3.2 Results of the logistic regression model

The fitted logistic regression for customer switching intent at Ahantaman Rural Bank in the Ahanta West Municipal are presented in Table 4.

The significance of the variables is assessed by the p-values (represented in the table by "sig"), the Wald's statistics values or the odd ratios. The values of the Standard Errors column 3, ranging from 0.502-1.078 are within the acceptable range, between 0.001-5.000 (Chan, 2004) and shows the absence of multicollinearity in the independent variables. This implies that the model is statistically stable. Table 4 reveals four variables (employee competence p-value = 0.001, reliability p-value = 0.044, pricing p-value = 0.001 and customer satisfaction p-value = 0.006) have their P-values less than 0.05, these are variables that contribute significantly to the model. This implies that the major variables influencing whether a customer will switch services with a bank are these: customer satisfaction, employee competence, pricing and reliability. Product innovation, convenience, effective advertising competition, physical evidence and demographics did not have any impact on the model statistically. The table further shows that customers who scored low with reliability construct were 8.008 times more likely to switch services with a bank. In other words, it is more likely that you are very *likely to switch customer* than very *unlikely to switch* if you score low in reliability construct. The customers who scored low in employee competence construct were 15.957 times more likely to switch services with a bank. It was noted that customers who scored low with customer satisfaction construct were 11.445 times more likely to switch a bank for another. Furthermore, a customer is 20.146 times more likely to be classified as very likely to switch customer if he or she scores high with pricing construct. The confidence interval column represents the 95% confidence interval for the odds ratio. This tells us that we are 95% confident that the interval contains the true value of odds ratio. The confidence interval of the significant variables shows that, the intervals do not contain the value 1, if the interval had contained the value 1, we would conclude that, there is equal probability of the responses (very likely to switch/ very unlikely to switch). The $'\beta'$ values are the logistic coefficients to be used to construct logistic regression model. Logistic regression model for the study is defined as:

$$logit(P) = 2.770x_1 + 2.176x_2 + 3.003x_3 + 2.438x_4 - 6.744 \tag{7}$$

By making 'P' the subject, we have predictive equation that give us the probability of a customer switching services with the bank:

$$p = \frac{exp^{(2.770x_1+2.176x_2+3.003x_3+2.438x_4-6.744)}}{1+exp^{(2.770x_1+2.176x_2+3.003x_3+2.438x_4-6.744)}} \tag{8}$$

where $x_{(1)}$ is employee competence construct where $x_{(2)}$ is reliability construct where $x_{(3)}$ is pricing construct where $x_{(4)}$ is customer satisfaction construct

This is an example of how the predictive equation can be used for a new case. If customer scored 3 in employee competence construct, scored 1 in reliability construct, scored 3 in price construct and scored 1 in customer satisfaction construct, would he/she be classified as very likely to switch customer or *very unlikely to switch customer?* Substituting in the predictive model we have Probability of switching service :

$$= \frac{exp^{(2.770(3)+2.176(1)+3.003(3)+2.438(1)-6.744)}}{1+exp^{(2.770(3)+2.176(1)+3.003(3)+2.438(1)-6.744)}} \tag{9}$$

$$= \frac{e^{15.159}}{1+e^{15.159}} \tag{10}$$

$= 0.99$

Therefore, the probability that a customer who scored 3 in employee competence construct, scored 1 in reliability construct, scored 3 in price construct and scored 1 in customer satisfaction construct will switch services with a bank is 99%, or 99% of such individuals will be expected to switch a bank for another.

Table 4. Parameter Estimates for Customer Switching Intent Model

Explanatory Variables	β	S.E.	Wald	Sig.	Odds Ratio	95% C.I. for odds ratio	
						Lower	Upper
Gender (1)	-0.03	0.536	0.003	0.956	0.971	0.34	2.775
Marital Statu1	-0.031	0.502	0.004	0.951	0.97	0.363	2.592
Edu (1)	-1.639	0.784	4.373	0.057	0.194	0.042	0.902
Years With Bank	0.545	0.513	1.129	0.288	1.724	0.631	4.708
Employee Competence	**2.77**	**0.535**	**26.846**	**0.001**	**15.957**	**5.596**	**45.497**
Reliability	**2.176**	**1.078**	**4.073**	**0.044**	**8.808**	**1.065**	**72.868**
Product Innovation	-0.525	0.545	0.926	0.336	0.592	0.203	1.723
Pricing	**3.003**	**0.609**	**24.328**	**0.001**	**20.146**	**6.109**	**66.441**
Convenience	0.057	0.537	0.011	0.916	1.058	0.369	3.033
Physical Evidence	0.301	0.548	0.302	0.583	1.351	0.461	3.959
Customer Satisfaction	**2.438**	**0.89**	**7.505**	**0.006**	**11.445**	**2.001**	**65.457**
Effect Advert Compet.	0.007	0.509	0	0.988	1.007	0.371	2.733
Constant	**-6.744**	**1.337**	**25.423**	**0.001**	**0.001**		

3.3 Validating the model

The model was validated using Hold-out method and receiver operating characteristic (ROC) curve. For Hold-out method, the entire data was divided into 2 sets: training and validation sets. Three different partitioned ratios were tried: 60% - 40%, 70% - 30% and 75% - 25%. The popular 70% - 30% Hold-out ratio was not used due its low overall classification power. The 75% - 25% partitioned ratio was adopted because of its higher classification power and other researchers have recommended this ratio as alternative to 70% - 30% ratio (Oluwarotimi, 2016). Table 5 is a final classification table for logistic regression model. The training set sample Three hundred and fifty-three (353) was used to design the logistic regression model and the model was tried on the validation set sample (117) to assess its classification power.

The study using the training set for classification, 98.3% cases were correctly classified for yes, very likely to switch group and 94.9% cases correctly classified for the no, very unlikely to switch group. Overall, 96.6% were correctly classified with sensitivity and specificity of 98.3% and 94.9% respectively. Using the same sample that was used to design a classification model to test the classification power of the model has been criticized by researchers. The model was validated using the validation set, and 92.3% of yes cases was correctly classified as yes cases and 92.3% no cases were correctly classified as no cases. The overall correct classification for the validation set is 92.3%, which is a bit lower than the final classification using the training set. The ROC curve for the model was plotted. An ROC curve graphically displays sensitivity and 100% minus specificity (false positive rate). By plotting the ROC curve for the model, it is very easy to see how best the model was classified. Figure 1 shows the ROC curve of the model indicates that the area under the curve (AUC) is 99.1% as shown in Table 6, which shows the model is quite good.

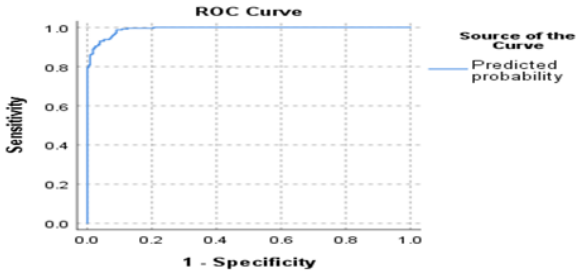

Figure 1. ROC curve of the model

Table 5. Final Classification Table

		Predicted					
		Training Set			Validation Set		
		Switching Intention			Switching Intention		
		no, very unlikely to switch	yes, very likely to switch	% Correct Classification	no, very unlikely to switch	yes, very likely to switch	% Correct Classification
Switching Intention	no, very unlikely to switch	168	9	94.9	48	4	92.3
	yes, very likely to switch	3	173	98.3	5	60	92.3
	Overall Percentage			96.6			92.3

Table 6. Area Under the ROC Curve

Test Result Variable(s)	Area
Predicted probability	0.991

4. Discussion

From the results, it shows clearly that more than fifty-one percent (51.3%) of customers who do banking transaction at the head office of Ahantaman Rural Bank have intended to switch services with the bank. This indicates that some of the customers are not happy with the services of the bank and the bank might risk losing customers to two competing banks; Agricultural Development Bank and ROACCU. The results have revealed that reliability construct, customer satisfaction construct, employee competence construct and pricing construct impacted greatly on customer intentions to switch a bank. The findings have confirmed the work of other studies that had established customer satisfaction is the motivator of a client next purchase intention and stops one from exiting, and helps banks to retain their customers (Taylor and baker, 1994; Fornell, 1992; Wingard, 2022).

The study has revealed that pricing construct which consists of three questionnaire items, was the major factor that influenced customers' decision to switch banks. The customers perceived that the bank charged high fees on its transaction and interest rates for loans. This is not at variance with the work of other studies that established in their work that price undoubtedly is very important factor that influences switching in banking sector (Gerrard and Cunningham, 2004; Farah, 2017; Lin et al., 2017). The study identified employee competence construct as the second most important factor influencing customers' decision to switch bank which also confirmed the work of Lin et al. (2017), and Farah (2017). This might be as a result of the way customers were treated by some of the bank employees. Customer satisfaction and reliability constructs were the third and fourth factors respectively influencing customers' decision to switch bank. Some customers perceived the bank as unreliable.

5. Conclusion and Recommendations

The study concludes that most of the customers of the bank are likely to switch bank if measures are not put in place to address their grievances. The study found four out of eight constructs to influence customers' decision to switch a bank, namely, employee competence, customer satisfaction, pricing and reliability constructs. The model was tested on the validation set to classify cases and 92.3% of cases were classified correctly. From the findings of this study, bank management may adopt the research model of switching intentions designed in this study to investigate the reasons why some customers are switching bank while others are not. The model may also provide managements with insight on how to predict a customer so that a customized service may be tailored for a potential switcher thereby reducing switching rate and increasing profitability. Bank management should develop strategies that increase customer satisfaction. Strategies that focus on avoiding service-related problems from happening, effectively handling of customers who are not happy with banking services as early as possible, and addressing complaints of customers are a must for banks to retain their customers. By so doing, customers would be motivated to recommend a bank to their friends. For reliability, managements should make sure all transactions are clear, accurate and all instructions to customers are easy to follow and easily understood. A bank must be seen to deliver its promises to customers and ready to accept customers' recommendations. Impressions should be created in customers' mind that their submissions are needed to make the banking services attractive. Customers should be sensitized and made to understand that what they are receiving at a bank they will not find in any other bank. For pricing, the current charges used by a bank should be boldly displayed in the banking hall for the customers to see. Most often it is the hidden charges that create the wrong perception about pricing. The customers should be made to understand that the bank charges are lower than the other competing banks. In situations where a customer perceived banking charges are high; the bank should justify why theirs differ from those of others. On employee competence, the employees should be trained on modern ways of attending to customers' needs by creating friendly customer-employee relationship before serving the customers. To enhance employee competence,

customers should be encouraged to rate the employees of the bank and the best worker of a given period should be adjudged based on customers' ratings and picture of the worker boldly displayed in the banking hall. On how to adopt and use the research model, at any point in time, managements should sample some of the customers and ask them to respond to questions in the questionnaire. Their scores on significant constructs should be inserted into the equation to classify each customer into *very likely to switch* and *very unlikely to switch customers*. In other to retain customers very likely to switch banks, customized or tailored services should be designed for them or find out what exactly is the problem that they want the bank to fix.

References

[1] Andreasen, A.R. (1988). Consumer complaints and redress: What we know and what we don't know. Columbia: MO.

[2] Bank of Ghana, (2019). Notice of Revocation of Licenses of Insolvent Savings and Loans Companies and Finance Houses, and Appointment of a Receiver: https://www.bog.gov.gh/wp-content/uploads/2019/08/Revocation-of-Licenses-of-SDIs-16.8.19.pdf.

[3] Bawumia, M., Belnye, F., & Ofori, M. E. (2005). The Determinants of banks interest spread in Ghana: An Empirical analysis of panel data. Bank of Ghana Working Paper No 2005/09.

[4] Beckett, A., Hewer, P., & Howcroft, B. (2000). An Exposition of consumer behaviour in the financial services industry. The International Journal of Bank Marketing, 18(1), 15.

[5] Brownbridge, M., & Gockel, A. F. (1996). The Impact of Financial Sector Policies on Banking in Ghana. (Available from the Institute of Development Studies, Ghana)

[6] Chan, Y.H. (2004). Logistic regression analysis. Singapore Med J 2004, 45(4), 149.

[7] Colgate, M., Steward, K., & Kinsella, R. (1996). Customer defection: A Study of student market in Ireland. International Journal of Bank Marketing, 14 (3), 23-9.

[8] Dako, A. G., Fiador, V., Agbloyor, E. K., & Abor, J. Y. (2021). Bank Competition and Financial Inclusion: Evidence from Ghana.

[9] Farah, M. F. (2017). Consumers' switching motivations and intention in the case of bank mergers: a cross-cultural study. International Journal of Bank Marketing.

[10] Fornell, C. (1992). A National customer satisfaction barometer: The Swedish experience. The Journal of Marketing, Vol. 56, 6-21.

[11] Gerrard, P., & Cunningham, J. B. (2004). Consumer switching behavior in the Asian banking market. Journal of Services Marketing, 18(3), 215–223.

[12] Hosmer, D.W., & Lemeshow, S. (2000). Applied logistic regression. New York: Wiley.

[13] Hull, L. (2002). Foreign-owned banks: Implications for New Zealand's Financial Stability. Discussion Paper Series, DP2002/05.

[14] Ghana Banking Survey, (2008). Raising the bar: Increase in the minimum capital requirements, and implications for the industry. PricewaterhouseCoopers Survey, www.pwc.com/gh.

[15] Ghana Banking Survey, (2012). Enhancing customer value to sustain profitable growth. PricewaterhouseCoopers Survey. www.pwc.com/gh.

[16] Ghouri, A. M., Khan, N., Siddqui, U. A., Shaikh, A., & Alam, I. (2010). Determinants analysis of customer switching behavior in private banking sector of Pakistan. Interdisciplinary Journal of Contemporary Research in Business, 2(7), 96-110.

[17] Kabir, M.N. and Worthington, A.C. (2017). "The 'competition–stability/fragility' nexus:a comparative analysis of Islamic and conventional banks", International Review of Financial Analysis, Vol. 50, bpp. 111-128.

[18] Kish, J. (2000). Before your customers leave. Bank Marketing, 32(2), 30.

[19] Lees, G., Garland, R., & Wright, M. (2007). Switching banks: Old bank gone but not forgotten. Journal of Financial Services Marketing. 12 (2), 146-157.

[20] Levesque, T., & McDougall, G. (1996). Determinants of customer satisfaction in retail banking. International Journal of Bank Marketing, 14(7), 12–20.

[21] Lin, C. N., & Wang, H. Y. (2017). Understanding users' switching intentions and switching behavior on social networking sites. Aslib Journal of Information Management.

[22] Lymperopoulos, C., Chaniotakis, I.E., & Soureli, M.(2006). The import. of service quality in bank sel. for mortgage loans. Managing Service Quality, 16(4), 365-379.

[23] Oluwarotimi, S. (2016). Re: Is there an ideal ratio between a training set and validation set? Which trade-off would you suggest? Retrieved from: https://www.researchgate.net/post/Is-there-an-ideal-ratio-between-a-training-set-and-

validation-set-Which-trade-off-would-you- suggest/56ec20d6cbd5c22c0101ece6/citation/download.

[24] Tan, Y. (2017). "The impacts of competition and shadow banking on profitability: evidence from the Chinese banking industry", The North American Journal of Economics and Finance, Vol. 42, pp. 89-106.

[25] Taylor, S.A., & Baker, T.L. (1994). An Assessment of the relationship between Service quality and customer satisfaction in the formation of consumers'purchase intentions. Journal of Retailing, 70 (2), 163-78.

[26] Wingard, L. (2022). Top 10 Challenges Banking Financial Organizations can Overcome. Website. Retrieved March 20, 2022, from https://global.hitachi-solutions.com/blog/top-10-challenges-banking-financial-organizations-can overcome/

[27] Yamane, T. (1967). Statistics: An Introductory analysis, 2nd Ed., New York: Harper