DETERMINANTS OF BANK CREDIT ACCESS FOR CUSTOMERS: EVIDENCE FROM BANK OF ABYSSINIA BAHIR DAR CITY, ETHIOPIA

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ABSTRACT

The objective of this study was to examine the determinants of credit access for customers of bank of Abyssinia. The research was applied both qualitative and quantitative research approach and cross-sectional research data to meet the research objectives. This study was conducted based on the data gathered from customers of Bank of Abyssinia in Bahir Dar town. Survey was conducted using questionnaires. 137 questionnaires have been distributed for the respondents and all responses were properly filled the questionnaires. The study shows that education, political condition, income, interest rate and saving have appositive significance influence on credit access. Gender has a negative significance influence on credit access for customers of BOA in Bahir Dar town. The study recommended that BOA should be give training for Credit relation managers, top management Credit Appraisal managers and the bank goes based on the correct credit procedures of the bank without biasedness by revising its working habit and providing small amount of credit facilities by taking in to consider the customers guarantees or collaterals to cover their liabilities.

Keywords: Credit Access, Binary Logistic Regression, Odds Ratio, Deviance test, bank of Abyssinia

1. Background of the study

The necessity for bank lending service is a crucial point to facilitate the buying and selling activities with in the nation and the world at large. In this regard one of the main objectives of financial institution is mobilizing resources, channeling them to investors and by giving loans for customers to generate profit out of it. Banks are mainly concerned with accepting deposits for the purpose of lending or investment in any country economy, there would be people and institutions surplus fund which they don't require for their immediate use, and wish to place these surplus funds in an institution both for security and also to gain some income from interest. These institutions would lend money to the borrowers at an ultimate interest rate (Genet *et al*, 2014).

Since, February 15, 1906 marked the beginning of banking in Ethiopia when the first bank of Ethiopia called Bank of Abyssinia was inaugurated by emperor Menelik II and Mr. Ma Gillivary,

representative of the British owned National bank of Egypt. Bank of Abyssinia ("the Bank") is a privately- owned share company domiciled in Ethiopia with this historic name, but otherwise not connected with the older bank, came in to existence. The bank was established on February15, 1996 in accordance with the licensing and supervision of banking business proclamation no.84/1994 (as amended by 592/2008) and the commercial code of Ethiopia of 1960. The subscribed capital of the new bank of Abyssinia (BOA) was birr 25 million and its authorized capital of birr 50 million, with 1311 shareholder, at all Ethiopian. Starting from this time, the bank provides a wide range of financial services (official website of BOA). As "Abyssinia" is the ancient name of our great nation and that of the pioneer bank of land, its presence in all direction of the country and the bank can be containing high total assets, deposit, capital and customers base and branches network, it comprises 31.98 billion, 25.79 billion, 4.24 billion, 41.58 billion and 286 respectively, (BOA Annual Report, 2017/18)

Credit access is the ability of individuals and enterprises to obtain external funding to enable them ease cash flow problem (Osoro & Muturi, 2013). In the city there are many businesses run by the society like construction of apartment, import, export, industry, transport, agriculture and other trading transactions. In order to run these kind of business customers can be needs availability of credit from the bank.so that, the bank can be provides credit facility to perform all activities done by the customers of the bank those who asked loan to develop the country's economy and maximize the wealth of shareholders. Finally, the study would determine the determinants of credit access for customers the case of BOA Bahir Dar city

1.1 Statement of the problem

Credit is an important pillar for banking So, creating favorable condition for customers in accessing credit is critical service for any banking industry and it is important to strengthen the financial system of Ethiopia in particular and the economic development in general (Asfaw & Adeba, 2016). In related to banking business credit is accessible when the customers who fulfills the banking credit preliminary requirements such as high collateral security, by interviewing applicant's business experience and relationship with banks, renewal license, registration certificate for companies, financial statement, tax identification number, business plan, credit information from national bank of Ethiopia (NBE) and other requirements that cannot contrary to

the banks prerequisites (Kidist,2014). This implies that Bank of Abyssinia gives credit for customers by take in to consider the NBE directives. Although, access to finance has a great problem in Ethiopia (Tefera, 2004), he revealed that, lack of access to equity and debt financing (lack of access to capital) is one of the serious problems for customer to acquire credit facility. Schmidt and Kropp (1987) states that access to financial service by banks for customers is normally seen as one of the hindrances that limiting to their benefits from credit facilities. This means that finance is the life blood of any business activities for every day's life. But customers cannot easily acquire credit from bank in order to run their business activities. Other study shown by (Asfaw & Adeba, 2016) suggests that credit program is one of the critical problems to access credit for customers. Various researches have been conducted on the area of credit access with different factors and contexts throughout the country. A study by Tang *et al*, 2010 collateral and education were a positive effect on credit accessibility and they stated that additional year of education and quality of collateral securities increases the probability of their payment capacities of their credit. Khalid & Wahab (2014) looks the demand side of credit for customers of the bank by examining the factors that influence banks to apply for credit. A study by (Mulandi, 2013), reveals that, age, gender, monthly income and capital requirement were significantly affects the level of access to credit in banking business. On the contrary to Mulandi, (Togba, 2004) suggests that age is a negative effect on credit access. Another study by Fatoki & Odeyemi, (2010) suggest that education level is not important determinant for accessing credit in bank. Tin *et al (2010)* also supports Fatoki and Odeyemis study. (Benful Nicholas, 2016) states that customers applying or demanding for credit from banks are either denied or granted, this implies that in most cases the customers do not receives the full amount of money they requested for. As a result of their research there are several factories studied under a study such as interest rate, saving, collateral security, gender, age and education were affects credit access for customers. Bank of Abyssinia is one of the financial sectors that give credit services for customers in Bahir Dar city. But, the following problems has been observed by customers who request credit access in the city such as; biasedness to give credit for customers from top management, complicated application procedure, restriction on credit for a specific purpose, weak institutional capacity, credit duration, term of payment, required collateral security and provision of additional services do not fit for the target grow, lack of knowhow towards credit relation departments, lacks of

reference materials in identifying factors that may determine credit access for customers from banks management and academicians.

Even though, where it exists and when the potential borrowers do, they would be neglects to give (accept) to credit services by banks. Due to this reason the bank cannot satisfy the credit requirements of the customers during the period and potential borrowers would not apply for credit services in BOA, Bahir Dar city. However, as per the researcher knowledge there is no research conducted on bank credit access for customers in these particular areas and the other studies did not try to see or distinguish internal and external factors separately. Therefore, the study would try to address the aforementioned gaps by considering these new variables such as capital requirement and political condition and by focusing determinants of credit access for customers.

1.3 Objective of the study

General objective of the study

The main objective of this study was to examine the determinants of credit access for customers.

Specific objective of the study

The specific objective of the study is: -

- ➢ To assess the credit performance of the Bank of Abyssinia.
- ➢ To investigate the major internal and external determinants of access to credit in the bank.

1.4. Research Question

- ➢ How does Bank of Abyssinia in Bahir Dar city extend credit to customers?
- ➢ How it looks like the customer management for availing credit in bank of Abyssinia in Bahir Dar city?
- ➢ What are the internal and external determinants of credit access in bank of Abyssinia in Bahir Dar city?

2. LITERATURE REVIEW

2.1 Concept and Definition of Bank and Credit

The name bank is derived from the French word "Banque" or the Italian word "Banco" which means in English a bench. This is derived from the experience of the merchants of Greece and Rome. They used to sit on a bench in the center of the market and receive deposit from the public and pay to the public from the deposit (Lady *et al*, 1905). As such the origin of commercial banking can be traced back to around in 2000 B.C by Babylonian and Assyria who was performing the safe keeping saving function, granting loans for public and private purposes (Freddie Mac, 2008; Betelehem, 2017).

Onyeagocha (2001) postulates that, the term credit is referring to the faith placed by a creditor (lender) in a debtor (borrower) by extending a loan usually in the form of money, goods or securities to debtors. Essentially, when a loan is made, the lender is said to be a have extended credit to the borrower and he automatically accepts the credit of the borrower. The rationale and the character of credit have been categorized into short term, medium term and long-term loans. Short term loans are advances extended with a repayment period of not more than two years. According to (Freddie Mac, 2008)

Credit rating has become an important part in the relationship between the banks and customers. Credit rating is defined as the process of using a specific formula or set of rules to evaluate the credit worthiness of potential customers in such a way that it evaluates the future loan performance of the customers (Mwongera; 2014Wallis, 2001)

According to Lofgren *et al* (2002), Information imperfection occurs when one party to a transaction has more and timely information than another party or lender and borrowers have different information. This imbalance can cause one party to another party to enter into a transaction or make cost decision. Information asymmetry is a common feature of any market interactions for example the seller of a good often knows more about its quality than the prospective buyer while a borrower knows more than the lender about his credit worthiness. Among the pioneers of this theory was George Akerlof (Lofgren *et al*, 2002) who demonstrated how imperfect information can produce adverse selection in the markets. He argued that when a lender or a buyer has imperfect information,

3. RESEARCH METHODOLOGY

3.1 Research Approach

The research approach in this study is quantitative approach because quantitative approach is best suited for a study where the problem involves identifying factors that impact on outcomes (Creswell,2003).

3.2 Research Design

The study adopts a cross sectional research data the reason for using this design is collecting the research data from many customers who request credit at one point in time by observing many subjects and this in turn reduce the cost of data collection.

3.3 Description of the Study area

The study would conduct in Bahir Dar city at Bank of Abyssinia Customers who ask loan. Bahir Dar town is the capital city of Amhara National Regional State.

3.4 Population of the study

Population refers to the entire group of individuals, events or objects having common observable characteristics. It is the aggregate of all that conforms to a given specification. Data collection would delimit to three branches of the bank in the town. Namely: - Bahir Dar, Tana and Gish abay branches. The time for completing the study took less than an academic year. According to BOA credit relation officer (CRO) department data, the data used in this paper can be collected from 137 customers those who asked loans, from those 100 are access to loan and 37 are not access to loan.

3.5 Sampling Frame

Cooper and Schindler (2003) define a sampling frame as a list of sampling units from which the sample was drawn. Saunders (2016) a sampling frame is a comprehensive list of all individuals or unit in a population from which a sample would be drawn. The sampling frame of the study is all customers of bank of Abyssinia who asked loans at Bahir Dar town.

3.7 Data Collections Method

Questionnaires were collected immediately once respondents were done answering hence reducing bias.

3.8 Variable of the Study

Dependent variable

It is a variable something that depends on other factors. In this study the dependent variable is expressed as a dichotomous variable category 0 if the customers are not access the credit and category 1 if the customers are access the credit. In view of this, the response variable, access to credit is measured as a dichotomous variable. Y_i = {0, customer that are not credit access

1, customer that are credit access

Where, Yi is status of accessing the credit.

Independent variables

Independent variable is a variable that stands alone and is not changed by the other variables we are trying to measure. The predictor variables that can study to determine the status of accessing the credit are listed below.

Table3.1. Description of explanatory variables.

Predictor variables name	Representation	Coding
Age (year)	X1	Continuous
Gender	X2	1 = Male 0= Female
Years of Formal Education	X3	1= Elementary 2= High School and Preparatory 3= Diploma and above
Capital requirement (birr)	X4	Continuous
Total Amount of saving (birr)	X5	Continuous
Interest rate (%)	X6	1= yes 0= no
Collateral Security	X7	1 = yes 0 = no
Average monthly income	X8	1= 10,000-15,000

(birr)		2= 15,000-20,000 3= 20,000-25,000 4= Above 25,000
Political condition	X9	1 = Stable 0= Unstabl

3.9. Data Analysis

3.9.1 Descriptive statistics

It is the study of statistical procedure that deals with the collection, representation, calculation and processing. That is the summarization of data to make it more informative and compressible. The study uses frequency tables, percentages, pie chart to analyze the data.

3.9.2   Inferential statistics

It describes the data with making any inference or conclusions and summarizing sources of numerical data into meaningful form the sample that we had taken. In this study the researcher uses bi variant and multiple binary logistic regression statistical analysis.

3.9.2.1. The Binary Logistic Regression Model (BLRM)

Binary logistic regression analysis examines the influence of various factors on a dichotomous outcome by estimating the probability of the event's occurrence. It does this by examining the relationship between one or more independent variables and the log odds of the dichotomous outcome by calculating changes in the log odds of the dependent as opposed to the dependent variable itself. The log odds ratio is the ratio of two odds and it is a summary measure of the relationship between two variables. The use of the log odds ratio in logistic regression provides a more simplistic description of the probabilistic relationship of the variables and the outcome in comparison to a linear regression by which linear relationships and more rich information can be drawn. Regression methods have become an integral component of any data analysis concerned with describing the relationship between a response variable and one or more explanatory variables. The outcome variable in binary logistic regression is binary or dichotomous while the outcome variable in linear regression is continuous. On the other hand, the error term in linear regression is normally distributed with mean zero and some variance that is constant across

levels of the independent variables while the error term in binary logistic regression is distributed binomially, not normally. Consequently, the response variable in logistic regression is not restricted to normality in case of parameter estimation. Because of this logistic regression is the most popular method of analyzing binary response data. There are two primary reasons for choosing the logistic regression. First from mathematical point of view it is an extremely flexible and easily used function and second it lends itself to a clinically meaning full interpretation (Hosmer and Lemeshow, 2000). Logistic regression is used regularly rather than discriminate analysis when there are two categories of the dependent variable. Discriminate analysis strictly requires the continuous independent variables (though dummy variables can be used as in multiple regressions). Thus, in instances where the independent variables are categorical, or a mix of continuous and categorical, and the dependent variable is categorical, logistic regression is appropriate (Agresti, 2007). Logistic regression determines the impact of multiple independent variables presented simultaneously to predict membership of one or other of the two dependent variable categories. There are two main uses of logistic regression: the first is the prediction of group membership. Since logistic regression calculates the probability of success over the probability of failure, the results of the analysis are in the form of an odds ratio. Logistic regression also provides knowledge of the relationships and strengths among the variables. The assumptions required in logistic regression are less restrictive than those for ordinary least squares regression. There is no formal requirement for multivariate normality, homoscedasticity, or linearity of the independent variables within each category of the response variable. However, the assumptions that apply to logistic regression model include: meaningful coding, inclusion of all relevant and exclusion of all irrelevant variables in the regression model and low error in the explanatory variables. **Model:** Let Y_{nx1} be a dichotomous outcome random vector with categories 1 (a customer that access the credit) and 0 (a customer that are not access the credit). Let X, an $n\times(k+1)$ matrix denotes the collection of k-predictor variables and, β be a $(k+1) \times 1$ vector of parameters, then the data layout of explanatory variables is given by: $\mathbf{X = (1, x_1, x_2, ..., x_k)'}$ and $\boldsymbol{\beta} = \mathbf{(\beta_0, \beta_1, \beta_2, ... \beta_k)'}$ The first (leading) column is a column of 1's. It corresponds to the constant or intercept of logistic regression equation. X without the leading column of 1s, is termed as predictor data matrix. Then, the conditional probability of Y given X is given by:

The transformed variable denoted by logit (π) is the log-odds and is related to the explanatory variables as:

Logit(π) = g(x) = $\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k = X'\beta\varepsilon$

So, the general form of the model is: -

Y (access to Credit)) = β_0 +β_1(Interest rate) +β_2(Collateral security) + β_3(Saving) +β_4(Capital requirement) +β_5(Political condition) +β_6(Age)+β_7(gender)+β_8(Monthly income) +β_9(Education)+ε

Where, y= dependent variable,

Y= Access to Credit

β_0 =constant,

β= coefficient of predictor variable, x1-x9= Independent Variable that means: -

x1=Interest Rate

x2=Collateral Security

x3=Saving

x4=Capital Requirement

x5=Political Condition

x6=Age
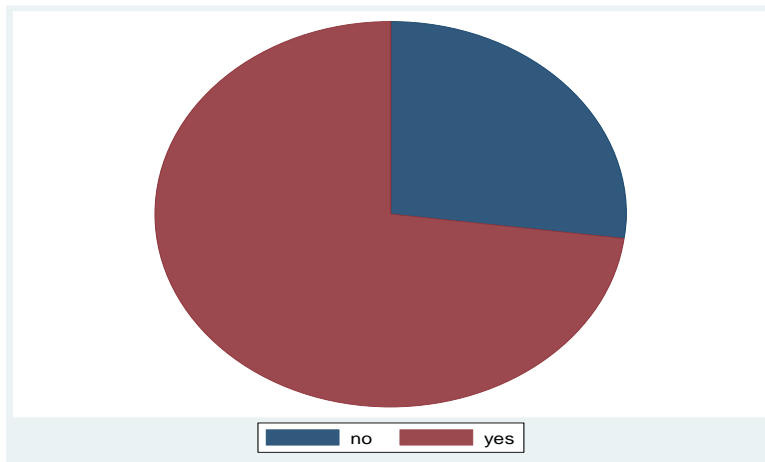
x7=Gender

x8=Monthly Income

x9=Education

4. DATA ANALYSIS AND DISCUSSIONS

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For the final discussion the researcher was collected from 137 customers of bank of Abyssinia. From the 137 questionnaires distributed to the customers of BOA who requests credit access, 137 (100%) were collected.

4.1 Descriptive analysis

The researcher summarizes from the total 137 customers who requests credit access from BOA, at Bahir Dar city 100 customers are accessible and the rest 37 are not accessible.

gender	Freq.	Percent	Cum.
female	35	25.55	25.55
male	102	74.45	100.00
Total	137	100.00	

From the above table of Stata output out of the total 137 respondents 74.75% were males and the remaining 25.55% were females respectively. The researcher summarized that the number of males exceeds the number of females, it might be the culture of our society in which male are the dominant credit access users than females. Based on chi-square test gender is weak relationship from credit access because p value is 0.809 it is higher than 0.05 confidence level.

4.2 Inferential statistics

4.2.1 Binary logistic regression

4.2.1.1 Estimation and goodness of the fit test

In this section binary logistic regression is applied to assess the relationship between credit access of the customers, which is dichotomous response variable with explanatory variables. Multiple logistic regression analysis was applied to assess the effect of each selected variable on credit access, while controlling for other independent variables. The analysis was done by using Stata 14 statistical software. Table 4.20 shows that statistically significant variables and the maximum likelihood estimate of parameters where the significant of each predictor is tested by using the Wald test.

Table 4.20 Result of Maximum Likelihood Estimate of Parameters in fitting Binary logistic Regression

Credit acesses	Coef.	Std.Err.	Z	P>Z	[95% Conf. Interval]	
Gender Male	-3.729957	1.677478	-2.22	0.026 *	-7.0178	-0.4422
Age	0.1097769	0.754988	1.45	0.146	-0.0382	0.2578
Income 15,000-20,000	2.790727	2.150232	1.30	0.194	-1.4237	7.0051
20,000-25000	4.147854	2.100478	1.97	0.048 *	0.0319	8.2647
Above 25000	1.154311	1.529241	0.75	0.450	-1.8429	4.1516
Education High school	6.162598	2.480122	2.48	0.013	1.3016	11.0236

and preparatory Dipoloma and above	10.92713	7.779252	1.40	* 0.160	-4.3199	26.1742
Political condition Stable	4.498709	2.141443	2.10	0.036 *	0.3016	8.6959
Collateral Yes	6.204993	3.224913	1.92	0.054	-0.1157	12.5257
Saving	0.0002607	0.0001108	2.35	0.019 *	0.0000	0.0005
Interest Rate Yes	8.47845	2.715653	3.12	0.002 *	3.1559	13.8010
Capital	2.67e-07	8.53e-07	0.31	0.754	-1.40e-06	1.94e-06
Constant	-26.25906	10.56816	-2.48	0.013	-46.9723	-5.5459

Note the symbole "*" indicates that the estimated cofficents are significance at 0.05 level of siginificane. The reference catagories are "No" for interest rate, " Un stable" for political condition, "Elementary " for education, "10,000-15,000" for mothly income and "No" for collateral.

Table 4.21 Result of Maximum Likelihood Estimate of Odds Ratio

Credit acesses	Odds ratio	Std.Err.	Z	P>Z	[95% Conf.

					Interval]	
Gender Male	0.0239939	0.0402492	-2.22	0.026 *	0.0009	0.64626
Age	1.116029	0.0842588	1.45	0.146	0.9625	1.2940
Income 15,000-20,000 20,000-25000 Above 25000	16.29286 63.298 3.171838	35.03344 132.9561 4.850505	1.30 1.97 0.75	0.194 0.048 * 0.450	0.2408 1.0315 0.1584	1102.246 3884.369 63.5336
Education High school and preparatory Dipoloma and above	474.6594 55666.45	1177.213 433043.4	2.48 1.40	0.013 * 0.160	3.6753 0.0133	61300.74 2.33e+11
Political condition Stable	89.90097	192.5178	2.10	0.036 *	1.3519	5978.116
Collateral Yes	495.2156	1597.027	1.92	0.054	0.8907	1275324.8

Saving	1.000261	0.0001108	2.35	0.019 *	1.0000	1.0005
Interest Rate Yes	4809.987	13062.25	3.12	0.002 *	23.4734	985624.8
Capital	1	8.53e-07	0.31	0.754	0.9999	1.000002
Constant	3.94e-12	4.17e-11	-2.48	0.013	3.98e-21	0.0039

4.2.1.3 Binary Logistic Regression Post Estimation Tests

4.2.1.3.1 Deviance Test

The deviance Test(-2LL) is a measure of the difference between a given model and the saturated model, smaller value indicates better fit. The researcher can sees that (-2LL) of the full model is -2(-13.221325) = 26.44265 and $-2LL_o$ of the intercept only model is -2(-79.916405) = 159.83281 giving the difference of the deviance is (159.83281-26.44264) = 133.39). The model deviance 26.44265 is significantly smaller than the null deviance (159.83281); hence the set of predictors significantly improved model. Since loglikelihood ratio test is chisquare distributed with 4 degree of freedom   Prob > chi2 (133.39) =0.0000, the researcher can reject the null hypothesis of no significance difference between the two models.

Pseudo R2 :- The independent variables have the power to explain the 83.46 % of the dependent variables.

4.2.1.3.3 Hosmer-lemeshow goodness of fit test

The overall goodness of fit of the model was evaluated by **Hosmer-lemeshow** goodness of fit test with the null hypothesis:

H_0: the model is a "good enough" fit to the data and the researcher only rejects the null hypothesis and decide it is poor fit if there are sufficiently strong grounds evidences.

Table 4.22 Hosmer-lemeshow goodness of statistics

Hosmer-lemeshaw test			
Ste p	Chi-square	Degree of freedom	Significance
1	0.79	8	0.9924

Source: Own computation by Stata 14.2

The p-value (0.9924) is greater than 0.05 in the above table gives us an evidence not to reject the H_0. Hence the model is a good fit to the data and the result is shown on (appendix E).

4.2.1.3.5 Marginal effects of significance variables

Based on the Appendix (I) the result of the marginal effect of significance variable is explained as follows: -

Gender: The predicted probability of credit access for gender is decreased by 0.0016301 for male customers than female other factors held constant in the model.

Monthly Income: The predicted probability of credit access for monthly income ranges from income level of 20,000 up to 25,000 is increased by 0.0005218 holding other variables in the model constant.

Education: The predicted probability of credit access for education level (high school and preparatory) schooling is increased by 0.0048041 holding other variables in the model constant.

Political Condition: The predicted probability of credit access for stable political condition is increased by 0.0079017 than un stable political condition holding other variables in the model constant.

Saving: The predicted probability of credit access for saving is increased by 1.88*10,000,000 =0.0000 (1.88e-7) holding other variables in the model constant.

Interest rate: The predicted probability of credit access for interest rate (yes) is increased by 0.0748313 than the customers who not know the rate of interest that can be charged holding other variables in the model constant.

5. CONCLUSSION AND RECOMMENDATION

5.1 Conclusion

The result was analyzed by using descriptive analysis and empirically by applying econometric model. To identify the determinants of credit access for customers Multiple Binary Logistic Regression estimate is used. The model describes that gender (male) on the determinants of credit access is negatively affects credit access and statistically significant as mentioned in chapter four on the discussion part. In the model variables such as saving, education (high school and preparatory), political condition (stable), monthly income (ranges from 20,000-25,000), Gender (Male) and interest rate (yes) show a positive sign and statistically significant with a p value less than 0.05.

5.2 Recommendation

The study recommends that, bank can be visualizes or sees their customer educational level and arranges credit facility and delivered at the right time, study also recommends that there is the need for effective credit management system, well trained credit relation officer and credit appraisal management practice in order to delivered credit services for customers by take into considering the customers guarantees or properties available for credit without biasedness from the top management. Saving is one of the determinant factors for credit access. This implies that customers save money in the bank are essential for to acquire credit access. Education level in high school and preparatory schooling has significant positive factor for credit access. BOA should develop their credit habit by increasing high school and preparatory educational levels customers beyond other educational status by take into considering their paying capacity and credit know-hows.

Political condition is one of the predominant significant variables for credit access. This implies that customers who live in stable political condition can be better to pay their liability and run their business in comfortable manner and the bank is easily supervise their business activities. So, BOA can motivate and increases credit program for stable political environments, Monthly income is basic variable for credit accessibility for banking industry. This implies that customers earn more income in monthly basis to repay their monthly repayment is easily acquires credit facility in bank. So, customers income ranges from 20,000 up to 25,000 is

significance variable and positively affects credit access. Gender is important and positive effect on credit access. Based on the researchers finding number of males exceeds the number of female customers, it might be the culture of our society in which male are the dominant credit access users than females.

Interest rate is also one of the basic variables for the study. If customers know the rate of interest that can be charged for their liability is better to pay based on the maturity date and customers can be easily distinguish the level of interest rate before the receives the service than the one who not knows the interest rate of the bank.

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