

Mobile Banking and Financial Inclusion in Burundi

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Abstract

In Burundi, only 7 percent of people above 18 years old have access to bank accounts. That percentage is small and this severely limits economic freedom, financial security and job prospects. The availability of financial services to people of different categories at lower costs is a good indicator of financial inclusion. The general objective of this study was on mobile money and financial inclusion in Burundi. The study's specific objectives laid on establishing mobile money distribution, mobile money transactions and the value of mobile money transactions on the financial inclusion in Burundi. The population of this study was 14 institutions that offer mobile banking services, and only three of them were sampled due to their data availability. The descriptive research design and data from secondary source were also used from the year of 2012 to 2019. Findings showed that the number of mobile money distribution was not statistically significant hence not an important determinant of financial inclusion in Burundi. On the second specific objective, the significance value showed that the number of mobile money transactions was statistically significant and an important determinant of financial inclusion. On the last specific objective, the value from the regression coefficients table showed that the value of mobile money transactions was not statistically significant hence the variable was not a good determinant of financial inclusion in Burundi.

Keyword: *Mobile banking, mobile money transactions, financial services, financial inclusion.*

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I. Introduction

The availability of financial services to citizens is key towards financial inclusion, When citizens are financially included, it results in unemployment reduction rate, boost of the gross domestic products, and contributes in both the sustainable economic growth and development. Poor people, limited financial resources and low classes take advantage of mobile banking to transact funds, request loans and adopt the financial education and launch entrepreneurial activities in groups or associations then improve the way they live. In most developed countries, financial activities are accessible to people and most of them are accustomed to formal banking systems, however, formal banks are mostly for educated people and those of middle and advanced classes in developing countries, they are the ones who understand more about the concept of banking, its features of savings and secure the funds, the rest from low income groups, especially those from countryside do not easily access the basic financial services offered by physical/ formal banks. (World Bank, 2014).

According to Boro (2017), mobile money involves the utilization of a telephone to deal with financial transactions linked to a customer's account. Mobile banking has had an impact worldwide and revolutionizing the financial industry. Many banks took advantage of technological advances by implementing mobile banking services in their financial services offered so that the quality of their services can be fast and more productive and covers a large number of people. As specific objectives of this study, mobile banking integrated three dependent variables and an independent variable which is financial inclusion in Burundi. The good thing about mobile banking is that users receive information about their banking transactions regarding registrations, new products or services from the financial institution in which they are registered, improving their accounts or account balance, etc. With mobile banking, funds can also be transferable between accounts, they can use the phone to change the PIN code of the bank account, control the movement of their accounts at any time.

Mobile banking is one of the methodologies propelling the banking sector towards a high speed of development. Without hesitation, the idea of having a bank account in one's pocket is so crucial. Technological progress has always been necessary in the accessibility of services and these technological financial services have enabled banks to expand their commercial territory. Since there was a bank account, there were so many requirements and obstacles, especially for people in rural areas, Mobile Banking came as an answer by facilitating everyone, including those in rural areas, open an account with very few requirements. Mobile money

distributions are channels that financial institutions and mobile money operators use to provide financial services to consumers using mobile phones. (IMF, 2014)

Demirguc, (2008) defined Financial inclusion as the availability of transactions of funds at a price that people can afford especially for the low and limited or disadvantaged income categories. When a country has not yet made financial services available to every citizen, it is difficult to say with confidence that it has achieved full inclusion, and these services must meet customer expectations and satisfaction through their quality and safety. Financial inclusion provides the financial services component, including financial transactions, deposits and withdrawals, payment of bills using the mobile device, easy access to loans, insurance matters.

1.1 Research objectives

1.1.1 General objective

Effect of mobile banking on financial inclusion in Burundi.

1.1.2 Specific objectives

- i. To assess the effect of mobile money distribution and financial inclusion in Burundi
- ii. To establish the effect of mobile money transactions on financial inclusion in Burundi
- iii. To examine the value of mobile money transactions on financial inclusion in Burundi

1.2 Research hypotheses

H₀₁: Mobile money distribution had no significant effect on financial inclusion in Burundi

H₀₂: Mobile money transaction had no significant effect on financial inclusion in Burundi

H₀₃: The value of mobile money transaction had no significant effect on financial inclusion in Burundi

II. Literature review

2.1. Empirical review

The researcher in this section discussed all the variables. The independent variables being mobile money distribution, Mobile money transactions, and the value of mobile money transactions.

2.1.1. Mobile money distribution and financial inclusion in Burundi

Donovan (2012), the contribution of mobile money and banking on the accessibility of financial services. The aim of the study was to examine whether the penetration of mobile banking has led people of low income classes and who were unbanked before to become financially included. The research used primary data and the outcome from the study was that mobile banking is so related to the fact that people of all socio-classes that are currently accessing financial services at low costs. The study had a measure contribution in research though it used primary data which can be subjected to bias, the current study considered the data from secondary sources of 2012 till 2019.

Thegya and Demombine, (2012) in his study, the movement of mobile money on savings in Kenya. This was to examine whether the introduction of mobile money in Kenya has influenced savings. The researcher used secondary data and the outcome was clear that the association between mobile money movement and savings attitude was positive. Although their study undoubtedly contributed to the research, it was based on a single determinant of financial inclusion which is savings. This study covered other determinants of financial inclusion.

Moses (2019), the flow distribution of funds and the inclusion of financial services in Kenya. The assessment was on whether there is an influence of the channels of distribution of financial services on financial inclusion. Taking into consideration internet banking and ATM systems as few among other distribution channels of financial services, the research outcome showed that there was a significant link between internet banking as well as ATM systems and financial inclusion. Though the study contributed in the area of research, it demonstrated gaps in failing to cover other elements that lead to inclusion. This one covered the distribution of mobile money, the transactions of mobile money and the value of transactions of mobile money effects on financial inclusion.

2.1.2. Mobile money transactions and financial inclusion in Burundi

Boro (2017) conducted a research on mobile money and financial inclusion in Kenya. This was to examine whether the number of mobile money users and their transactions lead to financial inclusion. The results have shown the transactions of M-money and financial inclusion positively associated. Data from the secondary sources was applied from 2007 to 2017. The research had a significant contribution though it may not be applied in Burundi since it was conducted in Kenya. The current study considered the case of Burundi. Mobile platforms have facilitated credit products such as loans and savings that were previously offered by banks, but now they are easily and inexpensively available to low-income families.

Etim (2014) conducted a survey on mobile phones to easy access financial services or the primary reason of owning a telephone might be something else. The outcome of the study has shown that most of the people owned telephones not for accessing financial services as their primary motivation but to communicate either through calls or messages. The study though has been beneficial to the research, used primary data which can be subjected to bias; the current study used secondary data between the period of 2012 and 2019.

Kibicho (2019), in his study on the use of mobile banking on the accessibility of loans in Makueni. The aim of the study was to assess whether having a mobile banking account made loans accessible. The outcome of the study showed that there is a positive link between using M-banking and loan access. Though the study contributed in the area of research, it did not cover all the ingredients of the inclusion in offering financial services. The current study considered other elements that lead to financial inclusion.

2.1.3. The value of M-banking transactions and financial inclusion in Burundi

Abel (2018), carried out a study on determinants that lead to borrowing and financial inclusion in semi-rural areas in Burundi. Aiming at assessing the reasons why many people in semi-rural areas of Burundi opted for loans / credits in microfinance institutions to obtain a source of finance and the effect that this type of borrowing can have on socio-economic development in Burundi. Research results have indicated that the main reasons why people go for loans / credits through microfinance institutions are to obtain the means to meet the needs of the newlyweds, to implement projects for the highly educated and middle class individuals. Other people who have access to these loans invest in agribusiness and other income generating activities. The researcher mentioned in his conclusions that these loans had a direct influence on reducing the unemployment rate and help boost socio-economic activities in underdeveloped areas.

Mago and Chitokwindo (2014) Mobile banking and the inclusion of financial service in Zimbabwe. Aiming at measuring how much mobile money and banking services had the impact on the financial inclusion. Due to the fact that mobile banking is not expensive, fast, secure and offers good quality of services that save time at the minimum tariffs, the respondents demonstrated their preference of mobile banking as it led to financial inclusion. Since the research was carried in Zimbabwe, it may not be the case to other countries; the current study considered the case of Burundi.

Saliu (2015) conducted a research on mobile money transfer and the socio-economic impact in Ghana. The study mainly targeted to examine how mobile money has created jobs to people working as agents and the impact it brought in the socioeconomic sector in Ghana. The results demonstrated that mobile money transfer has resulted in poverty reduction, decreased the rate of unemployment and contributed in improving the economy of Ghana. This led to the conclusion that there was a positive linkage between the mobile money transfers and the socio-economic impact in Ghana.

2.2. Conceptual Framework

This is the diagram form that depicted the link between all the variables in the study. The figure illustrated the link between variables of the research.

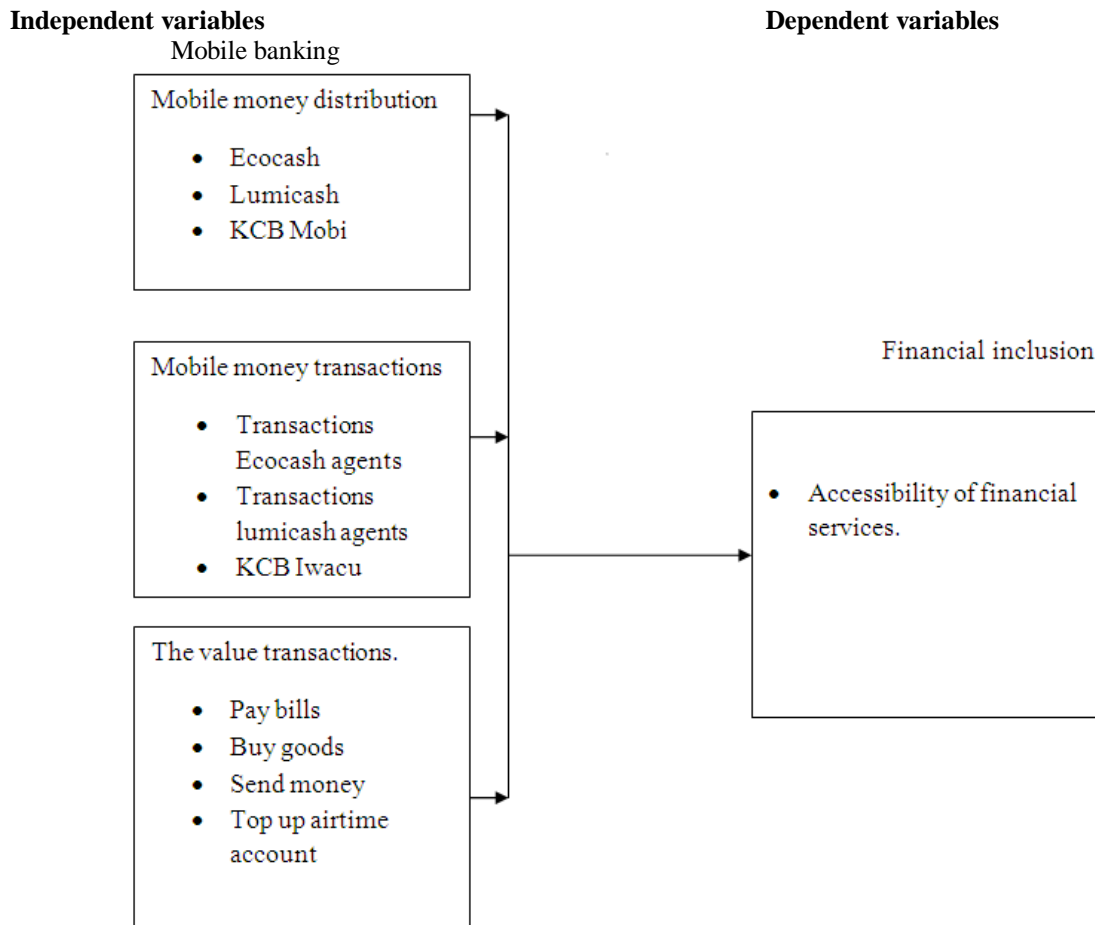


Figure 2.1: Conceptual Framework

III. Research Methodology

3.1 Introduction

This section gives an overview of the research methods, including the Research design, population, sample size, data collection methods, data analysis and interpretation of data which were the major sections of this chapter.

3.2. Research design

It describes the way the researcher gathered and analyzed the data. This is another way of basing one's case in order to reach to the solution of the questions raised, the information was gathered in terms of attitudes and behaviors of people. (Boro, 2017)

3.3. Population

It alluded to the collection of individuals that the researcher planned to consider in a reference for the study. The population for this study were 14 financial institutions both commercial banks and mobile operators that offer mobile banking services. They include **Bancobu, BCB, BBCI, BGEF, CRDB Bank, Diamond Trust Bank, Ecobank, Econetleo, Finbank, Interbank Burundi, KCB bank Burundi, Lumitel, Onamob, and Smart**

3.4. Sample size

A sample stood for a population as a whole. The sample size in this study was KCB Bank Burundi, Econetleo, and Lumicash out of 14 institutions in Burundi that offer mobile banking services and the other 11 ones were excluded. The reason why the three were chosen out of fourteen institutions, was because the three have been established for more than seven years, they have been leading the market in terms of offering mobile money services and hence data have been available comparing to the other eleven which were new in the market, the researcher did not consider them since they might lack data needed for this study

3.5. Data collection

The research used secondary data for the years 2012 till 2019. Data on mobile money distribution was accessed from Econetleo, Lumitel and KCB Burundi, while the remaining data was accessed from Banque de la République du Burundi, ministry of Burundi in charge of communication and telecommunication operators as well as mobile money providers and Bureau National des statistiques du Burundi. Different documents and official journals with relevant data on mobile banking and financial inclusion in Burundi were considered for this study for dependent variables.

3.6. Empirical Model

The study was guided by regression model which was also used as a set of statistical process to set the link between M-banking and financial inclusion.

The model of regression was:

$$Y = \alpha + \beta_1 X_1 t_1 + \beta_2 X_2 t_2 + \beta_3 X_3 t_3 + e$$

Whereby:

Y = Financial Inclusion

X₁ = Mobile money distribution

X₂ = Mobile Money transactions

X₃ = The transactions value

t₁ = Time factor for mobile money distribution

t₂ = Time factor for mobile money transactions

t₃ = Time factor for the transactions value

α = Constant

e = error term

β₁, β₂, β₃ = beta coefficients

3.7. Data analysis and presentation

The researcher used descriptive and inferential statistics for examination. Descriptive statistics gave the analysis for the variables in the study. Some of the techniques of inferential statistics that was used were: Pearson’s correlation and regression analysis.

3.8. Diagnostic tests

This section presents a couple of diagnostic tests which were used in this study, normality test, heteroscedasticity test, and autocorrelation test.

IV. Data Analysis

4.1 Introduction

The chapter four analyzes, presents and discusses the results of the study.

4.2 Descriptive Statistics

The descriptive statistics presented was based on independent variables of the research.

	Descriptive Statistics			
	Min	Max	Mean	Std. Deviation
Number of Mobile money distribution	1156	65394	37231.19	20331.321
Number of Mobile money transactions	139213	6168428	2967623.38	1938033.457
Value of mobile money transactions	21300000	172824600	77503310.77	36706631.042

Table 4.1: Descriptive Statistics

Source: Authors computations (2021)

The researcher used descriptive statistics. The findings of 2012 are of least value comparing to other years with the value of 1156 and 2019 which recorded the highest number, 65394. And 37231.19 was the Mean and 20331.321 was the standard deviation. From the figures, we can tell that as the years went by, the number of mobile money distribution kept on increasing and this was due to the fact that 2012 was the year of introduction of mobile money services in the market in Burundi, people had no idea about it, nor they could not embrace it as a business opportunity, but the year 2019 had the biggest value of figures because people have understood what it is about and jumped into it as agents.

The findings from the table above showed that 2012 had 139213 which is the smallest values of other years, and 2019 had recorded 6168428 and 2967623.38 was the arithmetic mean, 1938033.457 was the standard deviation. 2012 recorded the lowest number of mobile money transactions simply because people were not accustomed of using mobile financial services, the products was new on the market, Burundians had to first understand it and trust it when transacting money, however, one can see that the year 2019 recorded the highest number of mobile money transactions because people have understood it, agents have increased in number and the system was known everywhere in Burundi, even in rural areas.

2012 recorded 21300000 which is the smallest value while 2019 recorded the highest value with 172824600. And 77503310.77 was the value of the arithmetic mean for mobile money transactions and standard deviation was 36706631.042 on the value of M-money. The same as other two variables, the year 2012 recoded the lowest value of mobile money transactions and the year 2019 recorded the highest value of mobile money transactions and this has been influenced by the increase of the number of agents as well as the number of mobile money transactions from the year 2012 to 2019.

4.3. Diagnostic tests

Normality test which used kurtosis and skewness method, heteroscedasticity test which scatter plots test was tied up, and autocorrelation test which used Durbin-Watson test.

4.3.1 Normality test2

Tests of normality are applied to see if a group of data has a model of normal distribution.

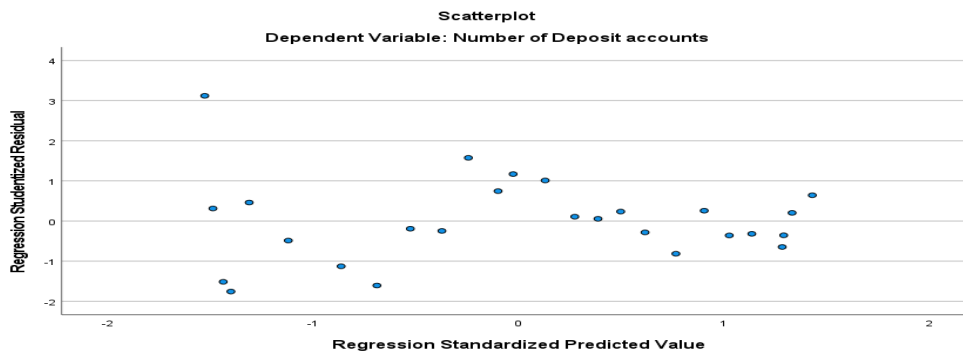
	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
M-money distribution	-.496	.456	-.960	.887
Mobile money transactions	.002	.456	-1.252	.887
Value of mobile money transactions	.700	.456	.957	.887

Table 4.2: Normality test
Source: Authors computations (2021)

To test that the data in this study followed the normal distribution, skewness and kurtosis test were applied from SPSS and the results of skewness were -0.496 for the number of mobile money distribution agents, 0.002 for mobile money transactions, 0.7 for the value of mobile money transactions and the results for kurtosis were -0.960 for mobile distribution agents, -1.252 for mobile money transactions and 0.957 for the value of mobile money transactions. Based on the results in the table above, skewness depicted the figures in the range between -1 and 1, which shows that the data is normally distributed, while for kurtosis, two variables mobile money distribution and mobile money transactions, the value indicated that the distribution has lighter tails than the normal distribution since they gave negative figures, when the value mobile money transactions, the distribution demonstrated a positive kurtosis value which indicated that the distribution has heavier tails than the normal distribution.

4.3.2 Heteroscedasticity test

It means unequal scatter. Each line's length "represents" the variance of the residuals corresponding to a specific value of the dependent variable. If the downward sloping lines length's change systematically this implies that the variance of the residuals changes systematically with the value of the dependent variable (& the fitted value), which would imply heteroscedasticity. To detect whether data in this study had the problem of heteroscedasticity, the scatterplot chart from SPSS was used.



4.3.4 Autocorrelation test

The researcher used the Durbin-Watson test for autocorrelation test.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.993 ^a	.986	.984	926.522	1.020

Table 4.4: Autocorrelation test
Source: Authors computations (2021)

Running the regression we received a DW-test value equal to 1.020. The range has to be between -1 and 1 and since the test value is outside the range, one has to draw the conclusion that the model suffer from positive autocorrelation.

4.4 Correlations

Under this section, the study demonstrated the relationship between dependent and independent variables. It ranged from -1 to 1, the strong positive relationship is indicated by 1 while -1 indicates a strong negative relationship and zero indicates that there is no association between the two factors, when the figures are close to zero, the relationship becomes more and more weak.

		Number of Depositaccounts	M-money distribution agents	Mobile money transactions	Value of mobile money transactions
Number of Depositaccounts	Pearson	1	.982**	.990**	.912**
	Correlation Sig. (2-tailed)		.000	.000	.000
M-money distribution agents	Pearson	.982**	1	.982**	.922**
	Correlation Sig. (2-tailed)	.000		.000	.000
Mobile money transactions	Pearson	.990**	.982**	1	.938**
	Correlation Sig. (2-tailed)	.000	.000		.000
Value of mobile money transactions	Pearson	.912**	.922**	.938**	1
	Correlation Sig. (2-tailed)	.000	.000	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4.5: Correlations

Source: Authors computations (2021)

Based on the table above, the association between Deposit bank accounts and the number of mobile money distribution agents was at 0.982. The reason why there is a relationship is because, mobile money service distributors have to be registered under the Banque de la Republique du Burundi (BRB) and must have a Bank account, so that the money transacted are taken to the BRB. The significant value (two tailed) is at 0.000 which indicated that it was statistically significant. the number of mobile money transactions and the number of deposit bank account were both positively associated at 0.990 and were statistically significant at 0.000, this one is explained by the first variable that all the amounts transacted via mobile money services have to be controlled by the central bank of Burundi (BRB) and lastly, the number of deposit bank accounts were strongly positive associated with the value of mobile money transactions at 0.912 and was statistically significant at 0.000, and the reason is as simple as that the value of the mobile money transactions depends on the number of transactions of mobile money services.

4.5. Regression model

The regression model, R-value shows the correlation between the dependent and independent variable. Any value greater than 0.4 is good to be taken for the analysis of the study.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.993 ^a	.986	.984	926.522

Table 4.6: Regression model

Source: Authors computations (2021)

On the table above, the R-value is 0.993, when the value greater than 0.4 that means the regression model is effective enough to set the relationship. In this study, the R-square value is 0.986, and it is greater than 0.4, which means it is also effective.

The adjusted R-square demonstrates the generalization of the results i.e. the variation of the sample results from the population in multiple regression. It is good to have a minimum or small difference between R-square and Adjusted R-square minimum. In the study, the value is 0.984, which is not far off from 0.986 of the R-square, which is effective. Thus, the table above presents results of the fit model which are satisfactory to proceed.

4.6 Analysis of variance

The ANOVA is used to determine the influence that the independent variable has on the dependent variable. The ANOVA table below, in a regression test generated in SPSS helps evaluates whether the model is significant enough to determine the results.

Model		ANOVA ^a			F	Sig.
		Sum of Squares	Df	Mean Square		
1	Regression	1329204178.985	3	443068059.662	516.130	.000 ^b
	Residual	18885753.669	22	858443.349		
	Total	1348089932.654	25			

a. Dependent Variable: Number of Deposit accounts

Table 4.7: Anova

Source: Authors computations (2021)

Based on the findings on the ANOVA table above, generally the significance value is chosen at 5% level of the significance for the study. Thus the p-value needs to be less than 0.05. In the table above, the significant value is 0.000. Therefore, the result is significant.

4.7 Regression coefficients

The results demonstrate the strength of the association between both variables, the significance of the variable and the influence of the independent variables on the dependent variable.

Model		Coefficients ^a				Sig.
		Unstandardized Coefficients		Standardized Coefficients Beta	T	
		B	Std. Error			
1	(Constant)	33057.991	586.556		56.359	.000
	Number of M-money distribution agents	.099	.049	.273	2.022	.055
	Number of Mobile money transactions	.003	.001	.856	5.703	.000
	Value of mobile money transactions	-2.853	.000	-.143	-1.965	.062

Table 4.8: Regression coefficients

Source: Authors computations (2021)

At less than 0.05 means the independent variable has an effect on financial inclusion. At greater than 0.05, that shows there is no statistically significant effect. From the table above, the Beta coefficient is 0.099, at the significance level of 0.05, the significance on the number of mobile money distribution agents is 0.055 which is more than the acceptable limit of 0.05. Based on the rule, this explains that there is no statistically significant effect between mobile money distribution and financial inclusion in Burundi. The significance on the number of mobile money transactions is 0.000 which is less than the acceptable value of 0.05, and the Beta is 0.003. And finally, 0.062 for the value of mobile money transactions which is greater than the accepted limit of 0.05, which shows that there is no statistically significant effect between the value of mobile money transactions and financial inclusion in Burundi, the Beta is -2.853. Here we can conclude that only mobile money transactions have an effect on financial inclusion in Burundi.

The regression model became:

$$Y = 33057.991 + 0.99x_1 + 0.003x_2 - 2.853x_3 + e$$

Year 2012 records 1156 which is the smallest number for mobile money distribution while the year 2019 records 65394 which is the largest number for mobile money distribution and the Beta value which is 0.99.

The year 2012 records 139213 which is the smallest number for mobile money transaction while the year 2019 records 6168428 which is the largest number for mobile money transactions and the Beta value which is equal to 0.003.

The year 2012 records 21300000 which is the smallest number for the value of money transaction while the year 2019 records 172824600 which is the largest number and the Beta value is equal to -2.853

V. Conclusion And Recommendation

On the regression coefficient table, if the significance value is less than 0.05, the null hypothesis is rejected, and this means the independent variable has an effect on financial inclusion. If Significance is greater than 0.05, then the null hypothesis is not rejected, and that shows there is no statistically significant effect. The study concludes that there is no statistically significant effect of mobile money distribution on financial inclusion in Burundi, since the Beta coefficient is 0.099, at the significance level of 0.055. Mobile money transactions is at the significance level of 0.000 and the Beta is at 0.003, this concludes that Mobile money transactions have an significant effect on financial inclusion in Burundi. The Value of mobile money transactions is at the significance of 0.062 which is greater than the accepted limit of 0.05, which shows that there is no statistically significant effect between the value of mobile money transactions and financial inclusion

in Burundi, the Beta is -2.853. One can therefore conclude that among all dependent variables used in this study, only mobile money transactions is a good determinant of financial inclusion in Burundi.

The study recommends that since the results showed that mobile money transactions have a positive relationship with financial inclusion in Burundi, the Banque de la République du Burundi (BRB), regulators should facilitate Mobile telecommunication operators and other financial institutions that offer financial services should motivate more people especially in rural areas to adopt mobile financial and banking system. Much effort from the mobile money service providers should be undertaken to make sure all rural and urban areas are covered. Citizens should be given workshops on financial education and the importance of savings and be encouraged to save with their mobile money accounts, if that can be done, one will expect the trend of mobile money transactions going higher and higher each and every year.

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