ECONOMIC FACTORS AND FINANCIAL INCLUSION IN AFRICAN STATES

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Abstract
Financial inclusion has been described as a key enabler to reducing poverty and boosting prosperity across the world, countries are now keen in reducing the financial exclusion across individuals and businesses. In this paper, examination of the effects of economic factors including gender, literacy rates, income level and income sources on financial inclusion across African states was carried-out. Quantitative methodology was employed through cross-country analysis for 41 African countries. Data was generated from World Bank Group updated Global Financial Inclusion Survey and World Fact Book for 2015, which was analyzed through Ordinary Least Squares (OLS) regression analysis. It was found that literacy rates and income level significantly improves financial inclusion, but gender and income sources have insignificant effects. Some policy insights can be gained from the results relating to the need for the governments to enhance literacy rates and more specifically the financial literacy among citizens. The result also called for the need to create economic activities more especially in rural areas so as to poster growth in Gross Domestic Products and eventually the per capita income for greater financial inclusion.

Introduction
Financial inclusion has been described as a key enabler to reducing poverty and boosting prosperity across the world, countries are now keen in reducing the financial exclusion across individuals and businesses. It has been estimated by the World Bank that about 2 billion people do not use formal financial services globally and more than 50% of adults in poorest households are unbanked (World Bank, 2018)., thus, President of the bank called for Universal Financial Access (UFA) by 2020.

In Africa, the African Development Bank (ADB) in its report documented that as at 2012 the region was the second least in financial inclusion. The financial inclusion rate stood at 23% above the Middle-ease region with 15%, while High Income Countries, East-Asia and Pacific as well as Europe and Central

have 89%, 55% and 45% respectively (Triki and Faye, 2013).

Within Africa, ADB reported that less than 25% and 30% of women and men are banked respectively. For inclusion by location, the report disclosed that less than 25% of individuals residing at rural areas are banked while less than 40% of those residing at urban areas are banked. In terms of literacy rates less than 20% of individuals having elementary certificates are banked, less than 40% of those with secondary certificates and less than 60% with tertiary education are banked respectively (Triki and Faye, 2013).

Despite this practical evidence few literatures investigates the factors influencing financial inclusion in Africa. The only work that attempted to address this challenge is that of Zins and Weill

(2016). However, the current study differs in number of ways. First, Zins and Weill (2016) studied only 37 African countries, this study covered 41 countries. Second, Zins and Weill (2016) did not study the influence of sources of income on financial inclusion. Last, the measure of literacy rate used in the current study varies with that of Zins and Weill (2016), in this study overall literacy rate per country instead of qualifications. Therefore, investigating the influence of gender, literacy rate, income level and income source on financial inclusion across African states serves as the key objective of this study.

In achieving this objective, the study is divided into five parts. This is an introduction, followed by literature review as the second part. The third part is methodology and the fourth part is result and analysis, while the last part is conclusion and policy implication.

Literature Review

Financial inclusion has been defined as a process which allows for ease of access to, or availability of and usage of formal financial systems by members of the economy (Kama and Adigun, 2013). Financial inclusion has two attributes; these are formal and informal financial inclusion. Formal financial inclusion refers to the access and use of financial services delivered by banks and non-bank financial institution licensed by central bank. Informal financial inclusion refers to the access and use of financial services delivered by such providers not licensed by the central banks.

Empirical evidences around the world showed that there has been high exclusion of populace in the formal financial services delivery. Specifically, the work of Ardic et al, (2011) revealed that 56.0 per cent of adults in the world do not have access to formal financial services and that the situation is even worse in the developing world with 64.0 per cent of adults unbanked. This situation persists, even recently the World Bank indices indicated that about 2 billion people do not use formal financial services globally and more than 50% of adults in poorest households are unbanked (World Bank, 2018).

Several factors were identified as to have influence on financial inclusion. In India, the study of Bhanot et al (2012) found that income, financial information, distance to financial institutions, awareness and education are key determinants to financial inclusion. In Peru the findings from the work of Clamara, Peñay and Tuesta (2014) indicated that age, gender, education and income level are important factors influencing financial inclusion. Likewise, the study of Fungacova and Weill (2015) which compared four emerging countries in terms of financial inclusion covering Brazil, Russia, India

and South Africa disclosed that formal account and formal savings in comparison to Brazil, Russia and India while certain other factors like higher income, better education and gender influence are associated with greater use of formal accounts and formal credit in China.

Moreover, another finding still from India by Nandru and Anand (2014) disclosed that population size, gender ratio, branch penetration, literacy rate and deposit to credit penetration ratio were the major determinants of financial inclusion Indian state of Andhra Pradesh. Similarly, Nandru, Anand and Rentala (2016) later reconfirmed that size of population, gender ratio, branch penetration and credit to deposit penetration ratio have a significant impact on enhancing financial inclusion programme in south Indian states. Another study also explored the moderating effects of demographic variables of respondents (sex, age and income level), it was found that these variables are significant factors moderating adoption of mobile financial services (Abdinoorand Ulingeta, 2017). In Africa, the study of Zins and Weill (2016) found that age, gender, income level and education have significant influence on financial inclusion in Africa.

From the foregoing review it has been clear that factors such as gender, education (literacy), income level have been among the mentioned factors that play important role in financial inclusion. However, income source has not been considered by the extant literature. It can be argued that source of income can be important determinant of financial inclusion for the fact that in Africa farming is normally undertaken by rural farmers who may not have easy access to banking services unlike service and manufacturing workers who may be taking the advantage for residing in cities where financial institutions are easily available. Moreover, it can be employers in these two sectors often asked pay their employees through banks, thus, the possibility of been financially included. Despite this evidence, a study that comprehensively examined the determinants proposed in this study was not availed by the extent literature. Thus, based on this argument the following hypotheses are developed.

H1 Gender has significant effect on financial inclusion across African states.
H2 Literacy rate has significant effect on financial inclusion across African states.
H3 Income level has significant effect on financial inclusion across African states.
H4 Manufacturing sectors have stronger effects on financial inclusion than service and agricultural sectors.

Methodology

In this section the description of the methodology and methods used in conducting the study is presented. This covers the population and sample size, variables and its measurements as well as data and data analysis techniques. The research model of the study was also presented.

Population and Samples

There are 61 nations in Africa. These serve as the populations of this research. The year 2015 was used as the year for the observation. In selecting the sample for the study equal chance was given to all African states. Notwithstanding these criteria 20 were exempted from the study due to lack of data in any one of the five variables of the study. Thus, 41 countries remained which serve as the sample of the study. This sample has been found to be adequate in running a regression analysis based on the support from extant literature. In this, Babyak(2004) posited that 10-15 observations for each independent/predictor variable enable a good estimation of a regression model. Consequently, with four main independent variables in the study; gender, education level, income level and income sources it could be said that 41 countries which served as the observations can be considered adequate in running the regression analysis.

Variables and its Measurements

Financial inclusion is the dependent variables of the study. It was measured using percentage of respondents who report having an account (by themselves or together with someone else) at a bank or another type of financial institution (see year-specific definitions for details) (% age 15+). The data was obtained from World Bank Group updated Global Financial Inclusion Survey for 2015.

The study has are four independent variables; gender, education level, income level and income sources. The first independent variables is gender, this was measured using ratio of male to female in each of the 41 African states, when ratio of male is higher 1, otherwise 0. Literacy rate is the second independent variable, which was measured using rate of literacy in each of the countries considered, in this actual percentage is used of each of the countries. Income level is the third independent variable which was measured using per capita GDP in each of the countries sampled, this literacy rate the actual per capita income was used for each of the 41 countries. Lastly, the fourth independent variable is income source which was measured using the sector (agriculture, services and industrial) contributions to GDP. Manufacturing sector was used as a base; the expectation was those individuals working in manufacturing sector could be more financial included as they may be dealing with the financial institutions than other sectors. Therefore, when country manufacturing sector is larger than other sector is 1, otherwise 0. United State Central Intelligence Agency (US-CIA) World Fact Book for the year 2015 was the source of this data.

Data and Data Analysis Techniques

In analyzing this data, simple regression analysis was conducted using SPSS version 22.0. Financial inclusion as a dependent variable was regressed against four (4) independent variable (gender, education level, income level and income sources).

Table 1: Data

No.	Country	Financial Inclusion	Gender	Literacy Rate	Income Level	Income Source
1	Angola	29.32	1	71.1	7,300	1
2	Algeria	50.48	1	80.2	14,500	1
3	Benin	15.98	1	38.4	2,100	0
4	Botswana	49.24	1	88.5	16,400	0
5	Burkina Faso	13.42	0	36	1,700	0
6	Cameroon	11.35	1	75	3,100	0
7	Cen. Afr. Republic	3.30	0	36.8	600	0
8	Chad	7.70	0	40.2	2,600	0
9	Congo Dem. Rep.	10.91	0	63.8	800	0
10	Rep. of Congo	16.68	1	79.3	6,700	0
11	Cote D'Ivoire	15.14	1	43.1	3,100	0
12	Djibouti	12.27	0		3,200	0
13	Egypt	13.65	1	73.8	11,800	0
14	Equatorial Guinea	46.21	0	95.3	31,800	1
15	Ethiopia	21.79	0	49.1	1,800	0
16	Gabon	30.15	0	83.2	18,600	0
17	Ghana	34.62	0	76.6	4,300	0
18	Guinea	6.17	1	30.4	1,200	0
19	Kenya	55.21	1	78	3,200	0
20	Libya	18.80	1	91	14,600	0
21	Madagascar	5.73	1	54.7	1,500	0
22	Malawi	16.14	0	65.8	1,100	0
23	Mali	13.25	0	38.7	2,200	0
24	Mauritius	82.21	0	90.6	19,500	0
25	Morocco	39.07	0	68.5	8,200	0
26	Namibia	58.06	1	81.9	11,400	0
27	Niger	3.49	1	19.1	1,100	0
28	Nigeria	44.17	1	59.6	6,100	0
29	Rwanda	38.14	0	70.5	1,800	0
30	Senegal	11.92	0	57.7	2,500	0
31	Sierra Leon	14.15	0	48.1	1,600	0
32	South Africa	68.77	0	94.3	13,200	0
33	Somalia	7.86	1	20	400	0
34	Sudan	15.27	1	75.1	4,300	0
35	Swaziland	28.57	1	87.5	8,500	1
36	Tanzania	19.04	0	70.6	2,900	0
37	Togo	17.61	0	66.5	1,500	0
38	Tunisia	27.26	0	81.8	11,400	0
39	Uganda	27.78	0	78.4	2,000	0
40	Zambia	31.29	1	63.4	3,900	0
41	Zimbabwe	17.19	1	86.5	2,100	0

Source: Extracted by Author from STATA

Research Model

The influence of the four variables gender, education, income level and income sources on financial inclusion across African states are presented in the regression model in equation 1 below which is consistent with the four hypotheses developed above.

$$FI_i = \beta_0 + \beta_1 GEN_i + \beta LIT_i + \beta INCOMELEVEL_i + INCOMESOURCE_i + \mu_i \dots\dots\dots\dots\dots\dots\dots \quad (1)$$

Where FI_i is financial inclusion rating for a country, β_0 constants, GEN_i Gender, LIT_i literacy rates, $INCOMELEVEL_i$ income level, $INCOMESOURCE_i$ income source and μ the error term.

Analysis and Results

This section presents the analysis conduct and result from such analysis. The results of descriptive statistics, test of normality, correlation analysis and regression analysis for hypothesis testing are presented.

Description Statistics

The descriptive statistics of the five variables comprising one dependent variable and four independent variables are presented in Table 2 below.

Table 2: Descriptive Analysis of the Variables

| Variables	N	Minimum	Maximum	Mean	Std. Deviation
Financial Inclusion	41	3.30	82.21	25.59	18.65
Gender	41	.00	1.00	.48	.51
Literacy Rate	41	19.10	95.30	66.39	19.82
Income level	41	400.00	31800.00	6258.54	6753.85
Income Source	41	.00	1.00	.12	.33

Source: Extracted by Author from STATA

From Table 2 it is evident that the minimum financial inclusion across African countries which was measured using percentage of respondents who report having an account (by themselves or together with someone else) at a bank or another type of financial institution (see year-specific definitions for details) (% age 15+) is 3.3% while the maximum is 82.21% with a mean value of 25.59% and standard deviation of 18.65%. This implies that there is high disparity in financial inclusion among the African countries.

Gender was coded using 1 and 0, thus, the minimum ratio 0 while the maximum is 1 which the standard deviation of 0.48 and 0.51 respectively. For literacy rate, the minimum literacy rate is 19.10% while the maximum is 95.30%, the mean literacy rate is 66.39%, while the standard deviation is 19.82%, depicting that there is high variation in literacy rate among African countries considered in the study. For income level, the minimum per capita income in Africa is $400 while the maximum is $31,800, with mean value of $6258.54 and standard deviation of $6753.85, indicating high level of disparity in per capita income among the African counties considered in this study. Lastly, for income source, it was coded as 1 when a country manufacturing sector is large and 0 when otherwise.

Normality Test

In regression analysis, normality of data among the study's variable is one of the important postulation of multivariate analysis. The requirement of normality is that the data should be normally distributed. The result of the normality test is depicted in Figure 1 below.

Histogram

Dependent Variable: FI

Mean = 4.35E-16
Std. Dev. = 0.903
N = 39
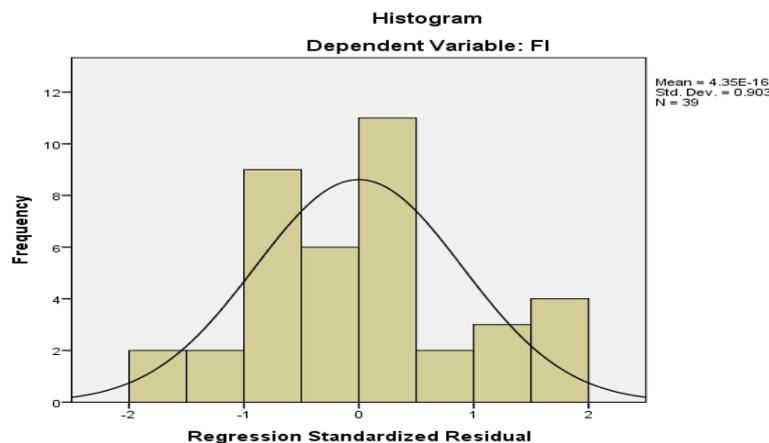
Fig.1: Histogram for Test of Normality

It is evident from Figure 1 above that the requirement for normal distribution of the data has not been violated as to some extent bell-shape has been depicted by the histogram above, thus, the data can be said to be good for the regression analysis in line with Gordon (2006).

Correlation Analysis

Test of correlation is another important requirement is multivariate regression analysis. It is required that a linear relationship must exist between dependent and independent variables. It is normally tested using Pearson correlation.

Table 3: Correlation Analysis

Variables	Financial Inclusion	Gender	Literacy Rate	Income Level	Income Source
Financial Inclusion	1				
Gender	-.048	1			
Literacy rate	.644**	.040	1		
Income Level	.636**	-.014	.661**	1	
Income Source	-.331*	-.215	-.440**	-.267	1

Source: Extracted by Author from STATA

As depicted under the second column containing financial inclusion there is significant linear correlation between all the independent variables and the financial inclusion which is the dependent variable, thus the assumption of linear relationship in regression analysis has been satisfied.

Regression Analysis for Hypothesis Testing

Having satisfied the assumptions of multivariate regression analysis, the main regression analysis is performed under this subsection. The result is presented in Table 4 below.

Table 4: Regression Analysis for Hypothesis Testing

Hypotheses	Unstandardized Coefficients		Standardized Coefficients			Decision
	B	Std. Error	Beta	T	Sig.	
Gender => Financial Inclusion	-3.165	4.828	-.085	-.656	.516	Not Supported
Literacy rate => Financial Inclusion	.354	.168	.373	2.109	.042	Supported
Income Level => Financial Inclusion	.001	.000	.358	2.199	.035	Supported
Income Source => Financial Inclusion	-5.213	8.869	-.085	-.588	.561	Not Supported

Source: Extracted by Author from STATA

From Table 4 above it can be seen that H1 was not supported. The hypothesis proposed that gender has significant effect on financial inclusion across African states. However, the effect is not significant ($β$= -3.165, t=-0.656, p= 0.516). The result implied that the difference in financial inclusion between males and females across African states is not statistically significant. This finding contradicts that of Clamara, Peñay and Tuesta (2014) and of Fungacova and Weill (2015) in China, Nandru and Anand (2014) in India as well as Zins and Weill (2016) in Africa.

Hypothesis 2 postulated that literacy rate has significant effect on financial inclusion across African states. The result in Table 4 supported this hypothesis ($β$=-0.354, t=-2.109, p=0.042). It shows that the high the literacy rate the high the financial inclusion. The finding is consistent with that of Indian study of Nandru and Anand (2014) as well as African study of Zins and Weill (2016).

Hypothesis 3 postulated that income level has significant effect on financial inclusion across African states. The result in Table 4 supported this hypothesis ($β$=0.001, t= 2.199, p=0.035). The result indicates that higher income across African countries measured by per capita income ensured high financial inclusion. The finding is consistent with that of Abdinoor[1] and Ulingeta (2017) as well as that of Zins and Weill (2016).

Lastly, hypothesis 4 projected that manufacturing sectors have stronger effects on financial inclusion than service and agricultural sectors. The finding supported this hypothesis ($β$=-5.213, t=-0.588, p=0.561). The result indicated that there is no significant difference in financial inclusion across the three sector covering agriculture, services and manufacturing. Put differently, individuals in manufacturing sector are not significantly higher than those in service and agriculture with respect to financial inclusion across African states. This finding is pioneering; extant literature did not explore this hypothesis. Thus, it requires replication across context and setting for further validation.

Fit and Robustness of the Model

The fit of the model was tested using F-test. It requires that when the combination of the research variables fits in the model the F-statistics will be significant. The result of this model fitness analysis is contained in Table 5 below.

Table 5: F-test for Model Fit

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6624.067	4	1656.017	8.309	.000[b]
	Residual	6776.537	34	199.310		
	Total	13400.603	38			

a. Dependent Variable: F
 b. Predictors: (Constant), Income level, Income source, Gender, Literacy rate
Source: Extracted by Author from STATA

It can be seen from Table 5 that the combination of the variables fits in the research model as depicted by the significant of F-statistics.

The robustness of the model was evaluated using R-squared. Cohen (1988) classified R-squares into three categories of 35 and above as large, up to 0.15 as moderates, while 0.02 as small. The R-square of the model is presented in Table 6 below.

Table 6: R-squared

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.703[a]	.494	.435	14.11772	1.795

 a. Predictors: (Constant), IS, IL, G, L
 b. Dependent Variable: F
Source: Extracted by Author from STATA

It can be seen that the R-squared of the model is 43.5% which can be classified as large based on Cohen (1988) classifications who classified R-squared of 2%, 15% and 35% as small, medium and large respectively.

Conclusion and Recommendations
The paper examined the effects of economic factors including gender, literacy rates, income level and income sources on financial inclusion across African states through cross-country analysis of 41 African countries. The findings from the study indicated that literacy rates and income level significantly influence financial inclusion, but this influence was not established in the case of gender and income sources. It indicates that individuals with high literacy rate and high income level will be more likely to be financially included. However, being male or female or being working in manufacturing, services or agriculture could be necessarily leads to higher financial inclusion.

The study has implication for policy and future research. For the policymakers the finding gives insights that enhancing per capita income through poverty reduction and economic empowerments across African states can equally enhance financial inclusion. Likewise, improving literacy rate and more specifically financial literacy could also improve financial inclusion. However, the findings revealed that being male or female does not make any difference in financial inclusion across African states. Likewise earning income through manufacturing, agriculture or service sectors do not make any difference in financial inclusion.

The study calls for further research especially on the effect of income sources on financial inclusion. The reason for this call can be justified by that fact that this finding is pioneering. Hence, it requires further validation through replication of the study in other continents around the world.

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