



Financial Inclusion and Effects of Mobile Money Within French and English-Speaking Countries in Sub-Saharan Africa

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Abstract

The past two decades have seen many governments, especially in the developing world acknowledging the importance of financial inclusion. It may be argued though, that the African continent has lagged behind. Nevertheless, the continent has begun to catch up, with studies indicating that over 75% of Africans hold a mobile phone with an internet connection that they use for mobile payments and e-commerce, among other things. The purpose of this paper is to establish the role of mobile money in financial inclusion, and if there is any difference between French and English-speaking countries in Sub-Saharan Africa. The study used the 2011 and 2021 Global Financial Index data collected by the World Bank for their report on financial inclusion across the world. General Linear Model and Binary Logistic Regression were employed to analyse data. The results revealed that while in 2011, before the widespread of mobile money, a significant proportion of English-speaking had inclusion and a significant proportion of French-speaking didn't. The gap substantially narrowed within 10 years due a wider adoption of mobile money by the French-speaking countries. However, the overall financial inclusion increased substantially for both groups within that period. The originality of this study lies in the fact that studies on financial inclusion in Africa have not been comparing comprehensively the differences by countries' colonial heritage, neglecting an important aspect which this study covered.

Keywords: Financial Inclusion; English-speaking countries; French-speaking countries; Sub-Saharan Africa

1 Introduction

The African population has been impacted by innovation and technology just like any other people in the globe, with the number of people in the continent possessing a phone with an internet connection and using it for e-commerce and mobile payments among other things expanding rapidly (Ahmad et al., 2020).

The African continent appears to have lagged behind despite the fact that many governments – particularly those in the global south – have recognised the significance of financial inclusion. Furthermore, the degree of inclusion appears to vary depending on the region and even the legacy of colonialism. Many studies have explored the question of financial inclusion in Africa over the recent past years (Avom et al., 2021; Evans, 2018; Ezzahid & Elouaourti, 2022; Girón et al., 2021; Ifediora et al., 2022; Kouladoum et al., 2022; Magale & Yengeni, 2024; Njanike & Mpofu, 2024). Financial inclusion has mainly been measured by the number of individuals owning an account which the Global Findex 2021 (World Bank, 2023) defines as having a regulated institution account, either individually or jointly, with a bank, credit union, microfinance institution, post office, or mobile money service provider.

These studies looked at a variety of determinant elements that affect Africans' financial inclusion and contribution to economic growth, including microeconomic issues, the role of the state and technology, etc. For example, Tinta et al. (2022) findings show that formal accounting constraints, innovation, financial literacy, and an individual's personality all affect judgements about traditional or mobile accounts. Financial services can also be accessed and used to create new firms, manage risk and lessen the effects of financial shocks, allow people to invest in their health and education, and ultimately boost human progress (Matekenya et al., 2021). The majority of these writers have praised the incredible rise in mobile and digital technology use in Africa for its contribution to increased financial inclusion in numerous regions of the continent. In support of this, Kouladoum et al. (2022) discovered that digital technology at all levels has a positive and significant impact on financial inclusion, as evidenced by ICT indicators of the subscription rate of fixed and mobile phone users, fixed broadband, internet users, and a composite indicator of digitalisation.

Examining the function of the state and its institutions, Kwenda and Chinoda's (2019) findings indicate a positive correlation between financial inclusion throughout the continent and institutional quality and governance. Nsiah and Tweneboah (2023) corroborate this, stating that bank quality, domestic loans to the private sector, and gross national income (GNI) per capita are important factors impacting financial inclusion in Africa. Ifediora et al. (2022) conducted a study on 22 sub-Saharan African nations between 2012 and 2018 and found that financial inclusion – including its availability, penetration, and composite dimensions – significantly affects economic growth, while the use dimension somewhat boosts it. Additionally, Ajide (2020) investigated the effects of financial inclusion in 13 African nations and discovered that it also has a positive and significant impact on entrepreneurship across the continent.

The last 20 years have seen a growing number of countries, especially in the south, realise the need of financial inclusion. Though notable development has been observed within 10 years, one may claim that the African continent is still falling behind in that regard. Sub-Saharan Africa had a little over 23% financial inclusion rate in 2011, but that number increased to almost 43% in 2017 and beyond, largely due to the expansion of digital financial services thanks to mobile money expansion in the region (Ajide, 2020). Nonetheless, it seems that there are regional and even cross-colonial differences in the extent of financial inclusion. Comparing the level of financial inclusion in French-speaking and English-speaking Sub-Saharan African countries and the role of mobile money is the problem this study attempted to examine.

2 Purpose

The aim of this paper is to examine the effect of mobile money in financial inclusion between French and English-speaking countries in Sub-Saharan Africa, and whether income level and employment (covariates) have any influence.

The following objectives were set in order to achieve the aim of the paper, in determining the level of financial inclusion for each group of countries, individually and collectively, and point out differences, if any.

2.1 To determine the level of financial inclusion for each group of countries, individually and collectively and point out differences, if any.

2.2 To establish the influence of mobile money in financial inclusion within and between the groups.

2.3 To determine whether income level and employment has any effect on the level of financial inclusion between the groups.

3 Literature Review

Over the past 20 years, one of the most extensively studied themes has been financial inclusion, particularly in emerging nations. In 2011, the World Bank began conducting extensive study and disseminating studies on this specific topic; it has since done so every four years (The World Bank, 2023) covering over 70% of all countries of the world. Several authors have used their database to report on different aspects of financial inclusion in different regions of the globe (Girón et al., 2021, 2021; Ifediora et al., 2022; Matsebula & Yu, 2020; Nsiah & Tweneboah, 2023a; Osabutey & Jackson, 2024; Tinta et al., 2022). The World Bank (2014) explains that as financial inclusion has moved up the global reform agenda, more and more decision-makers, regulators, scholars, market practitioners, and other stakeholders are interested in it. This may suggest that there is a chance to alleviate poverty and promote shared financial progress by encouraging financial inclusion (Mushonga et al., 2018). The African continent has been behind the rest in financial inclusion; however, there are countries that made a big progress many years before others. For instance, financial inclusion in South Africa increased dramatically from 63% in 2005 to 81% in 2012, largely due to an increase in the number of individuals utilising banking services, with women benefiting more from this increase, mainly because of the new award system that the South African Social Security Agency (SASSA) introduced.

It may be argued that financial inclusion might have its determinants both at micro and macro levels. For example, Tinta et al. (2022) Tinta found that age, education, and income level all positively correlate with the likelihood of having a traditional account with a financial institution in Africa, in addition to residing in an urban region, being married and having a job. This argument is corroborated by Girón et al. (2021) findings revealing that many factors seem to be important for financial inclusion in Asia and Africa, including levels of education, income, trust, accessibility to financial institutions, lack of documentation, and gender. At macro level, different institutions – private and public – play an important and maybe bigger role in influencing financial inclusion. As evidence of that, a research by Nsiah and Tweneboah (2023a) reveal that Gross National Income (GNI) per capita, money supply, and institutional quality have a major impact on financial inclusion in Africa, implying that these factors may assist lower barriers to financial inclusion on the continent. Equally, Kwenda and

Chinoda (2019) discovered that institutional quality and governance had a favourable effect on financial inclusion across the continent.

Financial inclusion has also been found to favour human and economic development. For instance, the Human Development Index (HDI), which is created by the United Nations Development Program, is positively impacted by financial inclusion metrics such as the quantity of ATMs, number of borrowers, commercial bank branches, deposit accounts, and loan accounts (UNDP), supporting the hypothesis that financial inclusion may provide a means of solving some of the developmental goals of Sub-Saharan African countries (Matekenya et al., 2021). Findings by Ezzahid and Elouaourti (2022) approve that financial inclusion motivates investment and economic growth in Africa. Furthermore, Ifediora et al. (2022) demonstrated that while bank branches and ATMs have a positive and significant impact on economic growth, deposit accounts and outstanding loans have a negative impact and only marginally support it.

For millions of Africans, the advent of mobile money in the majority of the continent's countries has unquestionably marked a turning point in their financial inclusion thanks to the rapid innovations in technology. Due to their ease of use and lower costs compared to commercial banks, mobile money has proven to be a good alternative to commercial banks in light of the enormous task of achieving financial inclusion that faces Africa as a whole and the failure of mainstream financial institutions to properly and effectively address it (Peels, 2013). Improving the availability, affordability, and selection of financial services and products for underserved, unserved, and financially ineligible populations is the goal here (FinMark Trust, 2016). Numerous mobile money providers and platforms throughout the continent have demonstrated their ability to accomplish this (Ahmad et al., 2020; Ajide, 2020; Ezzahid & Elouaourti, 2022; Osabutey & Jackson, 2024; Yawe et al., 2022). One would imagine that the growing number with people with smartphones and internet access on the continent, coupled with other reasons such as strict requirements to open a bank account, or technology adoption by younger generation, can only favour mobile money accounts. One study discovered that among the main factors influencing the adoption of mobile money in Ghana are technologically aware generations, readily available services like phone credit recharge, education, and income (Amoah et al., 2020).

Kouladoun, Wirajing, and Nchofoung (2022) report that indicators of financial inclusion in Sub-Saharan Africa have improved between 2004 and 2019, which is attributed to a rise in digitization. Hasan et al. (2020) concur that internet use has a favourable effect on a variety of financial development metrics. Additionally, Edo, Okodua, and Odebiyi (2019) found that financial openness combined with the internet significantly boosted financial development in Nigeria and Kenya between 2000 and 2016. According to the 2017 Global Findex, with 21% of individuals in the region having a mobile money account (Shipalana, 2019), and the 2021 data showing an increase to 33% of adults in the region having a mobile money account, sub-Saharan Africa provides compelling evidence of the power of financial technology to broaden access to and use of accounts (The World Bank, 2023).

While there is no prior study has been found by the authors that specifically sought to compare the levels of financial inclusion of these countries grouped by their colonial heritage, and the role of mobile money, finding from some studies might give an indication. For instance, at a regional level, data from the Central Bank of West African States (2020), Bank of Central African States (2020) and African Development Bank (2020) show that the levels of banking penetration are respectively 19% in West Africa, 15% in Central Africa, 35% in East Africa, 70% in Southern Africa, and 40% in North Africa (Tinta et al., 2022). It is

reasonable assumed that, because of their sources and earlier numbers, these statistics are for accounts held in formal financial institutions (banks).

4 Research methodology

This study followed a quantitative design using secondary data for its results. Quantitative design is used in many disciplines including social sciences, economics and market research. Watson (2015) posits that quantitative research aims to collect data by measurement, analyse it for patterns and relationships, and validate the measures taken, as is the case in this study. This study utilised the World Bank's 2021 Global Financial Index data, which was gathered for its global report on financial inclusion. The sample consisted of populations of 33 Sub-Saharan countries that had available data, grouped into English-speaking (17) and French-speaking (16) countries. The sampling and data collection procedure has been provided by the World Bank (2023), and are briefly detailed in the following two sub-sections.

4.1 Sampling procedure

In economies where face-to-face surveys were conducted, the first stage of sampling was the identification of primary sampling units. These units were stratified by population size, geography, or both, and clustering is achieved through one or more stages of sampling. Where population information is available, sample selection was based on probabilities proportional to population size; otherwise, simple random sampling was used. More details may be found [here](#).

4.2 Data collection method

Surveys were conducted face-to-face in economies where telephone coverage represented less than 80 percent of the population or where in-person surveying was the customary methodology. However, because of ongoing COVID-19–related mobility restrictions, face-to-face interviewing was not possible in some of these economies in 2021, unlike in 2011. Phone-based surveys were therefore conducted in 67 economies that had been surveyed face-to-face in 2017. These 67 economies were selected for inclusion based on population size, phone penetration rate, COVID-19 infection rates, and the feasibility of executing phone-based methods where Gallup would otherwise conduct face-to-face data collection, while complying with all government-issued guidance throughout the interviewing process (World Bank, 2023).

4.3 Data analysis

General Linear Model (GLM) which incorporates tests such as ANOVA, F-test, T-test among others, and Binary Logistic Regression incorporating Cross Tabulations and Chi-Square tests were employed to analyse data. Additionally, General Linear Model was used to determine if change in ‘inclusion’ from 2011 to 2021 differs across the groups. GLM was deemed appropriate because it fits both categorical and continuous effects, and the study data is also unlikely to be normally distributed. Similarly, Binary logistic regression was deemed appropriate because there are two possibilities for financial inclusion: either yes (if respondents have one or both of the account types) or no (if they have neither account type). Cross tabulation was used to determine the relationship between groups according to language and the different accounts that respondents had; and Chi-Square Test was used to determine the significance (Sig.) of the differences that exist between the groups. The Binary Logistic Regression analysis also included the unadjusted odds ratio (OR) as well as the adjusted OR to check if income level and employment has effect in the outcome.

4.4 Hypotheses

Independent variables: language (main variable); income level and employment (covariates).

Dependent variables: having neither account, having a financial account or a mobile money account.

The following hypotheses were formulated for the study:

H₀₁ (Null Hypothesis 1): English-speaking countries in Sub-Saharan Africa are less likely to be financially included compared to French-speaking countries in 2011.

H₁ (Alternative Hypothesis 1): French-speaking countries in Sub-Saharan Africa are less likely to be financially included compared to English-speaking countries in 2011.

H₀₂ (Null Hypothesis 2): English-speaking countries in Sub-Saharan Africa are less likely to be financially included compared to French-speaking countries in 2021.

H₂ (Alternative Hypothesis 2): French-speaking countries in Sub-Saharan Africa are less likely to be financially included compared to English-speaking countries in 2021.

H₀₃ (Null Hypothesis 3): Mobile money had no influence on the level of financial inclusion between English-speaking and French-speaking countries between 2011 and 2021.

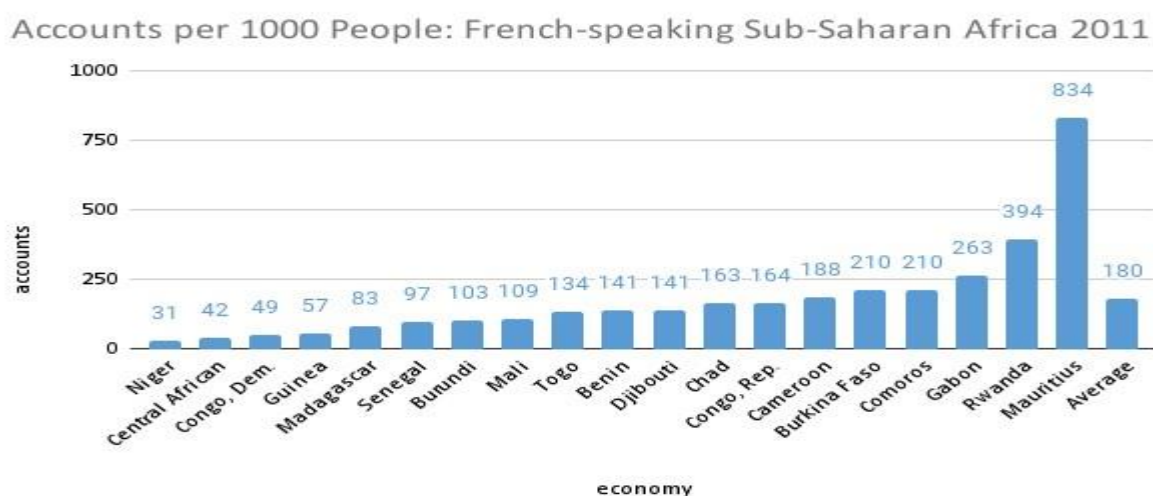
H₃ (Null Hypothesis 3): Mobile money had influence on the level of financial between English-speaking and French-speaking countries between 2011 and 2021.

5 Results and discussion

Descriptive statistics analyses of the variables are presented in this section, and the results discussed. Let's first look at the different account ownership per group (according to language) of countries in 2011.

It is to be noted that the World Bank first report (2011) only measured financial inclusion in terms of formal financial (bank) accounts because back then, mobile money was at its very infancy and did not penetrate many countries on the continent. Figure 1 depicts this result for French-Speaking countries.

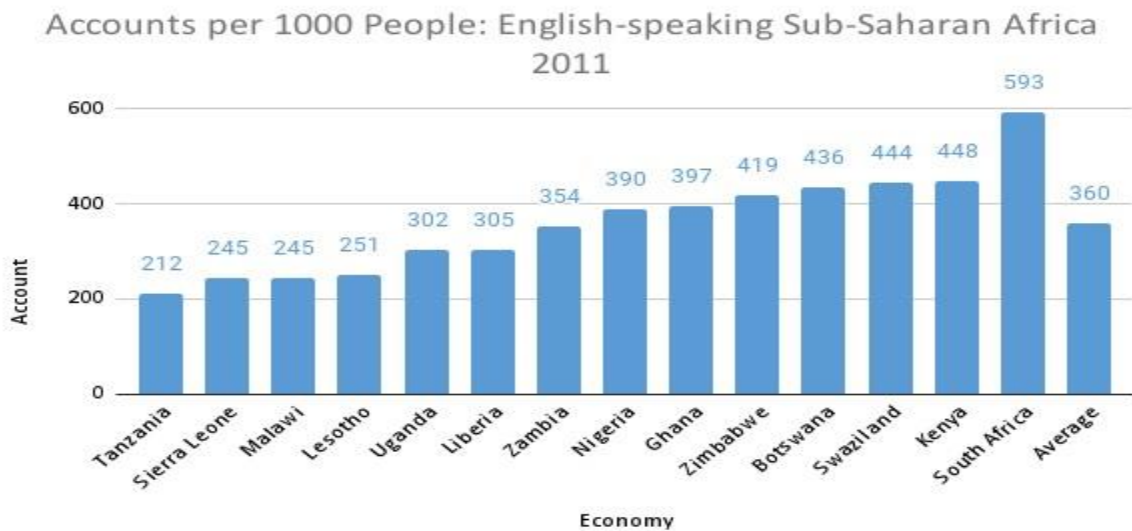
Figure 1 Financial accounts per 1000 people for French-Speaking Countries



Source: Accounts Frequency from the Data. Authors' Compilation

Numbers on Figure 1 show that the average financial account holding in this group is very low, with less than one in five people having an account with a financial institution. Furthermore, with the exception of a few countries that drove the average to where it is, most countries fall under that average. Therefore, this result indicates that in 2011, French-speaking Sub-Saharan Africa had a very low financial inclusion.

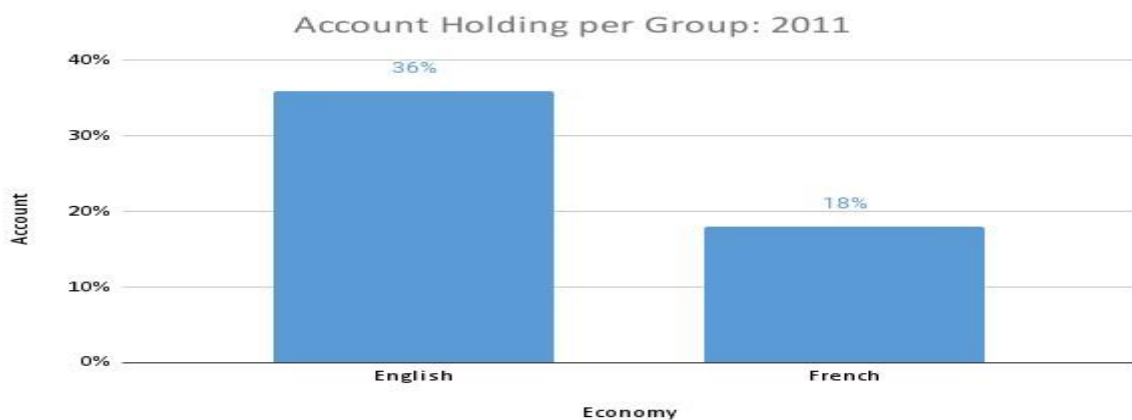
Figure 2 Financial accounts per 1000 people for English-Speaking Countries



Source: Accounts Frequency from the Data. Authors' Compilation

Figure 2 numbers reveal that the average financial account holding in this group is also low. However, it is higher than the other group with a little over one in three people having an account with a financial institution. Besides, with the exception of a few, not too many countries fall under the average. This result indicates that in 2011, English-speaking Sub-Saharan Africa too had a low financial inclusion. Yet, that group of countries is better off compared to their counterparts in the French-speaking Sub-Saharan Africa.

Figure 3: Account holding percentage per language group for 2011



Source: Accounts Frequency from the Data. Authors' Compilation

The result on Figure 3 confirms what was quite apparent from the two previous ones, depicting a much higher financial account holding for English-speaking Sub-Saharan Africa. This finding echoes the data from the Central Bank of West African States (2020), Bank of Central African States (2020) and African Development Bank (2020) that showed the levels of banking penetration being respectively 19% in West Africa and 15% in Central Africa – mainly French-speaking, and 35% in East Africa – mainly English-speaking (Tinta et al., 2022). To confirm that with further statistical analysis, a binary Logistic Regression analysis was performed and is summarised in Table 1 below.

Table 1: Binary Logistic Regression analysis summary for 2011

Variable	Financial exclusion	Financial inclusion	Unadjusted		Adjusted*	
	(N = 21222)	(N = 7776)	OR (95% CI)	P - value	OR (95% CI)	P - value
Language						
English	8959 (64.0%)	5042 (36.0%)	2.52 (2.392-2.664)	<0.001	2.68 (2.536-2.838)	<0.001
French	12263 (81.8%)	2734 (18.2%)	ref		ref	

*adjusted for income

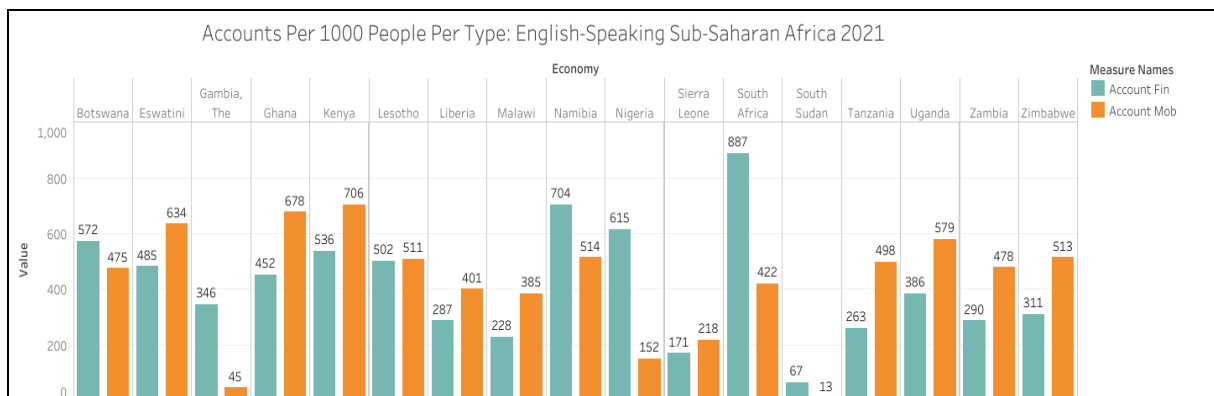
Source: Test results from data. Authors' Compilation

The test result in Table 1 reveal that English-speaking countries are 2.52 times as likely as French countries to enjoy financial inclusion, $p < .001$. After adjusting for income and employment, English-speaking countries are 2.68 times as likely as French-speaking countries to enjoy financial inclusion, $p < .001$. The financial inclusion after income adjustment favours even more English-speaking countries; however not with huge margin compared to the initial difference. Consequently, this result rejects the first null hypothesis H_{01} in favour of the alternative H_1 stating that French-speaking countries in Sub-Saharan Africa are less likely to be financially included compared to English-speaking countries in 2011.

Moving to the analysis of 2021 data for the two groups, the results follow in the next sections.

Because in 2021 the data includes mobile money accounts in addition to financial accounts, the results are first presented for the two account types per group, then aggregated within and across the groups. Figure 4 illustrates the findings for the English-speaking countries.

Figure 4: Accounts Ownership for English-Speaking Countries

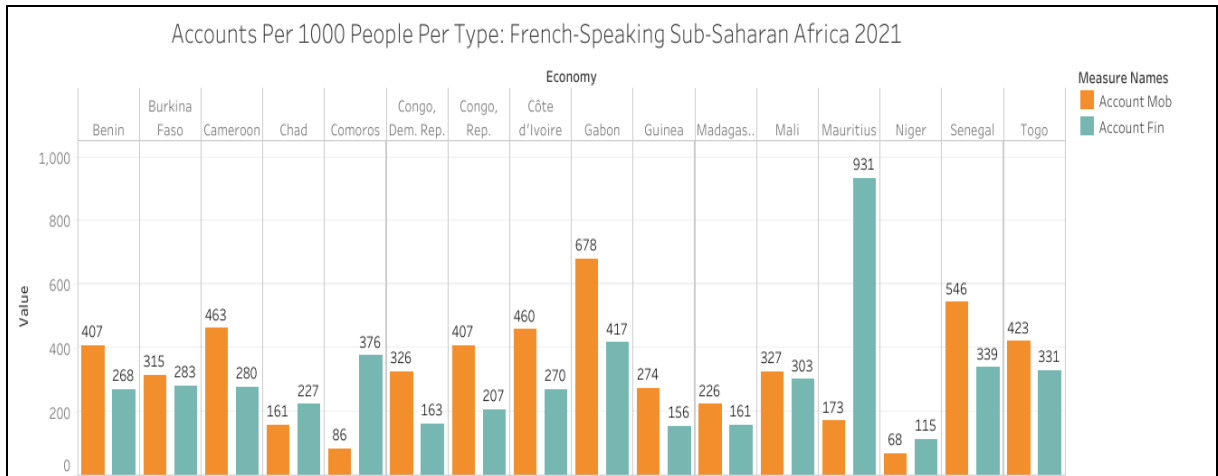


Source: Accounts Frequency from the Data. Authors' Compilation

This result shows that, with the exception of a few, a relative majority of the countries in this group have more mobile money accounts than financial accounts.

Figure 5 below illustrates the findings for the French-speaking countries.

Figure 5: Accounts Ownership for French-Speaking Countries

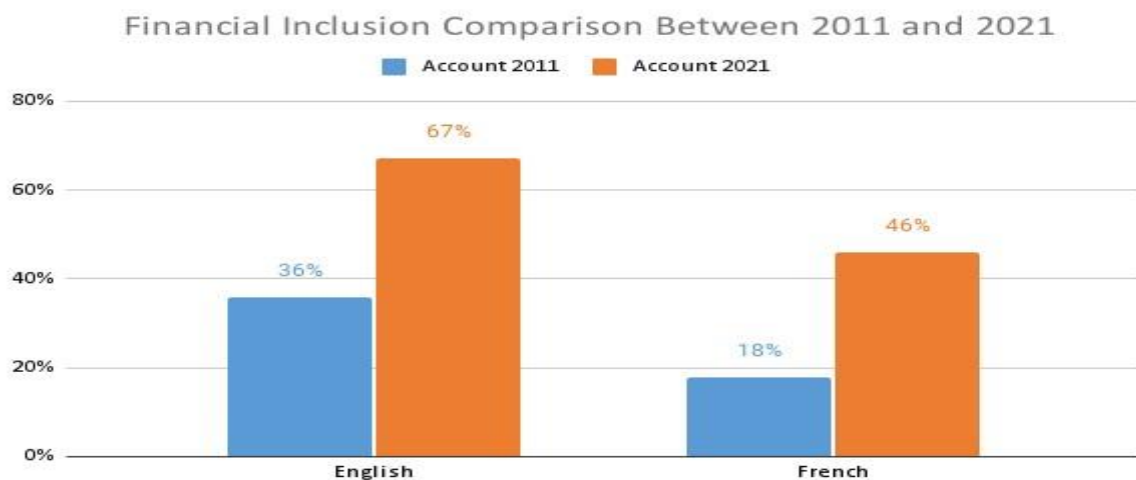


Source: Accounts Frequency from the Data. Authors' Compilation

For this group of countries, the result demonstrates that a large majority of countries have a notably higher number of mobile money accounts than financial institution accounts except for a few. The results in Figure 4 and Figure 5 confirm the findings by Kouladoun et al. (2022) revealing that in Sub-Saharan Africa, the rate of financial inclusion increases as digital technologies advance. Regarding digital technology advances, Ahmad et al. (2020) postulate that mobile penetration climbed more than five times outside of sub-Saharan Africa, yet the "miracle" happened there, where it increased by 3200% from a baseline that was obviously low. Also in line with that, Ezzahid and Elouaouri (2022) agree that Since 2014, mobile money accounts have become more common throughout Sub-Saharan Africa, which is one of the factors contributing to the rising levels of financial inclusion in many of the region's nations.

Next, looking broadly at the comparison of the relationship between the different accounts that respondents had within and across the groups, the following, shown in Figure 6 is found.

Figure 6 Account holding percentage per group per year



Source: Accounts Frequency from the Data. Authors' Compilation

The numbers on Figure 6 reveal that English-speaking countries have a higher percentage of both account ownership. The account ownership was double in 2011, but dropped to about

one and half times the ownership within French-speaking countries in 2021. Nonetheless, there is a considerable progress that had been made between 2011 and 2021 for both groups, especially for the French-speaking countries thanks to the astounding flood of mobile money accounts across the regions of the continent (Ahmad et al., 2020; Evans, 2018; Magale & Yengeni, 2024; Shipalana, 2019; The World Bank, 2014). This can only be good for the continent as Donou-Adonsou and Sylwester (2016) found that increased bank account accessibility often inspires the decrease of poverty.

With further statistical analysis, Logistic Regression endorsed the results indicating that that a significant proportion of English-speaking countries' populations had a financial account, while a significant number from French-speaking countries did not have a financial account; and that English countries were 1.66 times as likely as French countries to enjoy financial inclusion ($p < .005$), when taking language only into consideration. After adjusting for income, the result still favours English-speaking countries that were 1.74 times as likely as French-speaking countries to enjoy financial inclusion ($p < .005$), with a slightly higher rate as illustrated on Table 2. Hence, this finding rejects the second null hypothesis H_{02} in favour of the Alternative H_2 stating that French-speaking countries in Sub-Saharan Africa are less likely to be financially included compared to English-speaking countries in 2021. Furthermore, the results (Figure 4, Figure 5 and Figure 6) demonstrate that mobile money had contributed to the overall increase in account holding for both groups of countries, and more so for the French-speaking group, allowing it to greatly reduce the gap in financial inclusion with its English-speaking counterparts. Thus, this allows for the rejection of the third null hypothesis H_{03} in favour of the alternative H_3 stating that, mobile money had influence on the level of financial inclusion between English-speaking and French-speaking countries between 2011 and 2021.

Table 2 Binary Logistic Regression analysis summary for 2021

Variable	Financial exclusion	Financial inclusion	Unadjusted		Adjusted*	
	(N = 13764)	(N = 17297)	OR (95% CI)	p - value	OR (95% CI)	p - value
Language						
English	5705 (37.9%)	9336 (62.1%)	1.66 (1.583-1.733)	<0.001	1.74 (1.664-1.828)	<0.001
French	8059 (50.3%)	7961 (49.7%)	ref		ref	

* adjusted for income and employment status

Source: Test results from data. Authors' Compilation

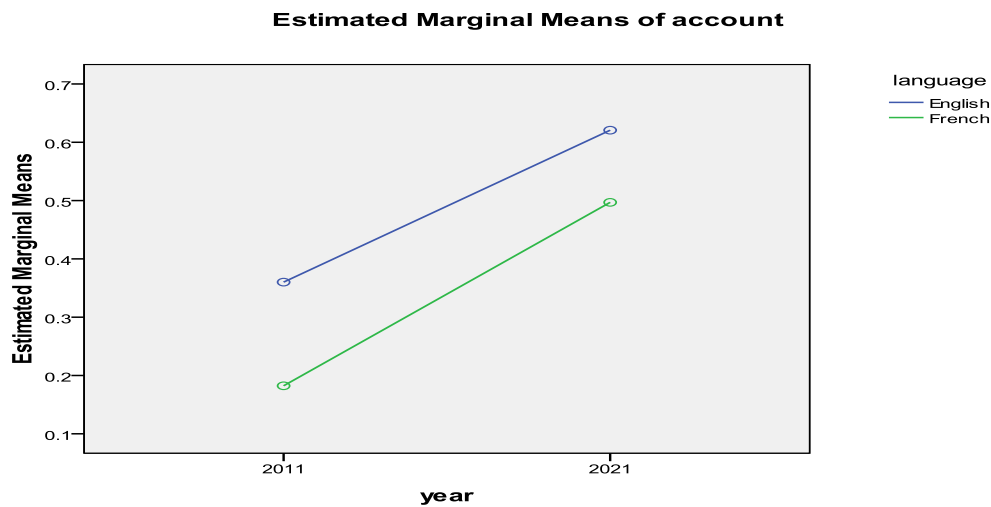
In addition to the descriptive statistics and the Binary Logistic Regression, General Linear Model (GLM) analysis was run to determine the nature of relationship between language (English and French) and year (2011 and 2021). It was found that the relationship between year and language is significant, $F(3, 60055) = 2459.03$, $p < .001$. The interpretation of the results are as follow.

Compared to the French in 2021:

- the English in 2011 are less likely (OR = .57) to enjoy inclusion ($\beta = -.137$, $p < .001$)
- the English in 2021 are more likely (OR = 1.66) to enjoy inclusion ($\beta = .124$, $p < .001$)
- the French in 2011 are less likely (OR = .23) to enjoy inclusion ($\beta = -.315$, $p < .001$)

The graph below (Figure 7) gives an indication of what is happening. The French slope is steeper indicating a bigger change compared to the English. However, it is still the English who enjoy more inclusion – in both years.

Figure 7: Financial inclusion relationship between language and year



Source: Test results from data. Authors' Compilation

These results show that English-speaking countries still enjoy more inclusion than French-speaking countries, but the overall inclusion increased for both from 2011 to 2021, and the French-speaking countries have substantially reduced the gap within that period.

6 Conclusion

This study aimed to examine the effect of mobile money in financial inclusion between French and English-speaking countries in Sub-Saharan Africa, and whether income level and employment (covariates) has any influence. It has been established that English-speaking countries enjoy more inclusion than French-speaking countries, but the overall inclusion increased for both from 2011 to 2021 due to the widespread of mobile money on the continent, which also allowed the French-speaking countries to substantially reduce the gap within that period. Income and employment on the other hand, did not play a significant role in the financial inclusion differences, even though the income adjustment shows a slight increase in the financial rate between the groups, but was still in favour the English-speaking countries. From a broader viewpoint, irrespective of the group, these percentages of accounts ownership are still lower than other developing regions (Kwenda & Chinoda, 2019; Louis Ntu et al., 2024; The World Bank, 2023; Warsame & Abdalla, 2024). The reason for that could be due to, especially for financial institutions accounts, the fact that outside of major cities, branch penetration in Africa is still low, particularly in low-income or poorly populated areas (Beck & Cull, 2013). Nonetheless, there is a considerable progress that had been made between 2011 and 2021 thanks to the astounding flood of mobile money accounts across the regions of the continent.

The implication of the study is the need for the realisation by the French-speaking countries in Sub-Saharan Africa that they are lagging behind in terms of financial inclusion in a region that is already behind others, and start acting more decisively and swiftly. Emphasis should be put on how to raise the level of inclusion in both financial institutions and mobile money accounts for a proper integration of populations in the countries' financial system. Moreover, the debate for future research on financial inclusion of these countries should be taken beyond just having financial accounts (bank, mobile money or otherwise), since the way these accounts are used could be equally important for an effective financial inclusion.

7 Conflict of interest

The authors do not have any conflicts of interest to declare.

8 Acknowledgement

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