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Drivers of Financial Inclusion and Effect of Covid-19 on Electronic Payments in West Africa

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ABSTRACT

This study examined the drivers of financial inclusion as well as how COVID-19 affected West Africa in terms of electronic payments. It used the World Bank's Global *Findex* 2021 data collected at the time of the COVID-19 pandemic with 1000 respondents each from Senegal, Togo, Burkina Faso, Guinea, Mali, Sierra Leone, Nigeria, Ghana, Benin, Liberia and Cameroon and model logit regression to investigate the drivers of financial inclusion and how COVID-19 affected it. With regard to key drivers of financial inclusion, it found that female and lower income groups have low inclusion levels which decline when income increases; also, the more educated persons, are linked to high financial inclusion. On account ownership of mobile money, there is discrimination of financial inclusion based on sex. Distance from the office of a financial institution poses a key obstacle to financial inclusion for females and various income groups, but the cost is not a major worry. Informal financial practices are not very popular. The study found that highly educated persons used electronic payment systems to settle utility bills for the first time during the COVID-19 pandemic. The study recommends policies that lead people closer to financial services to reduce financial exclusion. Again, individuals should be stimulated to adopt electronic payment systems to help reduce financial exclusion. The originality of the study stems from the usage of figures provided by the World Bank's Global *Findex* in 2021 which is unique in totality. This study adds to current knowledge by evaluating drivers of financial inclusion in West African countries by looking at current issues on finances focusing on the sub-region during the COVID-19 pandemic.

Keywords: *Financial Inclusion, West Africa, Personal Characteristics, COVID-19 Pandemic*

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INTRODUCTION

All over the world, people have received a form of financial services for centuries. Nonetheless, people from different countries have utilized various forms of financial inclusion.[1] Thus, answers are needed as to why different people from diverse countries do not receive the same financial services. Existing literature shows that economic development is linked to countries with advanced forms of financial inclusion.[2] Hence, it is important to find answers to how financial inclusion is different from country to

[1] Asli Demirgüç-Kunt et al., *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19* (World Bank Publications, 2022).
[2] Alexandra Zins and Laurent Weill, "The Determinants of Financial Inclusion in Africa," *Review of Development Finance* 6, no. 1 (2016): 46.

country and what it offers the poor. There are no straight answers to these questions. Whereas Asli Demirgüç-Kunt, et al and Jungo et al., stated that economic development is linked to financial inclusion.[3] Philip Mader however disagrees. He claims that all the widely cited works like Robert King and Ross Levine, as well as Hossein Jalilian and Collin Kirkpatrick, have not documented how the poor gain. [4]

Among scholars, the gains or otherwise from financial inclusion remain inconclusive. For instance, Alexandra Zins and Laurent Weill claimed that financial inclusion improves economic well-being,[5] and Asli Demirgüç-Kunt et al. also outlined the gains from financial inclusion.[6] These have however been challenged by Gustav Pebbles and others doubting the gains financial inclusion has brought to the poor in any particular study.[7] Though the operation of financial activities to some extent is carried out effortlessly in the developing countries, there exist some setbacks and modifications among the countries.[8] The differences among countries appear to be the case as Dmitry Gershenson et al. listed some of the technology-based challenges of financial inclusion in Africa as strict regulation and high financial illiteracy among others.[9] Again, Triki and Faye indicated that there is poor knowledge of customers, inadequate records in the midst of limitations, poor financial and managerial expertise, and poor understanding of financial issues among others have affected the operations of SMEs.[10] It is observed that when "*FINTECH*" is operationalized, it will ensure a reduction in shortfalls and develop financial inclusion.[11]

In 2021, Demirgüç-Kunt, et.al. found that the COVID-19 pandemic (C-19P) brought nearly 6% of grown-up people in advanced economies to pay utility bills online, and the numbers are still rising since then.[12] Once more, C-19P facilitated financial inclusion activities through various means all over the globe. The greater challenge as noted by Philip Mader is that whereas empirical studies trumpet how economic development has been of benefit, they fail to show how poor individuals have profited.[13] This study examines how West Africa was affected by C-19P and financial inclusion indicators. Like other known studies, it falls short of specifying benefits to the poor as a result of unavailable detailed data for analysis.

Since there are differences between countries on financial inclusion, there is a need to investigate the reasons why financial inclusion differs in West Africa.[14] In finding solutions to these questions, the study explores the effects of personal factors on financial inclusion indicators namely bank account ownership, saving and using a mobile money account. Second, it investigates how individual

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[3] Asli Demirgüç-Kunt and Dorothe Singer, "Financial Inclusion and Inclusive Growth: A Review of Recent Empirical Evidence," *World Bank Policy Research Working Paper*, no. 8040 (2017); João Jungo, Mara Madaleno, and Anabela Botelho, "The Relationship between Financial Inclusion and Monetary Policy: A Comparative Study of Countries' in Sub-Saharan Africa and Latin America and the Caribbean," *Journal of African Business* 23, no. 3 (2022): 794–815.

[4] Philip Mader, "Contesting Financial Inclusion," *Development and Change* 49, no. 2 (2018): 461–83.

[5] Zins and Weill, "The determinants of financial inclusion in Africa." *Review of Development Finance* 6: (2016): 46–57.

[6] Zins and Weill, "The Determinants of Financial Inclusion in Africa"; Demirgüç-Kunt and Singer, "Financial Inclusion and Inclusive Growth: A Review of Recent Empirical Evidence."

[7] Gustav Peebles, "Rehabilitating the Hoard: The Social Dynamics of Unbanking in Africa and Beyond," *Africa* 84, no. 4 (2014): 595–613; Philip Mader, "Questioning Three Fundamental Assumptions in Financial Inclusion," 2016; Daniela Gabor and Sally Brooks, "The Digital Revolution in Financial Inclusion: International Development in the Fintech Era," *New Political Economy* 22, no. 4 (July 4, 2017): 423–36, https://doi.org/10.1080/13563467.2017.1259298; Milford Bateman, Maren Duvendack, and Nicholas Loubere, "Another False Messiah: The Rise and Rise of Fin-Tech in Africa," 2019.

[8] Dmitry Gershenson et al., *Fintech and Financial Inclusion in Latin America and the Caribbean* (International Monetary Fund, 2021); Mamudu Abunga Akudugu, "The Determinants of Financial Inclusion in Western Africa: Insights from Ghana," *Research Journal of Finance and Accounting* 4, no. 8 (2013): 1–9.

[9] Gershenson et al., *Fintech and Financial Inclusion in Latin America and the Caribbean*.

[10] Thouraya Triki and Issa Faye, *Financial Inclusion in Africa, The Transformative Role of Technology* (Africa Development Bank, 2013).

[11] Gershenson et al., *Fintech and Financial Inclusion in Latin America and the Caribbean*; Dong He et al., *Fintech and Financial Services: Initial Considerations* (International Monetary Fund, 2017).

[12] Demirgüç-Kunt et al., *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19*; World Bank Group, " Financial Inclusion: Financial Inclusion Is a Key Enabler to Reducing Poverty and Boosting Prosperity," 2022, https://www.worldbank.org/en/topic/financialinclusion/overview#:~:text=Half of the adults around the world –,burdensome requirements involved in opening a financial account.

[13] Mader, "Questioning Three Fundamental Assumptions in Financial Inclusion."

[14] World Bank Group, " Financial Inclusion: Financial Inclusion Is a Key Enabler to Reducing Poverty and Boosting Prosperity"; Asli Demirgüç-Kunt et al., "The Global Findex Database 2014: Measuring Financial Inclusion around the World," *World Bank Policy Research Working Paper*, no. 7255 (2015).

characteristics have caused a hindrance to financial inclusion. Finally, it examines how C-19P affected financial inclusion in West African countries in terms of electronic payments. To meet these objectives, the study used the 2021 World Bank's Global Findex (WBGF) data to answer the questions on factors that drive West Africa's financial exclusion. *The logit* regression model similar to Zins and Weill is used to estimate how gender, age, income, and education impact financial inclusion.[15] The difference is that whereas Zins and Weill used the *probit* model, this study uses the *logit* model.[16] The sample size is 11 countries namely Senegal, Togo, Burkina Faso, Guinea, Mali and Sierra Leone, Nigeria, Ghana, Benin, Liberia, and Cameroon with 1000 respondents from each country.

The study adds to the current literature by evaluating drivers of West African financial inclusion. Even though Mamudu A. Akudugu focused on the causes of West African financial inclusion, he used only Ghana, whereas this study focuses on 11 countries.[17] Gershenson et al. used pre-COVID-19 data; Onyina used data collected during the C-19P to examine financial inclusion, and Roa looked at access, usage and excellence but all concentrated on Latin America and the Caribbean (LAC).[18] This study relies on the data collected in 2021 during the C-19P period to examine drivers of financial inclusion and concentrate on West Africa, a complete departure from other studies. Secondly, it adds to the literature by looking at current issues on finances focusing on West Africa during the C-19P period, as a pioneer work. The remaining part of the study follows the following order. Next is financial inclusion and its related literature. Then, descriptive statistics from the sample are provided, and a brief discussion of the regression model used; the findings and analyses of the estimates obtained from the regression follow. Finally, concluding remarks are provided.

LITERATURE REVIEW

Among the several studies on financial inclusion, the Global Findex Database provides the trend of financial inclusion for almost all countries from 2011 to 2021.[19] From available data, the proportion of adults above 15 years worldwide who own an account with formal financial institutions regulated by government agents rose from 50.6% in 2011 to 76.2% in 2021. That of West African countries was from 23.3% to 55.1%. Other studies including Asli Demirgüç-Kunt et al. contend that despite the rise in account ownership to more than 50% of the adult population in Sub-Sahara Africa, it is far lower than the 96% of the developed economies.[20]

Among studies on financial inclusion determinants include William F. Steel et al., being pioneer work and centred on informal finances in Ghana, Malawi, Nigeria, and Tanzania.[21] Using 1992 and 1993 data, they claimed that two main problems confront both formal and informal financial institutions on the continent. Firstly, there is too much meddling from the state preventing expansion. Also, there is a huge cost involved in the operations of the institutions coupled with decision-making problems. To Mamudu A. Akudugu, a problem opposing the development of informal financial markets is that it has not been adopted by most people because of inadequate infrastructure.[22] Again Demirgüc¸-Kunt et al., have made remarkable contributions to the financial inclusion literature and the data provided is well known as the WBGF database.[23] Several studies have used the WBGF data to assess drivers of financial inclusion for people at the global level and for countries. For instance, Demirgüc-Kunt and Klapper; and

[15] Zins and Weill, "The Determinants of Financial Inclusion in Africa, "49.
[16] Zins and Weill, "The Determinants of Financial Inclusion in Africa, "50.
[17] Akudugu, "The Determinants of Financial Inclusion in Western Africa: Insights from Ghana," 2.
[18] Demirgüç-Kunt et al., *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19*.
[19] Demirgüç-Kunt et al., *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19*.
[20] Demirgüç-Kunt et al., *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19*.
[21] William F Steel et al., "Informal Financial Markets under Liberalization in Four African Countries," *World Development* 25, no. 5 (1997): 817–30.
[22] Akudugu, "The Determinants of Financial Inclusion in Western Africa: Insights from Ghana," 5.
[23] Demirgüç-Kunt et al., "The Global Findex Database 2014: Measuring Financial Inclusion around the World."

Allen et al., all focused on the global level, and other studies like Fungácová and Weill; and Jayanti et al. were country-specific.[24]

At the global level, Allen et al. contend that rich individuals, people with high education, adult population, city dwellers, and working married individuals are more likely to possess a conventional account.[25] In contrast, Aterido et al. found that gender is not a main driver of financial inclusion in Africa.[26] However, Zins and Weill found otherwise.[27] Also, Jungo et al. examined how financial inclusion relates to bank attractiveness and firmness, and determined how monetary regulations were effective in Sub-Sahara Africa (SSA) and the LAC.[28] Again, João Jungo et al. made a comparative analysis of how SSA and LAC monetary policy relates to financial inclusion.[29] Rashdan and Eissa concentrated on the contributing factor of financial inclusion in Egypt, and Jayanti et al., used Indonesia as an example to examine the causes of obstacles to accessing recognized financial services.[30]

METHODOLOGY

This study uses the 2021 WBGF dataset; detailed information on the collection of the data among others is provided by Asli Demirgüç-Kunt et al.[31] Available individual 11 West African countries' data with 1000 respondents per country make up the sample size. As indicated by Zins and Weill, opponents of this type of dataset are of the view that using the same number of respondents for countries with different population sizes may not provide good estimates for policy making; however, there is no alternative to this dataset.[32] Again, the scientific method used in the selection of respondents makes the data reliable and generalization possible. Like other studies, this study groups the drivers of financial inclusion into three dependent variables presented in Table 1 with the description below.

Table 1: Descriptive statistics of dependent variables

Variable			
Financial Inclusion	Obs	Mean	Std. Dev.
Official bank account	11001	.3167894	.4652457
Has savings account	11001	.1363512	.3431768
Has taken credit	11001	.0276393	.1639288
Has mobile money account	11001	.3821471	.4859343
Difficulty to financial inclusion			
Distance	11001	.213526	.4098145
Very expensive	11001	.2207072	.4147423
Lack of documentation	11001	.2525225	.4344791
Lack of trust	11001	.1481683	.3552829
Religious reasons	11001	.0686301	.2528356

[24] Asli Demirgüç-Kunt and Leora F Klapper, "Measuring Financial Inclusion: The Global Findex Database," *World Bank Policy Research Working Paper*, no. 6025 (2012).
[25] Franklin Allen et al., "The Foundations of Financial Inclusion: Understanding Ownership and Use of Formal Accounts," *Journal of Financial Intermediation* 27 (2016): 1–30.
[26] Reyes Aterido, Thorsten Beck, and Leonardo Iacovone, "Access to Finance in Sub-Saharan Africa: Is There a Gender Gap?," *World Development* 47 (2013): 102–20.
[27] Zins and Weill, "The Determinants of Financial Inclusion in Africa."
[28] João Jungo, Mara Madaleno, and Anabela Botelho, "The Effect of Financial Inclusion and Competitiveness on Financial Stability: Why Financial Regulation Matters in Developing Countries?," *Journal of Risk and Financial Management* 15, no. 3 (2022): 122.
[29] Jungo, Madaleno, and Botelho, "The Relationship between Financial Inclusion and Monetary Policy: A Comparative Study of Countries' in Sub-Saharan Africa and Latin America and the Caribbean."
[30] Abeer Rashdan and Noura Eissa, "The Determinants of Financial Inclusion in Egypt," *International Journal of Financial Research* 11, no. 1 (2020); Ari. D. Jayanti, S. Agusti Kemara, and Yuli Setiyawati, "Barriers to Access Formal Financial Services: An Empirical Study from Indonesia," *Journal of Asian Finance, Economics and Business* 8, no. 11 (2021): 97–106.
[31] Demirgüç-Kunt et al., *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19*; Demirgüç-Kunt et al., *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19*.
[32] Zins and Weill, "The Determinants of Financial Inclusion in Africa."

No money	11001	.5668576	.4955324
Use family and friend	11001	.0741751	.2620675
No financial inst.	11001	.1431688	.3502608
COVID-19 Impact			
Online payment during COVID-19	11001	.038542	.1925093
Paid utility digital during COVID-19	11001	.0492682	.2164374

Financial inclusion is the first group with four indicators. In using the responses for analysis, *formal account* which refers to a person owning a bank account, was assigned 1, else, 0. *Formal savings* refers to a person who has saved with a formal institution was coded 1, otherwise 0. A person who responded yes to having *borrowed* from a formal institution, as well as an individual using a *mobile money account* were all coded in the same way. The second group is the factors that restrict financial inclusion. Here the question was: "Are there reasons why you do not have a bank account?', yes was assigned 1, and else 0. The final category was the effect of C-19P. The initial question was "Please did you use electronic payment during C-19P for the first time?" Affirmative, was coded 1, else 0. Then, did you use electronic means to pay utility bills as a first-time user? 1 was assigned yes, and 0 otherwise. The descriptive statistics for the dependent variables are depicted in Table 1 above. The highest mean from the table is "no money" which is .5668576 and it is in the barriers to financial inclusion group. The least is "has taken credit" 0.0276393 which is among the financial inclusion drivers.

The definitions of the independent variables showing the respondents' personal characteristics are depicted in Table 2.

Table 2: Descriptive statistics for independent variables

Variable	Description	Obs	Mean	Std. Dev.
Gender	Dummy variable Female 1, 0 otherwise	11001	.4916823	.4999535
Age	Age in years	10987	32.86102	14.01359
Lowest 20%	Dummy = 1 if within 1st income quintile, 0 else	11001	.1688937	.3746751
Next 20%	Dummy = 1 if within 2nd income quintile, 0 else	11001	.1668939	.3728981
Third 20%	Dummy = 1 if within 3rd income quintile, 0 else	11001	.1861649	.3892574
Fourth 20%	Dummy = 1 if within 4th income quintile, 0 else	11001	.2049814	.4037064
*Richest 20%	Dummy = 1 if in 5th income quintile, 0 else	11001	.2730661	.4455548
Basic Edu.	Dummy = 1 if respondent has at least basic	11001	.494046	.4999873
	education, 0 else			
Sec. Edu.	Dummy = 1 if respondent has secondary	11001	.4584129	.4982902
	education, 0 otherwise			
Ter. Edu.	Dummy equal to 1 if respondent has	11001	.0429961	.2028575
	tertiary education, 0 else			
Wgk	Dummy equal to 1 if respondent is working	11001	.760581	.4267012
	else 0			
Loc	Dummy equal to 1 if respondent lives	11001	.4772293	.4995039
	in an urban place else 0			

* The 20% richest was dropped from the regression model because of collinearity.

Years denote the age of an individual. To control for possible non-linear correlation between age and financial inclusion, *Age* and Age^2 represented Age. A female was coded 1 else 0. Income is

represented by four groups- lowest 20%, next 20%, third 20%, and final 20%. The wealthiest cohort was excluded because of collinearity. Coding the income group and the lowest 20% for example, those with income within the group were assigned 1 else 0, the remaining categories followed a similar process. Three variables represented education namely primary schooling assigned 1, else 0. The same coding procedure was adopted for those with secondary and tertiary education. Respondents who are working were coded 1 otherwise 0, and urban dwellers were assigned 1, else 0.

Specification of the Model

In examining the drivers of financial inclusion in West Africa, *logit* regression was adopted to know how the independent variables impact the dependent variables. As indicated by David Hosmer and Stanley Lemeshow,[33] suppose that *n* autonomous variables using interval scale are represented by the path **X'** (X_1 $+X_2$ +,…+X_n), it portrays restricted probability indicating how the event occurs, is designated by P (Y= 1/x) = π(x) and the *logit* regression (Ł) represents the expression:

$$Log(\frac{P(X_i=1)}{1-P(X_i=1)}) = \alpha + \beta_1 female + \beta_2 Age + \beta_3 Income + \beta_4 education \quad (1)$$

Where *X* is the financial inclusion variable, *i* signifies a person, *βs* are the constants for determination. From Takeshi Amemiya, the *logit* regression which relates outcomes of individual separate respondents is normally determined using the maximum likelihood technique, and Jan S. Cramer shows how the logistic or *logit* model is robust.[34]

PRESENTATION OF RESULTS AND DISCUSSION

Results obtained from *logit* regression based on equation (1) are presented in Table 3, every column indicates a different model; all dependent variables are given in the rows and individual characteristics (independent variables) are listed in the columns.

Determinants of Financial Inclusion in West Africa

Table 3 details the estimations obtained from the regression model on financial inclusion indicators in West Africa. The dependent variables are *formal account, savings, borrow* and *owns mobile money account*.

Table 3: Drivers of West Africa Financial Inclusion

	Official account	Official saving	Official borrow	Mobile account
Gender	1.354*** (.052)	1.349*** (.083)	1.121 (.137)	1.301***(.055)
Age	1.067*** (.008)	1.049*** (.010)	1.038 (.022)	1 .040 (.008)
Age^2	.999*** (.000)	1.000*** (.000)	1.000 (.000)	1.000***(.000)
Inc-1 poorest 20%	.474*** (.035)	.343*** (.038)	.510*** (.102)	36 (.031)
Inc-2 second 20%	.491*** (.035)	.440*** (.044)	.461*** (.093)	.596***(.040)
Inc-3 third 20%	.573*** (.038)	.449*** (.041)	.447*** (.086)	.671***(.042)
Inc-4 fourth 20%	.622*** (.039)	.604*** (.048)	.578*** (.096)	.811***(.048)
Primary education	.274*** (.081)	.372** (.149)	.374 (.228)	.807 (.257)
Secondary education	.700 (.208)	.981 (.391)	.409 (.251)	1.650 (.525)
Tertiary education	1.924** (.607)	2.145* (.878)	.963 (.608)	2.724***(.907)
Working	1.974*** (.116)	2.266 ***(.201)	3.161 ***(.677)	1.3591***(0.84)
Locality	1.493*** (.072)	1.432*** (.094)	.976 (.127)	1.493 ***(.067)

[33] David W.. Hosmer, Stanley Lemeshow, and Rodney X. Sturdivant, *Applied Logistic Regression* (Wiley New York, 2000).

[34] Takeshi Amemiya, "Qualitative Response Models: A Survey," *Journal of Economic Literature* 19, no. 4 (1981): 1483–1536; Jan Salomon Cramer, "Robustness of Logit Analysis: Unobserved Heterogeneity and Mis-specified Disturbances," *Oxford Bulletin of Economics and Statistics* 69, no. 4 (2007): 545–55.

Observation	10,987	10,987	10,987	10,987
Pseudo R^2	0.1262	0.1261	0.0488	0.0848
Log-likelihood	-5994.4153	-3824.1474	- 1322,491	-6686.9274

This table shows logit estimates of the main financial inclusion drivers in West Africa. Official account, recognised saving, official loan and mobile money account are the latent variables. Personal characteristics represent dependent variables: Gender, age, age^2, income- represented by 4 binary variables- and education-uses 3 binary variables- as clarified in Table 2. Forecasted marginal impacts are given and standard errors are in parentheses.
**** Significance at 1% level. ** Significance at 5% level. *Significance at 10% level.*

It shows that women are 1.4 times more likely to own an official account compared to men, and it is significant at 1%. With all three variables compared to men, women are 1.3 times more likely to have a recognised savings account, 1.1 times more likely to borrow, and 1.3 times well placed to possess a mobile account. Taking an official loan is the only variable not significant. Here, a woman, more likely to own a mobile money account conforms to the notion that it is very easy and suitable to operate. It also affirms Andersson-Manjang and Naghavi's report on mobile money that during the C-19P, there was strong robustness in the mobile money industry despite the disruptions.[35]

Age is directly related to financial inclusion based on the result; thus, an increase in age suggests being financially included. The results on income support the notion that income drives financial inclusion. The study found that income level raises financial inclusion for owning an official account, a recognized savings account, taking a formal loan, and mobile account ownership.

For instance, whereas an individual in the fourth income quartile is 0.622 times well-placed to own a formal account, an individual in the lowest 20% income quartile is 0.474 times well-placed to own a recognised account. Higher education is related to financial inclusion, as a tertiary institution has the highest relationship. For example, an individual with tertiary education is 1.9 times well-placed to possess an official account compared to those at the lower levels. It suggests that education is a major determinant of financial inclusion; it is directly related to all the dependent variables. Working and dwelling in an urban place are all drivers of financial inclusion. For example, a worker is 2.0 times well placed to open an official account compared to a non-worker, and significant at 1%; an urban dweller is 1.5 times well placed to open a conventional account compared to a rural dweller. The other variables follow a similar pattern. The results found here are consistent with what Jayanti et al., found for Indonesia, and for Egypt by Rashdan and Eissa, Africa by Zins and Weill, and Fungácová and Weill found for China.[36] However, Allen et al. did not find such differences at the global stage.[37] Summing it up, in West Africa, gender, receiving better income, and being well-educated improve financial inclusion.

Determinants of Barrier to Financial Inclusion

Table 4 depicts reasons why individuals are excluded from financial activities. As emphasized by Zins and Weill, it is essential to differentiate between deliberate exclusion and otherwise.[38] Exact traditional motives including no money, religious beliefs, and account ownership by a family member are considered as deliberately self-excluded barriers. In contrast, failure of the market is the key driver for unintended elimination. For example, sighting of the institution, requirements for account opening, and no confidence in the monetary firms are obstacles considered as unwillingly personal exclusion. In differentiating it, Gershenson et al., considered monetary and non-monetary among others as barriers to the supply side of financial inclusion.[39] Based on the results, to females, distance is key to financial

[35] Nika Naghavi and Simon Andersson-Manjang, "State of the Industry Report on Mobile Money," *London: GSM Association*, 2019, 23.
[36] Jayanti, Kemara, and Setiyawati, "Barriers to Access Formal Financial Services: An Empirical Study from Indonesia"; Rashdan and Eissa, "The Determinants of Financial Inclusion in Egypt"; Zins and Weill, "The Determinants of Financial Inclusion in Africa"; Allen et al., "The Foundations of Financial Inclusion: Understanding Ownership and Use of Formal Accounts."
[37] Allen et al., "The Foundations of Financial Inclusion: Understanding Ownership and Use of Formal Accounts," 23.
[38] Zins and Weill, "The Determinants of Financial Inclusion in Africa," 53.
[39] Gershenson et al., *Fintech and Financial Inclusion in Latin America and the Caribbean*, 13.

inclusion; charges, inadequate documents, no money, and relatives or companions owning recognised bank accounts are not barriers.

Table 4: Drivers of obstacles to financially included in West Africa

	Distance To the bank	High charges	Inadequate documents	Lacking confidence	Spiritual factors	No money	Relatives & allies	No fin. Inst.
Female	1.103**	.934	.920*	.985	.952	.811***	.803***	1.036
	(.055)	(.047)	(.056)	(.055)	(.075)	(.034)	(.061)	(.059)
Age	.985 *	.981**	.938***	1.002	.963***	.964***	.932***	.972***
	(.008)	(.007)	(.007)	(.008)	(.011)	(.006)	(.010)	(.008)
Age^2	1.000	1.000	1.001***	1.000	1.000**	1.000***	1.001***	1.000
	(.000)	.000	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Inc-1 poorest 20%	1.791***	1.615***	1.764***	1.569***	1.621***	1.930***	1.004	1.144
	(.145)	(.124)	(.130)	(.137)	(.205)	(.127)	(.125)	(.102)
Inc-2 second 20%	1.623***	1.541***	1.727***	1.309***	1.468***	1.823***	1.004***	1.211**
	(.132)	(.118)	(.128)	(.117)	(.190)	(.118)	(.162)	(.107)
Inc-3 third 20%	1.667***	1.416***	1.523***	1.332***	1.404***	1.649***	1.201	1.088
	(.133)	(.107)	(.112)	(.115)	(.179)	(.101)	(.138)	(.095)
Inc-4 fourth 20%	1.449**	1.315***	1.282***	1.203**	1.252*	1.439**	1.210	1.110
	(.115)	(.097)	(.093)	(.102)	(.161)	(.084)	(.134)	(.093)
Primary education	1.331	1.357	1.173	.922	.542	2.082**	2.132	1.403
	(.484)	(.485)	(.387)	(.343)	(.212)	(.603)	(1.552)	(.616)
Secondary education	.855	.895	.770	.623	.218***	1.169	1.796	6.063
	(.312)	(.321)	(.255)	(.233)	(.087)	(.339)	(1.309)	(.468)
Tertiary education	.570	.670	.348***	.446**	.122***	.538**	.871	.571***
	(.231)	(.260)	(.130)	(.182)	(.065)	(.166)	(.677)	(.273)
Working	.833***	.844***	.835***	.994	.860*	.829***	1.022	.670***
	(.088)	(.014)	(.044)	(.064)	(.075)	(.604)	(.075)	(.041)
Locality	.342***	.694	.659***	.937	.780***	.694***	1.245***	.908
	(.019)	(.036)	(.033)	(.056)	.067	.030	(.088)	(.055)
Observation	10,987	10,987	10,987	10,987	10,987	10,987	10,987	10,987
Pseudo R^2	0.0790	0.0303	0.0524	0.0141	0.0450	0.0655	0.0232	0.0155
Log likelihood	-5247.4574		-5882.9577		-2618.9096		-2839.03655	
	- 5626.881		-4546.3276		-7024.8166		-4440.613	

The table displays regression estimates of the drivers of obstacles of financially included in West Africa. Distance to the firm, higher charges, inadequate documents, lacking faith, spiritual factors, no money, relatives and allies, and no financial institution are the dependent variables. Personal characteristics are the independent variables: gender, age, age^2, income used 4 binary variables and education used 3 binary variables detailed in Table 2. Forecasted marginal impacts are offered and standard errors are found in parentheses.

**** Significance at 1% level. ** Significance at 5% level. *Significance at 10% level.*

No trust and spiritual beliefs are also not hurdles to women. Age, high charges, no confidence, lack of money, relatives and allies, and absence of financial institutions are key obstacles. With income, remoteness is a main obstacle to financial inclusion. Charges, no documents, no faith in the financial institution, spiritual factors, no money, as well as use of relatives and allies are strongly linked to income and financial inclusion in West Africa.

There are conflicting outcomes on education. For instance, though distance is a hurdle to a low-educated person, it does not bother higher-education individuals. High charges, inadequate documentation and no trust, religious factors, no money, and the absence of financial institutions are all issues confronting educated persons. These findings are similar to what Jayanti et al., found for Indonesia; Rashdan and Eissa for Egypt, Zins and Weill for Africa; Fungácová and Weill for China, and Allen et al., found at the world stage noting that the indicators differ.[40] Different geographical locations of countries together with different environments may be the reason why different indicators are used.

Using gender as an example, Simon Aterido et al., found that traditional reasons and failure of the market led to discrimination against women.[41] However, Asli Demirgüc-Kunt et al., contend that accepted events, basic traditions, schooling, and work brought about the discrimination.[42] Thus, in the Eastern world, the cultural practices are strictly different from the Western world based on religious reasons with different effects on women.

How C-19P Impacted Financial Inclusion and Electronic Payments in West Africa

The pandemic took the world impromptu and impacted every area of life. One of the impacts was the novel way of doing things. As the pandemic emerged, there were restrictions on movements, and governments announced lockdowns to avoid the spread of the virus. With financial operations, the popularity of electronic payments among others emerged. Data on electronic and digital payments were obtained from the 2021 WBGF data. This section examines how electronic payments impacted people in West Africa. The two questions used for the analysis are: "Did you use electronic payment for the first time during the pandemic?" And did you pay utility bills electronically during the pandemic for the first time?

Table 5 below portrays the estimations of the variables. The study found that as first-time users, gender is positively linked to electronic payment during the pandemic. A major driver of financial inclusion was higher earnings. An increase in income enhances financial inclusion, all the groups are significant at 1%.

Higher education increases financial inclusion. Thus, primary education is 0.58, secondary education is 0.81, and tertial is 1.9 times more likely to do an online payment. It implies that at the time of the pandemic, persons with higher education mostly used digital payment as first-time users. Paying utility bills electronically followed a similar pattern. With electronic utility payment online, a first-time user in the C-19P period was directly related to various levels of education and were all significant. On

[40] Jayanti, Kemara, and Setiyawati, "Barriers to Access Formal Financial Services: An Empirical Study from Indonesia"; Rashdan and Eissa, "The Determinants of Financial Inclusion in Egypt"; Zins and Weill, "The Determinants of Financial Inclusion in Africa"; Zuzana Fungáčová and Laurent Weill, "Understanding Financial Inclusion in China," *China Economic Review* 34 (2015): 196–206; Allen et al., "The Foundations of Financial Inclusion: Understanding Ownership and Use of Formal Accounts."

[41] Aterido, Beck, and Iacovone, "Access to Finance in Sub-Saharan Africa: Is There a Gender Gap?"

[42] Asli Demirgüç-Kunt, Leora F Klapper, and Douglas Randall, "Islamic Finance and Financial Inclusion: Measuring Use of and Demand for Formal Financial Services among Muslim Adults," *World Bank Policy Research Working Paper*, no. 6642 (2013).

the other hand, all income cohorts were not significant, though, a rise in income levels means financial inclusion rises.

Table 5: Impact of C-19P on financial inclusion in West Africa

	Used online payment first time during C-19P	Paid utility electronically first time during C-19P
Gender	1.190 * (.124)	1.287*** (.120)
Age	1.004 (.020)	1.034** (.017)
Age^2	1.000 (.000)	1.000* (.000)
Inc-1 poorest 20%	.538*** (.099)	.408*** (.071)
Inc-2 second 20%	.644*** (.109)	.506*** (.079)
Inc-3 third 20%	.660*** (.103)	.4728** (.093)
Inc-4 fourth 20%	.811 (.110)	.595*** (.075)
Primary education	.577 (.422)	1.754 (1.783)
Secondary education	.814 (.594)	2.360 (2.340)
Tertiary education	1.856 (.1340)	2.273 (2.340)
Working	1.704*** (.244)	1.920*** (.257)
Locality	1.490*** (.169)	1.960*** (.202)
Observation	10,987	10,987
Pseudo R^2	0.0453	0.0529
Log likelihood	-1714.3155	-2042.431

The table depicts regression estimates of how C-19P impacted financial inclusion in West Africa. Using online payment first time during C-19P and paying utility bill electronically for the first time during C-19P are the latent variables. Independent variables include: gender, age, age, income using 4 binary variables- and education-uses 3 binary variables- as indicated in Table 2. Estimated marginal impacts are given and standard errors are shown in parentheses.
**** Significance at 1% level. ** Significance at 5% level. *Significance at 10% level.*

The results show that at the time of the pandemic, those with higher levels of education used electronic payment for utility bills as first-time users. This suggests that people with better education experience better financial inclusion at the time of the C-19P compared to less educated individuals. Individuals gainfully employed and urban dwellers were strong drivers of financial inclusion.

Discussion Summary

In relation to other sub-regions on the globe, financial inclusion is very low in West Africa. As high financial inclusion supports poverty reduction and improves economic activities, investigating determinants of financial exclusion became pertinent. With the help of the 2021 WBFG database, the study examined the causes of financial inclusion in 11 West African nations at the time of the pandemic and its effects. It used *Logit* regression to determine the impacts of the latent variables on personal characteristics. The following summarises the findings.

First, it emerged that, compared to women, men with high education are highly financially included. Despite owning mobile money accounts being unpopular, females were the least underprivileged. Secondly, to women, a key obstacle to financial inclusion is distance; however, higher charges, inadequate documents, being cashless, and friends owning formal accounts are not an issue in West Africa. Other factors that are not challenges to women include inadequate trust and spiritual factors. On income, a key challenge to financial inclusion is distance. Aside from financial institutions located far from individuals, highly educated persons have no issues with financial inclusion. Third, the study predicted credit and informal savings to impact people to increase financial inclusion, the results for savings and borrowing show otherwise, and do not serve as alternative means. For example, women have

a low probability of using a bank or having an account with mobile money and belong to non-formal fund groups. Finally, at the time of C-19P, more educated persons utilized electronic payment systems and adopted online platforms to settle utility bills.

RECOMMENDATIONS

Based on the results discussed in this study, the following recommendations are provided for policymakers. It is expected that policymakers will provide detailed guidelines in favour of individuals with low financial inclusion. Also, decision-makers should design and develop policies to favour people to increase financial inclusion in West Africa. With these in mind, the study endorses programmes that will lead people to be closer to financial services to increase financial inclusion. Again, individuals should be stimulated to adopt electronic payment systems to help increase financial inclusion. To improve financial inclusion, additional pains be taken to ensure that financial institutions provide services that are friendly and closer to the people. Thus, the difficulties that increase financial exclusion such as expensive charges, and requests for many documents among others must be reviewed without compromising best practices. Also, issues confronting online digital services must be resolved wherever it is possible to help increase financial inclusion in the sub-region.

Again, it is important to come out with policies that will help financial institutions to be cited closer to the people as much as possible. Another area of much interest is the education of the people, the paper found that education is a major determinant of financial inclusion, hence, policies that will help to increase the literacy rate are an ideal one to be implemented by various governments in West Africa. In Ghana, for instance, it is important to widen the free senior high school to include basic education to help people from all walks of life to have education to improve financial inclusion. The policy of the free senior secondary school concept model could be rolled out by other countries in the region to improve the literacy rate and increase the financial activities of the people.

CONCLUSION

The paper has examined the drives of financial inclusion and how the C-19P affected West African countries with respect to electronic payments. The paper found that income levels, gender of an individual, a person working, and whether one dwells in urban or rural locations determine financial inclusion. Some factors found as obstacles to financial exclusion include distance to the location of the financial institution, documents required to open an account, high charges, and spiritual reasons. The paper also found that during the C-19P, it was the higher income earners and highly educated individuals who widely used electronic or digital payment systems. Since it is the aim of all governments to help improve financial inclusion in a country, it is important to consider policies that will improve financial inclusion.

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