Finance & Economics Review 7(1), 2025 **ISSN: 2690-4063**

Fintech Services and Entrepreneurship in Africa

Iyabo Olanrele
Senior Research Fellow, Economics & Business Polic Department, Nigerian Institute of Social & Economic Research, Ibadan Oyo State, Nigeria
Email: adeyemiyabo@yahoo.com

Citation: Olanrele, I. (2025). Fintech Services and Entrepreneurship in Africa. *Finance & Economics Review 7(1)*, 1-12. https://doi.org/10.38157/fer.v7i1.651.

Research Article

Abstract

Purpose: *This paper examines the effect of fintech on entrepreneurship to ascertain the role of financial technology services on individual entrepreneurial intention in five sub-Saharan African countries.*

Methods: *The analysis was based on an extended probit model to determine the country-specific effect of mobile money account ownership (Fin) on individuals who used fintech services to start a business (Ent) as a measure of entrepreneurship. The impact of other control variables (X) such as credit access, education, and labor force participation on entrepreneurship (Ent) was also considered.*

Results: *The findings show that fintech services through mobile money are significantly associated with an increased likelihood of entrepreneurship in The Republic of Congo, Kenya, Mauritius, Nigeria, and South Africa. Credit access, higher levels of education, and labor force participation are other drivers of entrepreneurship in Kenya, Nigeria, and South Africa.*

Implications: *Country-specific characteristics play a significant role in engendering entrepreneurship; thus, the government should intensify efforts to diffuse and adopt fintech for optimal livelihood and economic transformation.*

Originality: *Overall, this paper accounts for the role of technology penetration in financial services and contributes to the literature on entrepreneurship development in the African context. The research utilizes the World Bank Global Findex data, which is nationally representative, to provide insight into the subject matter.*

Limitations: *This paper's analysis relied on the 2017 World Bank Global Findex Database, the most recent data available. Although this may be perceived as insufficient, the findings were valid due to their alignment with similar outcomes in the literature.*

Keywords: Fintech Services, Entrepreneurship, Extended Probit Model, Global Findex, Africa

1. Introduction

A persistent lack of access to financial services may hinder small enterprises or start-ups from pursuing economic transformation opportunities. This is typical of traditional financial institutions that are reluctant to serve small businesses and start-ups due to perceived high-risk exposure (Armendariz and Morduch, 2005) and high failure rates (Reynolds, 2007; Ucbasaran et al., 2013). In sub-Sahara Africa, about 51 percent of micro and small enterprises need access to finances more than their current level (Runde, et.al., 2021). Access to credit is a barrier to small business development due to stringent requirements from the traditional financial system in South Africa (Lewis & Gasealahwe, 2017). Likewise, Osa (2021) identified funding as a main constraint to startup businesses in Nigeria with the 2021 SMEDAN Report revealing that 44.3 percent of sole-proprietor enterprises lack access to financing.

Improved access to financial services can promote entrepreneurship and employment generation (Brown et al., 2019; Célerier & Matray, 2019). Small and start-up enterprises encounter great difficulty accessing

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

financial services; thus, without inclusive financial systems, individuals may have limited capability to save and invest in entrepreneurial ventures. Financial innovations such as fintech are increasingly leveraged to reduce barriers to capital access for business startups (Chen et.al. 2023). Fintech offers services and products that meet the financial needs of customers more than traditional banks. End-users adopt fintech services such as mobile money accounts and digital applications for financing, payment, investment, and accessing credits. Unlike traditional banks, fintech services are increasingly alleviating financial exclusion, by reducing service costs and improving service access and efficiency, which are binding constraints to entrepreneurship (Xie et.al., 2020). Particularly, fintech is anticipated to scale financial inclusion to unserved and underserved populations, thus increasing access to financial services that address factors limiting entrepreneurial financing opportunities. As a necessary condition, the penetration of fintech may reduce information asymmetry and optimize resource allocations for enterprise activities (Wang et.al, 2016; Alraqeb et.al, 2022).

Over the last decade, Africa has experienced an improvement in the level of financial inclusion due to the gradual diffusion of fintech services to niche areas and the economically disadvantaged. In sub-Saharan Africa, individuals with account ownership increased from 23 percent in 2011 to 55 percent in 2021 (Global Findex, 2021). This situation accounts for a 139 percent rise in financial inclusion with innovation in digital financing driving the pace. Nevertheless, adults' financial exclusion rate remains significant at 44 percent. This may lead to low economic opportunities, weak economic growth, and exacerbate income inequality, especially for the most vulnerable. Also, the high exclusion rate may further worsen unemployment and dependency levels predominantly among the young African population.

However, evidence remains scarce as to whether the use of fintech services promotes entrepreneurship in Africa. Elsewhere, evidence revealed that crowdfunding, a form of digital finance, is important in supporting entrepreneurship. Digital finance provided by fintech also affects informal entrepreneurship, especially among females (Allison et al., 2015), while mobile money is associated with entrepreneurial intention among men (Kedir & Kouame, 2022). Financial service digitalization leads to higher self-employment (Alraqeb et.al., 2022). Also, digital finance promotes entrepreneurial behavior among vulnerable households with less capital (Zhang et al. 2020). Thus, improvements in the financial sector, through fintech services can reduce financing constraints for entrepreneurship development, especially among individuals with difficulty in self or informal financing. Would fintech services reduce financial barriers and promote entrepreneurship in Africa? This study aims to generate evidence for boosting livelihood strategies and economic growth in Africa.

Entrepreneurship is defined as an act to start new businesses or expand existing ones by individuals or organizations[1], which enhances socio-economic transformation by providing individual livelihood strategies. Entrepreneurship brings about new products and innovations not only to individuals but also beneficial to society by fostering economic transformation. In terms of economic transformation, entrepreneurship facilitates resource mobilization in new sectors and contributes to strengthening existing ones. This structural transformation leads to product diversification and higher productivity gains for livelihood improvement and economic competitiveness. While entrepreneurship may not be the sole driver of economic growth or its transformation, some evidence reveals its significant positive role in boosting economic prosperity in developing countries (Carree & Thurik, 2010, Kim et al., 2022, Asamaoh, et. al., 2021). Thus, assessing the factors that stimulate entrepreneurship, with particular attention to the role of financial technology, is desirable for improved economic growth and development at the intersection of digital diffusion.

Policy-wise, this paper contributes to understanding the effectiveness of the booming fintech ecosystem in bolstering livelihood strategies like entrepreneurship in Africa. This outcome reveals the impact of Africa's strategies towards financial inclusion for business development and economic growth. Beyond this, the outcome also provides evidence-based approaches to facilitating economic transformation

[1] **https://www.gemconsortium.org/report**

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

through financial inclusion, enabled by fintech diffusion, as anticipated in most sustainable development goals (SDGs) and the respective National Financial Inclusion Strategies. Specifically, some SDGs prioritize inclusive growth, access to basic amenities, achieving equality and food security, among others. The diffusion of fintech services can facilitate Africa's sustainable development, thus, making the outcome of this paper important for promoting strategies that enhance financial inclusion.

Unlike previous literature, which focuses on the role of fintech on financial inclusion and the determinants of fintech adoption, this paper interrogates the effect of fintech services such as mobile money and digital transactions on entrepreneurship such as saving to start or expand existing businesses. By this, the research elucidates whether financial technology adoption translates to livelihood strategies, while also providing opportunities for economic empowerment. Although a plethora of studies examined the effect of fintech on entrepreneurship elsewhere (Alraqeb, et.al.2021, Kedir & Kouame 2022; Haq & Dawood, 2023), the literature gap remains dearth in Africa making the research context suited. Thus, this study is among the earliest to examine the effects of fintech services on entrepreneurship. Overall, the paper accounts for the role of technology penetration in financial services and contributes to the literature on entrepreneurship development in the African context. The research utilizes the global fintech database of the World Bank, which is nationally representative, to provide insight into the subject matter.

The paper is in six sections, including this introduction. Section two reviews relevant literature on theoretical and empirical perspectives. Section three provides the methodology detailing the data source and analytical strategy. The empirical results and discussion of findings are in section four. Section five presents the conclusion and policy recommendations, while section six highlights the study's limitations and the area of future research.

2. Literature Review

The theories of the Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology (U TAUT) are the widely adopted frameworks in the literature of technology diffusion such as fintech. The application is hinged on the role of technology diffusion in facilitating activities due to the existing barriers associated with traditional financial systems. Such is the case with fintech diffusion as an enabler of financial inclusion due to reduced barriers that lead to exclusion. For instance, the Technology Acceptance Model (TAM) alludes that the perceived usefulness and ease of use are the motivating factors for technology adoption (Lee et.al, 2003). Thus, the perceived usefulness of technology will determine individual adoption for personal and economic gains such as entrepreneurship. Also, the perceived ease of use will motivate widespread adoption. In the context of existing and new entrepreneurs, the perceived usefulness and ease of use will propel individuals to leverage fintech services as a viable option for breaking barriers imposed by traditional financial services. Likewise, fintech is leveraged to enhance business efficiency and expansion.

Within the framework of the Unified Theory of Acceptance and Use of Technology, Venkatesh et al., 2003 hypothesized that the probability of adopting a technology hinges on four pillars, performance expectancy, social influence, effort expectancy, and facilitating conditions. In the context of financial inclusion, the increased barriers to accessing traditional financial services give fintech leeway in bolstering individual innovative activities, such as entrepreneurship. The 'performance expectancy' is the extent to which an individual perceives that an innovation will facilitate improved job performance. The effort expectancy is the ease associated with the adoption of the system. Social Influence resonates with the bandwagon effects to the extent that an individual believes the opinion of others about the use of a new system. In the final analysis, the facilitating conditions describe the level to which an individual believes that technical infrastructure exists to support a system. The combination of these four constructs has been applied in the literature of financial technology and entrepreneurship. For instance, Sultana et.al. (2023)

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

adapt the UTAUT in providing insights into the motivations for fintech adoption. Three UTAUT constructs, except social influence, led to fintech adoption. Najib et.al. (2021) also analyzed the drivers of fintech usage among small enterprises and their sustainability based on the theory of the UTAUT. These evidences, among others, give credence to the suitability of the unified theory of acceptance and use of technology (UTAUT) theory in this study.

Empirically, there is a plethora of literature on studies that account for the effects of fintech services adoption on entrepreneurship, using diverse measures of entrepreneurship and analytical strategy in Africa and elsewhere. Some of these studies include, Alraqeb, et.al., (2021), who examined whether fintech promotes entrepreneurship in China. The authors constructed a fintech adoption indicator and estimated its effect on the share of self-employment using data from the National Bureau of Statistics of China. Their result reveals that digital financing at an aggregate level has a positive effect on self-employment. In rural areas, digital banking facilitated an increase in self-employment, while digital financial services were more important in promoting self-employment in urban areas. Likewise, Hau, et. al. (2021) examined the effects of fintech credits on entrepreneurial growth potentials on sales, transaction, and product growth using the fuzzy regression framework. Their empirical findings indicate that sales and transaction growth increased by 13.1 percent and 10.6 percent after the first month of fintech credit access in China. The authors find that mobile money significantly improves self-employment and female entrepreneurship.

The study by Kedir and Kouame (2022) assessed the effects of fintech on women entrepreneurship in Burkina Faso and Cameroon using the FinScope Consumer surveys. The study used indicators such as self-employment/enterprise ownership (entrepreneurship), access and use of finance measured by mobile money usage, and other socioeconomic factors including; age, gender, marital status, and level of education. The study employed a probit regression technique to assess the relationship. It revealed that mobile money adoption increases the likelihood of male and female entrepreneurship in both countries. Also, age plays a significant role in improving the chances of entrepreneurship, especially among individuals within the youth age bracket.

The mediating role of fintech in financial inclusion was assessed on entrepreneurial intention among Indian female students in higher education by Haq and Dawood (2023). The study used a sample of 399 female respondents with ownership of mobile money accounts for entrepreneurial intentions in high institutions. The study adopts a structural equation to reveal that Mobile money had a favorable impact on financial inclusion and a positive correlation between women's entrepreneurial intention and financial inclusion. Similarly, the study by Yang et al., (2022) supports that digital financing significantly promotes women entrepreneurship in China. Specifically, the study used a national survey by matching macro-financial data with individual micro-level data to assess the effect of digital financing on regional entrepreneurial behavior. Besides the overall impact on women's entrepreneurial behavior, digital financing increases the likelihood of entrepreneurship among vulnerable women facing gender inequality in education and financial inclusion.

The literature also established the channels through which fintech promotes entrepreneurship. In describing these channels; Jack et al. (2016) established that financial technology allows entrepreneurs to pull resources from formal and informal networks to bridge the financing gap. The opportunity created through mobile money usage enables individuals to transition from small-holder farming to business activities with higher returns. Also, through interwoven products such as logistics services, insurance, and savings, fintech catalyzed new start-ups and entrepreneurship intentions (BIS, 2019). Also, due to reliable payment mechanisms that facilitate merchant payments through online and offline channels, fintech is increasingly becoming beneficial to entrepreneurship. This was the case with small vendors in China that introduced QR codes to retail payments among their customers (Ding et.al., 2018). Similarly, Beck et.al., (2022) established that small firms using QR codes for retail online and offline transactions had better digital credit access, faster payment processes, and faster business recovery after the COVID-19 lockdown. The QR code usage for retail transactions allows for efficient business management, thus

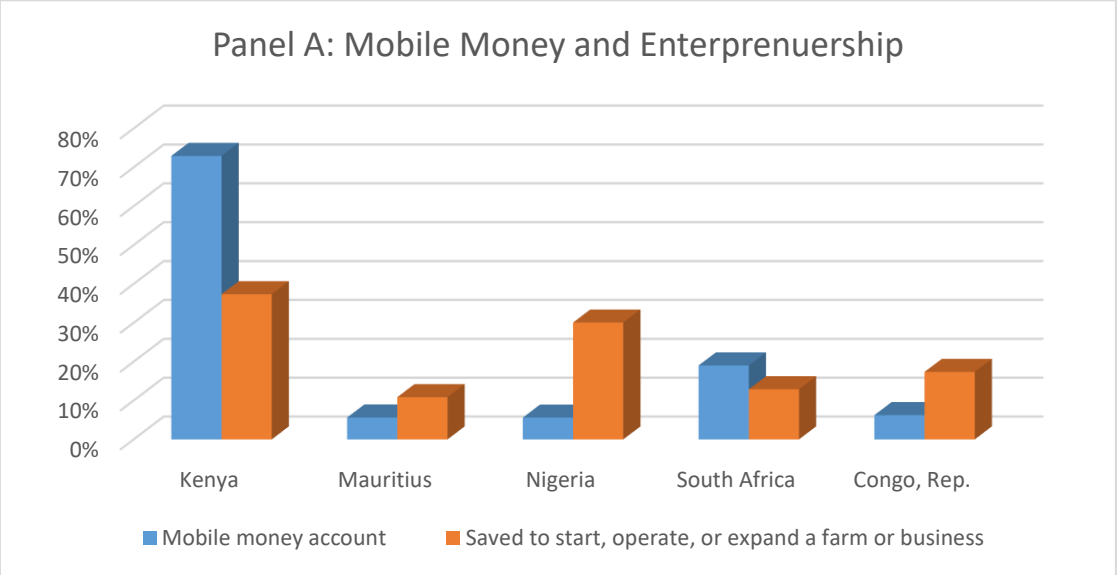
Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

encouraging entrepreneurship growth. The assertion supports that the risk coverage offered by fintech offers financially unserved and underserved opportunities to start and scale a business (Carter, 2021). Finally, fintech is associated with the least credit access barrier due to non-collateralization of credit access. This is supported by Erel and Lieberson (2019), who show that end-users in areas with low traditional bank coverage access credit with ease from fintech platforms.

3. Methodology

3.1 Data and Sources

The data for this study is based on the third wave of the World Bank Global Findex Database by Demirgüç-Kunt, et.al. (2017). The Findex survey is the most comprehensive global database on fintech financial inclusion. It provides information on the demand side of adult financial inclusion, specifically on how individuals save for productive uses, borrow, makes transactions, etc. The survey is conducted in over 144 countries, including African countries. In the survey, micro-level data are provided for nationally representative and randomly selected samples among adults age 15 and above across male and female genders. Also, the survey captures information along the demographics and socioeconomic characteristics of the samples such as location, education, income, labor market participation, etc. In this study, five African countries across the regional divide are selected based on their high level of financial inclusion measured by adults' mobile account ownership and digital transactions. The select countries are Kenya, Mauritius, Nigeria, South Africa, and the Congo Republic (see Figure 1). Table 2 describes the dataset employed in the analysis.



Published by *Research & Innovation Initiative Inc.*, registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

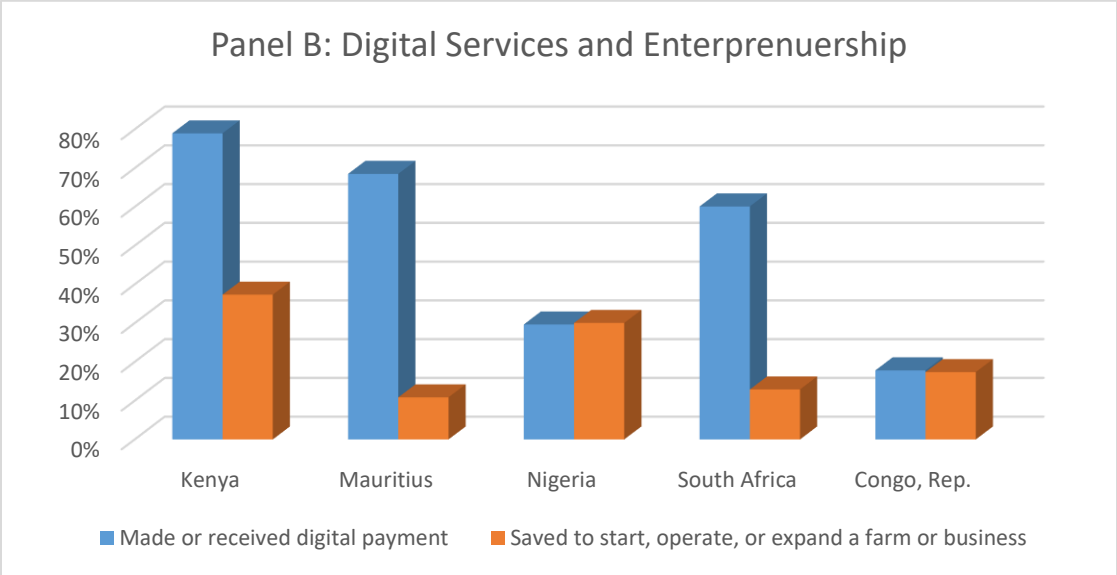


Fig. 1: Trends in Fintech Services and Entrepreneurship
Source: Global Findex, 2017

Table 1: Summary Statistics

Variable	Measure	Mean				
		Congo	Kenya	Mauritius	Nigeria	South Africa
Entrepreneurship	Adult (age 15^{+}) who saved to start, operate, or expand a farm or business	0.500	0.741	0.621	0.700	0.614
Mobile money account	Mobile account owner (Adult age 15^{+})	0.063	0.769	0.060	0.084	0.225
Credit	Credit from financial institutions, friends and family, or savings clubs (Adults age 15^{+})	0.494	0.475	0.376	0.436	0.564
Education	Secondary education (Adult age 15^{+})	0.597	0.550	1.882	1.84	1.937
Labor force	Adult (age 15^{+}) Labor market participation	0.616	0.836	0.631	0.779	0.677

3.2 Analytical Framework

The study follows the probit analytical framework of Kedir and Kouma (2022) in estimating the effects of fintech services on entrepreneurship. However, the model was modified as much as the data permitted, and the implicit form is in Equation 1.

$$f(z) = \frac{1}{1+e^{-z}} \quad (1)$$

Where z is the explanatory variable of a linear function specified in (2)

$$z = \beta_0 + \beta_1 x_1 + \ldots + \beta_k x_k \quad (2)$$

From equation (2), the probit regression can be specified as:

$$g(x) = \frac{1}{1+e^{-(\beta_0+\beta_1 x_1+\ldots+\beta_k x_k)}} \quad (3)$$

From equation (3), the probability of the event occurring is:

$$p = \frac{1}{1+e^{-(\beta_0+\beta_1 x_1+\ldots+\beta_k x_k)}} \quad (4)$$

The probability of non-occurrence is:

$$1 - p = 1 - \frac{1}{1+e^{-(\beta_0+\beta_1 x_1+\ldots+\beta_k x_k)}} \quad (5)$$

The natural log of the specifications gives:

$$In\left(\frac{1}{1-p}\right) = In(e^{(\beta_0+\beta_1 x_1+\ldots+\beta_k x_k)}) \quad (6)$$

From equation (6), the logit model is derived as:

Published by *Research & Innovation Initiative Inc.*, registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

$$In\left(\frac{1}{1-p}\right) = \beta_0 + \beta_1 x_1 + ... + \beta_k x_k \quad (7)$$

Specifically, the explicit form of the adopted probability model is specified in equation (8) as:

$$Ent_i = \beta_1 Fin_i + \beta_2 X_i + \mu_i \quad (8)$$

The probit model (8) provides factors that affect the likelihood of entrepreneurship, where there is a dummy capturing individual entrepreneurship decisions; 1, and 0 otherwise. In this study, entrepreneurship is measured as an adult individual who saved to start, operate, or expand a farm or business. Further, Fin_i is the individual fintech service adoption decision (measured by individual mobile money accounts and digital transactions) in the past year or otherwise? The two measures of fintech services are included in the analysis to allow for a robustness check. Theoretically, an increase in individual adoption of fintech services will likely boost entrepreneurship. X_i is a vector of other potential factors stimulating individual entrepreneurship. These include age, income, education, credit, and labor force participation. These factors are expected to propel entrepreneurship, except for the lower level of income that may constrain an individual's business capability. Further, the analysis was performed for each country to capture individual peculiarities since policy context differs.

The specification in equation (8) may suffer from endogenous bias due to the possibility of causality from entrepreneurship to the usage of fintech services and vice versa. The extended probit model has been adjudged adequate in treating an endogenous bias in a binary model, hence its adoption herein. The extended model is suitable for analyzing endogenous covariates in a sample selection (Ünlü, 2023).

Equation (9) is the specification of the treatment model:

$$Fin_i = \beta_1 Ent_i + \beta_2 X_i + \mu_i \quad (10)$$

Where $Fin,\ Ent, and\ X$ remain as earlier defined.

4. Empirical Results

This section presents the empirical results from the extended probit estimation for the five selected African countries and shows the feedback causation between entrepreneurship and mobile money accounts. In the methodology, the proposal is to adopt both mobile money accounts and digital transactions as measures of fintech services, however, the latter indicator was dropped due to its non-performance in all estimations. This situation could imply that digital transactions are less embraced than the ownership of mobile money accounts across the countries.

Table 2 presents the estimation results for the Congo Republic showing that mobile money account has a positive significant relationship with entrepreneurship. Specifically, the higher use of fintech services such as mobile money accounts has the likelihood of facilitating or improving entrepreneurship for new start-ups or existing ventures in agriculture and non-agriculture businesses. While the Congo Republic is adjudged one of the top central African countries with individual owners of mobile money accounts, the diffusion of the fintech service is lower than what is obtained among other African countries selected in this analysis, nevertheless, it holds a significant effect for entrepreneurship. Other indicators such as credit, education, and labor force had the anticipated positive relationship on entrepreneurship development, but their effects remain insignificant.

The feedback estimation indicates that entrepreneurship drives individual mobile account ownership, possibly due to ease of use and access. The positive and significant relationship also established a strong causality between mobile money account ownership and entrepreneurship. Education has a positive and significant relationship with mobile money accounts. This outcome suggests that higher education attainment enhances the capability to control economic and physical assets such as financial inclusion

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

through fintech services. Also, the finding conforms with that of Ngakosso (2024), who shows that the population with a higher level of education has more chances of being financially included.

Table 2: Extended Probit Estimation Results_The Republic of Congo

Dependent Variable	**Entrepreneurship**			**Mobile Money Account**		
Variable	Coeff.	Std.err.	P>z	Coeff.	Std.err	P>z
Credit	0.122	0.156	0.434	0.016	0.013	0.209
Education	0.052	0.667	0.443	0.005**	0.008	0.043
Labor Force	0.064	0.082	0.440	0.026	0.018	0.151
Mobile Money Account	4.135	0.113	0.000***			
Entrepreneurship				-1.969	0.497	0.000***
Constant	-0.442	0.231	0.056**	0.865	0.089	0.000***

* p<.0.1; ** p<.05; *** p<.001

It is not unsurprising that mobile money accounts have a significant positive effect on entrepreneurship in Kenya (Table 3). An increase in the number of adult populations using this fintech service has a likelihood of engendering entrepreneurship growth at a 1 percent level of significance. This situation may not be unconnected to the early introduction of fintech services and the aggressive strategy towards its diffusion, such as the M-Pesa money, bolstering financial inclusion and entrepreneurship development.

Likewise, access to credit, higher levels of education, and labor force participation are drivers of entrepreneurship in Kenya. These findings indicate that other explanatory variables in the estimated model were important in determining entrepreneurship development in Kenya. The study by Ayaviri-Nina et. al., (2023) also finds education and access to credit as determinants of entrepreneurship, thus suggesting their importance in facilitating entrepreneurship. Another analysis from the global monitor entrepreneurship data revealed that a higher level of education was associated with a lower probability of being an entrepreneur (Tulani, 2019), thus defying the *apriori* expectation.

The feedback estimation also shows that the explanatory variables and the indicator of entrepreneurship are determinants of mobile money accounts as they exert positive and significant effects. For instance, the positive impact of entrepreneurship on mobile money accounts has a 10 percent statistical significance. Likewise, education and labor force participation have a 5 percent level of statistical significance each, while credit is at 5 percent. This outcome implies that the developed socioeconomic condition in Kenya has a positive relationship with the country's level of financial inclusion enabled through fintech services. A snapshot of the global Findex statistics revealed that Kenya has the highest fintech adoption rate and a higher level of financial inclusion in Africa (Pensa and Castellani, 2022).

Table 3: Extended Probit Estimation Results Kenya

Dependent Variable	**Entrepreneurship**			**Mobile Money Account**		
Variable	Coef.	Std.err.	P>z	Coeff.	Std.err	P>z
Credit	0.497	0.095	0.000***	0.252	0.102	0.014**
Education	0.209	0.738	0.005***	0.384	0.100	0.000***
Labor Force	0.222	0.087	0.011**	0.367	0.131	0.005***
Mobile Money Account	2.367	0.132	0.000***	-	-	-
Entrepreneurship				1.404	0.793	0.076*
Constant	-2.197	0.134	0.000***	-1.384	0.543	0.011**

* p<0.1; ** p<.05; *** p<.001

A higher mobile money account ownership rate likely improved entrepreneurship development at a 1 percent statistically significant level in Mauritius (Table 4). This finding indicates that fintech diffusion is lessening barriers to financial services adoption, thereby enhancing business set-up and improvement. Likewise, education also drives entrepreneurship at a 1 percent significance level. However, a higher level

Published by *Research & Innovation Initiative Inc.,* registered with the Michigan Department of Licensing & Regulatory Affairs, United States (Reg. No. 802790777).

of entrepreneurship lessens the probability of mobile account ownership in Mauritius at a high level of statistical significance. This finding indicates an absence or negligible feedback effect from entrepreneurship to mobile money accounts in Mauritius.

Table 4: Extended Probit Estimation Results _Mauritius

Dependent Variable	**Entrepreneurship**			**Mobile Money Account**		
Variable	Coef.	Std.err.	P>z	Coeff.	Std.err	P>z
Credit	0.040	0.069	0.565	0.049	0.112	0.666
Education	0.312	0.104	0.003***	0.039	0.091	0.663
Labor Force	0.101	0.071	0.156	0.074	0.170	0.664
Mobile Money Account	3.271	0.900	0.000***	-	-	-
Entrepreneurship				-1.929	0.370	0.000***
Constant	-0.596	1.255	0.000***	0.761	1.213	0.530

** p<.0.1; ** p<.05; *** p<.001*

Like Kenya, a higher degree of mobile money account ownership has a higher chance of increasing entrepreneurship at a 1 percent level of statistical significance (Table 5). Credit access, higher levels of education, and labor force participation are significant determinants of entrepreneurship. The findings show that the level of social and economic development matters in propelling entrepreneurship. Also, the findings align with studies that show that socioeconomic characteristics like education and labor force participation may engender entrepreneurship (Oosterbeek *et al.*,2008; Hadi & Karami, 2023).

The feedback estimation shows that a higher level of entrepreneurship is probably associated with increased mobile money account ownership, thus establishing a bi-directional relationship. Among other factors, only education exerts a positive impact on mobile money accounts at a 5 percent level of statistical significance.

Table 5: Extended Probit Estimation Results _Nigeria

Dependent Variable	**Entrepreneurship**			**Mobile Money Account**		
Variable	Coef.	Std.err.	P>z	Coeff.	Std.err	P>z
Credit	0.337	0.096	0.000***	0.103	0.079	0.195
Education	0.084	0.050	0.093*	0.234	0.118	0.048**
Labor Force	0.246	0.083	0.003***	0.088	0.104	0.399
Mobile Money Account	3.563	0.231	0.000***	-	-	-
Entrepreneurship				2.368	0.171	0.000***
Constant	-0.465	0.103	0.000***	-3.096	0.534	0.000***

* p<.0.1; ** p<.05; *** p<.001

In South Africa, mobile money exerts a significant positive impact on entrepreneurship, indicating that a higher mobile account ownership is associated with a higher likelihood of entrepreneurship (Table 6). Socioeconomic indicators such as credit access, higher levels of education, and labor force participation also determine entrepreneurship development in South Africa. The results indicate the important role of fintech and other socioeconomic factors in driving entrepreneurship.

Higher entrepreneurship activities also facilitate an increase in mobile account ownership, although the effect is insignificant. Credit access, education, and labor force participation positively impact mobile account ownership. Their coefficients are statistically significant, implying that they are facilitating conditions for fintech service adoption in South Africa.

Table 6: Extended Probit Estimation Results _South Africa

Dependent Variable	**Entrepreneurship**			**Mobile Money Account**		
Variable	Coef.	Std.err.	P>z	Coeff.	Std.err	P>z
Credit	0.476	0.089	0.000***	0.263	0.105	0.012**
Education	0.139	0.073	0.054*	0.177	0.086	0.041**
Labor Force	0.211	0.085	0.013**	0.502	0.143	0.000***
Mobile Money Account	1.413	0.423	0.001***	-	-	-
Entrepreneurship				0.789	1.783	0.658
Constant	-0.710	0.150	0.000***	-2.124	0.841	0.012**

* p<.0.1; ** p<.05; *** p<.001

5. Conclusion

Fintech services are scaling financial inclusion to unserved and underserved populations, thereby increasing access to financial services that address some of the barriers to entrepreneurship development. This paper examines the role of mobile money account ownership on nascent and existing farm and non-farm business development in five selected countries as a representative of the African sub-regions. The analysis utilizes a nationally representative database provided by the World Bank Global Findex report. Overall, the findings from the study show that fintech services through a higher mobile money account ownership is associated with an increased likelihood of entrepreneurship in The Republic of Congo, Kenya, Mauritius, Nigeria, and South Africa. Also, there is a high possibility of a bi-directional relationship between entrepreneurship and mobile money account ownership in the countries except Mauritius, which exerts a negative effect. This situation implies that country heterogeneity matters for nascent and existing business development.

Socioeconomic conditions such as credit access, higher levels of education, and labor force participation are other drivers of entrepreneurship in Kenya, Nigeria, and South Africa. These suggest that country-specific characteristics play a significant role in engendering entrepreneurship and as such the adequacies of umbrella strategies as always proposed in panel studies may be limited. Overall, the role of fintech in bolstering livelihood strategies cannot be overemphasized, thus, governments in the selected countries should intensify efforts towards fintech diffusion for optimal individual and economic transformation. A good strategy is to provide a more enabling environment such as infrastructural expansion and regulatory clarity for more integration and adoption of fintech services.

6. Limitation and Future Research

Due to insufficient data, the analysis in this paper relied on the 2017 World Bank Global Findex Database as the most recent data. This may be perceived as inadequate but the findings were valid due to their alignment with similar outcomes in the literature. Also, the study did not offer a gender insight that may have shown the varying degree of inclusivity due to the data limitation. However, further research may consider the gender effects of fintech financial inclusion, to provide granular insight on this dimension. Specifically, this can be based on socioeconomic attributes to identify the enablers or binding constraints to gender inclusion. Most National Financial Inclusion Strategies in Africa are not clear about measures of gender inclusion; thus, the outcome may serve as a lever for closing the gender gap in access to economic opportunities.

Conflict of Interest: The author declares no conflict of interest.

REFERENCES

Ayaviri-Nina, D., Cáceres-Guzmán, J., Quispe Fernández, G. M., & Maldonado-Nuñez, A. I. (2023). The Determinants of Success in Entrepreneurship: A Study in the Urban Area of Ecuador. *Sustainability*, *15*(6), 5277. https://doi.org/10.3390/su15065277

Allison, T. H., Davis, B. C., Short, J. C., & Webb, J. W. (2015). Crowdfunding in a prosocial microlending environment: examining the role of intrinsic versus extrinsic cues. *Entrepreneurship Theory and Practice*, *39*(1),53–73. https://doi.org/10.1111/etap.12108

Armendariz, B., & Morduch, J. (2005). The economics of microfinance. MIT Press, Cambridge, 352 p.

Asamoah, L. A., Figari, F., & Vezzulli, A. (2021). Spillover effects of innovation and entrepreneurial activity on income inequality in developing countries: A spatial panel approach. *Regional Science Policy & Practice*, *13*(5). https://doi.org/10.1111/rsp3.12470

Bachas, P., Gertler, P., Higgins, S., & Seira, E. (2021). How debit cards enable the poor to save more. *The Journal of Finance, American Finance Association*, *76*(4). https://doi.org/10.1111/jofi.13021

Beck, T., Gambacorta, L., Huang, Y., Li, Z., & Qiu, H. (2022). *BIS working papers No 1011 Big techs, QR code payments, and financial inclusion*. https://www.bis.org/publ/work1011.pdf

Berglund, K., & Holmgren, C. (2013). Entrepreneurship education in policy and practice. *International Journal of Entrepreneurial Venturing*, 5(1), 9-27.

BIS. (2019). Annual Economic Report 2019. *Www.bis.org*. https://www.bis.org/publ/arpdf/ar2019e.htm

Brown, J. R., Cookson, J. A., & Heimer, R. Z. (2019). Growing up without finance. *Journal of Financial Economics*, *134*(3), 591–616. https://doi.org/10.1016/j.jfineco.2019.05.006

Burney, S., & Davis, A. F. (2015). Determinants of entrepreneurship from the Kentucky entrepreneurship survey. https://cedik.ca.uky.edu/files/cedik_paper_-_determinants_of_entrepreneurship_from_kes.pdf

Carree, M. A., & Thurik, A. R. (2010). The impact of entrepreneurship on economic growth. *Handbook of Entrepreneurship Research*, 557–594.

Célerier, C., & Matray, A. (2019). Bank-branch supply, financial inclusion, and wealth accumulation. *The Review of Financial Studies*, *32*(12). https://doi.org/10.1093/rfs/hhz046

Chen, Y., Zhou, L., & Chai, S. (2023). Digital finance and entrepreneurial return rate: effects, mechanisms, and inequality. *SAGE Open*, *13*(4). https://doi.org/10.1177/21582440231205501

Chen, Z., Ali, S., Lateef, M., Khan, I. A., & Anser, K. M. (2022). The nexus between asymmetric financial inclusion and economic growth: evidence from the top 10 financially inclusive economies. *Borsa Istanbul Review*, *23*(2). https://doi.org/10.1016/j.bir.2022.11.004

Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). The global findex database 2017: measuring financial inclusion and the fintech revolution. *World Bank*. https://doi.org/10.1596/978-1-4648-1259

Erel, I., & Liebersohn, J. (2020). Does fintech substitute for banks? Evidence from the pay check protection program. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3650510

Feyen, E., Frost, J., Gambacorta, L., Natarajan, H., & Saal, M. (2021). Fintech and the digital transformation of financial services: implications for market structure and public policy. https://www.bis.org/publ/bppdf/bispap117.pdf

Gao, S., Yang, X., Guo, H., & Jing, J. (2018). An empirical study on users' continuous usage intention of QR code mobile payment services in China. *International Journal of E-Adoption*, *10*(1), 18–33. https://doi.org/10.4018/ijea.2018010102

Global Findex. (2021). The global findex database 2021. World Bank. https://www.worldbank.org/en/publication/globalfindex

Haq, Z. U., & Dawood, M. (2023). Does FinTech promote entrepreneurial intention among women? Studying the mediating role of financial inclusion. *Research Square (Research Square)*. https://doi.org/10.21203/rs.3.rs-2439996/v1

Hau, H., Huang, Y., Shan, H., & Sheng, Z. (2021). FinTech credit and entrepreneurial growth. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3899863

Holden, R. J., & Karsh, B.-T. (2010). The technology acceptance model: its past and its future in health care. *Journal of Biomedical Informatics*, *43*(1), 159–172. https://doi.org/10.1016/j.jbi.2009.07.002

Johri, A., Asif, M., Tarkar, P., Khan, W., Rahisha, & Wasiq, M. (2021). Digital financial inclusion in micro-enterprises: understanding the determinants and impact on ease of doing business from World Bank survey. *Humanities and Social Sciences Communications*, *11*(1), 1–10. https://doi.org/10.1057/s41599-024-02856-2

Kedir, A., & Kouame, E. (2022). FinTech and women's entrepreneurship in Africa: the case of Burkina Faso and Cameroon. *Journal of Cultural Economy*, 1–16. https://doi.org/10.1080/17530350.2022.2041463

Kim, J., Petalcorin, C., Park, D., Jinjarak, Y., & Quising, P. (2022). Entrepreneurship and economic growth: a cross-section empirical analysis. https://www.adb.org/sites/default/files/institutional-document/826606/adou2022bp-entrepreneurship-economic-growth.pdf

Lewis, C. and Gasealahwe, B. (2017). Lowering barriers to entrepreneurship and promoting small business growth in South Africa. OECD, Economics Department working papers no. 1449

Lee, J. N., Morduch, J., Ravindran, S., Shonchoy, A., & Zaman, H. (2021). Poverty and migration in the digital age: experimental evidence on mobile banking in Bangladesh. *American Economic Journal: Applied Economics*, *13*(1), 38–71. https://doi.org/10.1257/app.20190067

Lyons, A. C., Kass-Hanna, J., & Liu, F. (2021). Building financial resilience through financial and digital literacy in South Asia and Sub-Saharan Africa. *Emerging Markets Review*, 100846. https://doi.org/10.1016/j.ememar.2021.100846

Meek, W. R., Pacheco, D. F., & York, J. G. (2010). The impact of social norms on entrepreneurial action: Evidence from the environmental entrepreneurship context. *Journal of Business Venturing*,25(5),493–509.

Najib, M., Ermawati, W. J., Fahma, F., Endri, E., & Suhartanto, D. (2021). FinTech in the small food business and its relation with open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(1), 88. https://doi.org/10.3390/joitmc7010088

NFIS. (2018). National financial inclusion strategy *(Revised)*. https://www.cbn.gov.ng/out/2019/ccd/annual%20report%202018%20financial%20inclusion.pdf

Ngakosso, A. (2024) Determinants of financial inclusion in the Republic of Congo. *Theoretical Economics Letters*, 14, 1-15. https://doi.org/10.4236/tel.2024.141001.

Osa, I. G. (2021). The challenges in financing small businesses in expanding the frontiers of entrepreneurial development. *Sapientia foundation journal of education, sciences, and gender studies*, *3*(2), 361-380.

Phan, P.H., Wright, M., Ucbasaran, D., &Tan, W. L. (2009). Corporate entrepreneurship: Current research and future directions. Journal of Business Venturing,24(3), 197–205.

Reynolds, P. D. (2007). *Entrepreneurship in the United States: The future is now*. Springer.

Ratten, V. (2023). Entrepreneurship: Definitions, opportunities, challenges, and future directions. *Global Business and Organizational Excellence*,42(5)79–90. https://doi.org/10.1002/joe.22217.

Runde, D.F., Savoy, C.M., & Staguhn, J. (2021). Supporting small and medium enterprises in Sub-Saharan Africa through blended finance. *CSIS Briefs*. Available at: https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/210707_Runde_Supporting_SubSaharan_SMEs_0.pdf?VersionId=cbppgk5HzqGe0qOfQ4dMsRvZ9D1.Jz6X

Singh, S. K., & Gaur, S. S. (2014). Entrepreneurship and innovation management in emerging economies. *Management Decision*, *56*(1), 2–5. https://doi.org/10.1108/md-11-2017-1131

Sultana, N., Rubaiyat Shaimom Chowdhury, & Haque, A. (2023). Gravitating towards fintech: A study on undergraduates using extended UTAUT model. *Heliyon*, *9*(10), e20731–e20731. https://doi.org/10.1016/j.heliyon.2023.e20731

Suri, T., & Jack, W. (2016). The long-run poverty and gender impacts of mobile money. *Science*, *354*(6317), 1288–1292. https://doi.org/10.1126/science.aah5309

Tunali, C. B., & Sener, S. (2019). The Determinants of Entrepreneurship in Turkey. *Procedia Computer Science*, *158*, 648–652. https://doi.org/10.1016/j.procs.2019.09.099

Ucbasaran, D., Shepherd, D. A., Lockett, A., & Lyon, S. J. (2013). Life after business failure. *Journal of Management*, *39*(1), 163–202. https://doi.org/10.1177/0149206312457823

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: toward a Unified View. *MIS Quarterly*, *27*(3), 425–478. https://doi.org/10.2307/30036540

Wang, Z., Chen, C., Guo, B., Yu, Z., & Zhou, X. (2016). Internet Plus in China. *IT Professional*, *18*(3), 5–8. https://doi.org/10.1109/MITP.2016.47

WDI. (2023). *World Development Indicators*. Databank.worldbank.org. https://databank.worldbank.org/WDI-2023-Test/id/2a72e8aa

Xie, W., Wang, T., & Zhao, X. (2020). Does digital inclusive finance promote coastal rural entrepreneurship? Global topics and new trends in coastal research: port, coastal and ocean engineering. *Journal of Coastal Research*, *103*(sp1), 240. https://doi.org/10.2112/si103-052.1

Yang, T., & Zhang, X. (2022). FinTech adoption and financial inclusion: evidence from household consumption in China. *Journal of Banking & Finance*, *145*, 106668. https://doi.org/10.1016/j.jbankfin.2022.106668

Yang, X., Huang, Y., & Gao, M. (2022). Can digital financial inclusion promote female entrepreneurship? Evidence and mechanisms. *The North American Journal of Economics and Finance*, *63*, 101800. https://doi.org/10.1016/j.najef.2022.101800

Zeynep, A., Peter, K., & Camille, M. (2022). Does FinTech promote entrepreneurship? Evidence from China. Working papers, Banque de France. https://econpapers.repec.org/paper/bfrbanfra/895.htm

Zhang, H., Wan, G., Zhang, J., & He, Z. (2020). Digital economy, financial inclusion, and inclusive growth. *China Economist;* 15(3), 92-105. https://doi.org/10.19602/j.chinaeconomist.2020.05.07

Wang, Z., Chen, C., Guo, B., Yu, Z., & Zhou, X. (2016). Internet Plus in China. *IT Professional*, 18(3), 5-8.