World Academy of Science, Engineering and Technology
International Journal of Economics and Management Engineering
Vol:15, No:3, 2021

Financial Technology: The Key to Achieving Financial Inclusion in Developing Countries Post COVID-19 from an East African Perspective

Yosia Mulumba, Klaus Schmidt

***Abstract*—**Financial Inclusion is considered a key pillar for development in most countries around the world. Access to affordable financial services in a country's economy can be a driver to overcome poverty and reduce income inequalities, and thus increase economic growth. Nevertheless, the number of financially excluded populations in developing countries continues to be very high. This paper explores the role of Financial Technology (Fintech) as a key driver for achieving financial inclusion in developing countries post the COVID-19 pandemic with an emphasis on four East African countries: Kenya, Tanzania, Uganda, and Rwanda. The research paper is inspired by the positive disruption caused by the pandemic, which has compelled societies in East Africa to adapt and embrace the use of financial technology innovations, specifically Mobile Money Services (MMS), to access financial services. MMS has been further migrated and integrated with other financial technology innovations such as Mobile Banking, Micro Savings, and Loans, and Insurance, to mention but a few. These innovations have been adopted across key sectors such as commerce, health care, or agriculture. The research paper will highlight the Mobile Network Operators (MNOs) that are behind MMS, along with numerous innovative products and services being offered to the customers. It will also highlight the regulatory framework under which these innovations are being governed to ensure the safety of the customers' funds.

***Keywords*—**Financial inclusion, financial technology, regulatory framework, mobile money services.

I. Introduction

FINANCIAL inclusion continues to be an important element and a necessary component for promoting inclusive growth and socio-economic development. However, it remains a major concern for developing countries. More than 2 billion adults are excluded from the formal financial system, with a vast number of these adults being in low-income populations in developing countries [18]. Bridging this gap and providing access to affordable financial services in these economies can be a driver to overcoming poverty, reducing income disparities, and increasing economic growth.

Financial inclusion realities in East Africa are not any different from the rest of the developing world. The percentage of Ugandan adults with an account at a financial institution increased from 20% in 2011 to 28% in 2014 [5], showing the great number of Ugandans that are financially excluded. Furthermore, [13] highlights that for the two economies of Tanzania and Kenya, one in four people has a bank account while eight in ten have access to a mobile phone.

The exclusion of mainly rural residents from access to financial services can result in these residents falling into a "vicious circle of poverty" thus causing high levels of poverty in rural areas [16], and such has been the case in the above mentioned East African countries.

Financial inclusion entails the process of delivering suitable financial services and products at an affordable cost to all segments of society [2], thus a key pillar for major development policy objectives in most developing countries. Reference [2] emphasizes the importance of financial inclusion as a means of improving the livelihoods of the poor, low income and underprivileged people through the provision of access to financial services and products such as payments, savings, insurance, and credit; hence empowering these people to manage their financial commitments while creating better futures for their families and supporting broad economic growth, including poverty reduction. Subsequently, in a bid to drive financial inclusion, several initiatives and innovations have been adopted with the most promising involving financial technology (Fintech). Reference [22] has defined Fintech as companies that are embracing the intense utilization of information technology to develop financial services and products. In the East African context, this financial technology innovation has seen the adoption of Mobile Financial Services (MFS) as an important tool to achieve financial inclusion. The COVID-19 pandemic may have helped to accelerate the implementation of these services and provides an opportunity to more rapidly advance financial inclusion in the post-COVID-19 era.

The notion that the adoption of the mobile phone has become instrumental in providing financial services in Africa by integrating the previously unbanked populations to the mainstream financial systems has been supported by [14]. According to [14] access to mobile financial services not only boosts the possibility to save money and accumulate funds, but it also has a significant impact on the amounts saved for an entire economy, especially among the poor and low-income populations with limited access to formal financial services. This innovation provides both the basic mobile phone savings stored on the phone as well as the bank integrated savings. Hence the argument of [21] that, "Mobile phones can supply families with access to products like savings accounts,

Yosia Mulumba is a Graduate Research Assistant with the Department of Technology in the College of Applied Science and Technology at Illinois State University, Normal IL (e-mail: ymulumb@ilstu.edu).

Dr. Klaus Schmidt is a Fulbright scholar and is a leader in the Illinois based Management Development Institute (MDI) (e-mail: kschmid@ilstu.edu).

insurance, and credit-indispensable tools for lifting families out of poverty and connecting them to the formal economy."

MFS according to [4] are among the most promising mobile applications in the developing world as a tool for financial inclusion. Reference [4] further stresses how this technological innovation serves as a meaningful tool beyond the finance industry and has the potential to introduce positive change on a larger economical scale, and goes on to highlight the development of about 110 mobile money systems with more than 40 million subscribers worldwide. Reference [4] also makes reference to the Kenyan M-PESA success story that has 20 million subscribers who had transaction amounts totaling to $500 million transferred in a month in 2011. These realities can be incredibly supportive of a post-COVID-19 economy.

This research paper is going to explore recent developments of how Fintech through MMS has emerged as a key tool to achieving financial inclusion post-COVID-19 pandemic in developing countries with emphasis on four countries from the East African Community that is Kenya, Tanzania, Uganda, and Rwanda.

A. Defining Developing Countries

The definition of developing countries has evolved over the years, with recent terminologies referring to developing countries as Low-Income Developing Countries (LIDC). LIDCs have been defined by [7] as countries with low per capita Gross National Income and comparatively weak socioeconomic indicators. Reference [7] further highlights that LIDCs account for 4% of global output and roughly one fifth of the world's population, and the above mentioned four East African countries, Kenya, Tanzania, Uganda, and Rwanda fall in this percentile.

B. Defining Financial Technology (Fintech)

The Merriam-Webster dictionary defines Fintech as "products and companies that employ newly developed digital and online technologies in the banking and financial services industries." Fintech has been defined by [22] as "companies that develop financial services and products by relying on much more intense use of information technology." Subsequently, [3] has defined Fintech as "technologically enabled financial innovation that could result in new business models, applications, processes, or products with an associated material effect on financial markets and institutions and the provision of financial services." These definitions of Financial Technology thus provide the origin and foundation of the MMS innovation that has provided the East African community with a sustainable tool to achieve financial inclusion post COVID-19 pandemic.

As the pandemic had countries go on lockdown for months and financial institutions along with other key businesses are closed to the public without or with minimal access, MMS in the above mentioned East African countries provided a ray of hope to the economy in providing access to financial services.

C. Defining Mobile Money Services

MMS have been defined by [10] as a virtual or electronic money stored service that runs on a Subscriber Identity Module (SIM) card that acts as a unique identifier of the customer's or user's account. This product is facilitated by the MNOs and it is considered as one of the Valued Added Services (VAS) offered other than the traditional voice, text, and data services.

Reference [4] details how mobile money makes use of the Unstructured Supplementary Service Data (USSD) and the Short Message System (SMS) as standard network services that are entirely provided by MNOs, thus their importance in deploying, implementing and developing mobile money as a suitable Fintech product. Hence, it is these basic channels that have made MMS a largely accessible and successful Fintech product in both the rural and urban areas of Kenya, Tanzania, Uganda, and Rwanda.

The above-mentioned MMS have enabled users (subscribers) to make basic financial transactions through the use of mobile phones [11]. Furthermore, [11] illustrates that irrespective of the technological aspect of MMS, the product requires a mobile money agent network to facilitate a cash-in, cash-out infrastructure where cash is turned into e-value (electronic value) and vice versa. Once the cash has been transferred to the customer's SIM card-based account, the customer can carry out a range of services such as peer-to-peer transfers.

Reference [11] further states that, "with the growing interest from stakeholders, coupled with competition among the MNOs, this platform has expanded the range of services to include more complex uses like payment of utility bills, school fees, airtime purchase, and direct purchase of goods and services" [11, pp.128], thus showing the impact that this Fintech product has had on the above mentioned East African countries.

It is important to note that the mobile money industry is an intersection of finance and telecommunications. The mobile money industry's diverse and various set of stakeholders range from the MNO, banks, insurance companies and increasingly new entrants such payment card firms, aggregators, liquidity management firms to mention but a few [4]. The number of stakeholders is bound to increase post COVID-19 as the pandemic has shown that the adaption of financial technology is now a necessity more than ever.

II. Growth of MMS in East Africa

Over the past years, Fintech has presented consumers, businesses, and governments in the East African Community with new financial products and services that have proven themselves to be essential in bridging the gap of the financially excluded. The vast impact caused by COVID-19 has reiterated this impact as well, and we have seen consumers and businesses that were previously not interested in financial technology products getting on board and adapting them.

Reference [14] emphasizes that the developments in technology, particularly regarding mobile phones, have transformed financial services provision and therefore present new opportunities for serving the financially excluded in Africa. This is attributed to the fact that these mobile money transfer, payments, savings, and credit technological advances are currently playing an essential role in providing greater financial access to the financially excluded in Africa.

In 2007, Safaricom a subsidiary of the Vodafone Group the leading MNO in Kenya launched M-PESA which has turned out to be one of the most successful mobile money transfer services implementations [2] and this innovation has since been subsequently adopted by Tanzania, Uganda and Rwanda.

Reference [8] argues that the growth and impact of MMS in East Africa is evident given that 66% of Kenya, Tanzania, Uganda, and Rwanda's collective adult population are active subscribers and users of MMS.

III. MMS Regulatory Framework in East Africa

Kenya, Tanzania, Uganda, and Rwanda are operating under the guidance and licensed by their respective Central Banks in a mobile money model led by the MNOs [1]. This requires them to abide by reporting and regulatory requirements which include Anti-Money Laundering (AML), Combating the Finance of Terrorism (CFT) and Know Your Customer (KYC). Furthermore, the MNOs are mandated to partner with a commercial bank in which they are required to hold an escrow account with an aggregate deposit of the individual mobile money accounts.

In recognition of the evident economic and development potential of mobile money towards financial inclusion and the amplification of its adoption due to the COVID-19 pandemic, it is imperative that regulations of mobile money are well streamlined and strengthened. Reference [6] highlights how relaxed initial mobile money regulations in Kenya, Uganda, and Tanzania were, with the Central Banks in these countries only issuing letters of "No Objection" to the MNOs wishing to launch MMS. However, with the rapid growth of mobile money over the past few years, [6] further states that regulations for the sector have evolved and become more strict and practical with reference to the Bank of Tanzania having passed the E-Money Regulations and Payment Systems Licensing and Approval Regulations in 2015. Similarly, the Central Bank of Kenya has passed the National Payments Systems Regulations in 2014, hence putting into place more stringent obligations than the original letter of "no objection."

Reference [8] recommends that with the continuously evolving MMS environment, regulators such as those in East Africa should apply reasonable and risk-based regulations that will facilitate the growth and development of MMS that are safe, sustainable, and of integrity to the financial systems while delivering accessible financial services to millions of financially excluded people.

IV. MMS Country Analysis

A. Kenya

The Kenyan MFS experience has been one of tremendous growths, due to the fact that since its launch in 2007, there were about 16 million mobile subscribers by 2010, and this number had grown by 142% to nearly 39 million subscribers in 2016 [15].

Reference [19] argues that since the launch of MMS in Kenya through M-Pesa in 2007, Kenya's mobile money sector continues to be the largest and most successful on the African continent leading constantly in scale and innovation. Reference [19] further states that the mobile money sector had 37.4 million mobile wallets by 2017 accounting for 133% penetration of the Kenyan adult population.

Reference [15] further highlights that the mobile money sector in Kenya was initially launched by Safaricom through its M-PESA operations in 2007. The operation swiftly moved from Cash-In, Cash-Out transactions to facilitating bulk payments of salaries, and customers could access card-less ATM withdrawal services at selected Pesapoint ATM through a partnership with Post Bank Kenya by 2008. By 2009, M-PESA subscribers were able to pay their utility bills such as electricity and water bills, and school fees to mention but a few using mobile money. Hence clearly showing the impact that the innovation has had on providing financial inclusion in Kenya and it most likely will continue doing so in the post-COVID-19 era.

In December 2011, Kenya had four key MNOs with mobile money platforms and these included Safaricom's M-PESA, Airtel Kenya's Airtel Money, Orange Kenya's Orange Money, and Econet Wireless's Yu Cash [20].

B. Tanzania

Reference [9] states that since the introduction of MMS in Tanzania in 2008, the service has had tremendous growth which has been attributed to the development of information communication infrastructures, thus leading to a wide mobile phone penetration in the country with 35% of the households owning at least a mobile money account as compared to 2% of the household members who own conventional bank accounts. Furthermore, [9] highlights that in 2015, MMS facilitated the transfer of over 2.1 billion dollars (4.7 trillion Tanzania Shillings).

According to [15], despite the fact that MMS took off with a slow start in Tanzania, there has been significant growth over the past years with active mobile money subscribers growing with a compound annual growth rate (CAGR) of roughly 23% from four million to 28 million between 2011 and 2016.

The mobile money operations players in Tanzania as of December 2011 are listed as Vodacom's M-Pesa, Airtel Tanzania's Airtel Money, Tigo's Tigo Pesa and Zantel's Z Pesa [20]. The study further elaborates that domestic money transfers are still the most predominant service available to the mobile money subscribers, however customers are also able to pay bills for utilities such as electricity, water and school fees just as is the case in Kenya [20]. However, as December 2018, there were six key players facilitating the MMS platform in Tanzania and these included Vodacom's M-Pesa, Airtel Tanzania's Airtel Money, Tigo's Tigo Pesa, Zantel's Ezy Pesa, Viettel Tanzania's Halopesa and Tanzania Telecommunications Corporation's TTCL [17]. The Regulatory Authority further breaks down the mobile money subscriptions market share for each of the six MNOs with M-

Pesa at 39%, Tigo Pesa at 32%, Airtel Money at 21%, Halopesa at 6%, Ezy Pesa at 2% and TTCL at 0.13% [17].

C. Uganda

Inspired by the immense success of Safaricom's M-PESA mobile money product in Kenya, in March 2009, MTN Uganda launched MTN Mobile Money - the first mobile money platform in the country [12]. In support of the view that mobile money has had a positive impact on the Ugandan society, [12] states that "Since mobile money was established in Uganda, the number of subscribers has been steadily increasing. By mid-2014, over 17.6 million Ugandans had adopted MMS, representing over a fivefold expansion from 3 million users in 2011" [12, pp.3].

In 2016, the Ugandan MMS sector had a notable mobile money transaction increase of 34% from the previous year and these totaled US $9 billion. In the same year, the number of mobile money transactions significantly grew by 40% [19].

Reference [15], further reaffirms the rapid growth of MMS in Uganda by stating that the number of registered subscribers grew from 600,000 to nearly over 20 million (equivalent to the adult population) between 2009 and 2016. There are currently four MNOs in Uganda and these include MTN Uganda's MTN Mobile Money, Airtel Uganda's Airtel Money, Uganda Telecom Limited's (UTL) M-Sente, and Orange Uganda's Orange Money as of 2016 [15].

In its early stages, the MMS offered by MNOs were mainly peer-to-peer transfers however this has since changed with the increasing interest from stakeholders and the level of competition amongst the MNOs. As such the range of services has extended to more multiplex uses such as payment of utility bills, school fees, airtime and data purchases, and the direct purchase of goods and services [11].

D. Rwanda

Despite mobile servicing being launched in Rwanda in 2010 way later than its other East African partner states, its development and growth have been remarkable. Registered users reached approximately 1.2 million in 2012 (11.5% of the population), with almost 800,000 active mobile users in October 2012 [1].

The mobile money operators in Rwanda include MTN Rwanda's MTN Mobile Money, Tigo Rwanda's Tigo Cash and Airtel Rwanda's Airtel Money. These three MNOs are offering services ranging from peer-to-peer funds transfers, airtime purchase, utility payments, bulk payments (business to customers), and retail payments (customer to business) [20].

V. CONCLUSION

Since its inception in 2007, MMS have transpired as a key tool in the achievement of financial inclusion in the East African countries of Kenya, Tanzania, Uganda, and Rwanda. This Financial Technology (Fintech) innovation continues to bridge the gap of the financially excluded in the region through the provision of basic services such as peer-to-peer transfer. The platform has further expanded and diversified into a wider range of more sophisticated services such as payment of utility bills, school fees, airtime purchase, direct purchase of goods and services, and micro-savings and loans.

With the COVID-19 outbreak in 2020, and the devastating impact the pandemic has had on economies across the world, MMS have emerged as an essential financial technology innovation in the East African community as they have played a key role for lower-income individuals to get access to numerous financial services as the brick-and-mortar financial instructions closed their branches.

With 66% of the adult population of Kenya, Tanzania, Uganda, and Rwanda collectively being active subscribers and users of MMS in 2018, this financial technology innovation has illustrated the impact it can have on enabling developing countries to achieve financial inclusion. However, it is important to note that for this innovation to further bridge the gap of the financially excluded post-COVID-19 and increase the percentage of the adult East African population that are active MMS subscribers, the regulatory framework in which the MNOs operate needs to be well streamlined to ensure that the laws and regulations are able to evolve as fast as the products and services to ensure that consumers are well protected. Furthermore, MNOs in East Africa must put their competition aside and work towards interoperability and cross border transfers. More to this, the governments, MNOs, banks, and other key stakeholders need to work closely together to support and enable the growth and sustainability of the MMS platform in East Africa.

REFERENCES

[1] J. Argent, A. J. Hanson, and M. P. Gomez, "The Regulation of Mobile Money in Rwanda". International Growth Centre, London School of Economic and Political Science. F-38026-RWA-1, 2013.

[2] D. W. Arner, R. P. Buckley, and D. A. Zetzsche, "Fintech for Financial Inclusion: A framework for digital financial transformation." Alliance for Financial Inclusion, September 2018.

[3] Basel Committee of Banking Supervision, "Sound Practices: Implications of Fintech Developments for Banks and Bank Supervisors", Bank for International Settlement (BIS). February 2018.

[4] K. Donovan, "Mobile Money for Financial Inclusion. 2012 Information and Communications for Development, Maximizing Mobile", Washington, DC. The World Bank. DOI: 10.1596/978-0-8213-8991-1 Chapter 4, pp. 61-73. 2012.

[5] P. Dupas, D. Karlan, Et al. "Banking the Unbanked? Evidence from Three Countries". American Economic Journal: Applied Economics, 10(2): 257–297. April 2018.

[6] J. Greenacre, "Regulating mobile money: A functional approach. Pathways for Prosperity" Commission Background Paper Series; no. 4. Oxford, United Kingdom. 2018.

[7] International Monetary Fund, "IMF Policy Paper Macroeconomic Developments and Prospects in Low-Income Developing Countries – 2018", Press Release No.18/100. Washington, D.C 20431 USA. International Monetary Fund. March 2018.

[8] GSMA, "Mobile Money Policy and Regulatory Handbook". 2018.

[9] D. Koloseni, and H. Mandari, "Why Mobile Money Users Keep Increasing? Investigating the Continuance Usage of Mobile Money Services in Tanzania." Journal of International Technology & Information Management, 26(2), pp. 117–143. 2017.

[10] E. W. Lubua, and P. Pretorius,"The role of the transaction assurance, perceived cost and the perceived innovation in the decision to continue using mobile money services among small business owners." African Journal of Information Systems, 10(2), pp. 120–134. 2018.

[11] G. K. Munyegera, and T. Matsumoto, "Mobile Money, Remittances, and Household Welfare: Panel Evidence from Rural Uganda." In World Development. DOI: 10.1016/j.worlddev.2015.11.006, Database: ScienceDirect. 2016.

[12] G. K. Munyegera, and T. Matsumoto, (2018). “ICT for financial access: Mobile money and the financial behavior of rural households in Uganda.” Review of Development Economics, 22(1), pp. 45–66. 2018.
[13] J. Osoro, and H. Olaka, “Banking in sub-Saharan Africa: Recent Trends and Digital Financial Inclusion.” European Investment Bank, November 2016.
[14] S. A. Ouma, T. M. Odongo, and M. Were, “Mobile financial services and financial inclusion: Is it a boon for savings mobilization?” 1879-9337 Africa growth Institute. 2017.
[15] Paelo, “A Comparison of the Mobile Financial Services Sector in Kenya, Tanzania and Uganda.” 3rd Annual Competition and Economic Regulation (ACER) 2017 Conference, Dar es Salaam, Tanzania. Centre for Competition, Regulation and Economic Development (CCRED). 2017.
[16] B. Ren, L. Li, H. Zhao, and Y. Zhou, “The Financial Exclusion in the Development of Digital Finance: A study Based on Survey Data in the Jingjnji Rural Area.” The Singapore Economic Review, Vol. 63, No. 1 pp. 65–82. 2018.
[17] Tanzania Communications Regulatory Authority, “Quarterly Communications Statistics." Dar es Salaam: Government of Tanzania. 2018.
[18] The World Bank, “Universal Financial Access 2020”. 2019.
[19] The World Bank, “Digital Access: The Future of Financial Inclusion in Africa.” 2018.
[20] United Nations Conference on Trade and Development (UNCTAD), “Mobile Money for Business Development in the East African Community: A Comparative Study of Existing Platforms and Regulations.” UNCTAD/DTL/STICT/2012/2. United Nations Publication. 2012.
[21] United States Agency for International Development (USAID), “Digital Finance: Fact Sheet” USAID. March 2016.
[22] D. Varga, “Fintech, the New Era of Financial Services.” Vezetéstudomány / Budapest Management Review, 48(11), pp. 22–32. 2017.