# Banking for the Unbanked: The Promises, Pitfalls and Potentials of Mobile Banking

Major Research Paper

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# Abstract

Over the past decade, we have witnessed a global effort to expand financial access to the unbanked and increase their capacity to securely store and transfer currency, take out loans and buy insurance. Mobile money was first created to respond to the demand for affordable and accessible financial services. It was quickly proclaimed the solution for financial exclusion in the global south, largely because of its tremendously successful implementation in East-Africa. Mobile money users, specifically those living in rural areas in Kenya, reported an amplified ability to mitigate financial risks and economic shocks after adopting the mobile service because it allowed them to access financial support from a more extended social network.

As conflicting results emerged from studies which focused on the adoption, usage and impact rates of poor and vulnerable populations and those living in fragile and conflict-affected states, many researchers began to express doubts over the real value of mobile money. Efforts to expand mobile banking in other countries were mostly unsuccessful, specifically in states which lack a remittance-based economy, moderate human capital levels, robust financial institutions and telecommunication infrastructure. This is particularly evident in Afghanistan where poor infrastructure and low public trust in the banking sector contributed to subpar adoption rates, even though the high demand for affordable and accessible financial services is comparable to Kenya. Even in countries which share these characteristics, adoption, usage and impact rates of mobile banking have varied across population groups. Often, the poorest and most vulnerable populations, most notably the poorest 40% and low-income women, have either not experienced the same degree of financial inclusion or have been entirely excluded from this progress. This is primarily because many determinants of financial inclusion (gender, income level, urban-rural divide, and level of educational attainment) do not merely recede following the adoption of mobile money, but require more robust policy-changes, institution-strengthening and infrastructure-building initiatives, and broader social change to be alleviated. Mobile money is not a band-aid solution to financial exclusion, but a tool which can contribute to bringing universal financial inclusion.

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# Introduction

Today, about 1.7 billion adults, the vast majority living in the global south, remain unbanked, i.e. do not have an account from a formal banking institution or mobile money provider (The World Bank, 2019a). Nearly 952 million (56%) of them are women, and 680 million (40%) live in extreme poverty (The World Bank, 2019a). These individuals represent the poorest and most vulnerable of their respective countries and often work in cash-based or informal economies where affordable and accessible financial services are in low-supply but in high demand.

The mobile payment service, M-Pesa, was first launched in Kenya in 2007 by Safaricom, a leading telecommunications company in East-Africa, to respond to this demand. The initial aim of M-Pesa was to provide banking services to the unbanked by allowing users who did not previously have complete access to a bank account to "safely and securely send, receive and store money via a basic mobile phone" (Vodafone Group, 2019). By 2016, M-Pesa and other similar services, had roughly 29.5 million active customers effectuating 6 billion transactions a year, with 280,400 agents operating in over ten countries from the Democratic Republic of Congo to Romania (Vodafone Group, 2019). It is success buoyed by the emergence of affordable mobile services and handsets globally (Donner & Tellez, 2008) and the need for inexpensive financial services which better meet the needs of local populations (Ambrosius & Cuecuecha, 2016). The most important benefit of the mobile service is its ability to enhance the security and efficiency with which users can store and access capital. The mobile banking system has since evolved into a multifaceted financial service: offering loans and interest-paying savings accounts in conjunction with local banks and Western Union branches (Hove & Dubas, 2017).

The initial results of mobile banking were particularly exciting to development experts and economists alike who have extensively observed the correlation between enhanced financial inclusion and economic development. Access to financial services, mobile money included, is broadly considered instrumental to reducing poverty, fostering economic growth (Hove & Dubas, 2017) and encouraging household investments in health and education (The World Bank, 2019a). The use of financial products (savings, credit, insurance, etc.) is a critical determinant of an individual's ability to maintain consistent consumption levels and optimize the allocation of essential resources in both the short and longer term (Tuesta, et al., 2015). Further, research has shown that individuals who are more proficient in saving money or accessing capital are better able to withstand sudden income shocks (Suri & Jack, 2012) and tend to experience greater economic well-being compared to their counterparts (The World Bank, 2019a).

In Kenya, M-Pesa's most penetrated market, the rate of adults with an account at a formal financial institution rose from 18.5% in 2006 to 55.7% in 2017, more than doubling in the space of ten years (Hove & Dubas, 2017). This change is primarily accredited to the rise of mobile banking, which made the provision of financial services more cost-effective due to increased competition between providers (Furusawa, 2016). Many new users, especially those working within the agriculture sector reported being able to more efficiently manage their financial situations, mainly through their increased ability to receive financial support from a more extensive social network in times of income shocks (Suri & Jack, 2010). These findings were ground-breaking for both local governments and financial institutions, like the World Bank and the IMF, who have sought to promote financial inclusion in the global south for decades. A solution to the global financial exclusion crisis had seemingly been uncovered.

Unfortunately, it was not long before the conflicting results of more robust research initiatives emerged – casting doubt upon the value of mobile banking systems. The fundamental issues lay with mobile banking's limited ability to target populations which would benefit from these financial services the most: the poorest and most vulnerable populations of low-income countries, and those living in fragile and conflict-affected states. M-Pesa's success in East-Africa, a once golden example of cross-industry innovation and collaboration, has since been branded an isolated incident by some researchers (Dubus & Van Hove, 2017); (Arabehety, 2016) (Barasa & Lugo, 2015); (Bluemenstock, Callen, & Ghani, 2015); (Donner & Tellez, 2008); (Johnson, 2014); (Mbiti & Weil D., 2014) who have failed to witness the same results in more cross-national or longitudinal studies on the impact of mobile banking. This has led many to question if mobile banking still has the potential to spur further financial sector development and inclusion, and lift millions out of poverty.

The purpose of this major research paper is to outline the significant promises, pitfalls and potentials of mobile banking systems in the global south, with a particular focus on the impact mobile money has had on two of the world's poorest and most vulnerable population groups: the poorest 40% (B40) and women. This report will also address how and why mobile banking systems have largely failed in fragile and conflict-affected states. The central research questions will be the following:

1. What are the obvious benefits of mobile banking?
2. Why have adoption and usage rates of mobile banking services varied across populations and countries?
3. Can mobile banking systems still be a viable solution to reaching the unbanked or underbanked?

The paper will be separated into five parts. The first part will explain the methodological considerations taken while researching and compiling this report. The second part will define three key concepts central to understanding the central discussion outlined in this report: the poorest and most vulnerable populations, mobile banking and financial inclusion. As this is a descriptive report, the body of the paper will review the existing literature on the topic with the ultimate goal of outlining the nuanced connection between mobile banking, financial inclusion and economic well-being for users in the global south. This will include: 1) a discussion on the emerging role of remittances in the economies of many low-to-mid-income countries; 2a) a case study comparing mobile banking in Kenya and Afghanistan; and 2b) an examination of mobile banking's adoption and usage rates across two population groups: the poorest 40% and women. These third and fourth sections titled the Promises, and the Pitfalls of Mobile Banking respectively will attempt to elucidate how and why mobile banking's economic and social impact has varied across countries and populations. The fifth and final part of the report will explore the Potentials of mobile banking and whether the mobile service can still be considered a viable solution for reaching the world's unbanked. This part will also examine possible strategies for improving mobile banking systems, especially in terms of targeting the world's poorest and most vulnerable populations.

## Methodology

This report aims to create an analytical and descriptive account of the advantages and drawbacks of mobile banking systems in the global south. The primary strategy used to investigate this research problem was to compile a variety of sources on the topics: either from academic publications, documents and reports from government or international organizations,

popular sources from reputable online journals and resources, as well as professional sources from private enterprises. The methodological justification for using these sources was to capture the varying opinions on mobile banking systems in circulation. As Western or elite voices primarily dominate most academic and political spheres, it was essential to include the opinion of local authors whose voices have been traditionally overshadowed or downright ignored. However, any statistic or hard claim used in this paper has been taken from reputable sources to preserve the integrity of the analysis and reported data.

A significant obstacle of data collection for this report was sorting through sources with contradictory evidence and statistics. After realizing that various news sources popular in Africa have been including inflated statistics on the impact and use of mobile banking technologies (either deliberately or by mistake) in their articles, extra precaution was taken to guarantee that all the statistics listed in the report were the most accurate and recent.

Another major methodological obstacle which came up through the research process was the lack of reliable data available in certain countries (Tissot, 2015). Many low-income countries, especially fragile and conflict-affected states, cannot collect reliable data on the subject. The lack of data obstructs the ability of development experts, policy-makers and economists to derive concrete and robust conclusions on the effectiveness of mobile banking, specifically in countries which need it the most. This has resulted in the oversaturation of conflicting evidence on the real impact of mobile banking. It is, therefore, challenging to identify key-takeaways from the literature, as for each study which has proclaimed mobile banking as a valuable solution for reaching the unbanked and improving economic well-being in the global south, there is one which claims the opposite. Recent research on the topic has pointed towards the need for more reliable data on the subject-matter, specifically for lower middle income and

low-income groups (Tissot, 2015). This report will attempt to overcome these mentioned obstacles and will seek to present a balanced picture of the topic by including all sides of the argument to the best of its ability.

It is important to realize that development results rarely manifest instantaneously. The impact of financial services can bring gradual effects not easily tabulated through quantitative or qualitative research. A significant obstacle of many research strategies is their often-short-term study periods. Mobile banking's major impact is dependent on continued usage of these products and "becomes decidedly anemic as we move from measuring access to measuring usage to measuring impact on poverty alleviation" (Collins & Ng'weno, 2018). Further, many studies attempt to find a causal relationship between adoption and impact without fully recognizing all the other impact pathways triggered by increased access to mobile financial services. For example, users may be able to better access remittances through mobile banking, which opens the door for them to use this money as collateral when applying for formal loans - encouraging innovation and risk-taking for a small business-owner or post-secondary attainment for a gifted but poor student. Depending on the independent and dependent variable of a study, mobile banking users could be reported to have a higher amount of debt than their counterparts, when, in reality, they have experienced increased opportunities. The point is that many empirical studies rarely capture the entirety of these impact patterns, possibly diminishing the pragmatic results of mobile banking (Collins & Ng'weno, 2018). This is a significant gap in much of the presented research.

Canada' own Feminist International Assistance Policy attempts to provide a multidimensional approach to generating development results – one which seeks to recognize how specific socio-economic issues affect women and girls differently and supports female

empowerment globally. The policy also looks to identify and target some of the world's most impoverished and vulnerable populations. This report was written to meet the intended scope and targeted populations of this development policy.

## Key Concepts

There are three concepts vital to understanding why mobile banking has emerged as an essential development tool for promoting inclusive economic growth in the global south. Each of these concepts will be discussed frequently throughout the report. The following definitions are not meant to provide an exhaustive account of each of the key concepts, but rather present a contextual backing intrinsic to engaging further with the subject matter outlined in the report.

**The poorest and most vulnerable populations** tend to be from marginalized groups living in extreme poverty, usually in developing, fragile or conflict-affected countries. The World Bank defines extreme poverty as living on less than USD 1.90 a day (The World Bank, 2019e). The vast majority of the global poor live in rural areas, have low educational attainment and work in the informal or agricultural sector. Women and girls are more likely to live in poverty and lack access to necessary resources, such as clean water, nutritious food, electricity, health care and education (The Government of Canada, 2017).

Fragile or conflict-affected states are countries or territories experiencing high financial and security risks determined by the World Bank's Fragile, Conflict and Violence group (The World Bank, 2019d). These risks imply an "overt crisis (organized conflict and violent disruption of socio-political processes) and latent fragmentation (contested political settlement, state predation and failure to ensure basic rights and services)" (Taylor, 2014). Citizens of fragile or conflict-affected states are susceptible to poverty and forced displacement (The World Bank, 2019d).

A group is defined as vulnerable when they do not have access to the same resources as the rest of the population due to demographic characteristics which may stem from social and cultural prejudices held within their society. These include socio-economic status, gender, age, race, ethnicity, language, religion, geographic region (Robert Wood Johnson Foundation, 2001). Vulnerable populations tend to be economically disadvantaged, racial and ethnic minorities, displaced persons or refugees, low-income children and women, the elderly, the homeless, and individuals living with chronic health conditions, such as severe mental illness and physical disabilities (Robert Wood Johnson Foundation, 2001).

The poorest and most vulnerable populations tend to be the most affected when disaster strikes. A recent report by the UN has estimated that climate change will be most detrimental to individuals from the poorest and most vulnerable social groups (United Nations Environment Programme, 2019). Emerging climate-related health risks and the growing income inequality gap will further exacerbate the disproportionate allocation of resources on a global scale and lead to more frequent and violent conflicts (The World Bank, 2019d). By 2030, it is projected that more than 50% of the world's poor will be living in fragile and conflict-affected states (The World Bank, 2019d).

**Mobile banking** emerged in the late 1990s with the popularization of the cellular phone (Gupta, 2012). By 2015, mobile money services were available in 93 countries, from Canada to Afghanistan, with 411 million registered accounts effectuating 33 million transactions per day (GSMA, 2015). This trend has shown no signs of slowing down: "mobile money has evolved into the leading digital payment service in many emerging markets […] processing over a billion dollars a day globally" (Naghavi, 2019).

There is no universal form of mobile banking. Although the term refers to the management and effectuation of payments through a mobile device, the meaning of mobile banking differs across countries and is closely tied to their respective levels of development (Gupta, 2012). In low-to-mid-income countries, mobile payments are usually completed in conjunction with a formal banking institution. Online banking websites and mobile applications allow users to access their banking information, make or receive payments and transfer funds between users or accounts. In the global south, where individuals are less likely to have a bank account and technologies such as M-Pesa are more widely used, mobile money is not always connected to a formal financial institution. M-Pesa users create an account at an authorized agent, not a bank teller, where they can then deposit cash in exchange for mobile currency. The user-friendly interface of M-Pesa has contributed significantly to the mobile banking system's success. Users can store money on their account and receive or send remittances to other users via pin-secured text messages. M-banking users can also pay bills, rent or school fees. Mobile money is also used by small enterprises to pay for business transactions, receive payments from retailers or customers, and deposit employee salaries directly into their mobile money accounts.

The differences between mobile money and online banking are distinctive: where one technology requires the ownership of a formal bank account and access to the internet, the other needs neither but a registered SIM card and a working mobile device. These mentioned differences are important to understanding the rise of M-Pesa and similar technologies in diverse emerging economies. The barriers to financial access have been significantly reduced due to mobile banking systems, which are generally more accessible than traditional banking institutions, especially for the rural poor. In this report, the later definition of the mobile service

will be used when speaking of mobile banking (m-banking), mobile money (m-money), or mobile financial services (m-financing).

**Financial inclusion** refers to "access to and usage of appropriate, affordable and accessible financial services […], such as deposit, transfer and payment services, as well as saving, credit and insurance" (Hove & Dubas, 2017). In countries with low financial inclusion rates, the potential barriers to accessing and using financial services have not been appropriately mitigated. These barriers create a financial environment where the marginal costs of being banked do not always exceed the marginal benefits (Tuesta et al., 2015).

Consistent with anecdotal evidence and other studies, unbanked individuals are more likely to be of low socio-economic status, women, uneducated, unemployed (Hayashi & Minhas, 2017), and live in low-income countries (The World Bank, 2019a). The barriers reported for accessing formal financial services are usually tied to a multitude of reasons: insufficient funds to justify having a bank account (66%), far distance from a banking institution (25%), high transactions costs (25%), no need for one as a family member already has one (25%) lack of documentation (20%), distrust in financial systems (20%) and religious concerns (6%) (The World Bank, 2019a).

***How is financial inclusion measured?***

The Global Partnership for Financial Inclusion uses country-led data gathering techniques to determine the level of financial inclusion based on four distinctive indicators:

1. Percentage of adults with an account at a formal financial institution
2. Percentage of adults with at least one outstanding loan from a formal financial institution
3. Number or percentage of Small-or-Medium-Sized enterprises (SME) with an account

4. Number or percentage of SMEs with an outstanding loan
5. Number of financial branches per 100, 000 adults

It is important to note that the Global Partnership for Financial Inclusion does not consider the ownership of a mobile bank account as an indication of financial inclusion in their statistics. This is also the case for other financial institutions, such as the World Bank and the IMF, who still only measure access to formal banking services offered by commercial or development banks, rural or post banks, investment firms and savings and loan companies. Therefore, it is vital to remain aware of this dichotomy in the definition of financial inclusion when analyzing data on the topic. This can also explain why some reliable reports include statistics which may seem overinflated and differ from other reports of the same year, as the omission of mobile banking accounts in the definition of financial inclusion varies across research institution.

***Why does financial inclusion matter?***

Financial inclusion has emerged as a critical development target in the past decade for four fundamental reasons. Firstly, financial inclusion provides individuals with the capacity to safely and securely accumulate, store and transfer currency. In Kenya, M-Pesa users reported an amplified ability to save money because of the lower "transaction costs, transportation fares and services charges" associated with owning a mobile money account (Munyegera & Matsumoto, 2018). The ownership and usage of a saving account have been directly correlated with the more effective mitigation of financial risks and economic shocks (Morduch, 1994). When households lack consumption-soothing mechanisms, such as savings or access to reliable loans, they are more likely to suffer through chronic poverty and experience deprivations in health and nutrition (Morduch, 1994).

Secondly, it encourages investment in local small and medium-sized enterprises (SMEs) and allows them to access capital to expand and innovate their operations. In a study conducted on the performance of SMEs in Nigeria, improved financial inclusion helped drive growth for the enterprises (Ibor & Offiong, 2017). Thirdly, financial institutions can develop and improve products and services to better suit the entirety of their client population when previously underserved customers open and use an account. In Kenya, commercial banks, specifically those offering more extensive internet and ATM banking options, experienced enhanced financial performance and efficiency as financial inclusion rates increased from 2010-2016 (Mutinda et al., 2018). Finally, economic growth is spurred when the informal economy shrinks, and the financial sector becomes more inclusive. Increased inclusivity has been associated with higher average wages, greater transparency, lower corruption, more effective monetary policies and less tax evasion (Adams, 2018).

***What has been done so far?***

Financial inclusion rates have been steadily increasing over the past decade, primarily due to the implementation of various strategies by both private and public actors to promote financial and digital literacy in the global south. The most reliable source of information on financial inclusion comes from the Global Findex database which captures the financial situation of 148 countries, encompassing 97% of the world's adult population (The World Bank, 2015). Financial inclusion is incorporated into 7 of the UN's Sustainable Development Goals and considered an important enabler for achieving broader socio-economic goals. The World Bank's Center for Financial Inclusion, a leading research and data-collecting institution on the subject, manages the amalgamation of results from the other branches of the World Bank group, various

partner organizations and financial sector authorities worldwide (The World Bank, 2019a). The World Bank publishes yearly reports on the state of financial inclusion, and their publicly available datasets are often used by academics and other researchers alike in their analyses.

The saturation of information and data on the subject has helped guide policy-making. The World Bank recently launched the Universal Financial Access 2020 which was later adopted by the G20. Since 2010, more than 55 states have enacted policies in line with the doctrine of the initiative and implemented strategies to expand financial access for their citizens (The World Bank, 2019a).

The counties with the highest levels of financial inclusion demonstrate "government and policy support for financial inclusion, prioritize financial stability and integrity, and foster inclusion through a variety of products and outlets" (The Economist Intelligence Unit, 2018). By identifying Access Indicators which reflect the penetration of financial services, Usage Indicators which measure clients usage of financial services and Quality Indicators which measure whether the financial products suit the needs of local clients (The World Bank, 2015), actors are able to diagnose the state of financial inclusion in a respective country and begin implementing reforms. These include: the usage of incentives to encourage citizens to open a bank account, reducing market restrictions or sector regulations which restrict access, developing new technological products and improving existing digital infrastructure (The Economist Intelligence Unit, 2018).

The success of these policies is often measured by the World Bank, the International Monetary Fund, Findex and other organizations, through both demand-side and supply-side surveys. Demand-side surveys look to explain the financial needs of local populations, as well as the "barriers encountered when seeking formal financial services and products, and users' socio-economic and demographic characteristics" (The World Bank, 2015). The supply-side surveys

provide information on how financial services are regulated in a local context and measure the geographical reach of banking institutions, level of affordability and quality of services, and the penetration and usage of financial products.

## The Promises of M-Banking

Although there are many benefits to becoming banked, a crucial component of financial inclusion for this paper is an individual's increased propensity to save securely and access capital when needed. In the context of mobile banking, adoption rates have been particularly high in countries where citizens commonly depend on remittances from their social network to level the effects of unexpected income shocks (Suri & Jack, 2012). The most substantial benefit of mobile banking has thus been its ability to allow the unbanked to access emergency capital, either through receiving financial support from family members and friends or move traditional banking services. The following section will outline this notion further.

### *The Growth of the Global Remittance-Industry*

In sub-Saharan Africa, 21% of adults now have a mobile banking account, compared to half that number only five years ago (The World Bank, 2019a). Additionally, the percentage of adults regularly receiving digital payments has also increased from 12% in 2014 to 44% in 2017 (Demirguc-Kunt et al., 2018). M-banking was initially designed to capitalize on the widespread adoption of mobile technology throughout the late twentieth century. This rise coincided with the increase in the number of households dependent on remittances - the money or goods sent by breadwinners working either abroad or in major urban centers to their dependents back home – as a source of income worldwide. Although the best-known form of remittances is sent by migrant labourer working in a foreign economy, urban family members have also been found to

send financial support to their rural relatives, most notably in East-Africa (Jack & Suri, 2014). In this report, the term inter-national remittances will be used when referring to the first type and intra-national remittances will indicate to the later.

The amount of remittances circulated globally has been steadily increasing since the late 1990s (Ratha, et al., 2016). In 2018, $580.5 billion in intra-national remittances were sent compared to $351 billion in 2007, reflecting an increase of 65 percent (The World Bank, 2018b). It is important to key in mind that these numbers do not always include small value transfers, capital sent informally or through money transfer operators, therefore the actual number could be much higher (Migration Data Portal, 2017) Mobile banking services, either bank-led or non-bank-led, have played an important role in the remittances industry by providing users with a suitable alternative to always handling cash or visiting their local branch to access remittance services (Morawczynski, 2009).

Of the countries with the strongest uptake of mobile banking: Kenya and Tanzania, both have economies distinguishable by a high dependency on remittances (Donner & Tellez, 2008) and a stark rural and urban divide (Peruta, 2018). Many researchers have argued that these two characteristics of highly penetrated markets are at the heart of understanding how and why specific populations engaged with non-formal banking methods more than others. The answer lies in the presumable impact mobile banking can have on the economic well-being of its users, and other sociodemographic factors related to financial inclusion. Like most things, the market penetration of a product is mostly dependent on how useful and convenient it is for its targeted client base (Morawczynski, 2009).

In the four countries mentioned above, the receipt of remittances is fundamental to the livelihoods of households, especially in rural regions. Remittances are so crucial for generating

development results and increasing the well-being of households that the World Bank and the Bank for International Settlements released a joint-policy in 2007, later adopted by the G8 and G20, called the General Principles for International Remittance Services (Committee on Payment and Settlement Systems, 2007). The policy is a multidimensional strategy aimed to incite both public and private actors to reduce the cost of remittance services globally.

Building on these collaborative efforts, remittances targets have also been set within the mandate of the UN Sustainable Development Goals (SDG), specifically SDG 10: reduce inequality within and among countries (United Nations, 2018). By 2030, member states have resolved to eliminate all remittance services with transaction costs that represent more than 5% of the total amount being sent, making the average cost of remittances services less than 3% globally (United Nations, 2018). A vital tactic employed to reach this target is the development of mobile banking systems.

The growth of the remittances industry has allowed mobile money to emerge as a valued solution for securely and efficiently managing the distribution of remittances. A study conducted by the GSMA in over 20 countries, found that m-banking reduces the costs of remittances services by more than half compared to traditional money transfer operators (MTO), such as MoneyGram, Western Union, Ria Money Transfer, etc. (GSMA, 2016). In another study conducted in 19 countries, mobile banking accounts were found to be more popular than bank accounts, while in 37 countries mobile money agents outnumbered formal banking branches by 1000% (Suri & Jack, 2016). Lower transaction fees and greater accessibility to agents mean that households can receive more remittances more frequently and from a more extensive variety of sources (Suri & Jack, 2016).

In Kenya, M-Pesa, recognized by its slogan "Send money home", is the chosen method of sending or receiving intra-national remittances for more than 37% of households (Dubus & Van Hove, 2017). The average value of remittances being sent is about 1,800 Ksh (about 20 USD) in urban areas, and 700 Ksh (US$9) in rural areas (Kusimba, Yang, & Chawla, 2016). Research has shown that remittance-receiving households most commonly use the money to buy food, access medical care and pay school fees (Kusimba, Yang, & Chawla, 2016). Therefore, lower costs eliminate the "the threshold effect and enable emergency remittances of lesser amounts in response to small-magnitude shocks" (Dubus & Van Hove, 2017). In the Philippines, it is estimated that $32.8 billion in remittances was coursed through the economy in 2017, representing 10.5% of the country's gross domestic product (GDP) (The World Bank, 2018b). Decreasing the average costs of remittance services to the 3% target from the current global average of 6.94% would save Filipino households $1.3 billion a year in transaction costs on average (The World Bank, 2019b). Additionally, research has shown that MTOs tend to provide remittances services at a lower cost when operating in a market where they must compete with mobile money providers (GSMA, 2016). Improving and expanding the remittances industry is thus at the heart of the initial promises of mobile banking.

***Why are remittances so important for the mobile money users who receive them?***

Both inter- and intra-national remittances and mobile banking both play an important role in driving economic growth in many emerging economies, increasing investments in human capital and improving the general well-being of local populations in six fundamental ways.

Firstly, remittances have been shown to help households overcome income shocks. Individuals who receive remittances are most likely working in the agricultural sector and live in areas with low penetration of formal financial services (Hove & Dubas, 2017). According to

studies conducted by the Chronic Poverty Advisory Network, the world's most vulnerable populations often reside in rural and remote areas, tend to belong to disadvantaged ethnic/caste/race groups, or are women or girls, individuals living with disabilities and older farmers (Bird, 2019). These households are more vulnerable to economic shocks than their urban counterparts and are often forced to reduce their consumer spending by 7-10% when faced with a sudden loss of income (The World Bank, 2019b). However, those with access to digital financial services have been shown to better weather financial recessions, allowing them to maintain their regular household spending (The World Bank, 2019b). Through crop failure, severe drought, illness or job loss, mobile banking has allowed households to survive abrupt reductions in resources with greater ease and security. This is largely because they are better able to connect with a more extensive social network to receive remittances (Suri & Jack, 2012).

Secondly, receiving remittances in the form of mobile money provides households with a risk management tool, which can act as a substitute for traditional, and at times, prohibitively expensive debit-financing options (Ambrosius & Cuecuecha, 2013). In a study conducted in Mexico, remittance-receiving households were more likely to turn to family members for financial support than take up a loan when faced with the economic burden associated with a health-related shock (Ambrosius & Cuecuecha, 2013). These households reported increased economic well-being than their counterparts and were less likely to fall more into debt (Ambrosius & Cuecuecha, 2013). As high levels of debt make households more vulnerable to chronic poverty and income shocks, a remittance-receiving household has a distinct advantage over households restricted to taking out a loan or seeking other precarious methods to pay for health bills. In these cases, mitigation strategies include the selling of assets, working more,

seeking higher-paying employment opportunities (either illegal or legal) and cutting investments in health and education (Beegle, Dehejia, & Gatti, 2006).

Mobile money has acted as a substitute for credit where remittance-receiving household are better able to overcome economic shocks and less likely to seek informal loans and moneylenders (Ambrosius & Cuecuecha, 2016). However, this fact has been disputed. In a more recent study of the debt-acquisition patterns of remittance-receiving households in Mexico, a positive correlation was found between receiving remittances and the probability of holding large levels of debt (Ambrosius & Cuecuecha, 2016). Remittance-receiving households had 120% more debt than non-remittance-receiving households (Ambrosius & Cuecuecha, 2016). High levels of debt are typical for families who have experienced health-related shocks and loss of crops; it can, therefore, be debated whether higher levels of debt and the reception of remittances are related by correlation or causation. It might also indicate a supply-side market failure, where the formal financial sector is failing to meet the demand for loans. Seemingly, informal institutions might be more willing to consider remittances as part of a household's net-income leading to an improved creditworthiness evaluation, while formal banking institutions are still hesitant to provide these households with financial services beyond the provision of a bank account (Ambrosius & Cuecuecha, 2016).

Thirdly, remittance-receiving households are more likely to have and use a saving account as it facilitates the retrieval and management of financial support. The ownership of a savings account has been associated with increased resilience to income shocks and more profitable self-owned businesses (Dubus & Van Hove, 2017). As mentioned before, owning and using a saving account is one of the most important benefits of financial inclusion. In two separate studies both conducted in 2014, M-Pesa users in Kenya were found to use their mobile

bank account to save money (Jack & Suri, 2014; Mbiti & Weil D., 2011). Specifically, 35% of banked individuals use the mobile service to save, compared to 19% of unbanked users (Mbiti & Weil D., 2011).

These results were consistent with the results of later studies which found that on average 30-40% of M-Pesa users reported using their mobile account to save money (Kariuki, 2015; Johnson, 2014 and 2016). However, these results have been disputed by other researchers who rightfully pointed out that there is a significant difference between using a mobile account to hold money and using the account for long-term saving purposes. Where in the first instance users use the service essentially as a wallet, the latter suggests the accumulation of saving for a particular purpose, such as opening or expanding a business, or buying a house, etc. This dichotomy is not always captured in the other studies but is vital to preserving the integrity of the reported results and corresponding analyses of the impact of mobile money (Dubus & Van Hove, 2017). Nevertheless, users reported handling their money with increase security and accountability, which is fundamentally a good thing.

Fourthly, M-Pesa in Kenya has been shown to provide families with a means of paying school fees on time, "which could result in a positive effect on consistent student enrollment and retention" (Haas & Nagarajan, 2011). Safaricom launched a program in 2009 in partnership with local commercial banks which allows users to send funds directly to the school's bank account. They do not need a bank account themselves: the transfer of funds is effectuated entirely from their mobile device and account. Households are more able to easily access funding from their family members and friends to pay tuition, which is particularly important for parents whose children attend a boarding school and are often forced to travel long distances or to send someone else to pay the tuition in person. Although the direct effects of M-Pesa on access to

education are still debated, mobile banking has improved the safety with which funds are transmitted to schools and reduced the time and efforts spent on the transaction. Further, the education level of an individual is considered an important determinant of financial inclusion (Camara & Tuesta, 2015). Therefore, mobile banking might have a double effect on improving financial inclusion rates by both expanding access to financial services and education.

Fifthly, breadwinners, who were previously restricted from entering higher-return labour markets because of geographic distance, are now able to seek new occupational opportunities in other markets (Suri & Jack, 2016). There are two main types of labour mobility: geographic and occupational. Mobile banking promotes both types of labour mobility. Increased labour mobility spurs economic growth for both the destination and origin countries, as the first benefits from the reception of skilled and affordable labour, while the later reaps in the investments of human, social and financial capital acquired abroad (OECD, 2015). Unfortunately, this increased labour mobility has mostly excluded the poorest and most vulnerable households, which often cannot afford the travel costs and other financial burdens associated with moving to another city, region or country for work (Morduch et al., 2017). This has led to intensifying spatial inequalities, where the socioeconomic gaps among rural and urban populations continue to expand (Morduch et al., 2017). Mobile banking has been shown to reduce the divide by facilitating cash flows from urban center to rural region (Morduch et al., 2017) as it being increasing more "pro-poor over time as migration opportunities become more widespread" (Kóczán & Loyola, 2018). By reducing the costs and improving the security of transmitting remittances, more poor households can engage in migrant labour networks.

Finally, remittances have also been associated with the transmission of financial knowledge from donor to receiver and reduce the effects of specific demand-side barriers to

financial inclusion, such as financial information asymmetries and mistrust towards the banking sector (Roa, 2015). Although many of the mentioned benefits to mobile banking have sought to tackle market failures on the supply-side (increasing the affordability and accessibility of banking services), effectuating change on the demand side has proven itself more complex. While the demand for financial services is nevertheless high in the global south, researchers have found that financial and digital literacy levels, public trust in financial institutions and the perceived need for banking services play an essential role in reaping the benefits of financial inclusion (Kelly & Elisabeth Rhyne, 2015). A fact which is often overlooked by governments and financial institutions. Since "financial education appears to be key elements in the adoption of mobile money as an instrument for facilitating financial inclusion" (Peruta, 2018), some telecommunication companies have begun framing the job of a mobile banking agent as both a teller and an educator. (Peruta, 2018). After all, financial access is very different from financial inclusion (Kelly & Elisabeth Rhyne, 2015).

***Other Social Benefits***

Besides the real increase in available income for households, other benefits of using mobile banking to receive remittances include enhanced transaction security and transparency. In Kenya, M-Pesa users reported preferring using mobile banking technologies because "it is faster (the transfer occurs almost instantaneously), easier to access (there is a wide agent network), and safer (they do not have to travel with money)" (CGAP, 2009). Since many Kenyans work in the urban center of Nairobi, mobile banking saves them the dangerous and expensive journey of returning home to their villages to deliver remittances in hand. Mobile banking services have "significantly reduced the potential risks of street robbery, burglary and petty corruption within

cash-based economies where only a small proportion of the population benefit from access to conventional financial services" (Vodafone Group, 2019). Other ways to deliver remittances included depending on friends, family members or bus drivers as provisioners. These traditional processes were "expensive, fraught with delays, and involved substantial losses due to theft" (Jack & Suri, 2014).

Another added benefit of mobile banking is the increased transparency with which payments can be effectuated and received. A report, conducted by the International Mining for Development Center, found that the adoption of a new payment architecture which uses mobile money providers to deliver paychecks to mining labourer in Papua New Guinea (PNG), resulted in the "strengthening of mobile money ecosystems around PNG's resource projects; [improved] the distribution of payments to local communities; strengthen[ed] 'social license to operate' for resources companies; and enhance[d] financial inclusion efforts in PNG's mining, oil and gas regions" (Center for Social Responsibility in Mining, 2015). In other words, mobile money improved the efficiency and transparency with which employees received their salaries and served as a catalyst for increased financial inclusion (Center for Social Responsibility in Mining, 2015). In another study, mobile banking led efforts to reduce corruption and increase transparency in Afghani government departments. After Afghan police began receiving their salaries via the mobile money service, they reported that they were receiving 30% more per paycheck. They had received their full salary for once without interference from higher-ranked commanders, who frequently took cuts from the policemen's pay (Munford, 2008).

### *Commercial Benefits*

Other than the mentioned benefits, M-Pesa has also emerged as an important driver of income growth for Safaricom, now representing over 80 % of the mobile phone market in Kenya (Buku & Michael W., 2013). Just in 2018, the telecom company reported an increase in revenues by 7.7%: income growth driven mainly by M-Pesa, which currently represents 21.2 % of the company's total annual revenue (Safaricom Limited, 2019). CEO Bob Collymore estimates that by 2022-2023, M-Pesa will represent 50% of total revenue. This growth is not expected to diminish either, as new users accounted for 27% of M-PESA total revenue from 2018-2019 (Safaricom Limited, 2019). In only 20 years, Safaricom has grown from 50 employees serving 17, 000 clients, to employing over 3, 000 individuals with 16 million customers (Buku & Michael W., 2013). For many in the private sector, M-Pesa success can be attributed to its scope: its ability to access mass markets of clients previously unreachable (Mckay & Pickens, 2010). However, recent research has found that the most significant benefits of M-Pesa have been experienced by Safaricom itself in the form of private profits, while rural users have remained disenfranchised by the institutional forces of capitalism (Wyche et al., 2016).

### *A Contentious Debate*

Despite a large number of benefits associated with high mobile banking penetration, the direct impact of the mobile service on its users has been largely reserved for remittance-receiving households. Remittances have highlighted the global need for affordable cash transfers, but not every country or household has equally benefited from this growth. Many vulnerable populations, such as internally displaced persons, do not have access to the same support network as other households. The emergence of economies heavily dependent on remittances has

worried some economists who deem the trend to be an unsustainable development strategy, as it fails to tackle the heart of global economic inequalities and creates a culture of dependency that inhibits economic growth (Amuedo-Dorantes, 2014).

Another concern is that remittances are particularly popular in countries with developed telecommunication infrastructure and a favorable policy environment which supports "an open and level playing field that includes non-bank mobile money providers such as mobile network operators" (Sustainable and Inclusive DFS, 2018). The implementation and adoption of mobile money is usually low when a dominant mobile network operator either doesn't exist or is heavily regulated. For this reason, some economists and development actors have gone so far as to argue that the increase in financial inclusion rates in these states are due to broader factors within their economies and financial sector, rather than the adoption of mobile banking. The guise of mobile banking as a development solution was further tarnished when multi-country studies expounded the impact of mobile banking services which greatly varied across populations and countries (Kariuki, 2015). Although M-Pesa has been proven to be a more affordable and accessible financial service compared to traditional banking institutions, the poorest and most vulnerable populations have been largely screened out from this progress. In other words, certain countries and populations have a clear advantage over others when it comes to increased financial inclusion largely unrelated to mobile banking.

## The Pitfalls of Mobile Banking

The major pitfalls of mobile banking can be separated into two distinct categories: adoption- and impact-variations across countries and populations groups. Firstly, efforts to expand M-Pesa in other countries, particularly fragile states which lack formal banking infrastructure, have been mostly unsuccessful. Adoption rates of mobile banking have thus been

found to depend largely on the efficiency and inclusivity of the country's existing banking system (Peruta, 2018). Secondly, even within emerging economies, adoption, usage and impact rates of mobile banking have varied across population groups. Often, the poorest and most vulnerable populations of a respective country have either not experienced the same degree of financial inclusion or have been entirely excluded from this progress (Wyche, Simiyu, & Othieno, 2016).

In the following section, these pitfalls will be further explained through a case study which will compare the adoption-and impact-variations of mobile money in Kenya and Afghanistan. The significant barriers to mobile money and financial inclusion will also be explored, concerning two specific social groups which have consistently been financially excluded compared to other population sectors: low-income individuals and women.

Although there are many other marginalized social groups which would benefit from enhanced financial inclusion, these two population sectors have been chosen because of the prevalence of research on them individually. Unfortunately, many of the world's poorest and most vulnerable, such as indigenous groups or individuals living with disabilities, are not studied to the same degree as other social groups. The decision to focus on these two groups is grounded in the desire only to provide evidence-based analyses on the subject. Future research on financial inclusion and mobile banking should – ironically – aim to be more inclusive of other marginalized social groups.

### *A Case Study: Mobile Banking in Kenya and Afghanistan*

Of all the countries with mobile banking systems, none have demonstrated the same results as Kenya, a lower middle-income country in East-Africa. Today, there are more mobile

bank accounts in Kenya than adults (Kusimba, Yang, & Chawla, 2016). In 2014, 53% and 61% of Kenyans sent or received either inter- and intra-national remittances respectively, and 92% of them did so via a mobile device (The World Bank, 2017). This is quite significant compared to the average of sub-Saharan Africa. In sub-Saharan Africa, only 28.7% and 37.2% of adults sent or received respectively, and only 30.8% used a mobile device (The World Bank, 2017). In low-income countries or those with GNI per capital of $1,025 or less, the numbers are even lower (The World Bank, 2017). A little more than 18% of individuals sent remittances, and 25.6% received them, and however, 42.8% used a mobile device (The World Bank, 2017).

The following section will compare the scope and impact of mobile banking services in Kenya and Afghanistan. These two states are easily distinguished from each other due to stark regional, cultural and structural differences. Afghanistan has been listed on the Fragile States Index every year since the report was first published in 2005 (Fragile States Index, 2019). In 2017, Kenya was declared the second most-improved country for enhanced state-wide security and stability (Fragile States Index, 2019). Afghanistan is a land-locked country, located in the Middle-East: a region plagued by geopolitical issues, proxy wars and foreign occupation. Although Kenya has suffered through its own social, economic and political issues, it is a far more stable country with one of the most important trade ports in Africa and has relatively strong public institutions for a sub-Saharan African country. Further, Kenya is one of the fastest growing economies in Africa and receives the most foreign direct investment of every African state except South Africa and Morocco.

The purpose of this exercise is to demonstrate why Kenya has been described as the "sweet spot" for mobile banking by comparing it to a state which is its polar opposite. This is not a fair comparison; Afghanistan differs from Kenya in both its level of fragility and the health of

its democracy and economy; Kenya Gross National Product (GNP) is nearly three times Afghanistan's as of 2009 (Open Data for Africa, 2019) However, comparing the two is useful for understanding which socio-demographic factors supported the penetration and impact of mobile banking in Kenya and why.

The underlining factors which have allowed Kenya to become the gold standard of mobile banking are the following: remittance-based economy developed telecommunication infrastructure with a single dominant carrier, and moderate financial literacy rates and public trust in banking systems (Brown, 2014). Countries which do not share these specific characteristics have demonstrated lower levels of mobile banking penetration, even though affordable and accessible banking solutions are just as in demand by local populations.

Firstly, Kenya is home to one of largest remittance-industries in the world due to specific socio-demographic factors related to its population and economy. About 80% of Kenyans depend on agriculture-related activities to sustain their livelihoods (Food and Agriculture Organization, n.d.). As mentioned earlier, rural households tend to be more vulnerable to income disturbance due to covariate and production shocks (Burns, 2018). Secondly, Kenya's formal economy is concentrated in their dense urban hubs, mostly centred around Nairobi which generates about 21.7% of the entire country's GDP (Ngugi, 2019), and has an unemployment rate of 9.3%. It is also common for families and social networks to be dispersed over large geographic areas (Jack & Suri, 2014) and exhibit strong kinship ties which promote the sharing of extended family resources (Kusimba, Yang, & Chawla, 2016). In this sense, Kenya proved itself to be an ideal setting for mobile banking as it had a latent demand for affordable money-transfer services to manage the distribution of remittances across the country.

Comparably, in Afghanistan, agriculture represents only 23% of the economy. In Afghanistan, about 42% of youth are not in education, employment or training (The World Bank, 2019c). Further, $2.6 million Afghan individuals are currently registered as refugees by the UNHR, and it is estimated that there are about 3.8 million internationally-displaced Afghan people in the world (United Nations, 2015). In 2015, Afghanistan had the 7th largest diaspora population (United Nations, 2015). The internal and international displacement of many Afghan persons due to the conflict has led to the degradation of many family ties (The World Bank, 2019c). This means that the remittance-industry in Afghanistan is considerably less developed than in other low-income countries, most notably Kenya. Only 2.5% of the population have used the mobile service to send financial support between family members. The most common way to send remittances is through the handing over of cash, with 9.6% of the population having received or sent remittances in this way in 2014 (The World Bank, 2017). This suggests that the large majority of remittance received by Afghan households come from individuals working in Afghanistan, and not migrant workers. Migrant workers are important contributors to the economies of many low-to-mid-income countries as they tend to work in economic-centers characterized by low-unemployment and higher wages. In Afghanistan, years of conflict have debased social capital and thus made it difficult for families to access financial support for members living or working both abroad and in another area of the country.

Another critical difference between the two countries is the dispersal and density of their respective populations. In Kenya, M-Pesa is frequently used by individuals living in rural areas. However, in Afghanistan, "M-Paisa, [the Afghan equivalent to Kenya's M-Pesa], use is highly concentrated in the urban and peri-urban regions of Afghanistan, as well as along major transport corridors" (Bluemenstock, Callen, & Ghani, 2015). In this sense, the demand for mobile banking

is considerably different in Kenya, where M-Pesa has been intrinsic to reaching the rural poor and unbanked. The same results in Afghanistan have failed to manifest, because of an economic and social environment which does not favour a booming remittance industry because of the "high costs of currency and transport, due to unreliable transport infrastructure and concerns of physical security" (Bluemenstock, Callen, & Ghani, 2015).

Secondly, Kenya's telecommunication sector received significant buy-in from the private sector at the time of M-Pesa's launch. In Kenya, the Central Bank allows non-bank actors to easily participate in the provision of new financial services and the government-enforced regulations on mobile money were codified only seven years after the launch of M-Pesa. This allowed policy-makers to observe the market dynamics of mobile banking before drafting regulatory practices, resulting in the implementation of regulations which did not impede on existing business models (Sustainable and Inclusive DFS, 2018). This led to significant amounts of money being invested in developing new and existing infrastructure. Ultimately, governments require the know-how and capital to build proactive regulatory models for mobile money and increase financial inclusion rates – resources which are often scarce in fragile and conflict-affected countries such as Afghanistan.

Further, Safaricom was already an established, and well-known telecommunications provider and many Kenyan were loyal clients to the company before M-Pesa's unveiling. Therefore any psychological barriers to adoption, such as a fear of technology, were primarily considered a non-issue for Safaricom who "utilized consistent branding, rigorous agent training, and regular auditing" to build public trust and ensure that M-Pesa became the chosen financial mechanism to manage remittances in Kenya (Donovan, 2012). To contrast, inadequate infrastructure and weak state institutions have significantly limited the penetration of mobile

bank accounts in Afghanistan (Bluemenstock, Callen, & Ghani, 2015) where about 60% of the population has access to a mobile device, and 5% of the country had an active mobile bank account in 2017 (The World Bank, 2017). This is compared to 86% of Kenyans who had access to a mobile device and 69% who actively used a mobile account in the same year (The World Bank, 2017). Afghanistan's telecommunication sector was reduced to ruins following the US invasion in 2001 and the years of war which followed. Although the mobile network has since been somewhat rebuilt and is now estimated to cover 85% of the country, the services remain expensive, unreliable and inaccessible for many Afghans, specifically for those living in rural areas which still lack widespread coverage.

Unreliable mobile services are one of the first barriers to mobile banking penetration since users are less likely to use a service which is often not available. The high operating costs associated with the provision of mobile technology in regions affected by conflict and limited market-entry by telecommunication providers, effectively makes mobile services inaccessible and unaffordable for a large portion of the population, further widening inequality gaps. However, mobile device ownership in Afghanistan has been improving, and the country now has four private mobile operators, in addition to the one-state owner mobile operator which already existed. This growth has been attributed to a demand for innovative technologies able to support greater transparency and accountability in both the financial sector and other sectors (Bluemenstock, Callen, & Ghani, 2015).

Thirdly, Kenyans also have considerably high trust in financial services and financial literacy rates than Afghanistan. Nearly 85% of Kenyans are literate and have prior experience using mobile technology (Buku & Michael W., 2013). These mentioned socio-demographic factors, distinctively all present in Kenya, have been associated with higher adoption rates of M-

Pesa. A study conducted in Kenya, Tanzania, Nigeria and South Africa found that "using formal finance is an economically significant factor for predicting usage of informal finance" (Koker & Jentzsch, 2013). This has created a paradox where the adoption of mobile banking services in a country is dependent on the initial financial literacy rates of the population, despite the service's aim to fight financial exclusion in the first place (Peruta, 2018). In Afghanistan, the majority of individuals living in rural areas have received almost no education and only 15% of adults are financially literate. Further, the formal banking sector only reaches about 5% of the population, indicating possible information asymmetry and that a vast majority of the population have a low demand for financial services (Bluemenstock, Callen, & Ghani, 2015).

The Afghan population has a great distrust for financial and public institutions, primarily due to "imperfect government control, rampant corruption, poor infrastructure and weak state institutions" (Bluemenstock, Callen, & Ghani, 2015). In 2011, a large commercial bank in Afghanistan, Kabul Bank, was found to have been stealing money directly from the accounts of depositors by offering "loans" to shareholders and political elites which were never paid back. The profits, estimated to equal more than $900 million, were found to have been pocketed by the bank's former chairman, chief executive and other stakeholders (Rivera, 2011). Public confidence in the finance sector had been shattered, and it became increasingly more common for individuals to hoard their money at home. The Central Bank of Afghanistan was greatly criticized during this time for failing to be an effective watchdog for the country's banking sector. Tensions grew further when the disbursement of money from a trust fund managed by the World Bank was delayed after the Afghanistan government failed to meet mitigation conditions set by the International Monetary Fund in time for a critical deadline (Rivera, 2011). Following the scandal, many prominent Western donors suspended payment to the trust fund, greatly

diminishing the government's ability to pay for non-security costs, social services and the salaries of civil servants (Rivera, 2011). Since the Kabul Bank Scandal, civic trust in the financial sector and public confidence in the government has never fully recuperated. Even when incentives are offered, many Afghan individuals continue to be very hesitant towards adopting either a formal bank account or a mobile money account.

In a study conducted in Afghanistan found that mobile money adoption increased when employees were given the option of receiving their salaries through a mobile bank account (Bluemenstock, Callen, & Ghani, 2015). However, the study found that the adoption of mobile money in Afghanistan had limited effects on users' perceived economic welfare and was not significantly more likely to save money or send remittances (Bluemenstock, Callen, & Ghani, 2015). Further, many respondents even signalled that they were not sure if they would continue to use the mobile service once the study was completed, even though many reported receiving their full salaries for the first time as senior management were no longer able to take cuts. The evidence presented in the study captured the extent to which the Afghan population distrusts financial institutions. This study, and others like it, have also called into question whether the increased use of mobile money translates into an increased propensity to save – a central benefit to being banked for reasons mentioned above. This has subsequently caused others to doubt if mobile banking can ever truly become a replacement for formal banking institutions in countries which lack the infrastructure (Bluemenstock, Callen, & Ghani, 2015). This incertitude has severe implications for the presumed capacity for mobile baking services to bridge the financial inclusion gap in Afghanistan, and other fragile and conflict-affected states.

The reality is that a one-size-fits-all solution to financial exclusion does not exist. Although mobile money was able to generate significant development results for Kenya, we

cannot expect the same outcomes in other states, especially fragile and conflict-affected states. A country could have all the ideal conditions for mobile money penetration and still not experience the same impact as Kenya did, because of the unpredictability of both social, institutional and commercial forces. The mentioned barriers to mobile banking in Afghanistan and other states cannot be alleviated overnight but require multi-generational policy-interventions and broad social changes.

***The Poorest 40% of the World (B40)***

Over the past 20 years, the world has seen a substantial reduction in poverty on a global scale, but unfortunately, pockets of poverty persist on every continent. The poorest 40% of the world (B40), also referred to as the deeply poor, mostly live in Sub-Saharan Africa – a region which has experienced the slowest rate of growth since 2000. Researchers have outlined three key barriers which continue to restrict sustainable and equal income growth: "the depth of remaining poverty, the unevenness in shared prosperity, and the persistent disparities in non-income dimensions of development" (World Bank Group & IMF, 2016). From 1999 to 2015, the global poverty rate fell from 29.1% to 9.6%: an extraordinary example of collective human efforts. However, the majority of those lifted out of poverty were just below the poverty line or living in central Asia (World Bank Group & IMF, 2016). It is estimated that by 2030, the number of people living in extreme poverty will stagnate at about 500 million, the vast majority concentrated in sub-Saharan Africa. For these population groups living in the world's poorest countries, the depth and breadth of their penury are rarely addressed, despite a growing and refined development sector which still fails to recognize and respond to poverty's multidimensionality.

Although poverty is most commonly measured and referenced in terms of an absolute poverty line, a $1.95 per day analogy, it fails to capture the variations of deprivation which exists under the poverty line (World Bank Group & IMF, 2016). Nor does a declining poverty rate reflect an increasingly unequal world where the global 1% now controls roughly 44.8% of the world's wealth (Global Inequality, 2019). In other words, poverty exists in many forms – many often unconnected to impecuniousness.

The B40 lack access to education, health care, clean water and financial services (World Bank Group & IMF, 2016). Low human development, inadequate social policies and low direct household-level support in countries with historically low economic growth and opportunities have contributed to this stagnation. The notion of furthering investment in human capital is reflected by a new conception of poverty, one which focusses on increased well-being and not merely consumption levels for the B40. Mobile banking and other inclusive financing mechanisms falls into this new development doctrine as it seeks to respond to the needs of mostly neglected consumer base – the poor unbanked. Unfortunately, for the most part, mobile banking systems have fallen short of this objective as the users tend to have a higher than average socio-economic status. Adults out of the labour force and adults belonging to the poorest 40% represent the least likely to be banked in low-income countries, where 23.4% and 25.5% have a bank account respectively (The World Bank, 2017).

The point of this section is not to overlook the benefits of m-banking. It is important to reemphasize the impact mobile banking has had in the rural regions of some sub-Saharan countries, most notably Kenya and Tanzania. In one study, it is estimated that about 2% of Kenyan households were lifted out of extreme poverty due to the adoption of mobile banking (Suri & Jack, 2016).

Mobile banking has also helped bridged the urban-rural divide (Asongu & Odhiambo, 2017), allowed users to acquire greater market information (Mbiti & Weil D., 2011), has helped SMEs to develop sustainable business models (Ibor & Offiong, 2017), enhanced the delivery of health services by allowing users to pay for healthcare from their mobile money account (Asongu & Odhiambo, 2017), and finally has increased consumption for low-income women who depend on remittances (Suri & Jack, 2016). However, the scope of these benefits has been disputed by researchers who have pointed out significant flaws in the perceived impact of mobile banking, mostly in terms of its reach across countries and populations. As seen in the previous section, specific country-level determinants of mobile banking adoption have limited the financial mechanism's ability to penetrate new markets. In this section, mobile money will be investigated through a demographic analysis of the poorest 40%.

To begin, users of mobile banking tend to come from comparably economically-advantaged social groups. Individuals most likely to use mobile banking services tend to be male (The World Bank, 2018a), better-educated (Suri & Jack, 2010), live in urban areas (Suri & Jack, 2010), already have bank account (Mbiti & Weil D., 2011) and be employed in the formal sector (Koker & Jentzsch, 2013). Individuals with these characteristics are almost two times more likely to use mobile banking services (Mbiti & Weil D., 2011). Although mobile banking is more affordable and accessible than other formal financial services, low-income rural families must firstly have a family member able to send them remittances, and own and know how to use a cellphone (CGAP, 2009). Unfortunately, the majority of these demographic factors are not strongly associated with the deeply poor.

Middle-to-high income individuals are "more likely to use M-Pesa to purchase airtime, save and store money while travelling, and use M-Pesa to pay wages than their respective

counterparts" (Mbiti & Weil D., 2011). In a small study in Kenya, remittances-receiving households who adopted M-Pesa experienced an increase in household income by 30% as a result of money being sent more frequently (CGAP, 2009). Although the economic well-being of these mentioned households was directly impacted by mobile banking, these results are not shared by all households but are limited to individual with the financial ability, social opportunity and necessary information to migrate (Asongu & Odhiambo, 2017). In another study, a third of wealthy individuals used M-Pesa to save money, while only a fifth of more impoverished individuals did the same (Mbiti & Weil D., 2011). Further, rural areas with many households receiving more remittances also saw the price of food and goods increase (Asongu & Odhiambo, 2017).

Of the eight pioneering countries which saw the implementation of mobile banking services, Banco Postal in Brazil, FINO in India, GCash and Smart Money in the Philippines, M-PESA in Kenya and Tanzania, WING in Cambodia, and WIZZIT in South Africa, only in Brazil did low-income individuals represent the majority of the userbase (Mckay & Pickens, 2010). In Kenya, the average user of M-Pesa reported an annual income of 21% higher than non-users (Mckay & Pickens, 2010).

An individual's financial inclusion has been determined to be the primary determinant of M-Pesa adoption and usage. Individuals who already have a savings account at a formal banking institution are more likely to use mobile banking, often as a complimentary service to the existing financial services offered by their bank (Mbiti & Weil D., 2011). Researchers in Kenya found that individuals with bank accounts use M-Pesa almost three times as much as those without bank accounts (Mbiti & Weil D., 2011). Further, 35% of banked customers used M-Pesa to save money, while only 19% of unbanked customers used the service for this reason (Mbiti &

Weil D., 2011). Another crucial demographic difference between users and non-users is human capital level, where more-educated individuals were 2.5 times more likely to use M-Pesa to store money (Mbiti & Weil D., 2011).

### *Impact Challenges for the B40 and Country Examples*

Despite mobile banking's primary objective of improving financial inclusion rate for the world's poorest individuals, the majority of its users do not meet the demographic characteristics shared by the B40. This is primarily because many determinants of financial inclusion (gender, income level, urban-rural divide, and level of educational attainment) do not merely recede following the adoption of mobile money but require more robust policy and social changes to be alleviated. Further, these characteristics have also been found to determine if an individual will open and use a mobile bank account to begin with, suggesting that the beneficiaries of mobile banking are wealthier members of society (Morawczynski, 2009). However, this does not mean that the B40 have not reaped any economic or social benefits from mobile banking at all, only that the benefits have been concentrated in higher socio-economic groups.

Looking past micro-level barriers to mobile banking, the broader state of a country's economy could also explain low impact and adoption rates. A study in Nairobi also found that adoption rate fell considerably when competitive and substitute products entered the market (Gakure, Anene, & Arimi, 2013). This suggest that barriers to adoption exist on the macro-level, such as economic policy, demand and supply cycles, and government regulations (Nguena, 2019), as well as the micro-level which tends to focus on demographic factors and consumer preferences. Of the eight initial mobile banking systems mentioned above, the countries with the highest reported income inequality (South Africa, India and Brazil) demonstrated the lowest

adoption and impact rates. This is following a recent study which looked at the impact of mobile banking on inclusive development found that users who live in countries with low income inequality and poverty were more likely to experience inclusive economic growth after adopting mobile banking (Asongu & Odhiambo, 2017). Although the study does not specify whether the reported results point to a causal relationship or positive correlation, it rightly elucidates a significant development obstacle for mobile money, since the majority of the world's poorest 40% live in countries plagued with rampant poverty and inequality.

Another important consideration is the impact government regulations and market trends can have on the implementation and adoption rates. Brazil and India were all considered to be promising markets for mobile-banking as both had developed telecommunication infrastructure, thriving remittance-industries and relatively high financial literacy rates. However, heavy government oversight in India and Brazil have made it difficult for mobile operators to provide services in line with the needs of its users. In India, mobile operators are required by law to collaborate with a bank to provide services. The popular mobile agent, Safaricom, which expanded access to financial services in rural Kenya simply by being more available than bank tellers, is not existent in India due to burdensome public regulations and an unwillingness from banks to operate in small villages due to high costs and low returns (Mirani, 2014). Only 36% of adults in India own a bank account; the vast majority live in urban centers and reports a higher average income (Mirani, 2014). Despite the need for affordable financial services in rural regions, substantial government oversight has become a significant barrier for mobile financial inclusion.

Brazil's Banco Postal allows users to access financial services through postal branches, which acted as banking correspondents (ITU, 2016). Correspondent banks are another form of

branchless banking, aiming to address constraints related to access (Nakane & Rocha, 2012). Postal banks tend to be cheaper to operate, have longer opening hours and are more present in rural communities (Nakane & Rocha, 2012). However, the rights to managing the Postal's 6,195 branches is awarded by the state to a successful bidder every 5-10 years; meaning that the new operating bank has both a monopoly on the mobile banking sector and limited experience in this domain (Post and Parcel, 2011). This leads to higher prices for consumers and less reliable services. Since 2013, only about 14 million accounts were opened, representing less than 7% of the population (ITU, 2016). In 2018, mobile banking represented about 40% of all banking transaction effectuated in Brazil. However, all of these transactions were done in conjunction with a formal banking institution's mobile application, which often require an internet connection (Mari, 2019). The needs of the poorest citizens are not adequately responded to in Brazil because of the low profitability associated with reaching and serving them. Further, mobile banking systems in Brazil and India have failed to address the fundamental barriers which cause financial exclusion for the B40: low accessibility and high costs. In an attempt to reinvent the wheel, all three systems have offered services which are strikingly similar to financial services offered by commercial banks.

***Moving Forward***

The Sustainable Development Goals sought to reposition the development sector to make it more responsive to the needs of the poorest populations. Unfortunately, this is easier said than done. In the cases presented above, the individuals who are most likely to adopt and use mobile banking systems are rarely part of the most disenfranchised population groups. In this sense, the picture of the most common mobile banking user is both as concerning at it is attestable, for it

points towards a reality which is all too common in the development sector – one where the poorest, and most unreachable, populations are oftentimes neglected.

The fact is that low-income individuals and households who have benefited from mobile banking tend to be either just below or just above the poverty line. Without diminishing the positives interventions brought to the lives of these individuals, mobile banking may be just another development initiative which fails to address the real complexity and profundity of poverty globally. The reason for such has three main components. Firstly, financial institutions, mobile banking included, are profit-seeking enterprises which seek to shape their services to the needs of their customer base. If the majority of their clientele are not part of the B40, they will be less likely to offer services with them in mind. Secondly, organizations and stakeholders want to see humanitarian assistance initiatives produce development results. The problem with results-based management is that it presumes that social and economic change can always be predicted and thus controlled. The focus of the initiative is centred around monitoring and evaluating the projects according to set indicators, instead of analyzing and responding to the needs of local populations. This notion could also explain why mobile money was firstly framed as a universal solution for financial exclusion by development actors eager to report on results. Further, development projects which demonstrate results, even if these results do not always equate increased well-being for the targeted population, appease donors and are more likely to receive future funding or have their model duplicated in other initiatives. Finally, genuinely addressing the depth of poverty involves more long-term and costly institution-and capacity-building, which is often outside of the will or budget of many development actors and donors. This approach also involves robust coordination with local actors and governments, which is not always feasible for

long-term initiatives due to regime changes, electoral cycles, geopolitical power shifts or conflict.

In this sense, mobile banking might be a valuable financial solution for the underbanked - the individuals who do not have sufficient access to financial services but still demonstrate the capacity and need for banking products. However, the socio-economic conditions which plague the poorest 40% do not always support the adoption or usage of mobile banking. For these populations to be included in the mobile banking movement, the telecommunication and financial sector must be redacted to service their needs, governments must be cooperative and human capital levels need to be higher.

***Women and Financial Inclusion***

Women and girls make up more than half of all the world's most poor and vulnerable individuals, and a large majority of the world's unbanked. In the least developed countries, 79% of working women depend on agriculture to maintain their livelihoods. Despite this important economic contribution, women represent only 37% of banked landowners in low-income countries (The Government of Canada, 2017). In a study conducted by the United Nations, 33% of married women from low-income countries reported having no control over household spending, and about 10% disclosed that they also have no control over how their earnings are spent (United Nations, 2015). Even more concerning is that despite the process made worldwide in terms of financial inclusion, the gender gap has remained unchanged since 2011, "where 72% of men have access to an account while only 65% of women have an account (Costin & Jales Coutinho, 2018).

This discrepancy is largely attributed to the social, legal, educational and economic barriers which continue to restrict women's decision-making powers, human rights and other freedoms. Women are twice as likely to have informal and vulnerable employment, have less access to social protection and are still paid on average 23% less than men for the same job (UN Women, 2018). In another study, men were reported to represent 65% of bank customers: effectuating 80% and 75% of loan and deposit services, respectively (Global Banking Alliance for Women, 2017). Further, strict adherence to gender roles within the labour market is associated with retardative economic growth, due to labour shortages and "skills mismatch" (Nikolov, Desislava Nikolova, Ganev, & Aleksiev, 2018). Therefore, promoting higher financial inclusion rates amongst women can generate both gender equality and broader development results.

There are several ways women benefit from financial inclusion. Greater financial autonomy has been associated with increased security for women (Holloway, Niazi, & Rouse, 2017) and positive household welfare impacts (Karlan, D., Kendall, J., et al., 2016). A study looking at the effects of increased financial inclusion rates in a Kenya, found that improving access to financial services "enable women-headed households to increase their savings by more than a fifth; allowed 185,000 women to leave farming and develop business or retail activities; and helped reduce extreme poverty among women-headed households by 22 percent" (Demirguc-Kunt, Klapper, Singer, Ansar, & Hess, 2018). In addition, women-led households spend on average 15% more on nutritious food and 20% more on education after opening a saving account (Demirguc-Kunt, Klapper, Singer, Ansar, & Hess, 2018). Financial inclusion is important for women to access various financial tools which allow women to have more control over their finances and their lives. Financial inclusion has been shown to decrease the likelihood

that a woman will stay in abusive domestic situations (Robino et al, 2018). In a study conducted in 2009, female users of M-Pesa reported that they preferred this financial service over others because it was easily accessible and "it decreased the risk of [their savings] being found, and stolen, by their husbands" (Morawczynski, 2009). These women reported being able to have greater financial autonomy due to this discrete mobile saving mechanism (Suri & Jack, 2016).

***Women and Mobile Banking***

Mobile banking has had a varied effect on promoting financial inclusion and increased economic well-being for low-income women, specifically. The most tangible benefit brought to rural low-income women is their enhanced ability to solicit financial support from their husbands or other family members living in urban centers. In a study conducted in Kenya, rural families were able to access remittances with higher frequency and for small transfer amounts because of mobile banking (CGAP, 2009). The provision of financial services to low-income women is shown to be critical for both women's empowerment and poverty reduction. However, the lack of gender-inclusive financial mechanisms built to address to the demand-side and supply-side barrier explicitly faced by women hinder this endeavour.

These barriers range from encompassing harmful social norms to financial product designs which do not suit the needs of local women (Holloway, Niazi, & Rouse, 2017). Many studies which outline the widespread adoption rates often do not take into account the gendered inequality of mobile phone ownership and usage (Hove & Dubas, 2019). Men who are older than 25, educated and non-poor are the most likely to own a mobile device and a registered SIM card (Dubus & Van Hove, 2019). Although about 77.4% of rural Kenyans own a SIM card, about 92.7% have access to one; pointing towards a beneficial effect of shared ownership in certain

situations (Dubus & Van Hove, 2019). However, it was found that women who have access to a SIM card are a lot less likely than women who own their own SIM card to use mobile banking (Hove & Dubas, 2019). To overcome this barrier, a study in Tanzania observed financial inclusion rates before and after some women were given a free mobile device (Roessler, et al., 2018). Not surprisingly, the women who received a mobile phone reported increased mobile financial inclusion (Roessler, et al., 2018). Although the results of the study proved decisive, the central premise of giving free phones to women fails to adequately address the systematic barriers and power differentials, which restrict low-income women from participating in the financial sectors in the global south in the first place.

Another reason why women are less likely to have a mobile bank account is that they find it challenging to use the mobile device (Morawczynski, 2009). Women reported having difficulty understanding the interface of the M-Pesa, which requires multi-steps to perform a function. Also, some of the error messages sent by Safaricom if a user inputted the wrong password or attempted an un-supported function are in English, while rural women are much more likely to use their mother tongue. Research on the interface of mobile banking has found that "the design of existing mobile phones and their accompanying services do not match the skills, expectations, or needs of their intended users" (Wyche, Simiyu, & Othieno, 2016). Further, many older women reported having difficulty viewing the screen itself due to poor visual acuity (Wyche, Simiyu, & Othieno, 2016). In this sense, the very technology of mobile banking is discriminatory against older individuals or those who have a visual impairment. This caused a differential capacity where the traditionally lower literacy and unfamiliarity with operating mobile devices for women, acts as an amplifier of social inequality amongst both women and men, and between women of differing education and income-level (Wyche, Simiyu, & Othieno, 2016).

Additionally, women are often less likely to have valid identification documents, such as a driver's license or a passport, which are required for opening and using an account at both a formal and mobile banking institution (Robino et al, 2018). Further, many Kenyan banks still oblige women to provide their husband signature as a guarantor to open a bank account, which is not the case when opening a SIM card or a a M-Pesa account.  to This is often because women and girls have less freedom of movement to travel outside of their homes or communities for reasons related to distance, risk of gender-based violence, housework gender gap, financial costs, literacy, lack of information or awareness, and/ or opposition from family members (Hanmer & Dahan, 2015). These two rudimentary barriers to mobile banking also restrict their abilities to access the same type of social and financial services available to men (Hanmer & Dahan, 2015), which also indirectly limits their capacity to save money to better manage financial risks compared to their male counterparts (Hove & Dubas, 2019).

An essential component of economic empowerment for women is that the belief that by expanding women's ability to make strategic life choices, they will experience increased wellbeing and thus will help their families and societies (Barasa & Lugo, 2015). In this sense, having greater access to the financial controlling mechanism will allow women to participate more fully in a country's economic and political institutions, strengthen their intra-household bargaining powers and decrease restrictions on labour and physical mobility (Barasa & Lugo, 2015). Through engaging with mobile banking, women are presumed to better control their savings, which promotes financial independence and the management of remittances and income-flows. Further, since mobile banking institutions do not require a minimum balance to open an account, many women reported being able to open an account more smoothly and without their husbands' permission (Wandibba, 2014).

Despite these benefits, research on the economic impact of mobile banking on women has been mixed. Some studies have found that mobile banking expanded the capacity for women to access remittances. In one Kenyan study, the majority of M-Pesa users in Nairobi sending money were men, and more than 90% of their recipients were women in rural villages, most commonly the men's wives, sisters, daughters or mothers (Wyche, Simiyu, & Othieno, 2016). Mobile banking is thus an important tool for mobilizing financial support for rural women who tend to "bear the responsibility of feeding the family and any money they get either from their limited sources from the sale of agriculture and livestock products, and or are given by their husbands and other kin is mostly used to cater for the family's immediate needs" (Wyche, Simiyu, & Othieno, 2016).

However, in another study, the rural/urban separation of families has forced remittance-receiving households to redefine their relationships with their remittance-sending family members. Since labourers no longer have to travel back to their rural villages to deliver remittances in person, rural women in Ebusiloli reported more frequent virtual contact with their husbands but less frequent physical visits (Ramisch, 2015). The women explained that although the possibilities of communicating and sharing the financial and decision-making responsibilities with their migrant husbands have increased with the proliferation of cellphones, many still described feeling discontented with the distribution of housework. This is mainly because women previously enjoyed "high levels of autonomy and responsibility for the rural home [which has now been] more frequently curtailed by obligations and instructions given by physically absent husbands or sons" (Ramisch, 2015). Remittances can be traced back to patrilineal social relationships upheld over many generations and inherent to the traditions of many households in East-Africa (Kusimba, Yang, & Chawla, 2016). However, as the structure of

social relationships are challenged by mobile money, "household relationships around labour, capital, and knowledge are being reconfigured despite spatial separation" (Ramisch, 2015).

In another study, M-Pesa was found to help women in rural Kenya "graduate from subsistence agriculture and reduce their reliance on multiple part-time occupations" (Suri & Jack, 2016). M-Pesa improved the capacity for the poor to access credit lines by using their remittances as a type of insurance, which resulted in many women opening or expanding their small-and-medium-sized enterprises. However, a Filipino study found that increasing access to credit for rural poor women did not lead to improved business activities and economic well-being (Karlan & Zinman, 2011). Further, little evidence has demonstrated a statistical connection between receiving remittances from mobile money transfers and increased outstanding saving balances, even for female-headed households (Koker & Jentzsch, 2013).

The reality is that women continue to be controlled by social constraints meant to subvert their collective bargaining power and social status (Costin & Jales Coutinho, 2018). Even with the proliferation of telecommunication technology and new financial mechanisms meant to connect previously unreachable populations with financial services, women are still disadvantaged compared to their male counterparts and are still restricted by traditional and persistent gender norms and roles. Further research on the impact of mobile banking and broader access to financial services continue to be limited by methodological strategies which still don't always present data disaggregated by sex (Wyche, Simiyu, & Othieno, 2016). This limits researchers and policy-makers for genuinely understanding both the gender-based opportunities and constraints of mobile banking and prevents the completion of non-isolated and systematic studies on the topic. Although mobile banking has made visible differences in the lives of many

women worldwide, concrete conclusions on the implications of the mobile service on female economic and social empowerment cannot yet be made for the reasons mentioned above.

## Potentials of Mobile Banking

Despite the pitfalls to mobile banking discussed throughout this report, mobile money, and other pioneering financing mechanisms can still be a practical and innovative approach to addressing financial inclusion in the global south. Many of the barriers to mobile baking, such as lack of telecommunication infrastructure, low financial literacy and educational attainment rates, harmful gender stereotypes, high wealth inequality, and distrust of financial institutions, are complex problems which often coincide with each other and reinforce other socio-economic issues. The growing global remittance-industry acts as a catalyst for some of these barriers. Unfortunately, there are no simple or short-term solutions for these obstacles.

International organizations and other countries, like Canada, who wish to support financial inclusion through the proliferation of mobile banking would need to adopt a long-term vision. One which would seek to strengthen the infrastructure and institutions of low-income countries to support the local telecommunication sector and the accumulation of human capital.

The purpose of this section is to offer five brief suggestions to guide policy-making and development initiatives. These suggestions will come in the format of a Mobile Money Top 5: Next Steps for Improving Financial Inclusion for Poor and Vulnerable Populations. A more thorough cost-benefit analysis of each suggestion is beyond the scope of this report's research questions. Future research should look at how these suggestions could be strategically applied in the contexts of specific countries and populations more exhaustively.

## Mobile Money Top 5: Next Steps for Improving Financial Inclusion for Poor and Vulnerable Populations

1. **Support the proliferation of mobile technology and the development of telecommunication infrastructure in the global south and make it accessible for the poorest and most vulnerable populations**, especially in post-fragile and conflict-affected states where existing infrastructure has been damaged. The majority of mobile phone owners are educated, live in urban areas, are not part of a racial minority and tend to earn more than non-users. Notably, 50% of the global unbanked population have access to a mobile phone (Suri & Jack, 2016). Even if mobile money system become a passing fade of the development sector, there is considerable evidence that the future of banking will still be mobile. Effectuating new policies and program which expand universal access to mobile technology can allow poor and vulnerable populations to capitalize on emerging mobile banking solutions in real time. One important thing to consider is that the smartphone is not as widely used in the global south as it is global north, it is therefore consequential that these emerging banking solutions take it account that most low-income users will only have a basic handset and limited internet connection to effectuate online banking transactions. This may require public or private sector-led campaigns and incentives to encourage mobile providers to practice corporate social responsibility.

   Seizing the potential of the digital revolution requires coordination with local governments, financial institutions and telecommunication providers. Substantial government oversight of the telecommunication sector is not advised since government-owned monopolies tend to be more expensive and risk-averse. However, governments can play a significant role in implementing regulations which support the growth of mobile

services, specifically for the mentioned population groups. Knowledge-sharing programmes between foreign and local actors can benefit the design of mobile banking systems, which serve both the consumer and commercial sectors and foster integrated and interoperable solutions (Hicks, 2015). Additionally, encouraging foreign direct investment in the telecommunication sector, either through public-private partnerships or purely private sector initiatives, could help expand partnerships and services, create transparent and streamlined operations, reduce market-entry barriers for local firms and encourage innovation (Hicks, 2015).

2. **Strengthen the financial sector and increase its capacity to deliver affordable and accessible mobile financial services for all**: Commercial banks, credit unions, microfinance institutions and other financial institutions play an important role in the mobile banking ecosystem. They are also intrinsic to the large movement of improving access to financial services for poor and vulnerable populations. Although traditional banking institutions tend to have higher costs associated with their services, collaborating with mobile actors could result in the development of new technologies and strategies which decrease transaction costs for both financial institutions and users, specifically within the remittance-industry. Lower service fees and greater access could initiate economic improvements for both poor and vulnerable groups and the broader economy of a respective country.

These actors will require assistance in identifying consumer and market needs and better understanding mobile technologies, as significant barriers include: "high investment costs, lack of expertise with mobile technology, lack of knowledge on the information community technology (ICT) requirements, and undefined regulations" (Hicks, 2015). Although the

provision of mobile financial services is a profitable endeavour, smaller institutions may struggle with justifying the forward-thinking investment. Financial institutions should focus on establishing clear mobile strategies equipped with both short-term and long-term objectives and collaborating with other financial actors to share lessons-learned (Hicks, 2015). Another critical component of this suggestion is incorporating information campaigns which seek to build (or rebuild) the local population's trust in their financial institutions and the central bank's ability to serve as a watchdog.

3. **Design reliable platforms to provide critical consumer protection and regulation of mobile banking services:** This is central to encouraging higher adoption and usage rates and allowing customers to both trust the financial services they are consuming and make informed choices about their preferred banking products. The World Bank released a toolkit in 2014 for stakeholder in low-to-mid-income countries, which aims to provide the resources to guide national strategies for implementing digital identity platforms to protect data privacy and funds. It is worth consulting. Further, it would be beneficial to many poor and vulnerable populations if the terms and conditions of these platforms were released in plain language, so that it could be easily understood by groups with have lower educational-attainment levels.
4. **Support the accumulation of financial and digital literacy skills, especially for the poorest and most vulnerable populations:** This could involve developing the roles of mobile money agents to become better "educators" of financial products. However, a more long-term approach would be to incorporate financial and digital literacy into the curriculums of low-to-mid-income countries' education programs. Countries could seek help in building a national strategy for financial education based on the OECD guidelines, which

seeks to strengthen collaboration network between civil society and the private sector. In Rwanda, Umutanguha Finance encourages youth to deliver financial education using a peer-to-peer approach and "fosters youth as agents of change in their communities" (Bel, 2015). Financial literacy programmes can also reduce economic inequalities by empowering vulnerable populations and reducing information asymmetries (Bel, 2015).

5. **Consider subsidizing the cost of mobile banking or setting up centers tailored to the needs of poor or vulnerable populations**: In order to include the deeply poor in the mobile banking movement, telecommunication providers could be incentivized to adopt a price system based on a progressive scale which is tailored to the pay of low-income customers. Further, specific mobile banking centers could be equipped with agents specially trained to deal with individuals of lower educational attainment, living with disabilities or women who face gender-based violence and need higher security and privacy when managing their mobile money accounts (Barasa & Lugo, 2015). Another option would be to implement an interest-system similar to traditional savings accounts, where users would receive cheaper transaction rates or cash-back when using their mobile money accounts to save/accumulate money. All of these initiatives would require collaboration with telecommunication providers who demonstrate a commitment to corporate social responsibility.

## Conclusion

This report sought to answer three distinct but related research questions:

1. What are the obvious benefits of mobile banking?
2. Why have adoption and usage rates of mobile banking services varied across populations and countries?

3. Can mobile banking systems still be a viable solution to reaching the unbanked or underbanked?

Even though financial inclusion rates had risen globally from 51% in 2011 to 69% in 2017 (Demirguc-Kunt, Klapper, Singer, Ansar, & Hess, 2018), the direct effect of mobile banking on this trend is mostly disputed. Initial research on the topic presented an optimistic view of the mobile service as a solution to financial exclusion in the global south. Mobile money has been associated with facilitating the management and distribution of remittances, most notably in Kenya. The service was found to be more affordable and accessible compared to banking institutions and money transfer operators, especially for rural communities who have been traditionally disenfranchised from accessing financial services. Further, mobile banking has been analogous with enhanced transaction security and transparency, as well as increasing competition within the banking sector, leading to improved services for clients.

Despite these benefits, empirical evidence on mobile money has demonstrated various effects on the social and economic outcomes for vulnerable populations (Bluemenstock, Callen, & Ghani, 2015). Adoption and usage rates have differed across countries and populations. The implementation of mobile money technology in fragile and conflict-affected countries has found minor success. Audits of the mobile money programs in Afghanistan have identified three fundamental factors which contribute to the success of mobile money in a state: the local population must depend heavily on long distance remittances as a source of income; a dominant mobile carrier with reliable infrastructure must already be active in the country or region; and citizens must have trust in banks and the financial system (Brown, 2014). Even within countries which share these socio-economic characteristics, adoption and usage rates have not been consistent across population groups. Individuals who are the least likely to adopt mobile money

are also those who have been traditionally financially excluded: the deeply poor, women, the unemployed and the uneducated. However, mobile money has shown relatively positive development results for specific rural populations and educated women but has also altered the social structure of many familial relationships.

The reality is that mobile money is not the band-aid solution to financial exclusion, which researchers, telecommunication executives and policy-actors once framed it to be. We cannot expect a mobile application to change the socio-economic factors which restrict the deeply poor from experiencing economic growth, nor can we expect it to improve the social status of women or bridge the global wealth inequality gap. Mobile money is a financial tool that can be used to reach the unbanked in combination with progressive policy-changes, institution-strengthening and infrastructure-building initiatives, and broader social change which sees the poorest and most vulnerable populations economically empowered. We must not completely dismiss the value of mobile money in the global south, but we must recognize its limitations in order to maximize its utility.

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