

# Digital Finance Platforms to empower all

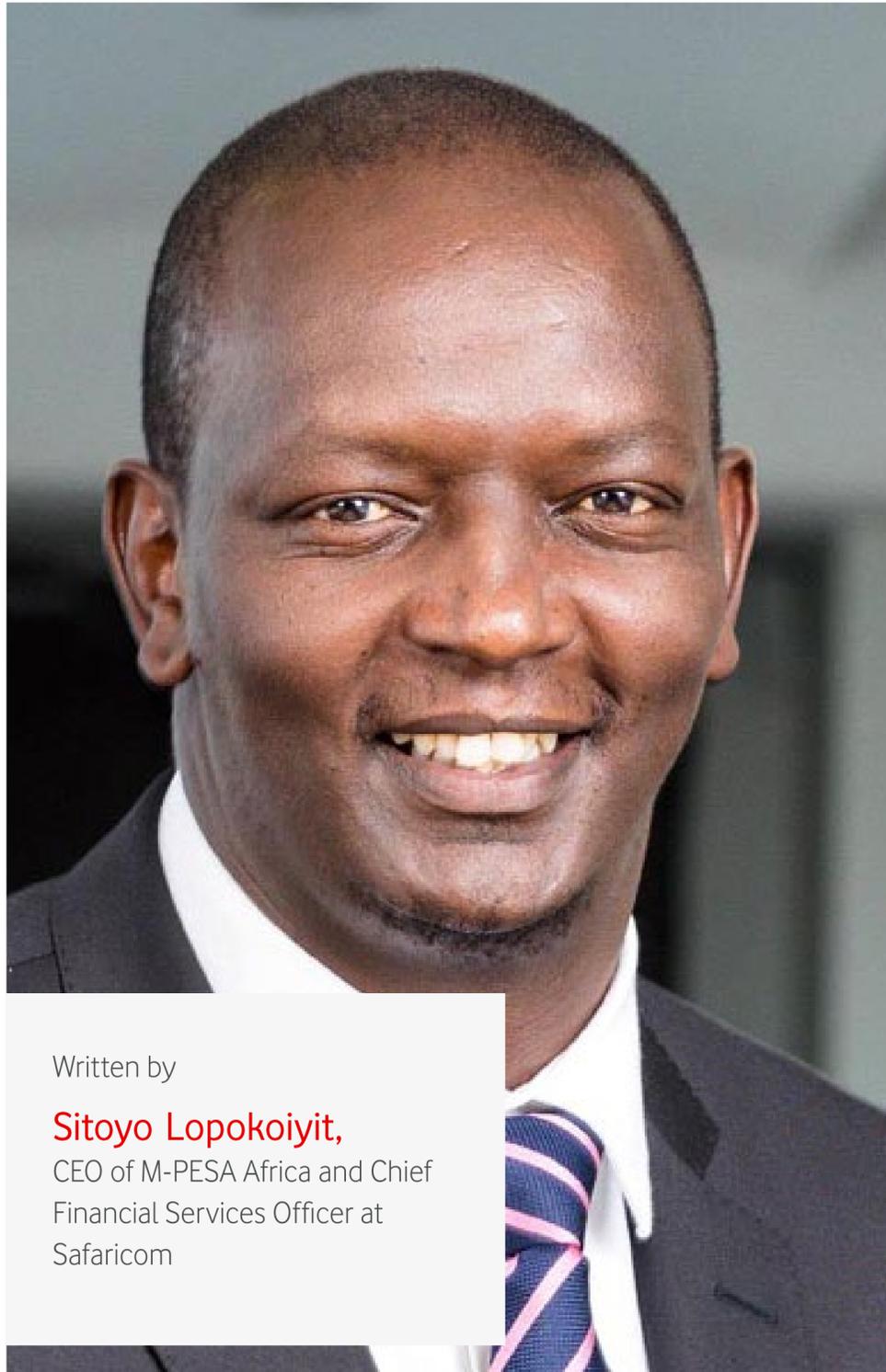
Accelerating the SDG impact of digital financial  
inclusion in Sub-Saharan Africa



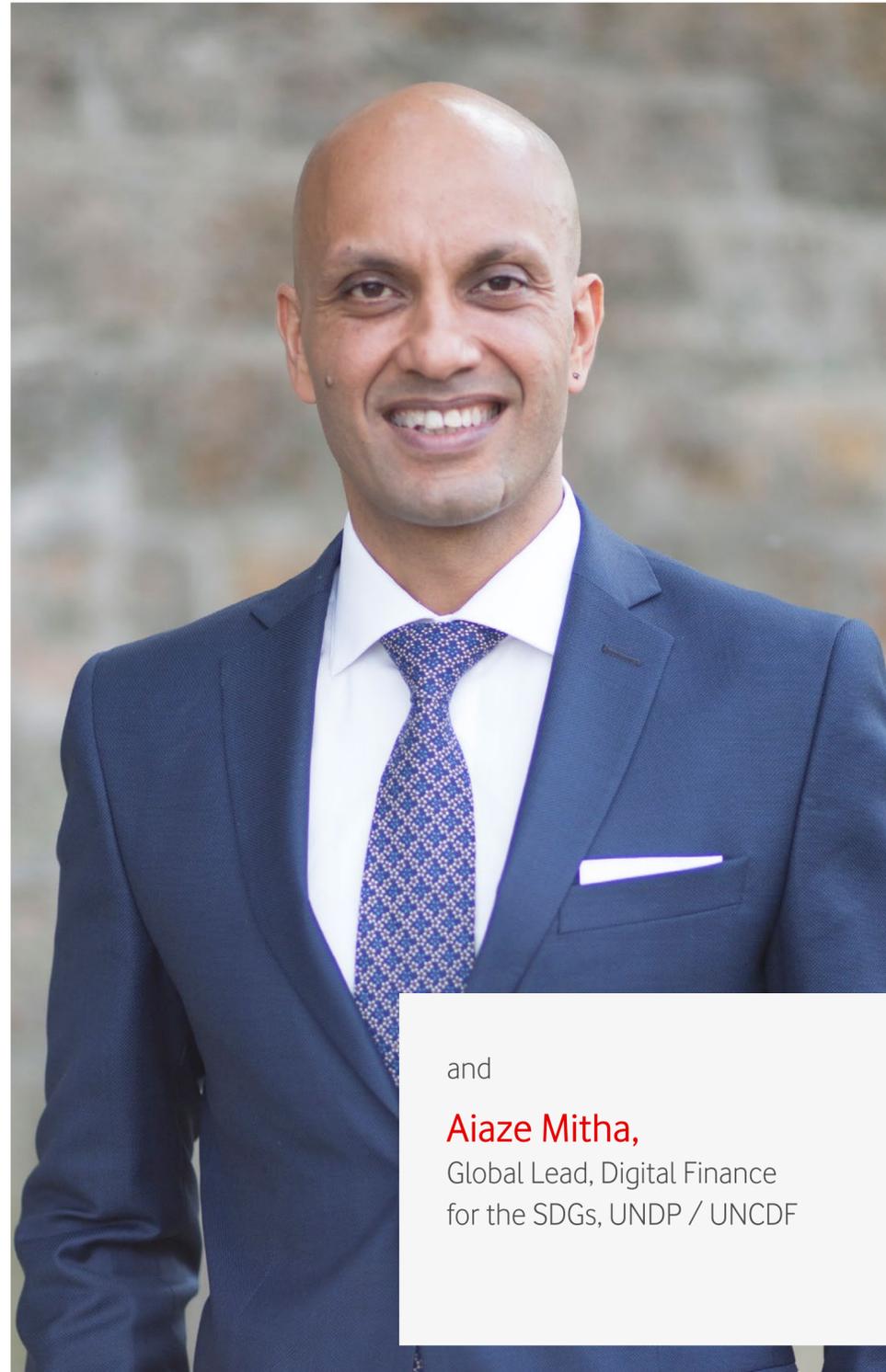
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UNITED NATIONS  
DEVELOPMENT PROGRAMME



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# Foreword

## Giving the underserved equal access to modern financial systems via mobile tech

In 2015, world leaders embraced a sweeping 15-year global plan of action to end poverty, reduce inequalities, and protect the environment. Known as the Sustainable Development Goals (SDGs), these 17 goals and their 169 sub-sets of targets provide a blueprint to achieve a better and more sustainable future for all.

Fast forward to 2022 and, while progress has been made in certain markets, there is still so much work to be done across the Sub-Saharan Africa region. Achieving several of the SDGs in this region requires addressing financial exclusion as a precondition. Ensuring equal access to financial services is crucial to Sub-Saharan Africa's development, as this will help alleviate poverty for individuals, open economic opportunities for critical sectors, boost innovative business models and green economic growth, and ensure that the benefits are equally distributed to all, including people.

Looking at the positive change mobile financial services can bring, this report unpacks progress made in the region since the introduction of M-PESA 15 years ago. Today, the mobile platform empowers 52 million active users in seven countries with several financial services, including mobile money. **It's astounding to think that 17.6 million of these users in Ghana, Tanzania, Kenya, and Mozambique had never been part of any formal financial ecosystem before they joined M-PESA.**

Before this mobile platform was available, traditional banking institutions provided the only source of services for these citizens, many of whom didn't qualify to use them, leaving cash-based transactions as their only option. **Equally important to note is that 12.3 million users in these four markets are now able to secure credit for the first time, through M-PESA.** The bottom line is that mobile platforms like this are key to giving the underserved in developing markets access to modern financial systems.

For all private individuals and businesses alike, the importance of participating in a more protected, formal financial ecosystem as a productive contributor to the economy cannot be overstated. However, there still are multiple barriers to this financial inclusion ranging from poor financial literacy to high bank transaction fees. Overcoming these barriers is a necessity because when people don't have access to traditional financial services, there is no safe way for them to save, invest, borrow, or transfer money and this affects their ability to build economic resilience to shocks and to secure a more sustainable future. Addressing financial exclusion for sustainable development demands that we rethink various regulatory and policy drivers through the lenses of inclusive green recovery and that we promote related investment and technological innovation.

According to the World Bank, the rise of digital financial services and mobile money has led to a massive increase in the number of people who are able to access the most basic financial services. Mobile financial services leverage affordable mobile phones and connectivity to put financial services at our fingertips, making it possible for people living in even the most remote communities to do everything from transfer money to apply for credit. In addition, these platforms eliminate the need for those who have been financially excluded to rely on inaccessible and costly traditional financial

infrastructure. Importantly, the impact of a service like M-PESA is most felt among traditionally excluded citizens: women, people living in rural communities, and those from lower socio-economic groups. In times of crisis, the value is heightened. During the pandemic, M-PESA allowed small business owners in Ghana, Tanzania, Kenya, and Mozambique to continue working without disruption by enabling them to take their businesses online. Essentially, mobile financial services are driving improved customer experiences and creating new opportunities, transforming the lives of entire communities in the process.

There are countless real-world examples across Sub-Saharan Africa, such as M-PESA mentioned above, that showcase how increased access to mobile financial services improves livelihoods, provides more employment opportunities, and empowers small businesses and entrepreneurs to expand their ventures.

These tools have the potential to expedite the continent's economic recovery post-pandemic. In doing so, they create an environment where we can transform the entire continent and improve the lives and economic prospects for the more than one billion people who call Africa home. By 2024, it's estimated that mobile technologies and services will contribute around US\$184 billion (€188.5 billion) in economic value for Sub-Saharan Africa. This growth is largely driven by the improvements in productivity and efficiency brought about by an increased uptake of mobile services. But we must also ensure that this economic growth is green and equitable, enabling a just transition while protecting our planet and mitigating climate change. Unleashing business model innovations that enable such green developments will be key for our future, and collective prosperity.



In boosting internet connectivity and usage across Africa, we can come up with innovative ways to connect the unconnected and empower the underserved. In supporting and developing digital financial ecosystems, we can foster the digital skills and financial literacy needed to promote socio-economic development, accelerate national development priorities, and move towards achieving the UN's SDGs. In focusing on green innovations, we can ensure that these developments lead to sustainable prosperity in a healthy planet. But it's important to remember that innovation isn't only about technology. In fact, it's about people. It's about people working together to create sustained, robust, and authentic partnerships that can help us build the financial, digital, and sustainable future Africans deserve.

## About Africa.connected

The goal outlined in our foreword is one that the Africa.connected campaign pursues. Launched by Vodacom<sup>1</sup>, Vodafone<sup>2</sup>, and Safaricom<sup>3</sup>, the campaign is committed to driving sustainable development across the continent through collaborative work that tackles existing divides and inequalities. This paper, the fourth in our six-part Africa.connected series, opens dialogue around the transformative power of mobile technology for reducing exclusion and poverty. If we are to deepen this uplifting transformation, governments, industries, and businesses must come together to share resources, harness their expertise, and collaborate with stakeholders like the United Nations Development Programme (UNDP<sup>4</sup>), the UN Capital Development Fund (UNCDF<sup>5</sup>) and Africa.connected to reduce the financial exclusion and digital divide crippling Africa's progress, to then harness inclusion to enable greener, more equitable, inclusive and responsible business innovations.



*Note: UNDP does not endorse any entity, company, product or service.*

# Executive Summary

Being able to save and invest money helps millions across Sub-Saharan Africa escape from common poverty traps and bounce back quicker from economic and environmental shocks.

**These are the benefits of financial inclusion, and mobile financial services are a vehicle for getting there.** Access to these services and the key capabilities they deliver is a huge part of inclusive, sustainable growth in the region. As such, it's a priority for the Africa.connected campaign and the work carried out by the UNDP.

**Financial inclusion is also a key enabler for meeting many of the UN's SDGs**, which tackle the biggest socio-economic and environmental challenges of our time. Financial inclusion can help make absolute poverty a thing of the past (SDG 1) and encourage investment in education and healthcare (SDGs 4 and 3). In critical economic sectors like agriculture, it opens vital access to markets, buyers, and inputs for smallholder farmers (SDG 2), boosting business productivity and stimulating economic growth (SDG 8).

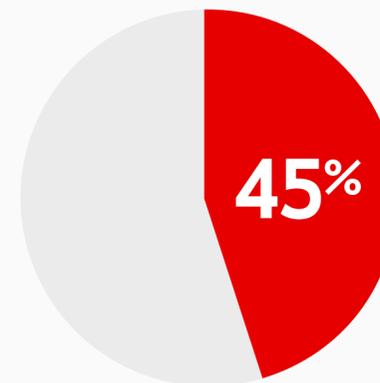
Real-world examples across Sub-Saharan Africa show the power of increased access to mobile financial services.

## Increased access to mobile financial services

improves livelihoods and creates employment opportunities...



...but **45%** of adults in Sub-Saharan Africa are still financially excluded.



**It's led to improved livelihoods and more employment opportunities, and has allowed Micro-, Small- and Medium-sized Enterprises (MSMEs) to expand their operations.**

However, despite rapid growth in financial inclusion over the last decade, Sub-Saharan Africa still has much to achieve.

**Only 55% of adults in the region have an account at a traditional bank or a regulated financial institution, with millions still financially excluded.**

These excluded citizens haven't engaged with formal financial institutions for several reasons, including lack of branches in rural areas where they live, complex paperwork, and strict ID or income requirements to open an account.

Most Sub-Saharan African countries have a high mobile-penetration rate, so extending the reach of mobile financial services would go a long way toward helping those who are typically financially excluded, which is what this report by Africa.connected sets out to highlight. Particularly in countries with less-developed financial systems, we're seeing how these mobile services enable people to pay, save, and borrow money more easily, sometimes for the first time within a formal financial ecosystem.

To explore how mobile financial services are contributing to financial inclusion and broader SDG impacts, this report by Africa.connected presents new econometric analysis and primary research in two contexts:  
(see Appendix for full methodology)

First, we focus on markets dominated by emergent banking systems: Kenya, Tanzania, Mozambique, and Ghana.

Here, we look at how mobile money platforms like M-PESA are accelerating financial inclusion.



In 2011, **only 23% of adult Africans** had access to bank account.



As of 2021, this has increased to

**55%.**

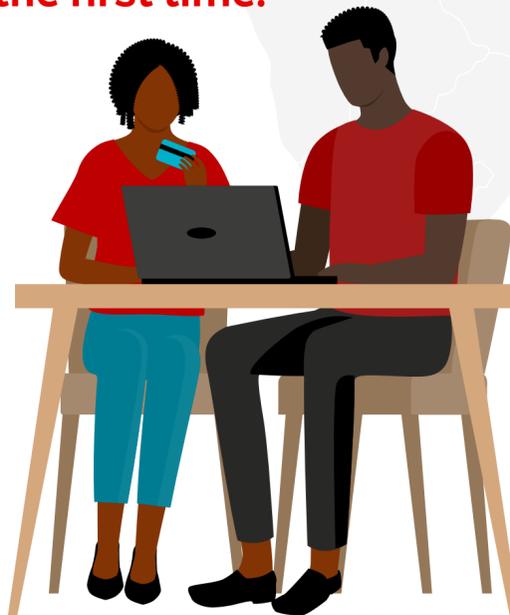


In Ghana, Tanzania, Kenya, and Mozambique, thanks to M-PESA

**17.6 million** users can access a formal financial ecosystem,

and **12.3 million** users can secure credit,

**for the first time.**



Second, we unpack the role of mobile money and broader mobile financial services, like those offered by Vodacom, within a more mature financial ecosystem such as South Africa's.

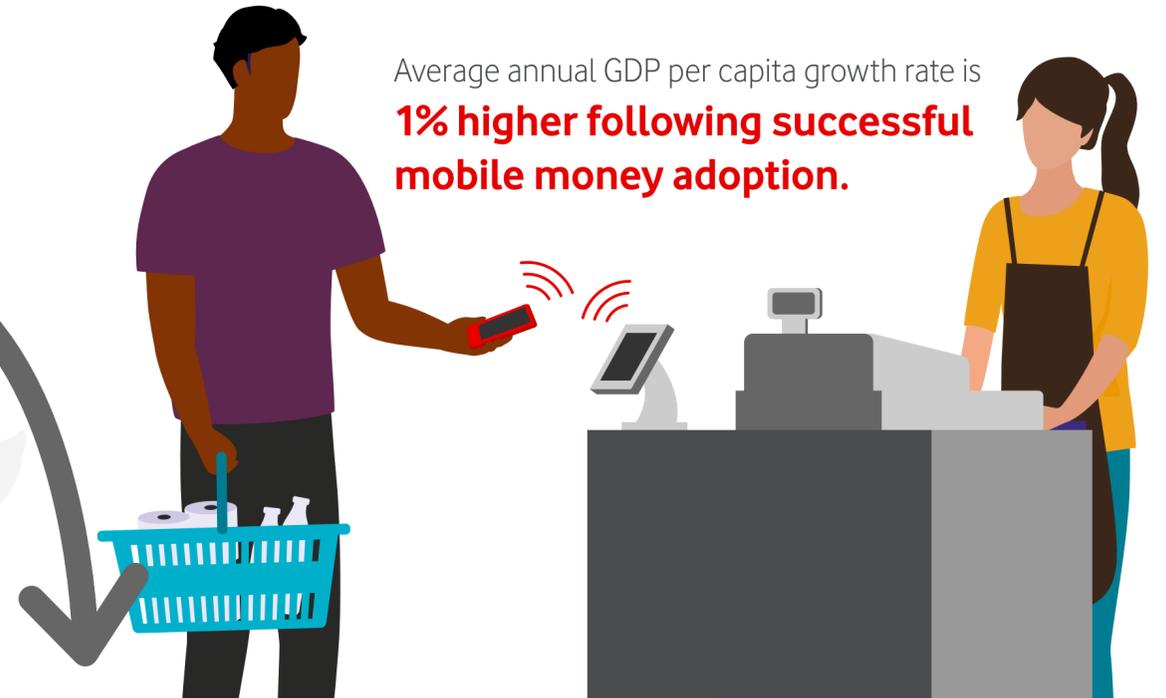
Vodacom services

**40%** of insurance-solution users

and **50%** of lending-solutions users

who would otherwise not have access to these services.

Average annual GDP per capita growth rate is **1% higher following successful mobile money adoption.**



**ATM**



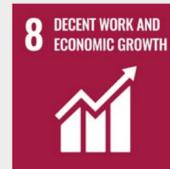
Digital finance has the potential to boost the annual GDP of emerging economies **by US\$3.7T by 2025.**



1% increase in economic growth will lead to a **2.59% decrease in proportion of people living in poverty.**

# Key findings from our analysis:

## Financial Inclusion (SDG target 8.10)



M-PESA, launched in 2007, now has 52 million active users, offering financial services that many of its customers would otherwise not be able to access. In 2022, it provided 12.3 million users across Kenya, Tanzania, Mozambique, and Ghana with first-time access to credit. Around **17.6 million users in these four markets did not have access to any formal financial services before they got M-PESA, which shows that such platforms are often the first step to entering a formal financial system.** Impacts were highest among rural individuals and those in lower socio-economic groups. Additionally, looking at the mobile solutions offered by Vodacom, we found that 48% of surveyed South Africans had access to loans that they would not easily be able to access if not for Vodacom.<sup>6</sup>

## Economic Growth (SDG target 8.2)



Countries with successful<sup>7</sup> mobile money adoption see an **average annual growth rate in per capita GDP that is 1 percentage point higher** than in countries where mobile money adoption was not successful or not introduced. Almost every business surveyed (**98%**) **agreed that M-PESA helps them carry out their business tasks** by facilitating faster and safer payments and by enabling the sale of goods and services online. In fact, **95% of these business users rely on M-PESA for at least half of their financial business transactions.**

## Poverty Reduction (SDG target 1.2)



Thanks to mobile money services, there were around **1.7 million fewer people living in poverty in 2019** across Kenya, Tanzania, Mozambique, and Ghana.<sup>8</sup> If M-PESA didn't exist, **57% of its users feel they would have less money available to them.**

# SUSTAINABLE DEVELOPMENT GOALS

Mobile financial services deliver a range of positive societal impacts, as highlighted in these key findings and in existing literature.

## COVID-19 and Well-being Impact (SDG target 3.4)



Of those surveyed, **91% of people and 94% of businesses agreed that M-PESA helped them stay safe during the pandemic,** largely through reducing the need to handle cash and enabling the purchase and sale of goods and services online. Additionally, most people (**72%**) **agreed that Vodacom South Africa's mobile solutions helped them manage their finances better** and a similar proportion felt it contributed to **improved well-being.**



However, evidence also shows that rising taxation (on devices and mobile money, for example) – compounded by many other challenges such as limited device access – is stopping more people, especially in poor communities, from using these services. This has a negative knock-on effect on financial inclusion, economic growth, poverty reduction, and sustainable development across Sub-Saharan Africa.

# Our policy recommendations.

## Accelerating the positive impact of mobile financial services (elaborated in Chapter 5):

- **Create an enabling legal and regulatory environment** – Stakeholders must create an open and level playing field where financial regulators allow both traditional banks and non-traditional financial-service providers to operate. This will allow digital finance innovation to flourish through greater interoperability and openness of payment rails.
- **Adopt risk-based Know Your Customer (KYC) regulatory requirements** – To overcome the obstacle of providing appropriately regulated financial services to unbanked customers who don't have reliable identity documentation, a risk-based approach should be considered. For example, tiered KYC mechanisms would allow some flexibility in providing access to basic regulated financial products to a larger proportion of the population.
- **Introduce stronger consumer-protection mechanisms** – Regulation should be instituted to enhance consumer protection through market-conduct policies that promote transparency across the entire value chain, including around pricing disclosures for example.
- **Set up secure cross-border data flows** – Policymakers should prioritise engaging with market players and advancing regulatory innovations that balance the ability to transfer data across borders with adequate handling of risks to users and citizens of the respective countries. Additional recommendations are discussed in the policy paper by Vodacom and AU-NEPAD on “*Enabling Policy Frameworks for Digital and Data Services*”.
- **Re-evaluate the impact of sector-specific taxes** – Policymakers should seek to engage with mobile money operators and telco businesses. This will help them to better understand the impact of mobile-sector taxes, harness mobile money to improve existing tax-collection processes, and to develop a more holistic approach to the taxation of this sector including through a broader lens of inclusion, SDG attainment, and tax mobilisation. *Additional tax-policy recommendations can be found in the Vodacom Tax Policy Paper “Implications of mobile money taxation in Africa”.*



By the end of 2021, the number of mobile-device users across the world totalled 5.3 billion. As mobile access grows, the transformative potential of mobile financial services increases, too, ushering in greater financial inclusion and sustainable development.<sup>9</sup> Together with the UNDP, the Africa.connected campaign is committed to progressing the SDG agenda by driving awareness around mobile services as a vehicle to tackle financial exclusion. Looking forward, governments, operators, and regulators alike should examine how they can accelerate the uptake and use of such solutions to simultaneously meet digitalisation and development targets.

## In conversation with...

Aiaze Mitha is a fintech and sustainability specialist, who leads a programme on digital finance for meeting the SDGs. This joint programme, launched by the United Nations Development Programme (UNDP) and the UN Capital Development Fund (UNCDF), aims to advance innovations that address the interlinked climate and social crises. In this Q&A, Aiaze shares insights into how technology has transformed access to finance for so many Africans, but he cautions that there is still a lot of work to be done.

### In Africa, what's life like for people or businesses who don't have access to financial services?

**AM:** There are a few dimensions to this question. **When we talk about access, we're not just talking about access for individuals; we're also talking about businesses that are excluded from financial systems.** When individuals don't have access to digital financial services and they want to interact with a bank, they're often hamstrung by the fact that bank branches are very far away. They must travel far distances, which is costly, and leave their families and businesses behind only to stand in a long queue to fill out paperwork for something as simple as making a deposit. And because they're carrying cash around, they could be targeted by thieves. **All of these harsh realities tarnish a person's interaction with formal financial systems, which makes it near impossible for them to get access to more advanced and sophisticated financial services, like credit or insurance. This impacts people's resilience to economic shocks and prevents them from breaking free from the cycle of poverty.**

Fortunately, this sombre reality has significantly changed with the development of both banking agents and mobile financial services using technology. However, despite this progress, many people remain excluded. For a business, obviously, if you can't access financing, you can't protect your organisation against different types of shocks, which prevents small entrepreneurs from growing their businesses sustainably. Even person-to-person financial transactions are complicated because every time you need to pay someone for something, you must physically travel to the

person to hand over the money. Another unfortunate result of a lack of access is that people rely on friends and family or informal lenders when they struggle to get credit from formal institutions. Sometimes, these informal lenders take advantage of the situation and charge massive amounts of interest on the money borrowed.

### How has technology transformed financial access for Africans?

**AM: Mobile has made a huge difference in terms of how people access financial services. In the last decade, more of the population has gained access to basic financial services, with the figure increasing from 23% of the population in 2011 to around 55% in 2021.** A lot of that has been unlocked through mobile financial services, simply because more people have access to a connected mobile device. These services are complemented by a physical network of agents who allow people to convert cash into digital currency so that they can start stepping into the formal financial system and start building up a credit history that will enable them to qualify for more sophisticated financial services.

**If anything, these digital financial services give every individual the ability to choose what really works for them in terms of managing their money.** If someone is comfortable with only having a mobile money wallet, then there might be no immediate need to have a bank account. For other individuals, opening a formal bank account is important because of the sense of additional protection offered by regulated banks.



“Many people face harsh realities tarnishing their interaction with formal financial systems, making it near impossible for them to get access to more advanced and sophisticated financial services, like credit or insurance. This impacts people's resilience to economic shocks and prevents them from breaking free from the cycle of poverty.”



## What has driven the accelerated growth of mobile financial services in Africa?

**AM:** From a technology standpoint, it's been driven by mobile operators. With already established large customer bases, they have created a significant retail footprint with major marketing power and brand recognition. And, of course, access to pre-paid cell phones has exploded across Africa, which further opens access. Need is also a factor. With the wave of migration from rural areas to more urban centres, people needed to be able to send money back home to their relatives living in remote areas. Similarly, small businesses need to be able to receive customer payments and pay their suppliers using more effective methods. **So, on the one hand, we have telcos and device manufacturers seeing an opportunity to expand their service offerings. And, on the other hand, there were a lot of unsatisfied market needs that are now being serviced by new platforms and solutions.** Increasingly, people are entering the gig economy to create livelihoods, and rely on mobile financial services to support these economic activities as well.

## How have mobile financial services accelerated financial inclusion and impacted broader SDG goals on the continent?

**AM:** A lot of the growth in financial services access in Sub-Saharan Africa can reasonably be attributed to mobile financial solutions like mobile money. And so, in many different ways, this has spurred a new wave of development and a new wave of inclusion, bringing millions into the financial system, thereby advancing economic resilience. This was especially true during the pandemic, with the services enabling millions to transact and access government emergency relief packages and support for their businesses. Has access to mobile financial services had an impact on the SDGs? My answer would be yes, but not enough. Yes, because we've seen some very innovative models unlocking access

to costly resources such as health services and education. For example, sharing economy models have enabled large numbers of farmers to use expensive agricultural equipment that they cannot afford to buy. Pay-as-you-go models have given millions access to clean solar energy and have helped many pay for schooling fees. We also see instances where single-women-led households have improved their economic well-being through mobile financial services. But we are still very early in our understanding of how much impact these innovations are already having and how much more impact they could have. Once we understand this, **we can be much more deliberate about how we design mobile financial services and how we shape the ecosystem they operate in to deliver greater impact on the SDGs.** A lot of work is still needed in this space.

## Looking ahead, what are the obstacles we still need to address around financial inclusion?

**AM:** There are a few things. First, there's access to affordable mobile financial services, which includes such things as digital connectivity, devices, and cost of broadband access. I'd say digital identity is also an issue. Being able to identify yourself so that you can access financial services is a major obstacle because there is a lack of digital identification in many countries across the continent. **Fortunately, there are several players coming together to ensure that digitalisation does not widen the digital and financial divide.** In that sense, building capacity around financial and digital literacy will be a key element of greater, more qualitative financial inclusion. Finally, the notion of embedded finance must be raised. Many people will use financial services for a purpose, to fulfil a specific need, not just for the sake of it. For example, financial services are being built into specific e-commerce, transport, mobility, or social experiences and use cases. This will most likely open new avenues for even greater inclusion once people have the tools and connectivity to engage with these use cases.

# Chapter 1: The changing landscape of financial inclusion in Africa

The World Bank defines financial inclusion as “individuals and businesses having access to useful and affordable financial products and services – transactions, payments, savings, credit, and insurance – that meet their needs, delivered in a responsible and sustainable way.”<sup>10</sup>

Over the last decade, Sub-Saharan Africa has experienced rapid growth in financial inclusion: by 2021<sup>11</sup>, 55% of adults had a bank account compared to only 23% in 2011.<sup>12</sup>

With greater access to financial services, more people across the continent have improved their livelihoods.

Financial inclusion has had a huge positive impact on low-income households, households in remote areas, and once-excluded groups such as women. It's also strengthened entrepreneurship in Africa, helping MSMEs expand their business while creating new job opportunities.<sup>13</sup> Financial inclusion is also a key enabler for meeting many of the UN's 17 SDGs, which recognise that ending poverty and other deprivations must go hand-in-hand with strategies to improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and preserving our planet.<sup>14</sup>

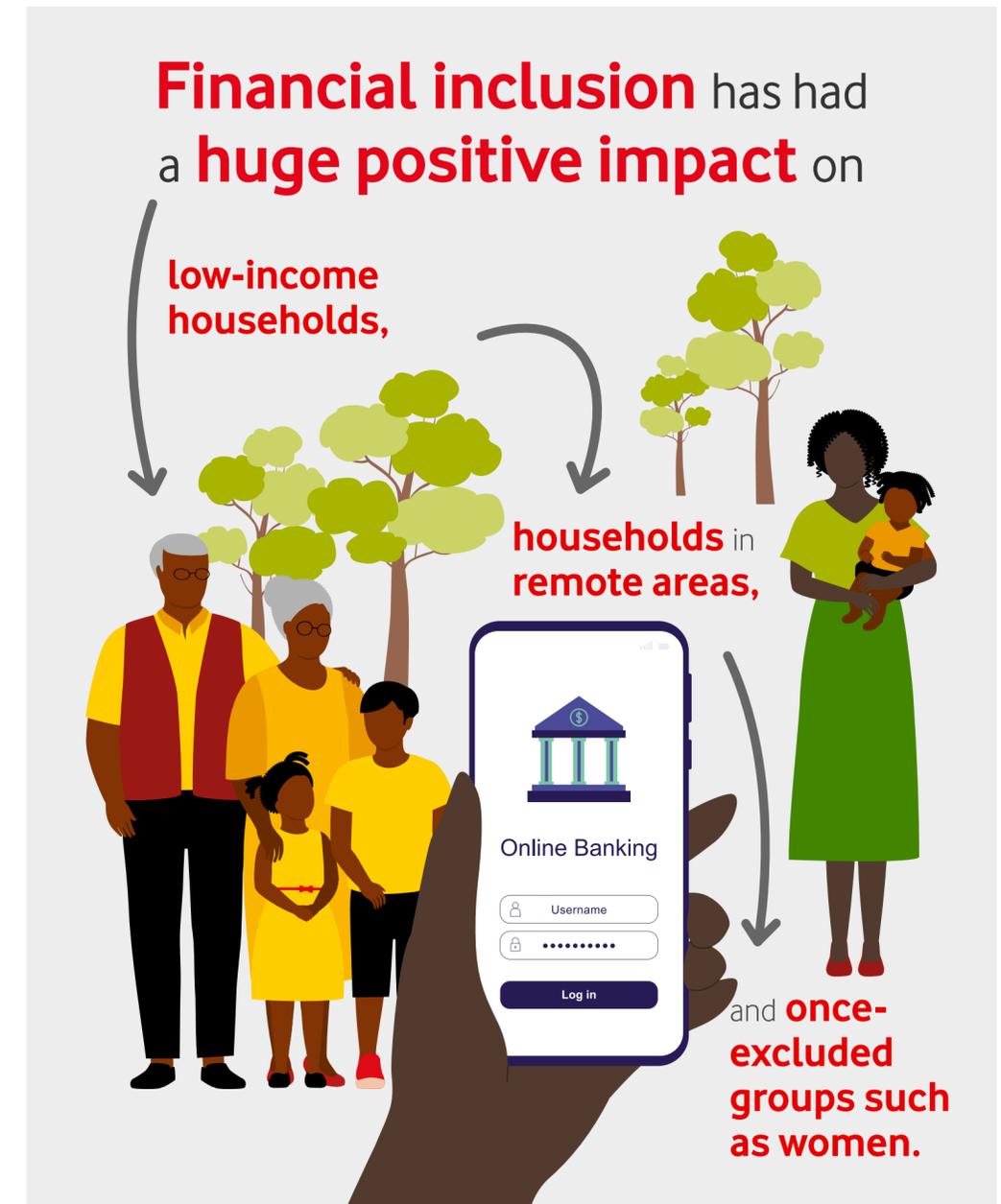
Despite increased financial inclusion, many people in developing markets still wrestle with exclusion from formal financial systems. **In fact, around the world, nearly two billion people and 200 million small businesses can't access formal savings and credit mechanisms,<sup>15</sup> while just over half of adults in Sub-Saharan Africa have an account at a traditional bank or a regulated financial institution.**

There are multiple barriers to inclusion, many arising from the urban-rural divide.

In rural areas, formal banks have limited branches, while the need to complete complicated documentation to open a bank account is another hurdle for residents in these communities.

Low financial literacy is yet another obstacle, as are unaffordable banking fees for even the most basic banking transactions.<sup>16</sup>

This is because many people living in rural areas have incredibly low or unpredictable incomes, which often means they don't meet the requirements for opening an account to begin with. **Around the world, 30% of financially excluded people cite a lack of funds as the main reason for why they can't open a bank account.<sup>17</sup>**



The figure below, taken from the 2021 Global Findex Survey, lists the percentage of Sub-Saharan Africans who still don't have a bank account, highlighting that there's much work to be done. In South Africa, while financial inclusion is progressing with only 15% remaining unbanked, easy management of finances and access to more financial services like credit or loans remain an issue.<sup>18</sup>

Figure 1: Sub-Saharan Africa's unbanked population

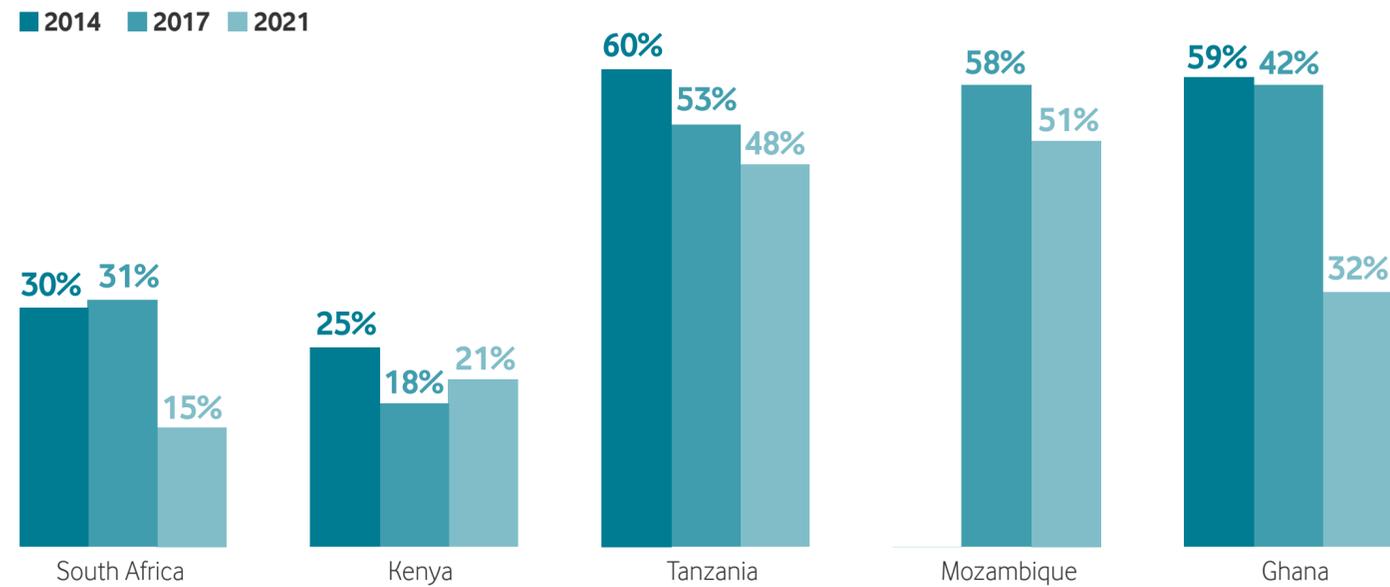


Figure 1 - Percentage of adult population without a bank account, by country in Sub-Saharan Africa

When people are financially excluded, they can only transact using cash and informal instruments, which are slower, more expensive, and less secure alternatives to formal banking systems. They also have no safe way to save money, relying on informal lenders and family members for loans.<sup>19</sup>

**Financially excluded people struggle to save money, repay debts, and manage financial shocks, all of which makes it difficult to break the cycle of poverty.**

On a macroeconomic scale, financial exclusion leads to slower economic growth and worsens inequality.<sup>20</sup> Eliminating financial exclusion in these African markets, and indeed globally, must remain a priority if we're ever to achieve the kind of meaningful, sustainable development that brings us closer to a world with zero poverty.





## Chapter 2: How mobile financial services are closing the financial inclusion gap

Financial exclusion can be addressed through a combination of regulatory, policy, investment, and technological drivers. This paper will show the success of innovative mobile solutions as a technological driver that puts financial services within reach of those who are typically excluded from formal banking ecosystems.

Today, in Sub-Saharan African countries where mobile penetration is high, mobile financial services have seen millions using these platforms to pay, save and borrow money. This wasn't always the case. Before the introduction of mobile financial services, many economies were – and still are – dominated by cash use with its associated risks.

In rural regions where bank branches are few and far between, carrying out basic day-to-day banking is a demanding activity. Some people are forced to travel far distances to reach the nearest bank – a time-consuming and expensive exercise. Citizens in Mozambique, for example, travel up to 50km either by foot or using limited transport just to do the most basic banking transaction. On finally reaching a traditional bank's headquarters, these customers are often deterred by long queues and complex paperwork. What's more, many banks have strict requirements for opening an account: customers who can't provide proof of identity, a fixed address, or the minimum account balance are excluded.<sup>21</sup>

One of several mobile financial services, mobile money – which is operated independently of a traditional bank allowing a user to store and send money via mobile money wallets on their mobile phone – is revolutionising financial service provision in the developing world. In fact, the International Finance Corporation claims that the impressive decade-long growth in financial inclusion across Sub-Saharan Africa has been driven primarily by mobile money and agent banking.<sup>22</sup>



Mobile money accounts can be opened by anyone with a mobile phone, providing an effective banking gateway to a population of around one billion individuals globally who own a phone but don't have a bank account.<sup>23</sup> Mobile money solutions offer affordable, instant, and reliable access to transactions, savings, and credit, which is more secure than cash transactions for the unbanked.

It allows customers to deposit and withdraw cash from their mobile money wallets via a network of agents, such as airtime shops or retail outlets, rather than having to sign up at formal bank branches, which can be difficult. These retailers get a small commission for turning cash into electronic value. The agent distribution network also allows lower-income individuals to gain access to financial services ubiquitously, without having to incur travel costs.

Simply put, mobile money is more accessible than formal banking institutions, thanks to these extensive networks of agents and more relaxed requirements for opening an account. This is most helpful for the poor and those living in rural areas because it allows them to build a formal credit score, further opening access to additional financial services such as loans or insurance. For example, a recent field experiment measured the economic impact of introducing mobile money in rural African villages, finding that it led to an 11% increase in money transfers and 24% increase in savings compared to traditional saving methods.<sup>24</sup> And the benefits are not just for individuals but for entire communities.

## M-PESA's case study

Throughout this report, Africa.connected gauges the impact of mobile money, using M-PESA as our case study. M-PESA was the world's first mobile money service and is now Africa's most successful one, with 15.2 billion transactions enabled through the platform in 2021<sup>25</sup> across its markets in Kenya, Tanzania, Mozambique, Ghana, the DRC, Lesotho, and Egypt. Today, it offers 52 million customers a safe, secure, and affordable way to send and receive money using their mobile phones. With the support of its partners, M-PESA also gives users access to a range of additional financial services such as credit, loans, overdrafts, and savings accounts with interest, through products like M-Koba, for example.



## M-Koba transforms group savings in Tanzania

Speaking to the impact for rural villages is Domician Mkama who has been an M-PESA customer for over a decade. When he first started using the service in 2008, it only enabled the sending and receiving of money. But, over the years, the platform has evolved. As part of this evolution, **M-Koba was launched in 2019**. It's a group-savings platform created to help digitalise savings for users in Tanzania.

Across Africa, small saving groups are common, explains Domician. Typically, people would contribute to an M-PESA account that was run and controlled by a treasurer. "This has a lot of risks because the treasurer will have all of this money in their account. We've seen groups collapse because the treasurer runs away with the group's savings" says Domician. When group savings were run this way, the money was physically collected, which was also time-consuming and made these groups more susceptible to theft.

M-Koba mitigates these risks. With M-Koba, people still contribute money to a shared pot but because notifications are sent to the group members whenever anything happens to that money, there is more accountability. Group members can still dip into the pot when they need to, but they must get the approval of their fellow members, of course. "When people come together to create these savings groups, the money sits in the M-Koba account until it is needed," says Domician. "Any transaction must be approved by other group members, so there's no uncertainty about where the money might be going, and no one can use the money without group permission."

Benefits of M-Koba include the fact that users aren't charged to transact when using this service. The platform is also interoperable, so customers from all networks can access this digital-savings facility.

"M-Koba has transformed my life," beams Domician. "It has also transformed the lives of so many others. In my community, people can now get loans through M-Koba without having to go to the bank and fill out any forms. And it's convenient because you can get a loan at any time – even in the middle of the night!"

For Domician, the financial freedom he now enjoys in being able to access money when he needs it is marvellous. Especially in an emergency when you need money quickly. "Let's say someone is sick and you need to pay medical bills, with M-Koba you can get approval for a loan in five or 10 minutes."

When Domician looks at the many different M-Koba groups – some are bigger, some are smaller – he can see how this savings platform is changing lives by giving people who were previously financially excluded the ability to access the funds they need, when they need them.



In 2022, Africa.connected conducted a consumer survey in Kenya and Tanzania to explore how people use the M-PESA platform [see Figure 2 below]. We also ran a survey of businesses using M-PESA in Kenya, ranging from those in the legal sector to those in the education space, with surveyed participants varying in size, from those with fewer than 10 employees to those with over 500 staff. Results showed that 95% of these businesses use M-PESA to conduct at least half of their business's financial transactions. The most common M-PESA use cases for businesses include receiving payments from customers (88%), paying bills (86%), and paying suppliers (82%). Paying staff wages via the platform is a trend that's gathering momentum – 61% of surveyed businesses already do this.

Figure 2: M-PESA uses cases

What do you use M-PESA for?

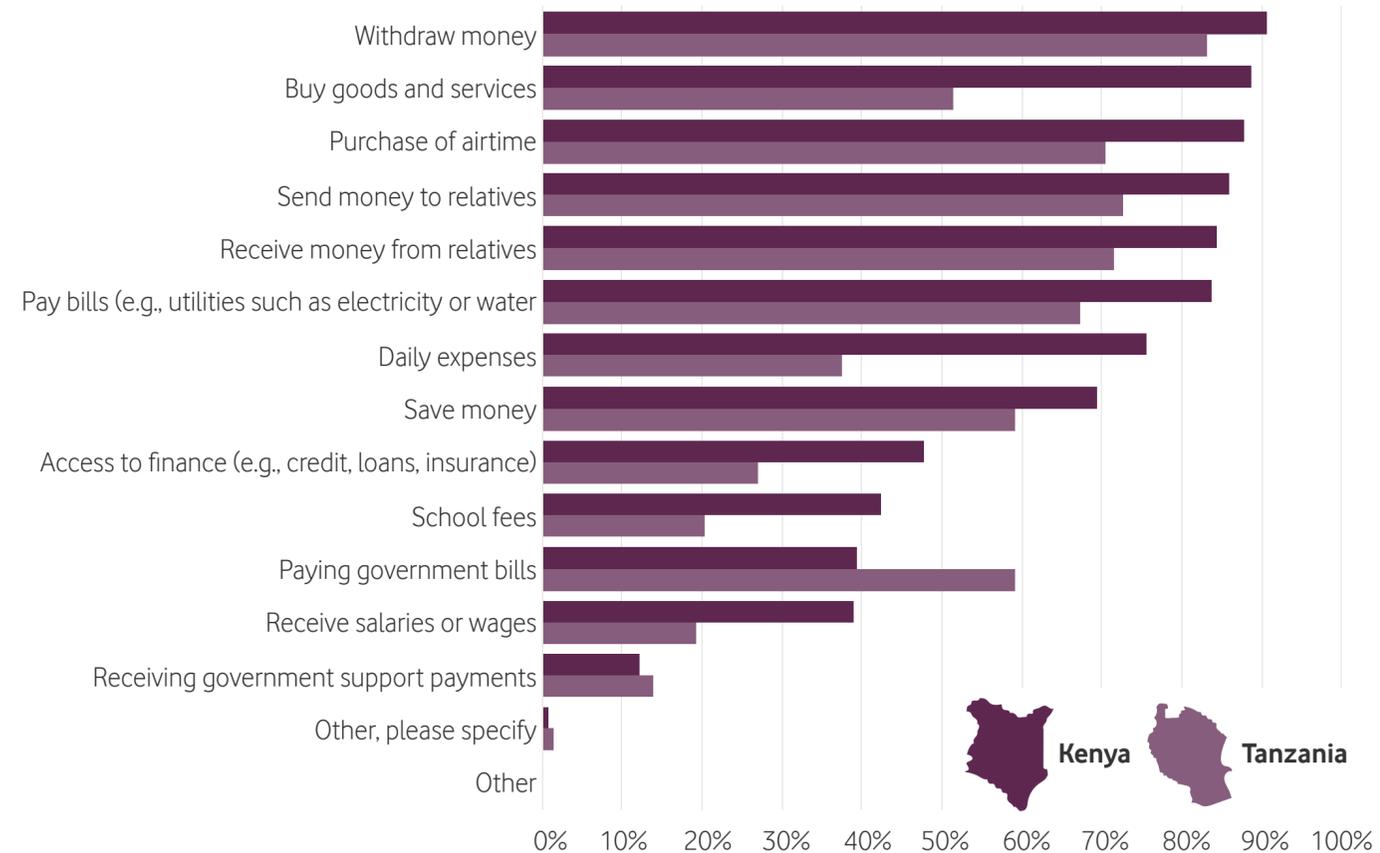


Figure 2 – Common M-PESA use cases in Kenya and Tanzania, from 2022 consumer survey





## Case study of Vodacom's mobile solutions

In this report, Africa.connected also explores the impact of mobile financial services within the context of a mature banking ecosystem such as South Africa's where the percentage of unbanked individuals is lower, using Vodacom's offering as our case study.

Vodacom provides easy-to-use payment, insurance, and lending solutions to individuals and businesses – all accessible by mobile phones. In this market, people are less reliant on the mobile money feature of mobile financial services, however they do use other features to streamline management of their finances and to access additional services such as advances and insurance.<sup>26</sup> As such, mobile financial services deliver deeper financial inclusion in mature markets because they allow users to easily check their eligibility for various forms of insurance and credit, apply online, and more quickly access the services – removing the need for paperwork, in-person eligibility checks, and long waiting times at traditional banks. All of which might deter someone from applying for insurance and lending solutions through traditional channels.

In Africa.connected's 2022 consumer survey of people using Vodacom's solutions, the most popular financial product was device insurance.

The second most common product was funeral cover, which is of particular relevance to South Africa as only 42% of South Africans had funeral cover in 2021 – down from 53% in 2019.<sup>27</sup> In the same survey, airtime advances were found to be the most common lending solution.

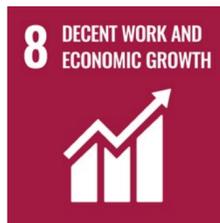
In Africa.connected's 2022 business survey of companies using Vodacom's solutions, we found that lending solutions to pay suppliers were most widely used (70%), followed by the bill payments service (59%), manage cash flow service (55%), and buy inventory and equipment service (55%). Our results highlight that lending solutions are crucial for maintaining business continuity and for managing individual cash flow.

Mobile financial services are breaking down barriers within Sub-Saharan African countries, leveraging affordable mobile phones and connectivity to overcome the challenges of costly and often inaccessible banking infrastructure.<sup>28</sup> The Africa.connected campaign is committed to supporting financial inclusion in the region by expanding access to mobile- and digital-based products and services. With 45% of adults in Sub-Saharan Africa still financially excluded, more work awaits, and we are looking at how to connect even more people to mobile financial services.

# Chapter 3: Measuring the SDG impact of mobile financial services

For each SDG, a sub-set of targets is listed to guide governments and policymakers tackling the overarching goal. Below, we explore how mobile financial services have enabled five Sub-Saharan African countries achieve some of these targets to strengthen progress on poverty reduction (SDG 1), good health and well-being (SDG 3), and economic growth (SDG 8).

For this exploration, Africa.connected uses new econometric analysis, which illustrates the relationship between successful adoption of mobile financial services and economic growth and poverty reduction. It also taps into new primary research on M-PESA to understand the financial inclusion impact and broader SDG impact of mobile money. Finally, new primary research on Vodacom in South Africa gives insight into the impacts of a broader set of mobile financial services.



## Impact on financial inclusion (SDG target 8.10)

Falling under the banner of SDG 8's focus on decent work and economic growth, this target calls on nations to "strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance, and financial services for all". As discussed above, mobile money has been a critical tool for giving millions of financially underserved and underrepresented individuals across Sub-Saharan Africa access to financial solutions, namely transactional services and varying forms of credit.

### M-PESA's impact

To further understand mobile money's impact, a survey of M-PESA users in Kenya and Tanzania was conducted in 2022. The survey was particularly focused on how M-PESA (and mobile money services in general) has given people access to financial services for the first time; how users rely on it as their only source of financial services; and how it has given people access to various forms of credit.



## Figure 3: Financial exclusion prior to M-PESA

### I didn't have a bank account before I got M-Pesa

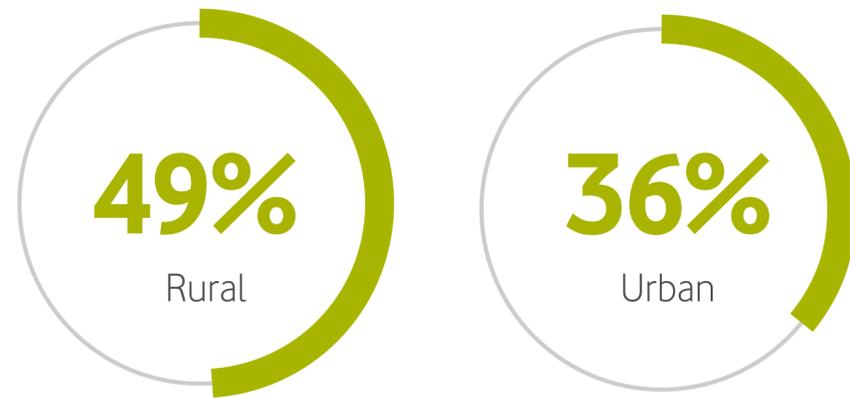


Figure 3 – Results from 2022 consumer survey, reflecting the percentage of people in Kenya and Tanzania who did not have access to formal financial services prior to using M-PESA

In response to the survey, 39% of respondents said they didn't have access to financial services, such as a bank account or mobile money wallet, prior to using M-PESA. This trend was more pronounced among typically underserved groups – 49% of rural individuals and 47% of people in the lowest-income group agreed. These results show that M-PESA has had a significant impact on financial inclusion, extending first-time access to financial services to roughly two-fifths of its users, who otherwise might have been financially excluded.



In the same survey, 34% of users across both rural and urban areas said they would still be financially excluded if mobile money was not available.<sup>29</sup> When diving deeper into typically excluded groups, 9% of Tanzanians in the lowest-income group and 7% of Kenyans living in rural areas agreed. The true number for these groups is likely far higher, given that the survey was conducted online. This makes it difficult to reach low-income users with limited digital literacy who are living in remote areas with limited internet access.

The survey also reveals how mobile money has changed the dynamics of the banking sector over time. Today, traditional banks must compete with mobile money providers for customers. Creating a more competitive marketplace has not only helped to reduce banking costs for customers; it has also encouraged traditional banks to provide more easily accessible products for the unbanked, which has seen many of these institutions turning to the same mobile technology to meet demand.<sup>30</sup> As a result, more people today have access to formal financial services. Despite this, **mobile money remains the only form of access to financial services for many people**, as our survey shows.

Figure 4: Financial inclusion via M-PESA by income groups

I only use M-Pesa, income groups



Figure 4 – Percentage of individuals who only use M-PESA to access financial services, split by income group, from Africa.connected 2022 consumer survey

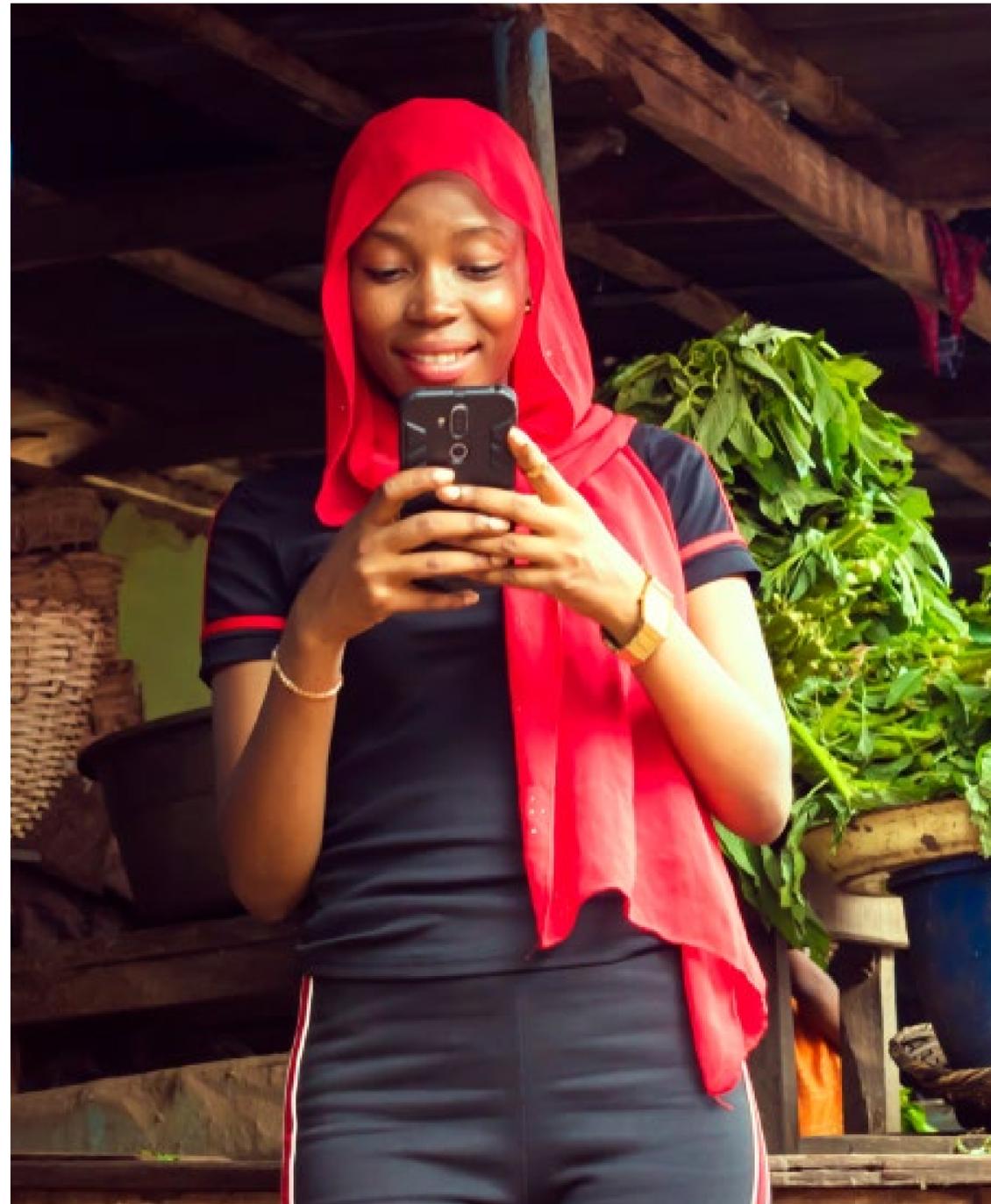


Figure 5: Financial inclusion via M-PESA by rural-urban divide

I only use M-Pesa

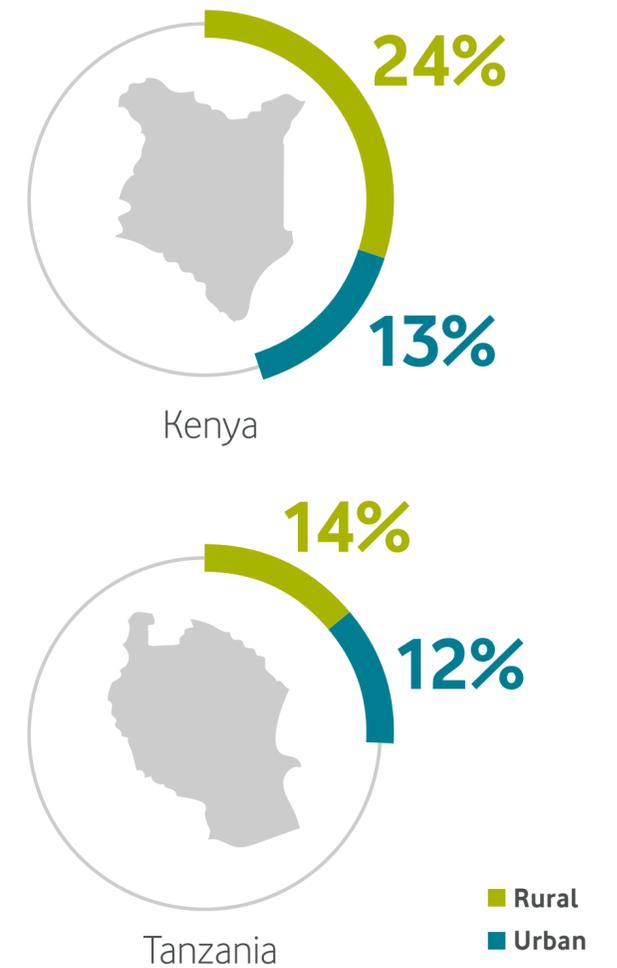


Figure 5 – Percentage of individuals who only use M-PESA in Kenya and Tanzania to access financial services, split by rural and urban areas, from Africa.connected 2022 consumer survey

Results from the Africa.connected 2022 survey shows that 22% of the lowest-income group only use M-PESA to access financial services, compared to 5 to 7% of people in higher-income groups. Similarly, 20% of respondents in rural areas only use M-PESA for financial services access, compared to 12% in urban areas. These results highlight the financial inclusion impact of M-PESA, facilitating convenient access to formal financial solutions for low-income and rural groups. Poor uptake of other financial services could be due to users not meeting the strict requirements for a formal bank account,<sup>31</sup> distrust in banking services due to poor financial literacy, high transaction fees, or because traditional banks do not have branches or ATMs in these users' areas. This final barrier is painfully obvious when you consider that, on average, there is only one bank branch or ATM serving every 10 000 inhabitants in emerging markets, and even fewer for those in rural areas.<sup>32</sup>

For many people, the only way to access personal or business loans is through a mobile money platform. In fact, 28% of surveyed users said they would not be able to borrow money or have access to credit if mobile money was not available. These results suggest that mobile money provides easier access to credit than traditional banks, where additional criteria (such as income thresholds or minimum account balances) are required to access credit.

The 2022 survey results<sup>33</sup>, which reflect the experience of a smaller sample of M-PESA users, were used to create a projection of financial inclusion for the entire user base of 52 million people [see Figure 6 below]. This projection shows how mobile money might empower people, where customers would rely on M-PESA either as their first gateway to entering a formal financial ecosystem or as their only means to access formal financial services, such as credit.

Figure 6: Financial inclusion projection

Country / Indicator	Number of adults that did not have access to formal financial services <sup>34</sup> before M-PESA	Number of adults that would not be able to access credit without M-PESA
<b>Total</b>	<b>Around 17.6m</b>	<b>Around 12.3m</b>
Kenya	Around 12.7m	Around 8.8m
Tanzania	Around 2.3m	Around 1.7m
Mozambique	Around 1.8m	Around 1.3m
Ghana	Around 780,000	Around 540,000

Figure 6 – Estimated number of M-PESA users in four Sub-Saharan African countries with increased levels of financial inclusion, based on 2022 consumer survey results



# Impact of Vodacom's mobile solutions

Beyond mobile money, broader mobile financial services including insurance and credit products can further enhance financial inclusion. To illustrate how access to insurance and credit impacts financial inclusion, Africa.connected surveyed South African users of mobile financial solutions offered by Vodacom.

Results revealed that 48% of people using Vodacom's lending solutions and 70% of those using the insurance solutions believe that alternatives to these mobile-based services would be difficult to access. The key reasons why people choose mobile-based insurance and lending solutions over non-mobile services are lower costs (70%), faster access, such as quicker approval times (65%), and an easier application process (62%). These results suggest that mobile financial services contribute positively to financial inclusion by providing quicker and easier access to financial products. Our survey shows that Vodacom services around two-fifths of insurance-solution users and half of lending-solutions users who would otherwise not have access to these services.

When it comes to businesses, Vodacom's mobile lending solutions streamlined and expedited access to credit, just as they did for individuals surveyed. When asked what the business impact would be if mobile lending services weren't available, business respondents indicated that they would have limited access to loans and other forms of credit, difficulties in building up capital, delayed access to finance, and increased vulnerability to market shocks and uncertainty. In essence, the survey shows that mobile financial services help businesses build resilience through increased access to financial products.

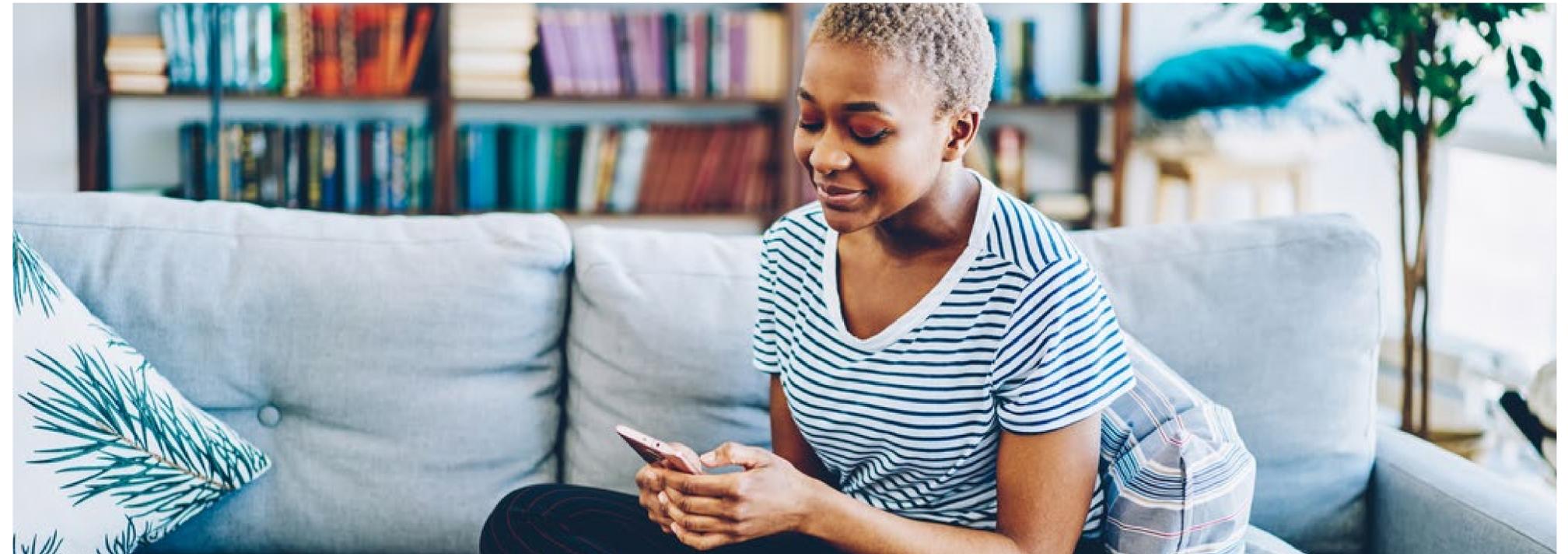


Figure 7: Financial exclusion if not for Vodacom's services

If lending solutions from Vodacom were not available, what effect would you expect for your organisation?

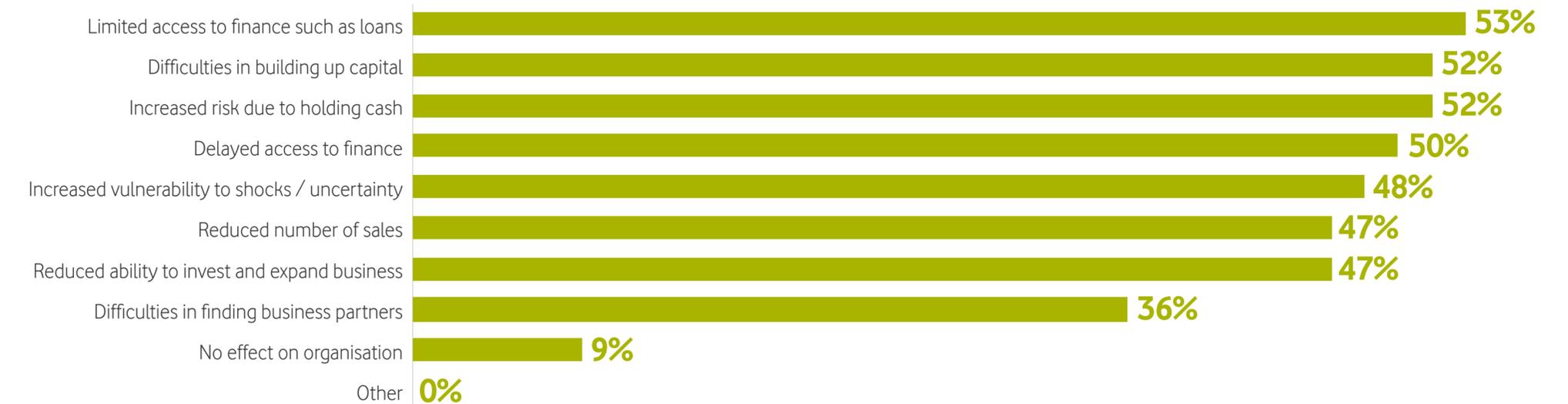
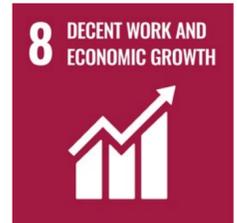


Figure 7 – Expected impact on businesses in South Africa if Vodacom lending solutions were not available, from 2022 business survey



## Impact on economic growth (SDG target 8.2)



This target calls on countries to “achieve higher levels of economic productivity through diversification, technological upgrading, and innovation, including through a focus on high-value added and labour-intensive sectors”. Economies throughout Africa are largely dominated by MSMEs, who provide an estimated 80% of jobs across the continent, making them an important driver of economic growth.<sup>35</sup> Sub-Saharan Africa alone has 44 million MSMEs,<sup>36</sup> and GSMA research has found that these businesses are already addressing their financial services needs through mobile money, with 80% owning a mobile money account and 83% using personal accounts for business activities.<sup>37</sup>

### Mobile money can support MSMEs in several ways to drive economic growth:

- **Lower friction cost:** Transactions made through mobile money services have a lower friction cost<sup>38</sup> compared to transactions made through other avenues. This means they are more affordable than traditional bank transfers and offer more security than cash transactions, encouraging small businesses to make more transactions, which, in turn, enables faster business expansion. Findings from a 2020 research paper by the International Monetary Fund supports this fact, showing that the difference in six-month sales growth for microbusinesses using mobile money was 28% higher compared to those that were not using mobile money.<sup>39</sup>
- **Expanding market reach:** Mobile money plays a key role in connecting consumers with MSMEs who were previously financially excluded. Businesses can further benefit from expanding their geographical footprint to engage with cheaper suppliers and widen their customer base.
- **Access to formal financial services:** Mobile money platforms provide MSMEs with access to formal financial services like credit, which they typically would not otherwise be able to access.<sup>40</sup> This access accelerates business growth and job creation. As a result, the size of the informal economy<sup>41</sup> is reduced, which delivers many additional benefits for MSMEs and their employees, including decent working conditions, living wage, social protection, and legal recognition.<sup>42</sup>

# Estimating the impact of mobile money services like M-PESA on economic growth

The GMSA<sup>43</sup> gauges how successful a mobile money service is based on the number of active accounts it has on a 30-day basis and on the percentage of active accounts it has as a proportion of its unique subscribers. In economies where mobile money has been successfully adopted based on this definition, economic growth appears to be significantly greater. For our purposes, Africa.connected defines a country as having successfully adopted mobile money when the service has over 300 registered mobile money accounts per 1,000 adults.

On average, the annual GDP per capita growth rate is one percentage point higher following successful mobile money adoption.<sup>44</sup> This was the finding of our econometric analysis of 49 developing economies, in which economic output per person was compared against the success or failure of mobile money services in the respective country. One caveat is the possibility that this growth rate would decline once mobile money services reach a very high adoption rate – a fact that could not be captured by the model of our analysis.

Caveat aside, the results suggest that mobile money services have a substantial positive effective on an economy. An example of this is the success of M-PESA in Kenya. Based on our econometric results for Kenya, GDP per capita is around US\$1,600 today; without successful mobile money adoption, that figure would be closer to US\$1,450. Looking back at 2019, Kenya's overall GDP was US\$84 billion, which would have been around US\$8 billion lower if mobile money hadn't been introduced; that's a 10% difference.<sup>45</sup>



Figure 8: GDP per capita growth in Kenya

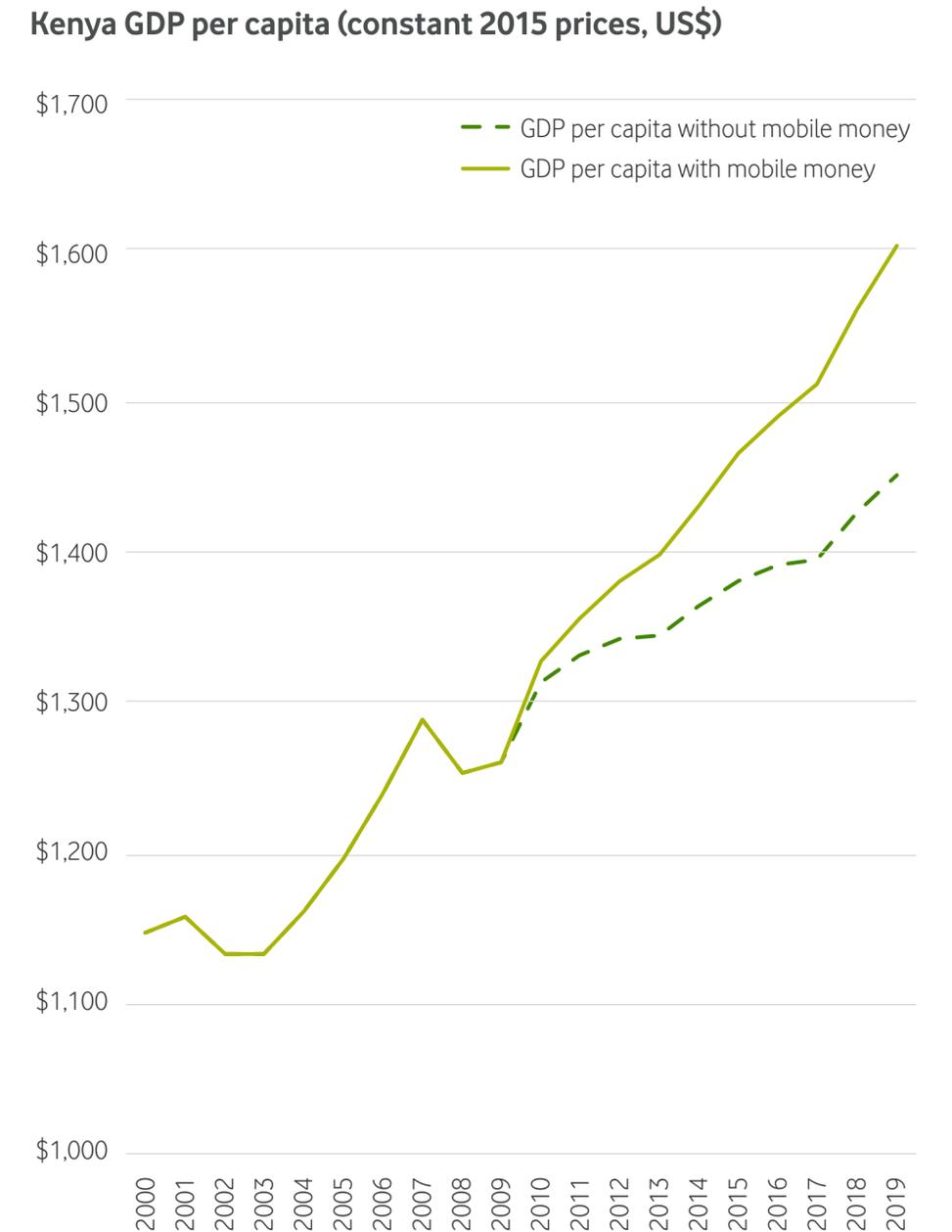


Figure 8 – Estimated Kenya GDP per capita with and without mobile money. As noted above, M-PESA was launched in Kenya in 2007 and already exceeded 600 registered accounts per 1 000 adults by 2010.

# Additional M-PESA insights from the 2022 business survey by Africa.connected

Nearly all surveyed businesses using M-PESA (98%) agreed that the platform streamlines their operations, in particular by enabling faster and safer payments to suppliers and employees.

**Figure 9: M-PESA impact on business growth**

**How does M-Pesa help your organisation to do business?**

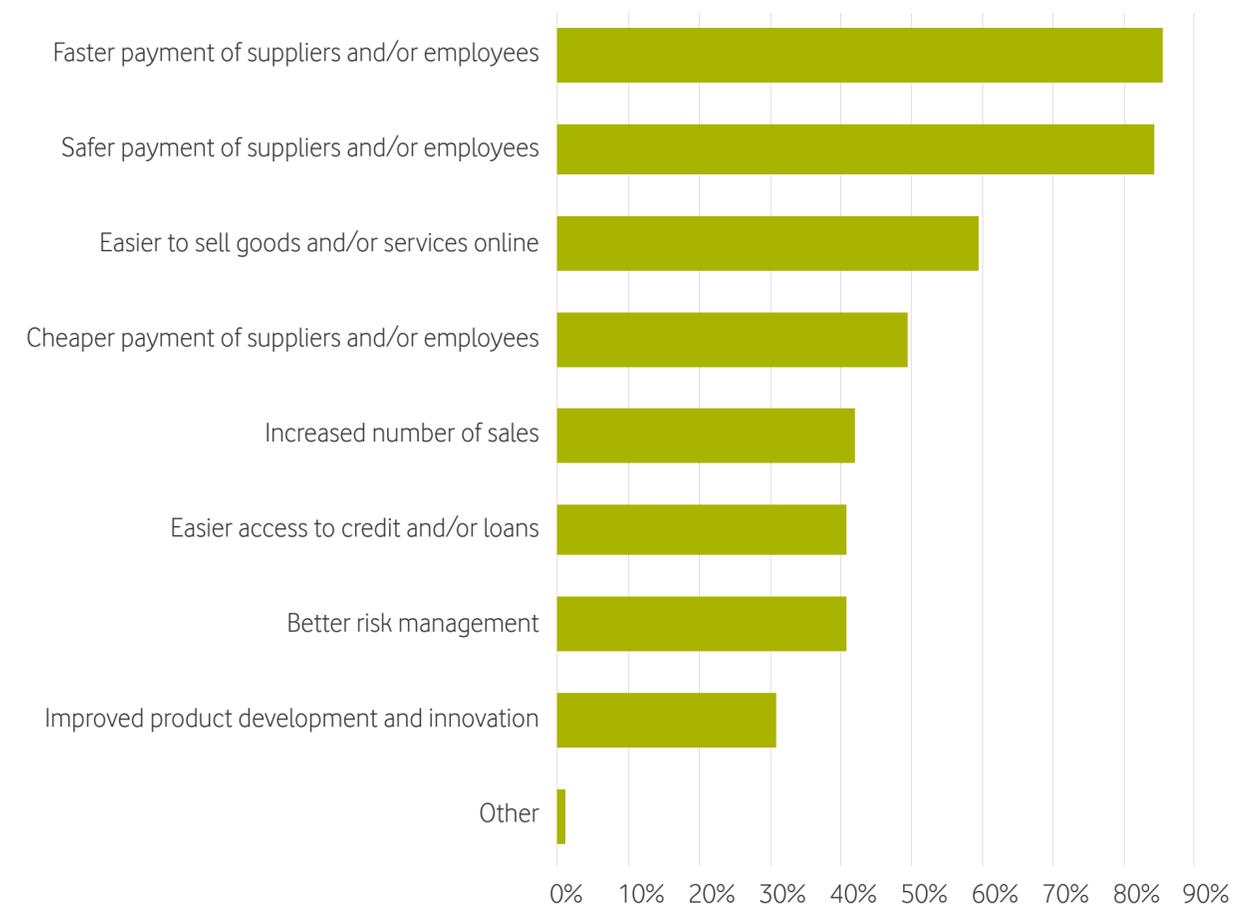


Figure 9 – How M-PESA helps organisations do business, from 2022 business survey



Beyond transactions, 41% of business respondents agreed they had easier access to credit and loans through M-PESA, with two-thirds feeling that finding alternatives to these services would be challenging. These results highlight that mobile financial services have been important enablers for business growth. Without these services, many businesses find it difficult to build up capital and are left increasingly vulnerable to market shocks. Thus, mobile financial services contribute to improved business resilience, higher earnings, more employment opportunities, and better growth over the longer term.



If mobile money were not available, 59% of surveyed businesses indicated they would use cash for at least some transactions – but acknowledged that this would come with disadvantages. On these downsides, 73% felt that cash transactions would result in “slower payments” because it would require additional time to go to a bank branch to make the transfer and additional time for the bank transfer to be received. Furthermore, 65% would expect a “reduced number of transactions” due to higher costs and higher risks associated with cash transactions. These results highlight the contribution of mobile financial services to the formalisation of the economy, helping businesses move away from more risky cash transactions.

**Figure 10: Business impact without M-PESA**

**If M-Pesa and other mobile money providers were not available, what, if any, effect would you expect for your organisation?**

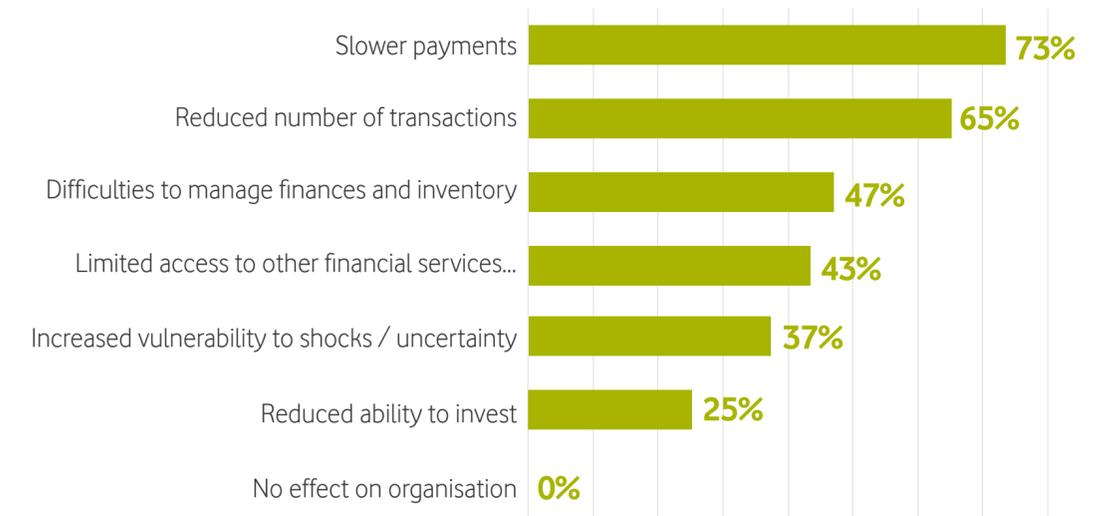


Figure 10 – Expected effects on business if mobile money were not available, from 2022 business survey

Finally, 75% of business respondents expected M-PESA to be even more important in the future, as it continues to integrate with additional financial services. This highlights the continued importance of mobile financial services as an enabler of MSME growth, and as a potential innovation catalyst in the financial services ecosystem, enabling other innovators to develop and distribute digital financial innovations on top of core mobile money services.

## Use Case

# How TamTam's Fresh Seafood is leveraging Lipa na M-PESA (Pay with M-PESA) for small-business success

Elizabeth Wanjiru is a self-confessed foodie. Born in the coastal town of Mombasa, 500km from Nairobi, she was raised to appreciate seafood culture. But when she was transferred to Nairobi for work, her beloved seafood was a little harder to come by. This is ultimately what drove her to start her business, TamTam's Fresh Seafood.

Elizabeth's mother would often send her seafood from Mombasa and when her friends started asking where she got it from, she quickly realised that there was a gap in the market. And TamTam, meaning 'delicious' in Kiswahili, was born.

A fishmonger by trade, the business was initially started as a side hustle but soon grew into something bigger than Elizabeth could ever have imagined. But with this growth came a few teething problems. "As our customer base grew, dealing with cash became quite difficult," she says. "The moment you have cash moving between two or three people, it is really hard to keep track of it."

For Elizabeth, following up with clients around how much they'd paid, manually counting the money that was coming in every day, and having to give customers change meant that some transactions could take up to three days to complete. And where she was able to use her personal bank account to pay suppliers or delivery riders, she often found it quite difficult to separate her personal and business expenses.





## Use Case continued

### Lipa na M-PESA making money matters easy

But this all changed after an encounter with an M-PESA agent who visited her store to find out what types of payments she was using to run her business. Elizabeth started using the Lipa na M-PESA business app that allows her to keep track of everything happening across her business. Through the app, she can access real-time statements, export statements, and track her business's performance on the go.

Over 170 000 merchants, including Elizabeth, can withdraw funds from Lipa na M-PESA to their M-PESA mobile money wallets, other online bank accounts, or at an agent. Business owners with a business till can also send money to other M-PESA customers such as to pay wages, pay for supplies, and make payments to other businesses – all through the app.

While TamTam might sell seafood in Nairobi, they source seafood from many different towns, so having a digital 'paper trail' makes it simpler for Elizabeth to keep tabs on everything that is coming into and going out of her business.

Elizabeth also receives a notification when a customer makes a payment. Gone are the days when she had to spend hours following up with customers or delivery riders to confirm that payment had been made. "This really has made everything much easier for me. Now I can keep good records and confirm everything at the end of each day," says Elizabeth.

Eliminating such uncertainty was a big factor for Elizabeth. In the past, most of her dealings with suppliers and customers were based on trust. As an online business, she explains, her clients don't often get to meet her in person and having the professional payment and tracking platform through Lipa na M-PESA makes them feel more comfortable doing business with her. And this often means that they buy more. She believes this legitimacy has been a major factor in the growth of her business. "Clients and suppliers can see that this is a legitimate company, so they are more likely to do business with us and they are also willing to recommend us to other people."

You need to remember, Elizabeth notes, when you start a small business, you oversee everything, from finances to marketing. This can be very time-consuming. Being able to easily track all your business finances is a game-changer. For Elizabeth, it took the responsibility of finance tracking off her plate, enabling her to shift her focus to building her digital marketing skills for the business.

"M-PESA is the reason I have been able to grow the way I have. If I look at my progress, I can see how much it has played a role in how far I have come."

# Estimating the impact of mobile solutions like Vodacom's on economic growth

Mobile financial services that deliver features beyond transactional solutions are equally effective drivers of economic growth. Such broader services deliver improved business productivity and financial management, enabling business expansion.

In the Africa.connected 2022 survey of businesses using mobile solutions offered by Vodacom, 93% agreed that these products boost efficiency, particularly by enabling safer payments to suppliers (74%) and easier collection of payments from customers (68%). If these solutions were not available, most businesses believed that they would experience a reduced number of transactions, increased transaction fees, and slower payment times – all of which would likely decrease business revenue.

Of those surveyed, 81% agreed that mobile solutions offered by Vodacom made it much easier to access insurance, with 71% stating that the services also provided better insurance terms and conditions. Additionally, 60% felt more confident when buying expensive business equipment because of the insurance available to them through Vodacom. If these mobile insurance solutions weren't available, 70% of businesses felt that their productivity would drop.



Figure 11: Business impact without Vodacom insurance

If insurance solutions from Vodacom were not available, what effect would you expect for your organisation?



Figure 11 – Expected effect on businesses in South Africa if insurance solutions from Vodacom were not available, from the Africa.connected 2022 business survey

Finally, in addition to driving financial inclusion by providing faster and easier access to credit, mobile lending solutions can deliver economic growth by enabling companies to secure loans to invest in and expand the business. These results highlight that mobile financial services, such as payments, insurance, and advances, all contribute to improved business productivity. They do so by driving faster and easier payments, reducing vulnerability to market shocks, and boosting investment in business expansion, in turn contributing to economic growth over the long term.



## Impact on poverty reduction (SDG factor 1.2)

SDG 1, which aims to tackle poverty in all its forms, has a sub-set target 1.2 that calls on governments to “reduce at least by half the proportion of men, women, and children of all ages living in poverty in all its dimensions according to national definitions” by 2030. Mobile money is a critical tool for poverty reduction because it gives poor communities access to financial services. By including more citizens within a formal financial ecosystem, mobile money stimulates economic growth, which benefits poverty reduction on a national level. To illustrate this, a 2016 study found that M-PESA lifted 2% of Kenyan households out of poverty.<sup>46</sup>

Over the long term, mobile money services can reduce poverty in several ways:

- Using these services, people can save and invest in education, healthcare, business, and other means to uplift themselves from poverty. According to the World Bank, M-PESA users in Kenya are 20 to 32% more likely to have savings than those not registered on the platform.<sup>47</sup> With barriers to doing business removed, there is also a rise in opportunities for the poor, with a positive knock-on effect of greater economic output.
- During times of economic or environmental crisis, mobile money services can help people navigate the financial shock through quick and easy international money transfers to help family and friends in need. For example, following an economic slump, a study showed that Kenyan households without access to mobile money suffered a 7% reduction in household expenditure, whereas households using mobile money were better able to manage their household expenditure by sending and receiving remittances quickly.<sup>48</sup>
- When faced with an idiosyncratic shock (i.e., a shock that only affects members of an individual household such as job loss, illness, or divorce), households with access to mobile money were better equipped to navigate it. These households were more likely to receive remittances from a more geographically distributed network of family and friends and were also more likely to receive a larger total amount of payments, helping to alleviate their immediate income concerns.<sup>49</sup>



# Estimating the impact of mobile money services like M-PESA on poverty reduction

As showcased above, mobile money services help reduce poverty by driving economic growth, either directly or indirectly – in the latter case, this could be through strengthened economic security, which, in turn, improves confidence for investing in people and equipment. The relationship between economic growth and poverty reduction is well established in academic literature. A World Bank study found that, on average, a one percentage point increase in economic growth will lead to a 2.59% decrease in the proportion of people living in poverty.<sup>50</sup>

Our econometric analysis suggests that, on average, countries with successful mobile money adoption have a one percentage point higher annual growth rate of GDP per capita. Using the relationship between economic growth and poverty reduction from literature, this would imply that countries with successful mobile money adoption could reduce poverty by around 2.6%. In the context of Kenya, for example, this would translate to around 430 000 fewer people living in poverty in 2019 due to mobile money adoption. This means that if mobile money hadn't been adopted in 2019, 16.8 million Kenyans would have been living in poverty. The actual number, with successful mobile money adoption, was 16.4 million.<sup>51</sup>

To further illustrate the point, research in 2016 found that per capita consumption in Kenya increased off the back of M-PESA, lifting 194 000 households out of poverty. Considering the average Kenyan household size is 3.9 people, this is equivalent to around 760 000 individuals. The magnitude of this figure is similar to the 430 000 figure already widely publicised in existing literature.<sup>52</sup> The bottom line being that the M-PESA results reiterate the findings of existing academic literature on the link between mobile money and poverty alleviation.

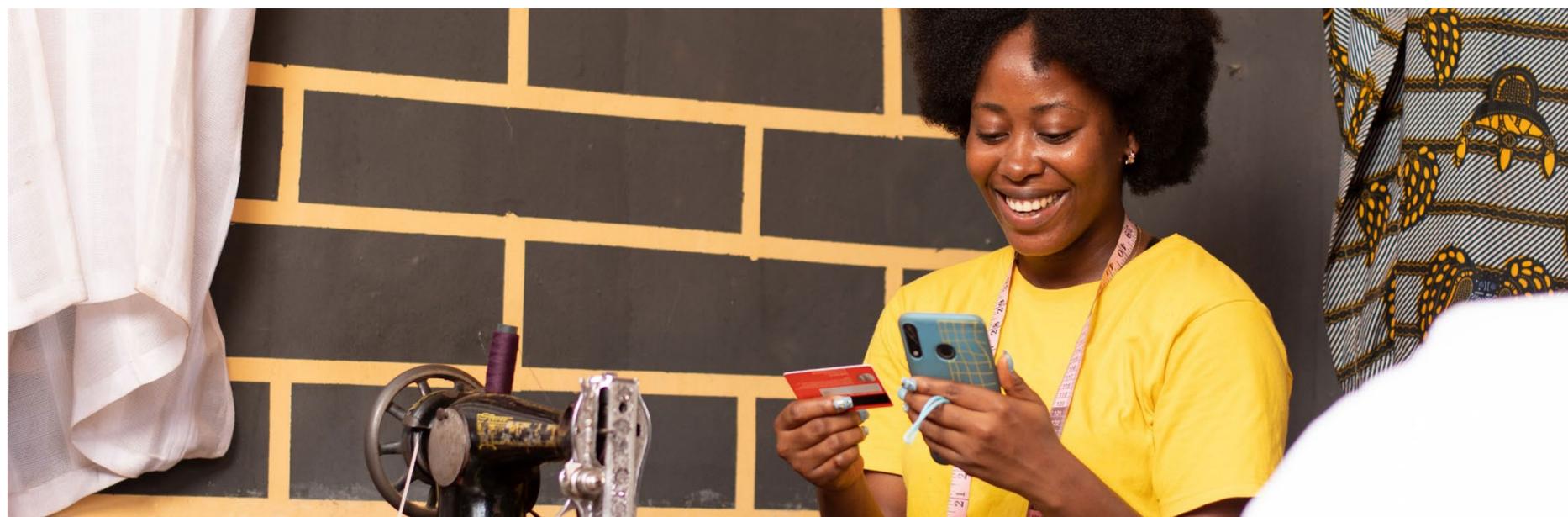


Figure 12: Mobile money impact on poverty reduction

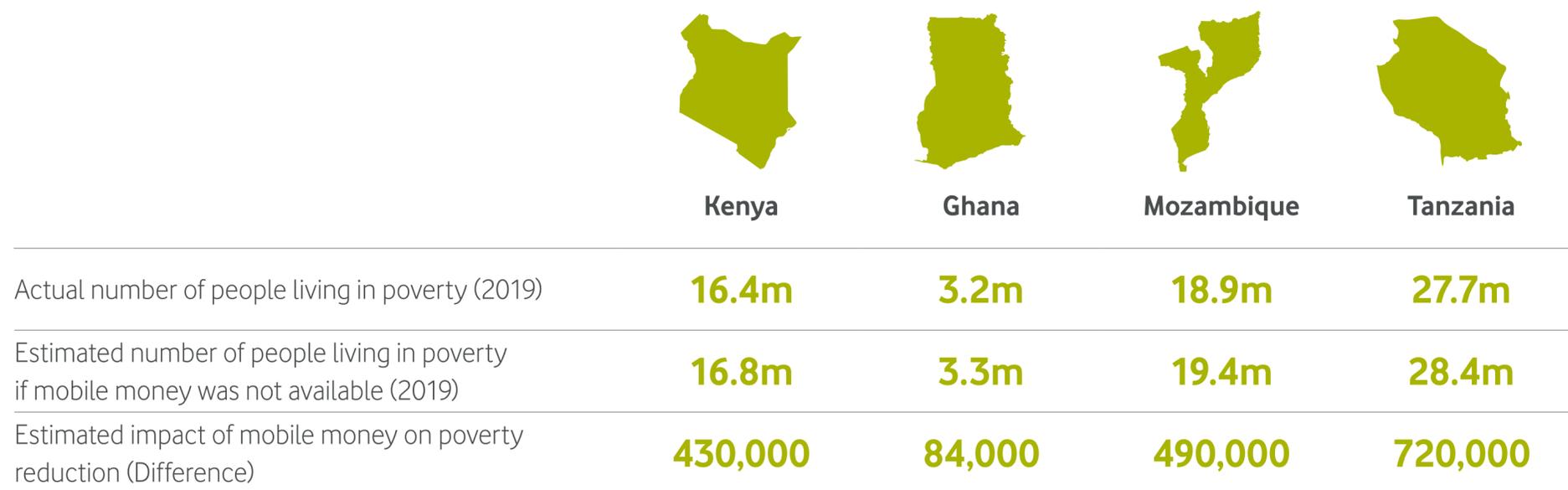


Figure 12 – Estimates for mobile money's impact on poverty reduction in Kenya, Ghana, Mozambique, and Tanzania

# Additional M-PESA insights from our 2022 consumer survey

In Kenya and Tanzania, 57% of surveyed M-PESA users agreed that they would have less money available to them without access to a service like mobile money. Kenyans living in rural areas were even more likely to believe they would have less money available, highlighting the importance of mobile money in increasing savings and incomes of low-income individuals living in rural communities.

When asked why they would have less money available, answers differed by country. Most Kenyan respondents agreed that, without mobile money, it would be harder to access financial services like credit and loans. They also highlighted that higher fees on money transfers through traditional banks would make it harder for them to save money. Tanzanian consumers responded in a similar way but also highlighted that it would be more difficult to receive money from family – an important income stream for many low-income households.

**Figure 13: Impact on finances without M-PESA**

**Why would you (and your household) have less money available?**

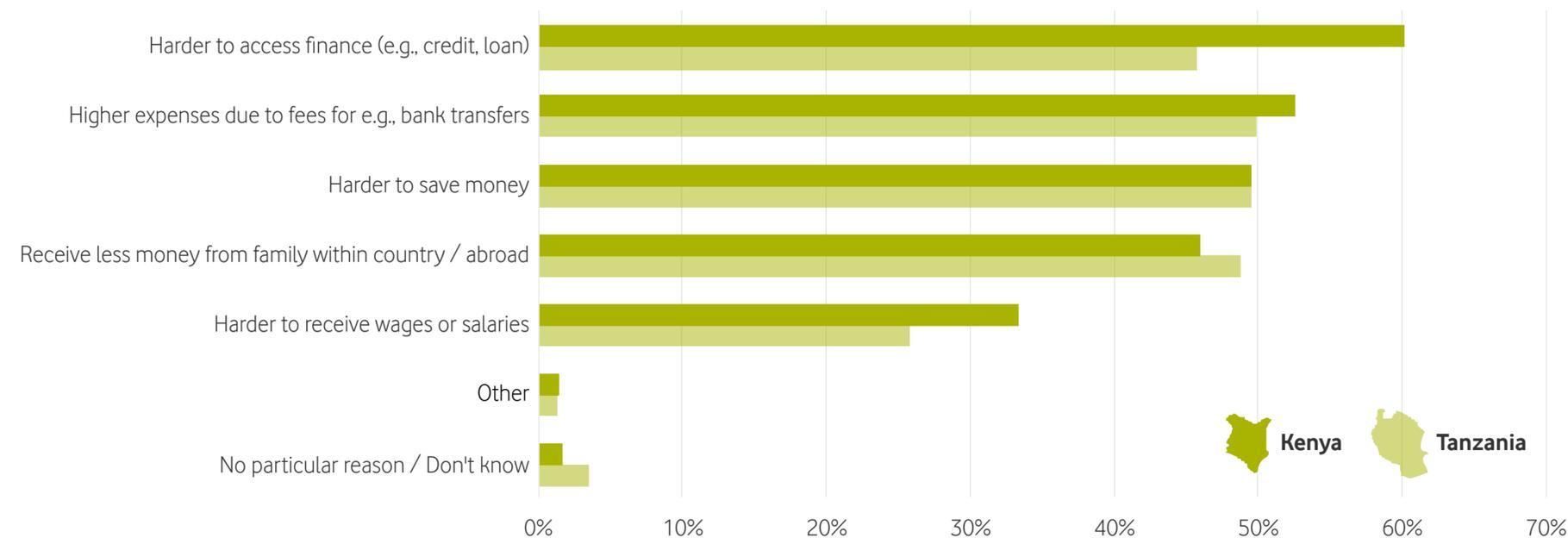


Figure 13 – Why M-PESA users in Kenya and Tanzania feel they would have less money if M-PESA and other mobile money services were unavailable, from the Africa.connected 2022 consumer survey

When asked about the *effect* that having less money would have on their household, the most common responses were that it would be harder to pay for day-to-day household needs, that they would have less money for buying personal and household items, and that they would find it harder to save money to start a business.



Figure 14: Impact on finances without M-PESA, part 2

Most likely effect on you (and your household)?

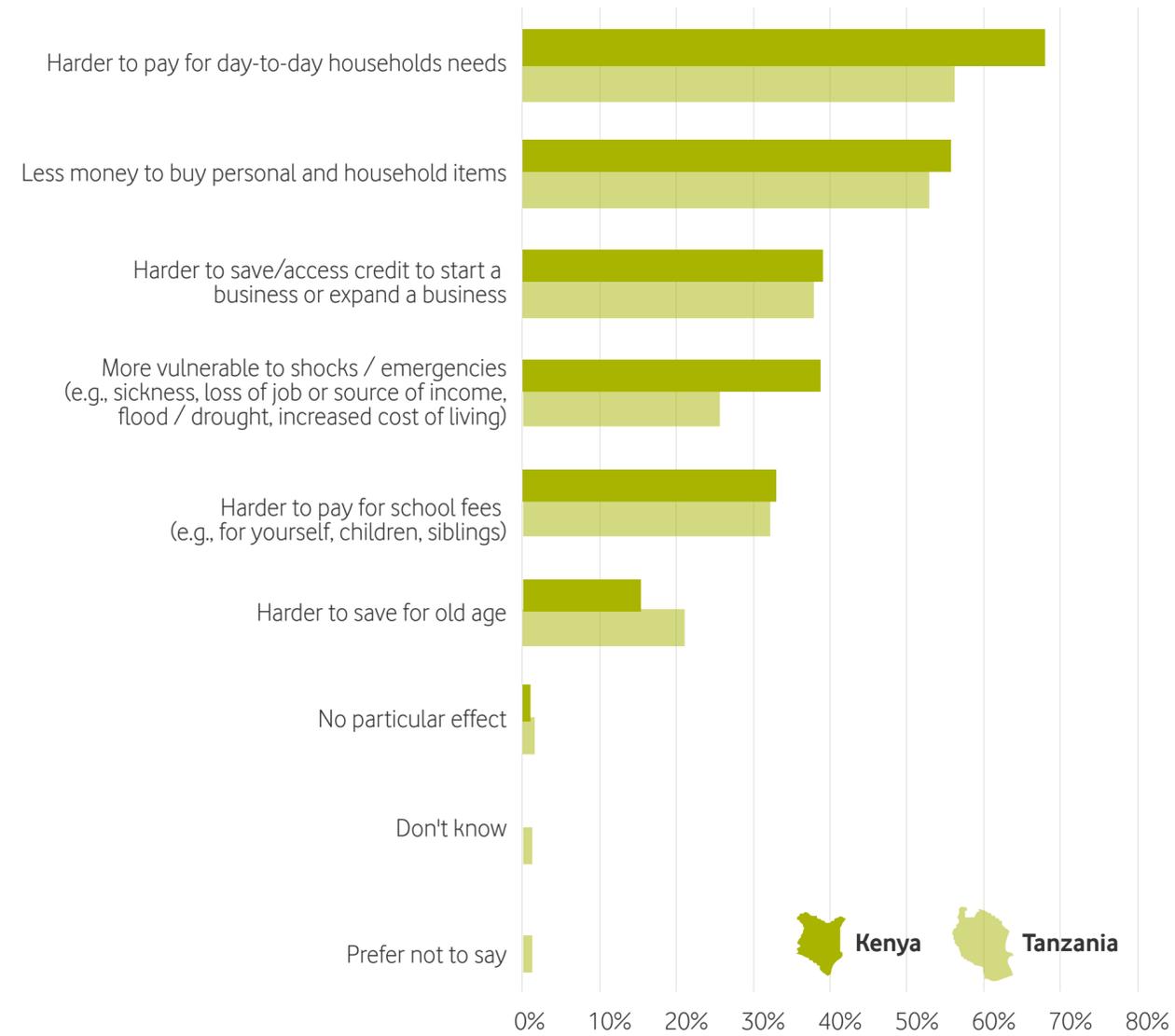


Figure 14 – The most likely effect that having less money would have on M-PESA users and their household, from the Africa.connected 2022 consumer survey

Overall, these findings are in line with those in existing literature, as they highlight the importance of mobile money as a tool to reduce poverty by increasing household income and savings, which, in turn, increases household expenditure, investment in businesses and education, and resilience to economic and environmental shocks.



## Use Case

# From socks to a super-agent – How M-PESA changed Dona Maria's life

Maria's story is more of a journey. When she lost her job several years ago, she used her savings to start a second-hand sock business in her Mozambican village. Here, she sold socks to customers on the street from a simple stall. But when sales started to increase, she realised that she could transform her humble retail business, meeting the more basic and urgent needs of her established customer base, with a more profitable offering. "So, I decided to set up an establishment to sell food products," she says.

Her grocery store was running quite smoothly when an M-PESA team showed up at her door in 2016 and explained how the service worked and how it could boost her business.

At the time, Maria didn't know anything about the mobile money service, but they encouraged her to consider using it for payments at her store. They also suggested that she become an M-PESA agent. This would mean that she could offer cash deposits and redemption services to other M-PESA subscribers. She took the chance and accepted.

**"The decision meant that customers could pay for purchases of my products through M-PESA," Maria explains, "and, as an M-PESA agent, customers could also deposit and withdraw money with me."**

Now earning a commission from her work as an agent, Maria was driven to invest more in the service and eventually left the grocery store entirely.



**"When I started making more money with M-PESA than I was making selling products at the grocery store, I left the store to focus my efforts on M-PESA," she says.**

One day, she hopes to become an M-PESA super-agent and is working hard every day to realise this dream.

**"M-PESA is very important for Mozambicans because it's practically a bank. Now we can transfer money to family members who are in distant areas. It has brought benefits to so many."**

Having worked with M-PESA for a long time, Maria understands that the platform provides opportunities for people, especially for women, helping increase their income. Maria has had such a positive experience and is so grateful for her M-PESA experience that when people ask her what it takes to be an M-PESA agent, she always explains how to do it because she wants to help others get the most out of the service, too.



## Estimating the impact of mobile solutions like Vodacom's on poverty reduction

In countries with more mature financial systems, mobile financial services still have a role to play in poverty reduction. Under these services, access to features like mobile money, insurance, and credit enable users to navigate unforeseen economic and environmental shocks – common poverty traps.

In 2022, Africa.connected surveyed users of mobile solutions offered by Vodacom. Of all surveyed respondents, 56% of those using insurance solutions and 49% of individuals using lending solutions agreed that they would be more vulnerable to economic shocks and uncertainty if they did not have access to mobile financial services. Our results show that around half of Vodacom's users likely experience increased financial security and improved resilience to economic shocks than people not using these services.

Vodacom's insurance- and lending-solution users who would feel more vulnerable to economic shocks without mobile financial services.

**56%**  
insurance  
solutions



**49%**  
lending  
solutions





## Impact on mitigating the effects of COVID-19 (SDG target 3.d)

SDG 3 centres on promoting good health and well-being, which mobile financial services have enabled in the larger context of healthcare access, during and after the pandemic, which has a positive knock-on effect on healthcare expenditure that supports the economy. For example, studies have found that, compared to non-users, mobile money users are more likely to take advantage of formal healthcare services and therefore boost public expenditure on healthcare.<sup>53</sup> Through M-Tiba, a mobile money health wallet that enables health payments, savings, and access to credit, 155 000 patients were able to visit medical facilities resulting in USD\$2 million in medical pay-outs to these public facilities.<sup>54</sup>

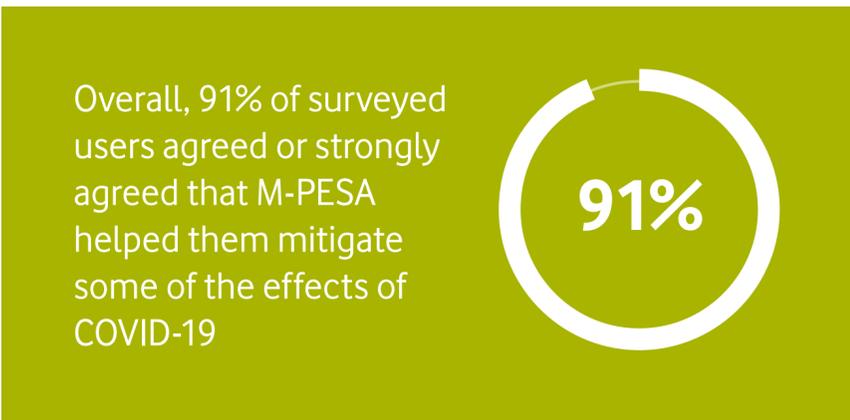


Narrowing the SDG focus to the context of the pandemic, the UN’s sub-set target calls for capacity strengthening to “manage national and global health risks”. The COVID-19 pandemic plunged billions into lockdowns of varying severity and duration, increasing reliance on digital and mobile networks to keep societies functioning. During this time, mobile financial services kept people connected and empowered, enabling them to buy goods and services online, access credit or loans to ease growing financial burdens, and reduce the transmission risk associated with cash.



Throughout the pandemic, mobile operators continued to innovate to make accessing and using mobile financial services much easier. In the case of M-PESA, this included increasing daily mobile money wallet limits, waiving some of the P2P fees and merchant payments fees paid by customers, reducing transaction fees, and promoting the use of the platform over in-shop purchases to limit interactions between people and curb the spread of the virus.<sup>55</sup>

In the Africa.connected 2022 consumer survey, we asked individuals in Kenya and Tanzania how M-PESA had helped them throughout the COVID-19 pandemic. Overall, 91% of surveyed users agreed or strongly agreed that M-PESA helped them mitigate some of the effects of COVID-19 – as highlighted in Figure 15 on the next page.



## Figure 15: Improved individual well-being through M-PESA during pandemic

### How did M-Pesa help you (and your household) cope with the effects of COVID-19?

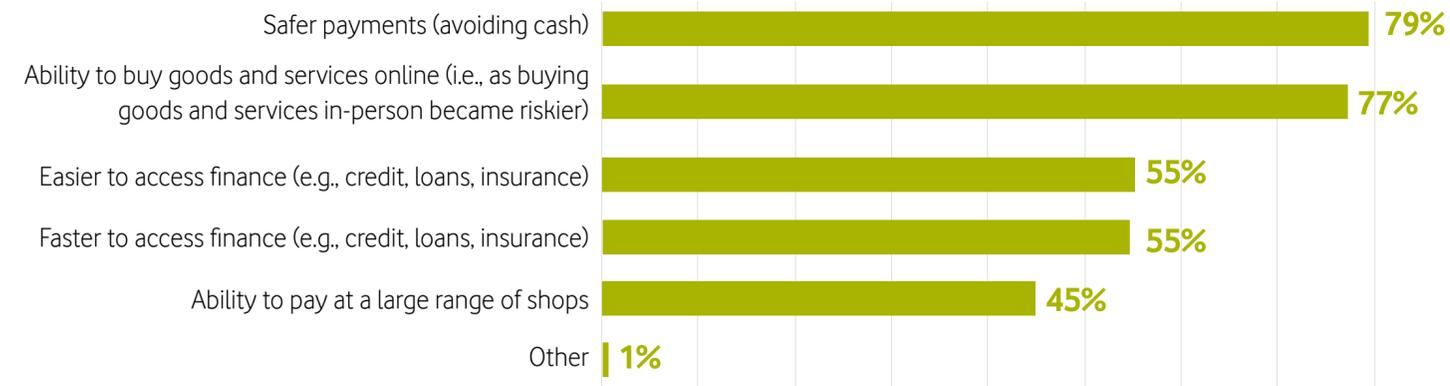


Figure 15 – How M-PESA has helped users and their households cope with the effects of COVID-19, from the Africa.connected 2022 consumer survey



In our 2022 business survey, businesses in Kenya were asked how M-PESA helped their company throughout the COVID-19 pandemic. Overall, 94% of surveyed organisations agreed or strongly agreed that M-PESA helped them mitigate some of the effects that COVID-19 had on the business – with over three-quarters also noting an increased number of suppliers and customers using M-PESA. These survey results highlight the continued importance of maintaining and increasing access to effective mobile financial services during global health crises and to drive economic recovery after.

## Figure 16: Improved business well-being through M-PESA during pandemic

### How did M-Pesa help your organisation to mitigate some of the effects that COVID-19 has had on your organisation?

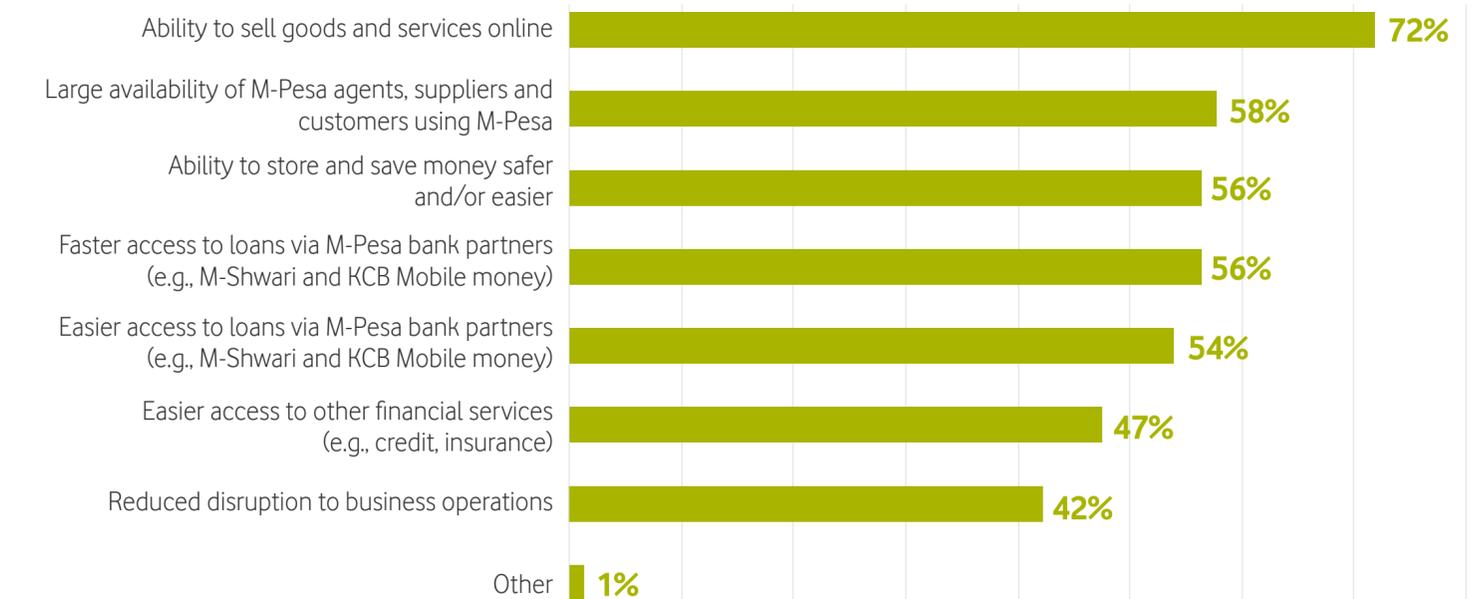


Figure 16 – How M-PESA has helped businesses mitigate the impacts of COVID-19, from the Africa.connected 2022 business survey



## Impact on well-being (SDG target 3.4)

The focus of this sub-set target is to promote better “mental health and well-being”. The negative impact of financial exclusion on well-being, particularly mental health, has been well-documented.

In their 2021 survey, Findex found that 50% of adults in developing economies worry about covering healthcare expenses in the event of a health shock, with 52% of adults in Sub-Saharan Africa worrying about paying for school fees. These financial concerns were exacerbated by the pandemic, with 82% of adults worried about the long-term financial implications of COVID-19.<sup>56</sup>

**In contrast, financial inclusion has been found to have a strong positive impact on well-being, and on health expenditure more broadly.**

Being financially included means an increase in household expenditure on food and healthcare, a trend that is stronger in households headed by a woman.<sup>57</sup> Reiterating these findings, the Africa.connected consumer survey on mobile solutions offered by Vodacom revealed that respondents felt empowered by these solutions for improved well-being [see Figure 17]. These results show that mobile financial solutions, particularly insurance, help ease financial worries, thereby improving the well-being of most users.

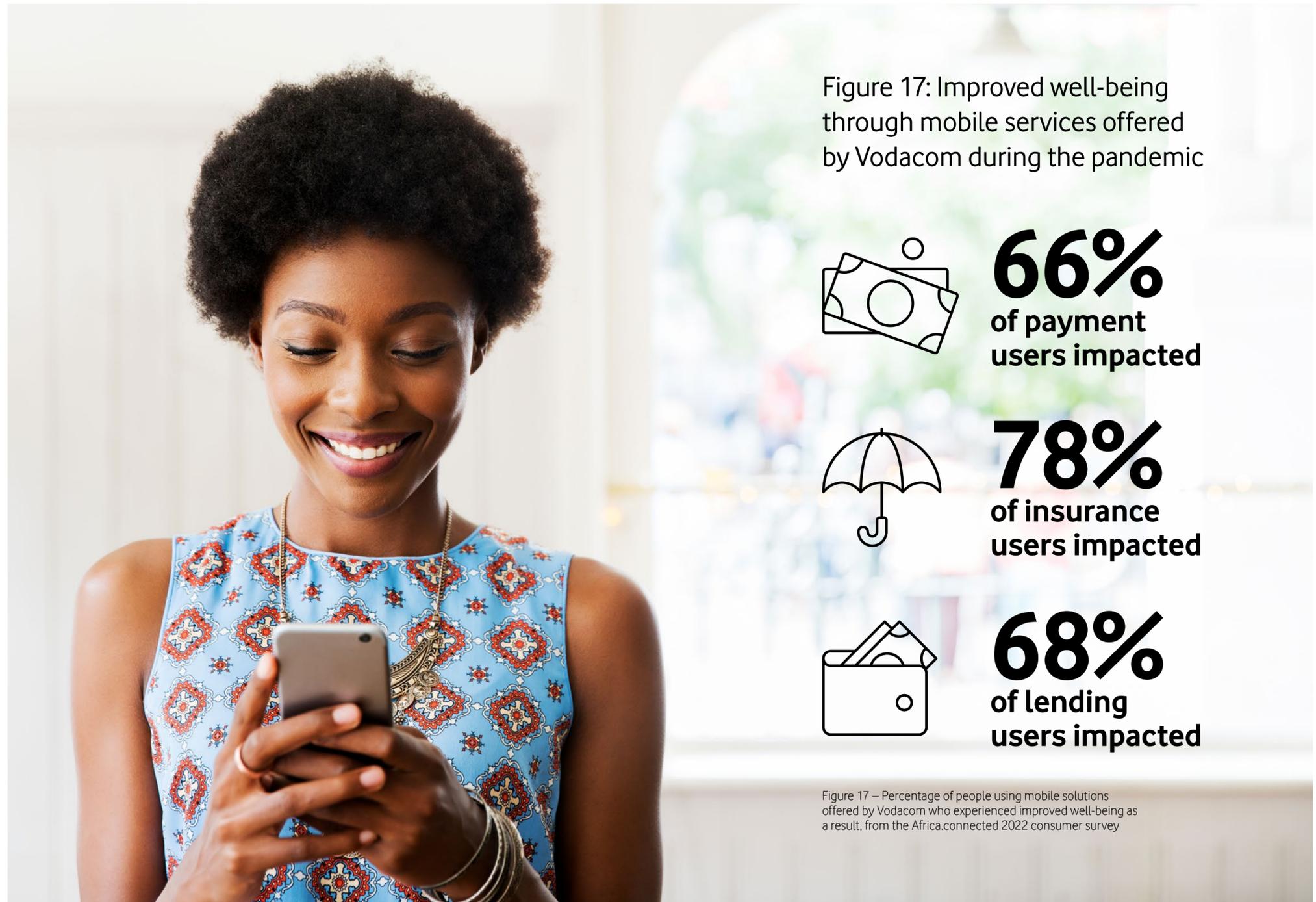


Figure 17: Improved well-being through mobile services offered by Vodacom during the pandemic

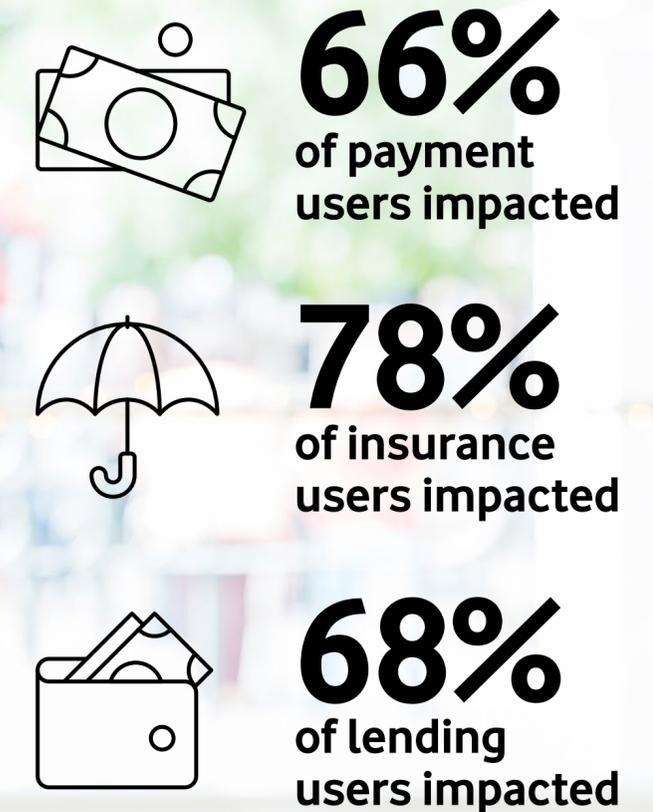


Figure 17 – Percentage of people using mobile solutions offered by Vodacom who experienced improved well-being as a result, from the Africa.connected 2022 consumer survey

# Chapter 4: Balancing mobile financial services' benefits and risks

Having unpacked how financial inclusion is tied to the goals of reducing poverty (SDG 1), improving good health and well-being (SDG 3), and driving economic growth (SDG 8) in the previous chapter, we showed how mobile financial services are key. This is because they expand the reach of financial inclusion to the very communities the SDGs were created to uplift: the poorest and most underserved people in society.

However, these are not the only SDGs that mobile financial services support [See Figure 18 below]. The impact of mobile financial services can be felt far more broadly, from driving gender equality (SDG 5) to reducing hunger through sustainable agriculture (SDG 2).

Figure 18: Theory of Change for M-PESA

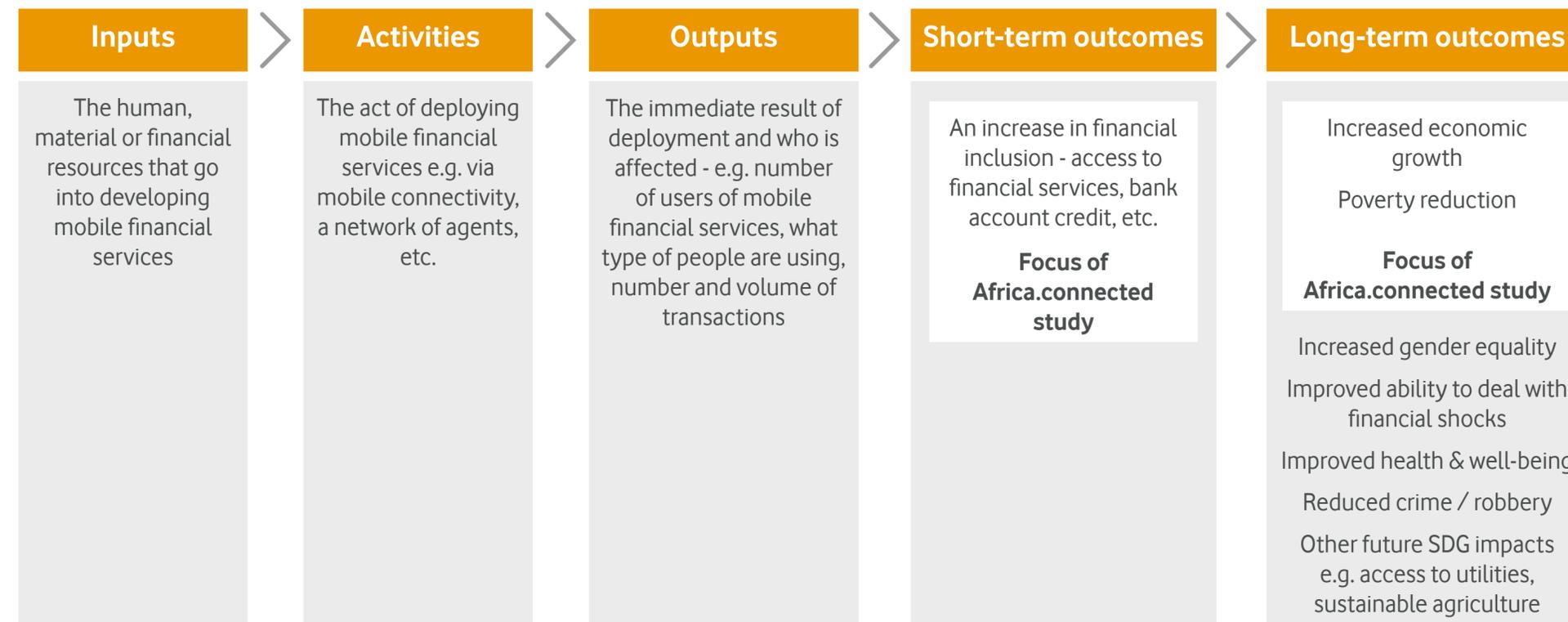


Figure 18 – Theory of Change (ToC) for M-PESA. A ToC is a description of how a product drives change over time to achieve ultimate long-term impacts

# Broader SDG impact on bettering quality of life

Below, we provide an overview of how mobile financial services like mobile money support a broader SDG impact in a way that empowers and uplifts to better lives:



**Boosting affordable access to utilities (SDG 7):** Using cost-effective pay-as-you-go models, mobile money can give citizens greater and more affordable access to utilities like clean solar energy and water. For example, in Tanzania, the digitalisation of water payments via mobile money not only reduced water-collection waiting times from three hours to 10 minutes, but also tripled water utility payments.<sup>58</sup>



**Increasing gender equality (SDG 5):** Too often, women can't access financial services (such as savings platforms) as easily as their male counterparts. Mobile financial services are changing this, as one Kenya-based study shows. Mobile money enabled surveyed women-headed households to increase their savings by 22%.<sup>59</sup>



**Strengthening food security through sustainable, inclusive agriculture (SDG 2):** Increasing sustainable food production means creating an agricultural ecosystem that includes and supports smallholder farmers. Reducing the time that it takes for these farmers to receive payments and eliminating the risk associated with cash-based transactions can be achieved by digitising the agricultural value chain. In doing so, smallholder farmers won't need to rely on middlemen as heavily for crop payments. For example, mobile-based agricultural loan repayments reduced collection times in Kenya by 46% and costs by 80%, with savings often being reinvested by farmers to improve their yield – contributing to

increased food production.<sup>60</sup> Another study looked at farmers in East Africa using mobile agricultural micro-insurance to reduce financial losses, which led to 16% higher earnings compared to uninsured farmers.<sup>61</sup> Mobile financial services also streamline the process of buying equipment and agricultural inputs for smallholder farmers. An example of this can be found in the BanQu solution integration rolled out by Tanzania Breweries Limited (TBL), in partnership with Vodacom Tanzania. BanQu is a software-as-a-service company that provides AB InBev (TBL's parent company) with a blockchain-powered platform for the management of supply chains and records. M-PESA is also integrated to enable payments and purchases made via BanQu to be directly deposited. This system is expected to increase transparency and traceability of payments throughout TBL's agricultural value chain, aiming to reduce the risk of payment fraud, enhance long-term yield management, and improve farmer access to credit and other financial services over the long term.<sup>62</sup>



**Boosting sustainable environmental management on land (SDG 15):** Mobile financial services can be used to finance environmental protection efforts, including payments for conservation, carbon offsets, ecosystem services, and regenerative agricultural practices. For example, M-PESA was the first African fintech platform to partner with United for Wildlife's financial taskforce, established to tackle the illegal wildlife trade. M-PESA will work to strengthen the



links between financial institutions and law enforcement by ensuring there are no illegal funds going through the platform that support the illegal wildlife trade.<sup>63</sup> This action also speaks to the UN's SDG 17 for partnerships created to meet SDG targets.

**Supporting greening initiatives (SDG 13):** The Green Digital Financial Alliance's "Every Action Counts Coalition" is an initiative that leverages digital technologies and partnerships to empower one billion people through education around the sustainability of their everyday choices, while also rewarding them for engaging in greening activities that tackle climate change and biodiversity loss.<sup>64</sup> This is a great example of how digital and mobile financial services can further national development agendas and work toward SDGs, steering the world onto a more sustainable course.



**Strengthening infrastructure investments (SDG 9):** Governments are exploring how micro savings from citizens can be channelled into development projects. For example, in Bangladesh, total citizen savings were around USD\$103 billion, but only 6% of these savings help finance the country's development budget.<sup>65</sup> With support from UNDP and UNCDF, Bangladesh is now exploring innovative financial instruments and partnerships with digital financial providers to give its citizens the opportunity to directly invest in building their own infrastructure while also getting equitable returns.<sup>66</sup>

# Managing the risks and potential negative impacts of mobile financial services

The previous sections highlight important positive SDG impacts delivered by mobile money and broader mobile financial services. These solutions deliver financial inclusion by providing cheaper and faster access to a range of financial services. This access, in turn, accelerates economic growth by increasing business productivity and enabling business expansion, which helps to reduce poverty by improving people's ability to save, invest, and stay resilient in economic slumps.

We've also highlighted that being able to invest in healthcare, which eases financial worries, leads to improved health and well-being. Beyond these impacts, mobile financial services are enablers of several broader SDG themes – helping to shape a sustainable, inclusive agriculture ecosystem, and enabling access to green energy, for example.

While these positive impacts are indisputable, mobile financial services do come with their own set of risks. A balanced view requires us to acknowledge potential pitfalls, which include fraud and over-indebtedness.

Despite delivering large financial inclusion gains, lack of formal identification on these platforms makes it possible for customers' and agents' identities to be impersonated.<sup>67</sup> Fraud can also occur at a transactional level, for example through reversal requests. This might entail a customer requesting a transaction reversal for a legitimately successful purchase. It can also arise through split transactions, where agents split cash-in transactions to earn multiple transaction commissions.<sup>68</sup>

On a broader scale, risks associated with cross-border monitoring must be considered. There is potential for fraudulent or laundered transactions to be made, especially because every region has a unique set of financial regulations that may impact how mobile financial services are implemented and used.

Over-indebtedness is another concern. Increased access to finance through mobile financial services can lead to accumulating debt, particularly when loan-repayment terms and conditions are unclear, or in cases where people use borrowed funds for gambling.<sup>69</sup>

More effective policies and controls should be introduced to better manage risks. This is the consensus of institutions like GSMA and the World Bank, who have published guidelines for navigating the risks. These guidelines include the GSMA's 2019 *"Digital credit for mobile money providers: a guide to addressing the risks associated with digital credit services"* and *"Mobile money and consumer financial health"*, published by the organisation in 2021.

To minimise the risks while extending the positive impact of mobile financial services, Africa.connected feels that the way forward is through partnerships. It's critical that all stakeholders collaborate to accelerate SDG progress – responsibly and securely – through mobile financial services.





## Chapter 5: Policy considerations that can amplify impact

Mobile money and other mobile financial services have had a transformational impact in Sub-Saharan Africa, tackling poverty, accelerating economic growth, and improving health and well-being. However, there remains an opportunity to build on these strong foundations to further increase investment and extend access to mobile financial services to amplify their SDG impact. The Africa.connected campaign and the UNDP encourage all players within the system – from mobile network operators and fintech innovators to financial institutions, digital financial platform providers, governments, regulators, and investors – to collaborate on this to amplify the impact and better mitigate the risks.

The need to take further action is compounded by the crises facing our planet today, including the ongoing COVID-19 pandemic and associated recovery efforts, political conflicts, climate-related disasters, and the rising cost of living. Throughout these crises, financial inclusion of individuals, and

particularly of the underprivileged, is critical to maintaining economic resilience and accelerating recovery. Policymakers have various levers to encourage financial inclusion, by enabling greater access to the internet, improving digital skills, and creating an enabling environment for mobile financial services to thrive in.

However, there are several barriers preventing full uptake of mobile financial services and their associated benefits. One such barrier is taxation of mobile money. To tackle the above-mentioned crises and other SDG priorities, governments are needing to increase taxes, including taxes on mobile money transactions, as a way to levy funds for competing priorities. Although such expansion of the tax base can help with financing other development priorities, the resulting cost of mobile money transactions are often unaffordable for poorer users, hindering uptake of the service. Other barriers include poor financial literacy, lack of digital access and a lack of digital capabilities.

Below, Africa.connected highlights a series of high-level policy recommendations to accelerate the uptake of mobile financial services in Africa:



**Enabling legal and regulatory environment** – In several markets, the number of telco-led mobile money accounts is higher than the number of traditional bank accounts, driving much-needed financial inclusion. To continue this momentum, stakeholders must create an open and level playing field where financial regulators allow both traditional banks and non-traditional financial-service providers to operate, and where digital finance innovation is furthered through greater interoperability and openness of payment rails. It's a positive sign that a growing number of countries have already enabled or are in the process of enabling the development of such an open and competitive market. This progress has allowed mobile network operators and other non-bank entities to launch mobile financial services solutions either directly or through separate, wholly-owned legal entities, to help governments meet SDG targets for inclusion.



**Risk-based Know Your Customer (KYC) regulatory requirements** – One of the main obstacles to providing appropriately regulated financial services or products to unbanked customers is the lack of reliable identity documentation and data verification. Low-income individuals or forcibly displaced persons, such as refugees, often do not have the proper IDs to meet traditional customer due-diligence requirements. A risk-based approach allows some flexibility in providing access to basic regulated financial products to a larger proportion of the population. This can be achieved through tiered KYC mechanisms, for example.



**Consumer-protection mechanisms** – The safety of mobile money relative to cash is often cited as one of its key benefits for customers. Customers could benefit from even greater protection through increased transparency, customer-recourse processes, insurance protection, and privacy and data-security measures. Enhanced consumer protection could be achieved through market-conduct regulation that promotes transparency. For instance, requiring agents to post applicable fees, requiring price disclosure for mobile transactions, prohibiting agents from charging extra fees without clearly disclosing them to customers, requiring contracts to be simple and include all relevant fees and charges, and requiring agents to disclose their status as an agent of a licensed institution.



**Enabling secure cross-border data flows** – Laws that limit the movement of data across borders can be detrimental to the digital economy and to the provision of mobile financial services. For example, the need for mobile money providers to develop data-storage facilities requires increased investment in infrastructure, which, in turn, can create a barrier to innovation, force smaller players out of markets, and lead to higher costs for consumers. Additionally, restrictions on cross-border data flows limits the ability of mobile money providers to leverage global partnerships that potentially increase value to customers and reduce costs of service. On the other hand, policymakers are rightly concerned with data sovereignty and data-privacy issues that might arise from more permissive approaches to cross-border data transfer. Policymakers should prioritise engaging with market players and advancing regulatory innovations that balance the possibility to transfer data across borders with adequate handling of risks to users and citizens of the respective countries. Additional recommendations are discussed in the policy paper by Vodacom and AU-NEPAD on *“Enabling Policy Frameworks for Digital and Data Services”*.



**Re-evaluating the impact of sector-specific taxes** – In addition to general corporate taxes, the mobile industry is one of the highest taxed in Sub-Saharan Africa. It is subject to a range of sector-specific taxes, including headset taxes, airtime taxes, SIM card taxes, social media taxes and more.<sup>70</sup> From 2011 to 2017, sector-specific tax rates in Sub-Saharan Africa increased by 22 points – the highest of any region by 10 or more points. Additionally, mobile money is increasingly becoming a focus for tax-collection authorities, with this disproportionately affecting the poorest customers.<sup>71</sup> Over the longer term, these customers gradually stop using mobile money, often reverting to cash. This leads to a loss of financial-inclusion gains made, particularly amongst the poorest and hardest to reach, which in turn can reduce mobile money taxation revenues in the long run. Examples of markets currently impacted include Ghana and Tanzania.<sup>72</sup> Policymakers should seek to engage with mobile money operators and telco businesses to better understand the impact of these taxes, harness mobile money to improve existing tax collection processes, and to develop a more holistic approach to the taxation of this sector including through a broader lens of inclusion, SDG attainment and tax mobilisation. This could lead to the development of more deliberate and better-informed policies. Additional tax-policy recommendations can be found in the Vodacom Tax Policy Paper *“Implications of mobile money taxation in Africa”*.

# Chapter 6: Looking to the future

The evidence is clear that mobile financial services help drive financial inclusion and benefit national economic growth and poverty reduction in several ways. Africa.connected and the UNDP are committed to their shared goal of continuing to expand access so that millions more individuals and businesses across Sub-Saharan Africa can reap these benefits.

Mobile financial services have the potential to accelerate a range of other SDG priorities. In their national development plans, African countries articulate national development priorities that are aligned to SDG themes. Common priorities include digital transformation, clean energy, agriculture, decent jobs, SME finance, and environmental management, amongst others.<sup>73,74</sup> Mobile financial services can be leveraged to drive even more progress on meeting SDG targets – the examples of broader SDG impact highlighted earlier in this report show how this can be achieved.

**Countries in Sub-Saharan Africa, and indeed across the world, should work collaboratively with all stakeholders to introduce strong mobile-tech-driven financial innovations in support of their national development priorities and the SDGs. This is how we will accelerate progress and increase the impact of financial inclusion.** The impact is potentially staggering, with the International Finance Corporation estimating that digital finance has the potential to boost annual GDP of emerging economies by US\$3.7 trillion by 2025.<sup>75</sup>



The UNDP and the UN Capital Development Fund (UNCDF) are already jointly working with countries to do so, through the UN Secretary-General's Task Force on Digital Financing of the SDGs (DFTF).<sup>76</sup>

As post-pandemic economic recovery continues, with the cost of living and climate crises intensifying, governments are encouraged to leverage mobile financial services to strengthen financial inclusion, which increases economic resilience and furthers sustainable development. When managed correctly, mobile financial services can not only drive financial inclusion, poverty reduction, and economic growth, but can also accelerate progress around the SDGs more broadly.

Collaboration and strong partnerships underpin this success and will drive future acceleration of progress. As such, governments and multilateral organisations should engage all stakeholders, including the UNDP, the Africa.connected campaign, and other telecommunications, fintech and finance businesses, to make the recommendations discussed in this report a reality. In doing so, Africa can continue to equitably expand access to mobile financial services, with all stakeholders working together to ensure these services are delivered in a responsible way that unleashes their full potential on SDG achievement to uplift and empower all citizens.

# Appendix

Research findings presented in this report on the usage and socio-economic impact of M-PESA and mobile solutions offered by Vodacom are based on primary and secondary research methods and an econometric impact modelling.

## A. Methodology for secondary and primary research

A combination of primary and secondary research methods was used to determine use cases and measure impacts for M-PESA and mobile solutions by Vodacom<sup>77</sup>:

**Secondary research:** Desktop research was conducted to identify relevant reports, studies, and academic research to help frame the problem of financial exclusion and financial literacy in African markets, the relevance of financial inclusion to achieving the SDGs, and how mobile financial solutions can help to close the gap. Impact measures from existing analysis on the effect of mobile financial services on economic growth and poverty reduction were further collected to inform the impact modelling.

**Primary research:** A business and consumer survey for M-PESA and mobile solutions offered by Vodacom were conducted as part of this research. Businesses in Kenya and South Africa were sampled to understand how businesses use M-PESA and Vodacom's mobile solutions, respectively, and how this impacts their business performance. In addition, users of M-PESA and the mobile solutions offered by Vodacom were surveyed in Kenya, Tanzania, and South

Africa to identify the main use cases for these products and their effect on household financials and well-being.

Figure 19: Survey overview

Survey topic	Survey	Country coverage	Sample size
M-PESA	Business survey	Kenya	83
	Consumer survey	Kenya and Tanzania	1 000 (Kenya) 500 (Tanzania)
Mobile solutions offered by Vodacom	Business survey	South Africa	79
	Consumer survey	South Africa	1 002

Figure 19 – An overview of the sample size and country coverage for Africa.connected's 2022 consumer and business surveys

The surveys were designed to uncover the factual scenario (i.e., how and why consumers and businesses use M-PESA / Vodacom's mobile solutions) and the counterfactual scenario (i.e., what would businesses and consumers use if these services were not available and how this would affect them). For example, the survey asked M-PESA consumers whether they would have access to financial services like credit if mobile money were not available. The self-assessed counterfactuals provide an indication about the scale of the impact that M-PESA has on consumers and businesses.

The M-PESA and Vodacom survey were fielded in June and July 2022, respectively. The survey invitations were provided online, and the survey introductions emphasised that participation is voluntary, and that responses are confidential. Respondents were not compensated in any way for completing the survey.

## Financial inclusion impacts – extrapolation

Results from the consumer survey were extrapolated to the national level based on active M-PESA users and population size to estimate the potential financial inclusion impact of M-PESA in African countries. It was not practical to survey every country in scope for this analysis, which means survey results from Kenya and Tanzania were used as a proxy to estimate the potential impact of M-PESA in Ghana and Mozambique, respectively.

Figure 20: Illustrative example

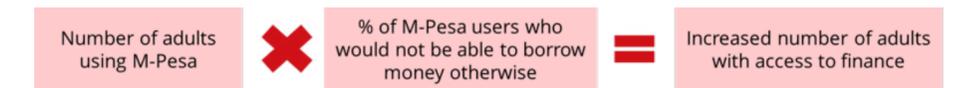


Figure 20- Illustrative example of the extrapolation performed on the Africa.connected 2022 consumer survey

## Figure 21: Results

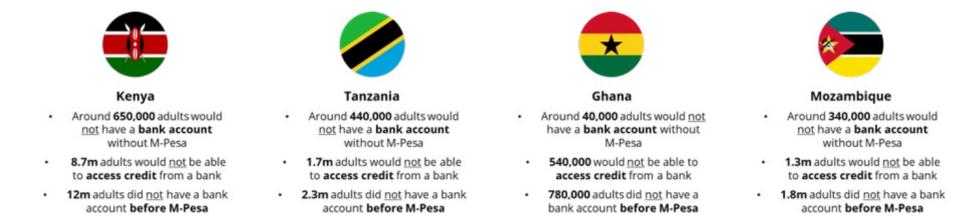


Figure 21 – Key results for each country from the Africa.connected 2022 financial inclusion calculations

## Limitations

The approach assumes that the results from the consumer survey are representative of the population and that consumers in Ghana and Mozambique would have provided similar results as consumers in Kenya and Tanzania.

Furthermore, the sample is skewed towards more educated people living in urban areas. The survey was conducted online, which implies that only users who are digitally literate and those who have access to the internet were able to participate. M-PESA does likely have the greatest financial inclusion impact on low-income users living in rural areas that might not have access to the internet. It was not practical to conduct face-to-face interviews with those consumers within the scope of this study. Survey results might therefore underestimate the financial inclusion impact of M-PESA in particular.

## B. Methodology for econometric impact modelling

An econometrics model was used to estimate the impact of successful mobile financial services deployment on economic growth. The analysis uses a Difference-in-Difference method, which is frequently used for development impact studies. Several studies have used this approach to estimate the impact of an intervention on economic growth. For example, Kneller et al. (2008) to estimate the impact of trade liberalisation;<sup>78</sup> Conti (2014) to investigate the impact of the euro adoption;<sup>79</sup> Zhao et al. (2021) to study the impact of institutional reforms in developing countries;<sup>80</sup> and Sun et al. (2019) to establish a link between the “Belt and Road initiative” and growth of participating countries.<sup>81</sup>

While there is a broad literature on the impact of mobile financial services on household consumption and firm sales, limited research seems to be available on the impact on economic growth. Nan (2019),

one of the research papers that exists on this topic, used a Difference-in-Difference method to determine the impact of mobile financial services on economic growth in Sub-Saharan African countries. The analysis in this report builds on the Nan (2019) approach by adding additional countries, time periods, and control variables to the model.

### Dataset

The dataset used for the analysis of mobile financial services consists of 49 developing countries in Africa, Asia, and Latin America, covering the time period from 2003 to 2019. The following data was used for the modelling:

**Dependent variable:** GDP per capita growth (annual %), available from the World Bank, was used to measure the impact on economic growth.

**Mobile money indicator:** a mobile money dummy variable was created due to limited data availability of adoption rates over time and across countries. The dummy variable was constructed based on a dataset from the IMF on the number of registered mobile money accounts per 1,000 adults,<sup>82</sup> the GSMA Mobile Money Deployment Tracker,<sup>83</sup> and the GSMA Prevalence Index.<sup>84</sup> The mobile money variable takes the value 1 when mobile money has been successfully deployed in a country and 0 if a country does not have mobile money or mobile money was not adopted successfully.<sup>85</sup> The time period for when mobile money has become successful differs for each country in our sample, with the earliest taking place from 2010 onwards. Figure 22 shows the countries in the sample with successful mobile money adoption (26 out of 49) and those without (23 out of 49).

Figure 22: Successful versus non-successful mobile money deployment

Successful mobile deployment (Treatment group)		Non-successful deployment / no mobile money (Control group)	
Bangladesh	Mexico	Angola	Myanmar
Benin	Mozambique	Argentina	Nicaragua
Botswana	Namibia	Bolivia	Niger
Burkina Faso	Pakistan	Brazil	Nigeria
Colombia	Paraguay	Cabo Verde	Panama
Cote d'Ivoire	Philippines	Comoros	Peru
Eswatini	Rwanda	Dominican Republic	Sierra Leone
India	Senegal	Guatemala	South Africa
Indonesia	Tanzania	Guyana	Sri Lanka
Kenya	Thailand	Honduras	Vietnam
Lesotho	Togo	Malaysia	
Madagascar	Uganda	Maldives	
Mali	Zambia	Mauritius	

Figure 22 – Table showing the countries in the sample with and without successful mobile money adoption

**Control variables:** the Difference-in-Difference method accounts for time-varying factors that affect all countries in the same way and for country-specific factors that are constant over time. Additional control variables were added to account for factors that might be different across countries and vary over time to increase the robustness and significance of the results. Figure 23 provides an overview of control variables used in the model.

Figure 23: Summary of variables used in the model

Control variables	Description	Source
Government consumption	General government final consumption expenditure (% of GDP)	World Bank
Inflation	Inflation, GDP deflator (annual %)	World Bank
Trade openness	Trade (% of GDP)	World Bank
Commodity imports	Gross imports of commodities (% of GDP) <sup>86</sup>	World Integrated Trade Solutions (WITS)
Commodity exports	Gross imports of exports (% of GDP)	World Integrated Trade Solutions (WITS)
Mobile phone subscriptions	Mobile phone cellular subscriptions (per 100 adults)	World Bank, ITU
Financial Development	Financial Development Index (considers how developed financial institutions are in terms of their depth, access, and efficiency)	IMF
Interest rate	Real interest rate (%)	World Bank
Capital	Cross fixed capital formation (% of GDP)	World Bank
Labour force	Labour force participation rate, total (% of total population ages 15-46)	World Bank
Education	School enrolment, secondary (% gross)	World Bank

## Approach

Difference-in-Difference is a quasi-experimental approach to identify a causal link between a treatment/intervention and the variable of interest. The method compares changes in outcomes over time between a population that experiences a treatment (called the “treatment group”) and a population that does not experience the treatment (called the “control group”).

As illustrated in Figure 24, the model takes the difference between the treatment and the control group’s outcome in the pre-treatment period controlling for country-varying factors that are constant over time (“Difference 1”). It then takes the before-after difference in the treatment and control group’s outcome controlling for time-varying factors that affect all countries equally (“Difference 2”). In the final step, it takes the difference of Difference 1 and 2 to estimate the overall impact of the treatment<sup>87</sup>. In this model, the successful deployment of mobile money was considered as the treatment. The analysis then examines the impact on economic growth by comparing developing countries that have successfully deployed mobile money with those where this was not the case.

Figure 24: Overview of approach

Model	Before treatment	After treatment	Difference 2	
Treatment group	$\bar{Y}_{T1}$	$\bar{Y}_{T2}$	$\bar{Y}_{T2} - \bar{Y}_{T1}$	Average change of treated over time
Control group	$\bar{Y}_{C1}$	$\bar{Y}_{C2}$	$\bar{Y}_{C2} - \bar{Y}_{C1}$	Average change of control over time
Difference 1	$\bar{Y}_{T1} - \bar{Y}_{C1}$	$\bar{Y}_{T2} - \bar{Y}_{C2}$	$(\bar{Y}_{T2} - \bar{Y}_{T1}) - (\bar{Y}_{C2} - \bar{Y}_{C1})$	Difference-in-Difference

Source: Figure adapted from <https://www.summitllc.us/difference-differences>

## Model specification

Based on the literature on Difference-in-Difference models, the following form is adapted:

Figure 25: Model specification

$$y_{it} = \beta_0 + \beta_1 MM_{it} + \beta_2 X_{it} + C_i + T_t + \epsilon_{it}$$

$y_{it}$	GDP per capita growth rate
$MM_{it}$	Mobile money dummy variable
$X_{it}$	Vector of macro control variables
$C_i$	Country-fixed effects
$T_t$	Year-fixed effects
$\epsilon_{it}$	Error term

Figure 25 – Model specification

## Assumptions

The Difference-in-Difference method relies on the following assumptions:<sup>88</sup>

**Parallel trends assumption:** The main assumption underlying the approach is the parallel trends assumption that states that the outcomes of the treatment and control group were moving in parallel before the treatment took place (i.e., no time-varying differences exist between the two groups). While the parallel trends assumption cannot be tested since the counterfactual scenario is unobserved, it can be verified visually by interacting the treatment (i.e., mobile money dummy variable) with the trend before mobile money was successfully adopted. Figure 26 on the following page supports the assumption that there was no significant trend in GDP per capita growth between the treatment and the control group before the intervention (i.e., countries in the control and treatment group had a similar trend before the deployment of mobile money). However, the assumption is weaker for year 2007.

Figure 26: Parallel Trends Assumption

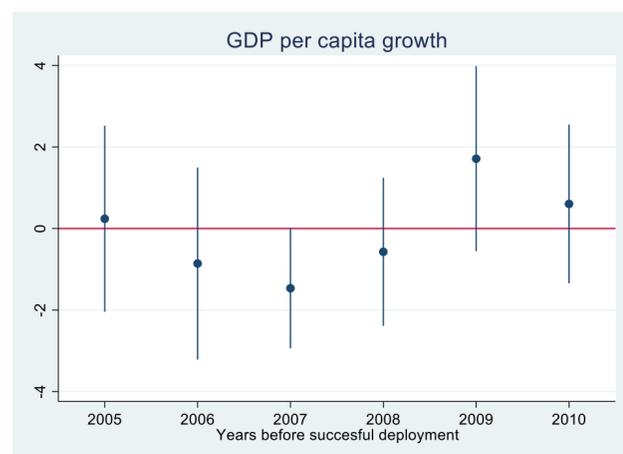


Figure 26 – Visual verification of the Parallel Trends Assumption

**Spillover effects:** it is assumed that there are no spillover effects between countries in the treatment and control group so that the impact can be identified.

**Timing of the treatment:** it is further assumed that the timing of the treatment is not correlated with the state of the outcome variable at a specific point in time (i.e., the year when mobile money was deployed successfully is not correlated with GDP per capita).

## Results

The analysis finds a positive and significant result for the impact of successful mobile financial services deployment on economic growth. It shows that countries that have successfully adopted mobile financial services experienced on average a 1-1.2pp higher growth rate compared to countries where this was not the case. Those findings are lower than those found by Nan (2019) who found a 3.1pp higher economic growth rate for Sub-Saharan African countries that have successfully deployed mobile financial services, which is likely to reflect the additional data and particularly controls included.

Figure 27: Model results

Variables	(1) GDP per capita growth	(2) GDP per capita growth	(3) GDP per capita growth
Mobile money dummy	1.000* (0.556)	1.128* (0.595)	1.23** (0.560)
Logarithm of government expenditure	-1.156 (0.882)	-1.433 (0.855)	-0.716 (0.872)
Logarithm of inflation	-0.594*** (0.194)	-0.621*** (0.199)	-0.597*** (0.203)
Logarithm of trade	1.417 (0.947)	2.241** (0.901)	1.29 (0.957)
Logarithm of commodity exports	0.984 (0.650)	0.785 (0.632)	1.061 (0.681)
Logarithm of commodity imports	-2.105*** (0.585)	-2.091*** (0.567)	-2.021*** (0.556)
Interest rate	0.005 (0.027)	0.004 (0.028)	-0.000 (0.985)
Mobile subscriptions	-0.013 (0.008)	-0.013 (0.009)	-0.012 (0.008)
Financial development	2.339 (3.384)	4.466 (3.194)	1.051 (3.506)
Logarithm of capital	2.226** (0.841)		2.555*** (0.883)
Logarithm of labour force	2.919 (3.841)		0.155 (4.533)
Logarithm of education			-1.687 (1.277)
Number of countries	49	49	47
Number of observations	833	833	799
R-squared	0.3889	0.3788	0.3894

Figure 27 – Model results for the impact of successful mobile money deployment on economic growth

## Contextualising the results

The number of studies that estimated the impact of mobile financial services on growth seems to be limited, however the literature on the impact of financial development on growth is well established and dates back to the early 1990s. King and Levine (1993),<sup>89</sup> Levine and Zervos (1998),<sup>90</sup> Levine et al. (2000),<sup>91</sup> and Beck and Levine (2004)<sup>92</sup> have found coefficients between 1.8pp and 3.2pp, depending on the financial development indicator, time period, and econometric approach used. The results suggest that a change in financial development imply large changes in economic growth.

Furthermore, the academic literature found large impacts of mobile financial services on firm sales, consumption, and productivity, which further supports the findings of the result that mobile financial services can generate large economic gains. For example, one research paper found that the difference in six-month sales growth for microbusinesses using mobile money in India is 28% compared to those that were not using mobile money,<sup>93</sup> and Beck et al. (2015) estimated that M-PESA generates a 0.5% Total Factor Productivity (TFP) growth for the Kenyan economy through trade credit channels only on an annual basis.<sup>94</sup>

The link between these two sets of literature may be complex, as the macroeconomic impact of mobile money will include:

- Direct effects of mobile money, e.g., faster sales growth
- How those effects aggregate up to market-level impacts, for example whether markets grow overall or some firms are better able to compete with others and grow their market share
- Indirect effects through changes in other services, either
  - Complementary services, e.g., other financial services enabled by mobile financial services
  - Competing services, e.g., conventional banking services, that might be displaced by mobile financial services, but also might improve their proposition to consumers in order to remain competitive with mobile financial services

This complexity means that any attempt to aggregate up the direct impacts of mobile financial services is likely to lead to erroneous results as impacts are either double counted or missed. Therefore, the macroeconomic approach taken here seems preferable; a more reliable way of capturing the aggregate impact. However, that complexity does mean there are still limitations in a study of this kind, some of which are described on the following page.

## Estimating the impact of mobile financial services on poverty reduction

Development research has shown that economic growth is one of the main drivers to reduce poverty. Based on this, the econometric estimates for GDP per capita growth rate found in this study were used together with the elasticity between economic growth and poverty to estimate the impact of mobile financial services on poverty reduction.

The literature on the relationship between economic growth and poverty is well established and goes back to the 1990s. A World Bank (2003) paper found an elasticity of -2.59, meaning that a 1 percentage point in economic growth will lead on average to a 2.59% decrease in the proportion of people living in poverty.<sup>95</sup> Bruno, Ravallion & Squire (1996),<sup>96</sup> Adams Jr. (2004),<sup>97</sup> and Dal Bianco (2016)<sup>98</sup> have also found similar elasticities between -2% and -2.8%.

Results from the econometric modelling suggest that developing countries with successful mobile financial services adoption experienced a 1pp higher annual GDP per capita growth rate compared to countries without successful mobile financial services deployment. Taking the elasticity of -2.59 this would imply that countries with successful mobile financial services adoption also experienced a 2.59% reduction in the poverty headcount ratio. The results of the econometric model and the elasticity found in the literature are average values, which means that some countries have experienced higher or lower impacts.

The relationship between economic growth and poverty is often estimated based on extreme poverty (\$1 per person per day), while poverty headcount ratio is the proportion of people living below the international poverty line of \$1.90. It is noted that the elasticity for people living below \$1 is higher than for those living below \$2 or \$2.50. However, the international poverty line was adjusted over time, and increased from \$1 a day to \$1.25 and \$1.90 a day in 2015.<sup>99</sup> The analysis assumes that the elasticity of -2.59 is still valid today for the \$1.90 threshold but could potentially overestimate the impact for that reason.

Furthermore, it is often found that the initial levels of income inequality are important in determining how large the impact of economic growth on poverty reduction is. An increase in income levels in a country with very low inequality could have a larger effect in reducing poverty than a country with high inequality. The analysis does not take the level of inequality into account, but poverty remains a material concern in all of the economies studied.<sup>100</sup>

## Limitations

The econometrics model is subjected to the following limitations, which should be kept in mind in reading the overall results:

- **Mobile money dummy:** the construction of the mobile money dummy variable is based on information from the IMF dataset on the number of registered mobile money accounts, the GSMA Mobile Money Deployment Tracker, and the GSMA Prevalence Index. However, the dummy could still be imprecise and biased due to data limitations on this topic. For example, results would be biased if countries that have successfully adopted mobile money were not marked as treated in the sample, or vice versa. Data issues were particularly prominent for Latin American countries, which made the exact timing of successful mobile money adoption challenging.
- **Robustness of results:** modelling results were similar and significant when countries were removed from the analysis. However, coefficients became insignificant when specific control variables such as financial development were not included in the model.
- **Growth impact:** mobile financial services could potentially have a non-linear impact on economic growth (i.e., when mobile financial services adoption rate reaches a plateau then the impact on economic growth might become less, or the impact depends on other financial institutions). The model cannot capture this potential effect as results are provided as an average impact measure across countries.

Further research could explore and attempt to mitigate any of these limitations, strengthening the evidence base as new data becomes available and enables other approaches (e.g., more sophisticated economic growth models estimating marginal impacts). Other research for Vodafone has used dynamic panel models to address similar problems in environments where relevant data was more readily available.

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- 2 Vodafone is a leading global IoT connectivity provider and telecommunications company in Europe and Africa. The largest mobile and fixed network operator in Europe, serving over 300 million mobile customers, more than 28 million fixed broadband customers and over 22 million TV customers, while connecting 130 million IoT devices as of 30 June 2021.
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