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Building resilience to crisis through digital financial services with a gender lens

James M. Naughton and Anne K. Brady

Abstract: *The vulnerability of populations with limited resources and either in or at risk of poverty to a myriad of crises continues to increase. The ongoing COVID-19 pandemic has further highlighted the inadequate resilience to crisis that such populations hold, and the rising prevalence of climatic variation is an existential risk factor that will continue to rise. In Mozambique, most livelihoods depend on natural resources and there is a high threat of extreme climate-related events. By drawing lessons from the Financial Services Deepening Mozambique (FSDMoç) programme, we highlight ways in which greater resilience has been built among fragile populations through innovative uses of digital financial services (DFS), and how resilience has been built with an explicit gender lens in order to mitigate existing inequalities. Lessons are drawn in relation to challenges faced and their application to wider programming.*

Keywords: digital financial services, gender, vulnerability, Mozambique, COVID-19

Introduction

We begin by introducing the background to our perspective from the field, assessing how the COVID-19 pandemic has produced disruption in financial services but also opportunities to build stronger resilience to future crises for vulnerable populations. Next, we explore the literature investigating the nexus between resilience, vulnerability, digital financial services (DFS), and gender before moving on to outline the findings and challenges from our field activities, analysing what these experiences mean for wider programming, and lastly drawing conclusions.

The COVID-19 pandemic has profoundly disrupted the provision of financial services worldwide, with many regular in-person practices limited during periods of restrictions. Devastating as the pandemic is, the conditions it imposes have provided opportunities to expand DFS in fundamental ways that can close service gaps and at the same time bolster the resilience of vulnerable people. In recent years, consumer preferences and expectations have accelerated toward DFS, and providers have responded accordingly. This response is particularly vital given the multitude of challenges vulnerable populations currently face. The World Bank (2020) estimates that between 88 and 115 million may have fallen back into extreme poverty in 2020 through the confluence of COVID-19, conflict, and climate change,

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with this expected to rise by up to 35 million in 2021. Donors have followed this trend, seeing DFS as powerful tools to reach the most vulnerable and better include currently unbanked or underbanked populations.

Those at risk of extreme poverty in Mozambique are particularly vulnerable to increasing shocks, especially due to climatic variation. Low-income earners are concentrated in subsistence agriculture, and recent cyclones have destroyed not just crops but significant rural infrastructure. Increasing variation in rainfall and prevalence of drought are key challenges, and insecurity in Cabo Delgado further limits the productive potential of arable lands. In DAI's Financial Services Deepening Mozambique (FSDMoç) programme (FSDMoç, 2021), two DFS workstreams in microinsurance and financial technology (fintech) are directly addressing exclusion, increasing shock resilience for vulnerable populations, and, critically, closing the gender equality gap.

Firstly, digitization of microinsurance has allowed FSDMoç to work with firms in piloting life insurance products that provide incremental levels of cover ensuring protection against shocks and financial hardship. Policies have been adapted to also cover COVID-19 cases as a direct response mechanism. Insurance as an alternate asset class has traditionally been out of the reach of those at risk of extreme poverty, yet microinsurance products are bridging this divide and also addressing access constraints for women with digitized services. Beyond personal microinsurance, digital microinsurance products have also been developed on an index format to cover smallholder farmers with the increasing vulnerability caused by climate change in Mozambique. Downstream implications of increased integration of smallholder farmers into digital finance include the establishment of credit history, which could be used for future asset finance transactions, and subsequent productivity increases.

Secondly, FSDMoç is working to develop the fintech ecosystem to meet the needs of lowest income households across Mozambique following a successful sandbox incubator project, in collaboration with the Central Bank of Mozambique. With growing advances in technology, fintech is contributing to achieving greater financial inclusion as it expands the ways financial services can be accessed by those in the poorest households. Fintechs have the potential to disrupt the traditional financial services models through increased efficiencies and reduced costs. In addition, fintech products are often better suited to local infrastructure and needs by enabling those excluded from the formal financial system through access and cultural barriers, particularly women, to receive services including savings accounts and digital payments.

In keeping with the market systems philosophy of FSDMoç, both workstreams seek to resolve market failures and aim to provide a catalytic impact on the sectors by developing proof of concept. In turn, it will show viability to the wider market, thus demonstrating the scalable nature of the interventions to have a broader, positive impact on society. Taking a broader perspective, the twin challenges of COVID-19 and climate change have both offered opportunities for accelerating DFS through providing a response to both disruption and vulnerability in different ways. During the various phases of the COVID-19 pandemic, DFS have allowed the financial sector to remain robust, specifically increasing access and closing gender gaps. In responding

to increased climate variation, DFS are specifically being utilized to mitigate risk and provide forms of safety nets to those suffering increased exposure.

Literature review

In the literature review, we survey the landscape across financial inclusion and DFS using a gender lens, vulnerability, and resilience to arrive at a working definition of vulnerable populations which we apply to the research. Increased financial inclusion for women is viewed broadly as a mechanism for achieving positive macroeconomic outcomes and advancing gender equality, through the assumption that more substantial access to insurance, current, and savings accounts aids longer-term growth (Sahay and Čihák, 2018). Enabling factors that facilitate financial inclusion include strong legal rights, strong institutions, high levels of financial development, and decreased resource dependence (Delechat et al., 2018). Fintech is seen as a solution to diminishing the gender gap by addressing the constraint of access to financial services (Sahay et al., 2020).

In recent times there has been an increased interest in the relationship between financial inclusion and gender. Sahay and Čihák (2018) discuss female representation in financial services globally and the impact of female inclusion as users and providers of financial services. Sahay and Čihák (2018) detail that women account for the majority of those globally financially excluded, with the largest gaps in the Middle East and North Africa. In their paper, Sahay and Čihák argue 'greater inclusion of women as users of financial services has generally positive macroeconomic outcomes as well' (2018: 5). Sahay and Čihák (2018) go on to state that it is important to integrate women's access to financial services into financial and macroeconomic policies to enhance equality.

Delechat et al. (2018) seek to understand the drivers of financial inclusion with a focus on women, at both the individual and national level, taking data from 140 countries. Delechat et al. (2018) identify structural factors, polices, and characteristics associated with women's financial inclusion, with stronger institutions, decreased resource dependence, and high levels of financial development all found to have positive association with women's financial inclusion. Delechat et al. (2018) also make an association between stronger legal rights for women and higher levels of financial inclusion, in particular rules concerning workplace discrimination.

When assessing responses to COVID-19, Sahay et al. (2020) advocate for the potential of fintech to improve financial inclusion through digital financial services in light of movement constraints and social distancing. Fintech is defined by Sahay et al. (2020) as an important contributor in closing the gender gap in financial inclusion, highlighting the removal of the access constraint. Considering financial inclusion and vulnerability from a feminist economics perspective, Elson (2010) details that in the case of financial crises, credit can become constrained in commercial banking, which can have an adverse gender impact on securing lending for production. Elson (2010) goes on to define microfinance as a socially useful form of banking, and highlights that women borrowers from microfinance tend to be less affected by crises and market downturns.

Moving onto the intersection between DFS, vulnerability, and resilience, Moore et al. (2019) frame resilience building through financial inclusion as a multi-phase approach. Prior to shocks, Moore et al. (2019) note the ability of reduced barriers to credit and goal-based savings as key methods of reducing exposure. Insurance as a risk investment is also explored, along with savings groups to enhance risk preparedness. In Mali and Malawi, savings groups were seen as empirically valuable in enhancing food security and smoothing food consumption over the year. Post shock, using digitalization to lower the costs of accessing assistance is recommended for vulnerable populations. In a similar vein, Calderone et al. (2019) promote access to savings and borrowing facilities as being important in building adaptive capacity and the ability to absorb climatic shocks, including seasonal variations in income.

In assessing the challenges of implementing donor programming over multiple years on value chain projects, Stoian and Donovan (2020) address the problem of what they define as issue-attention cycles. Stoian and Donovan (2020) note that after the initial interest in resolving issues passes and the reality of tackling difficult problems becomes apparent and in particular with regulatory constraints, then interest declines in continued commitment to programming. In developing countries, DFS occupy a challenging policy arena for governments, as the pace of digital innovation in the financial sector has in many locations outstripped regulatory frameworks. This leaves DFS operators in a challenging regulatory position offering services that have significant market potential, yet are on weak regulatory footing.

UNCDF (2021) cite cautious approaches by DFS to scaling solutions regionally due to consumer protection issues with weak regulatory frameworks. UNCDF (2021) go on to detail the positive impact of DFS solutions on vulnerable populations left behind by economic growth, and only served by informal financial services. What constitutes a vulnerable population is an evolving concept without a working definition and has changed over time. Taking a multi-disciplinary perspective as part of a World Bank social protection paper, Alwang et al. (2001) define key principles of vulnerability as: the probability of future welfare and food security shocks; the ability to respond to shocks with limited assets; and being able to be measured over a variety of time horizons with different risk responses required for longer-term mediations.

Proag (2014) takes a systemic view of vulnerability in line, exploring how the overall system determines the crisis response and level of resilience shown and the need for multi-sectoral resilience. Systemic perspectives on vulnerable populations have become more prevalent in recent years, coupled with both the increasing integration of disaster risk management as a concept and the increased relevance of climatic insecurity. Approaches taken in Somalia have blended a systemic lens with responses to food insecurity caused by climatic variation to deliver sustainable response to vulnerable populations situated in insecure locations (Naughton, 2018).

In giving a brief working definition of vulnerable populations, we incorporate the views of Eriksen et al. (2021) that introducing climate adaptations does not automatically reduce risk. A parallel is found with the aforementioned theoretical principle from Alwang et al. (2001) that multiple risk responses are required, which

are changeable over time. We posit vulnerable populations are those 'who are below national extreme poverty lines (using PPP calculations as per World Bank Databank, 2021) or at risk of falling below them leaving them with very limited resilience to the risks of multi-factoral shocks'. We use the extreme poverty line as it is likely that those below this level do not have a significant asset base, or would need to divest held assets quickly – and include those at risk of falling below the line with income fluctuations and people moving in and out of poverty on a fluid basis. The choice of wording in using multi-factoral shocks incorporates a spectrum of shocks, such as the global turmoil caused by the COVID-19 pandemic, and local climatic and agricultural shocks such as localized droughts which can be measured by vegetation composite indexes (UNICEF, 2019).

Findings from the field

Methodology

As a perspective from the field article, a straightforward design methodology is utilized to capture ideas and experiences on entrepreneurship in Mozambique and their wider application. The article outlines the theoretical assumptions of the FSDMoç programme, before moving onward to assess the practical interventions utilized in collaboration with a range of local partners. Next, the article assesses the challenges and opportunities highlighted through the experiences and how these can be applied to other contexts before closing with a final discussion and conclusion.

Theoretical assumptions and practical applications

The objective of FSDMoç is to increase financial inclusion and access to formal financial services especially by women, youth, and the rural low-income population, as well as small businesses who lack access to appropriate and accessible financial services. FSDMoç pilots new interventions, promotes innovation and contributes to policy reforms and changes in regulation. The end goal is to offer a broad range of quality financial services provided by a stable and competitive financial system. Figure 1 displays the high level theory of change, which incorporates from the left the causal pathways towards the listed Meta Impact of sustainable livelihoods improvements through increased incomes, jobs, and resilience to shocks.

The logic of the theory of change dictates that if the inputs and outputs are delivered and the assumptions hold, then the outcome will be achieved, and FSDMoç contributes along with other FCDO programming to achieve Impact and Meta Impact levels. The critical assumptions are listed, and paramount is the process of systemic change. Delivering systemic change is a fundamental component of the market system approach. With the underpinning market systems philosophy, FSDMoç assesses the financial sector to diagnose market failure and then delivers sustainable, scalable interventions to remedy these failures. In keeping with this theoretical framework, forming interventions is done using selection lenses as criteria, which in the case of FSDMoç involves including a gender lens. This involves assessing the potential of interventions to deliver positive gender outcomes such as increasing

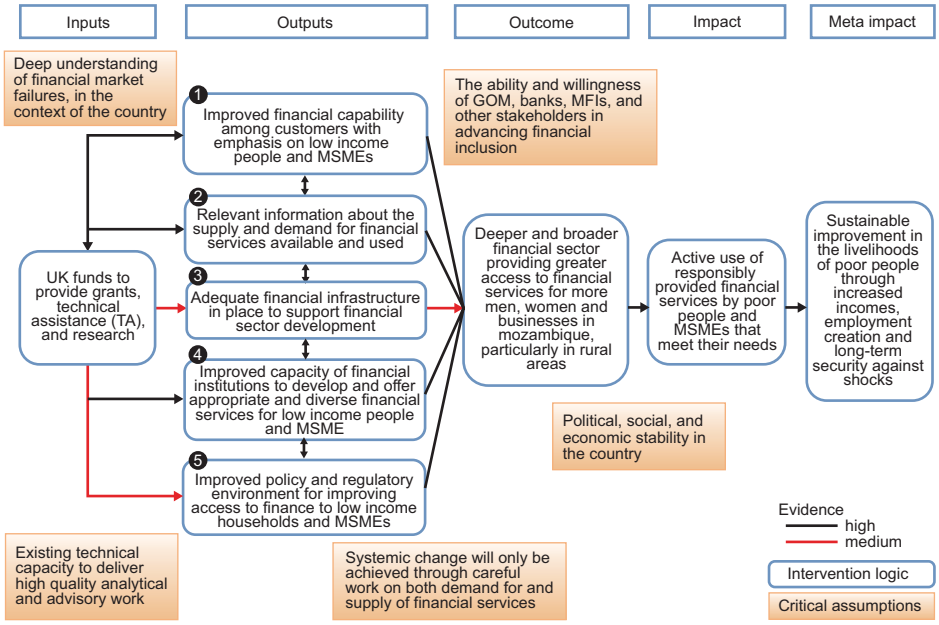

Figure 1 FSDMoç high level theory of change
Source: FCDO, 2020

equality of access to economic resources and increased female empowerment through technology, with recorded linkages to SDG 5: 'Achieve gender equality and empower all women and girls' (UN, 2015). Subsequently, in practice, this means that the intervention is designed (either as products or services) to directly ensure that a clear causal pathway is structured to achieve positive gender outcomes and then assessed and validated by ongoing monitoring.

One of the learnings that emerges from the FSDMoç interventions is the role DFS have in reaching vulnerable populations, using the definition we apply above. In Mozambique, DFS have played a significant role in expanding the reach of financial services beyond traditional banks to increase financial inclusion. FSDMoç has contributed to DFS through supporting the expansion of mobile money, championing the adoption of new projects and services, and building the enabling environment for the growth of fintechs.

In terms of the approaches utilized, the strategic focus on the workstreams addressed was arrived at through a detailed sector assessment of the financial sector in Mozambique, in accordance with market systems theory. Market failures were assessed, and interventions were developed taking into account specifically how these failures could be resolved in the Mozambican context. The strategic aim of the interventions designed was to provide causal pathways towards achieving the mandated project results but also delivering sustainable innovations. To do so, the ideation process took into account both DAI and wider market systems best practices, successes, and lessons learned in financial sector development and integrated these where possible with the interventions. Pilot phases were built into

all interventions as part of the market systems approach, and adaptation of interventions was delivered as contexts changed.

Throughout the COVID-19 pandemic, FSDMoç has worked to adapt interventions to meet the needs of vulnerable people in Mozambique. Social distancing measures have been damaging to those who depend on selling fast-moving items and have less access to financial products. While the circumstances presented by COVID-19 are challenging, it has presented a number of opportunities to accelerate the expansion of DFS. The use of DFS better enables social distancing measures to be implemented and they have the potential to significantly improve products available for entrepreneurs across the country.

The following project examples explore lessons learned in the development of a fintech environment, expansion of DFS products, and reflections on where DFS can now play a role in conflict areas, such as northern Mozambique.

Enabling a fintech environment

With growing advances in technology, fintech is contributing to achieving greater financial inclusion as it expands the ways financial services can be accessed by those in the poorest households. Fintechs have the potential to disrupt the traditional financial services models through increased efficiencies and reduced costs. Compared to other African countries, for example Kenya, South Africa, and Ghana, the financial ecosystem in Mozambique is less well established. This has meant levels of financial inclusion are low, most notably in rural areas. In response, FSDMoç has been working since 2017 to develop the fintech ecosystem from a very low base to meet the needs of vulnerable populations with a focus on the lowest income households across Mozambique.

Fintech products are often better suited to local infrastructure and needs, because they enable those excluded from the formal financial system, particularly women, to access services including savings accounts and digital payments. Fintech mitigates exclusionary barriers such as physical access when providing unpaid care. In particular, two fintech platforms supported by FSDMoç have been prioritized to respond to COVID-19. The construction of a digital platform has enabled the registration of savings groups and improved the security of money saved, with a focus on female members. This was done through the gender lens approach being utilized to design savings groups by first assessing the needs of potential female members, then structuring vehicles that were tailored to these needs. SOMA is a digital platform which enables the registration of savings groups and improves the security of money saved. During the pilot phase, 356 savings groups were created, of which 43 per cent of new members were women. The savings group increases resilience to shocks to those who are vulnerable. This is complemented with an online agricultural marketplace, aimed at buyers and sellers of fruit and vegetables. The intention is to digitalize marketplace payments, contributing to digitalizing the informal sector. Both fintechs demonstrate new innovative products which are representative of the developing Mozambican fintech ecosystem.

Developing the environment for expansion of DFS also has a role to play in supporting vulnerable populations living in regions of instability, such as those currently in northern Mozambique. FSDMoç has previously partnered with Vodafone's M-Pesa mobile solution to improve the adoption and usage of DFS in rural communities. One of the key components was the delivery of a financial literacy campaign which targeted women and youth. Again, referring back to the gender lens approach, critical to the design was the process of understanding what targeting women (and youth) required practically and how to conduct the promotional activities for maximum outreach. The financial training was necessary to ensure uptake of the products and support those with low levels of financial literacy. Employment and capacity training was also delivered to field staff (promoters) to ensure that the project can be rolled out in harder to reach areas. The collaboration targeted mobile money usage of microenterprises (informal traders) as well as low-income rural and urban households. A key focal area was Cabo Delgado, which has been the site of an ongoing Islamic insurgency since 2017. As a result of expanding mobile penetration, the government is better positioned to utilize the technology and channel payments to internally displaced persons (IDPs). With a climate of greater uncertainty and challenges to vulnerable populations, increasing the usage of mobile money will be critical. Another example of where fintechs have the potential to play a role in enabling more effective response to displaced populations, is the collaboration between FSDMoç and Paycode. Paycode is a fintech company which combines biometrics, payments, and data in one financial product. The use of biometric data can be a contentious issue in developing economies, and as a result Paycode spent considerable time establishing strong data protocols. In addition, Paycode developed clear messaging to clients on how secure their biometric data would be and the advantages their approach offered in order to build confidence. Critically it is able to function offline in real-time, which is vital in areas where connectivity is intermittent and where vulnerable populations do not have income resources for data access. By leveraging its Electronic Data and Payment Technology (EDAPT) system, Paycode supported the National Institute of Social Action in delivering social payments to beneficiaries in the three districts in Gaza province.

Alongside supporting Paycode in introducing the EDAPT system, FSDMoç conducted financial literacy training with beneficiaries involved in use of the system, on personal and banking finances. This type of intervention has potential to contribute to inclusion of low-income and displaced communities (estimated to be 732,000 people in Mozambique as of April 2021) (UNOCHA, 2021). The technology also has a role to play in humanitarian crises because the channel involves digital onboarding and data generated can be used to profile the beneficiaries into different categories according to their needs. This can enable government and donors to focus resources more effectively and efficiently; however, the sensitivities around digital ID collection require clear communications, careful management, and strong legislative provisions to maintain public confidence.

One of the key learnings from the development of these products is that by expanding mobile penetration in rural areas and regions with instability the

response to humanitarian crisis can be more targeted. The initial investment better enables governments to respond. DFS do increase access to vulnerable populations but FSDMoç have found that approach must be combined with financial literacy training.

Expanding financial services through microinsurance

The 2019 Mozambique Finscope Study (FSDMoç, 2019) provided a representative survey of financial behaviour of Mozambican adults (over 16) in terms of how they conducted money management. The study found approximately half the adult population of Mozambique experienced an unforeseen event that had a negative financial impact on their lives. Digitization of microinsurance has allowed FSDMoç to work with Hollard Mozambique (a local insurance group with a multitude of service offerings) and PEP (a retail chain providing low-priced clothing) in piloting life insurance products. The products provide incremental levels of cover ensuring protection against shocks and financial hardship, with coverage from $32 per annum and payouts up to $1,258. Policies have been adapted to also cover COVID-19 cases as a direct response mechanism. In addition, FSDMoç partnered with MovelCare to design innovative food insurance products to cover basic needs. The coverage has various levels, but begins at $22 per annum, with monthly $23 food coupons available for a year if the policy is activated.

Insurance as an alternate asset class has traditionally been out of the reach of those at risk of extreme poverty and with fluctuating monthly incomes, yet microinsurance products are bridging this divide and also addressing access constraints for women with digitized services. In addressing access constraints, the gender lens design here focused on multiple elements. This included promotion of services through a targeted messaging campaign particularly focused rurally, which included clear and concise content regarding benefits of microinsurance products. In addition, pricing was carefully considered to ensure affordability for female users. This demonstrates the importance of ensuring that financial products are developed to meet the needs of individuals, and particularly those who have low financial literacy.

Beyond personal microinsurance, digital microinsurance products have also been developed on an index format to cover vulnerable smallholder farmers with the increasing vulnerability caused by climate change in Mozambique. FSDMoç use the term ‘inclusive insurance’ to refer to appropriate and affordable insurance products for the unserved and underserved population segments, with a particular emphasis on the vulnerable and low-income people.

Again with Hollard Mozambique, FSDMoç have worked to develop an inclusive insurance product, drawing on a geographic information system (GIS). This innovation has enabled the mapping of smallholder farmers in Gaza, Manica, Tete, Zambezia, and Nampula provinces. Due to the absence of a postcode system and appropriate rural and urban planning, GIS has been utilized to appropriately geo-reference a covered area accurately. Using GPS coordinates it is possible to independently access data of interest, such as rainfall or vegetation index, and be certain of looking at data relating to the correct place. The data collected has been used to improve the way in which

the insurance company process claims for risks associated with climate change, in this case, agricultural risks. While the utilization of GIS data did not directly lead to the increased uptake of crop microinsurance by farmers, it allowed Hollard Mozambique to provide more accurate, tailored, and crucially more affordable insurance products based on the data of interest gathered. To date, the GIS platform has enabled the registration of 35,574 smallholder farmers, exceeding the target of 11,000 smallholder farmers.

This initiative has proved to be significant both in the provision of an innovative financial service solution, but also in supporting the livelihoods of the smallholder farms involved. Notably, approximately 50 per cent of the smallholder farmers are women producing food crops in the target areas. The insurance protection provides some indemnification in the case of a loss, a service which is particularly vital to vulnerable populations. In addition, due to this intervention it was possible to implement COVID-19 social distancing measures and provide direct support to smallholder farmers. The intervention allowed Hollard to access farmers in a faster and more efficient way as they were able to monitor the process from Maputo by satellite. This eliminated the need to travel to remote and rural areas, reducing the risk of COVID-19 infection for both Hollard's supervisors and field officers and farmers. Furthermore, the digital application eliminated other time-consuming procedures such as the physical completion of forms by smallholder farmers. The use of a GIS platform to collect data has reduced the cost for the system and enables scalability, much faster than traditional insurance which requires physical presence (farm visits) to assess premiums and claims. As a result of this initiative, smallholder farmers are better positioned to use digital finance and benefit in the longer term from having a credit history. Downstream implications of increased integration of smallholder farmers into digital finance include the establishment of credit history, which could be used for future asset finance transactions as vulnerable populations develop their income and asset bases, and subsequent productivity increases.

Supporting entrepreneurs

From our experience, entrepreneurship depends on the support of business support services. Again, DFS have a role in ensuring inclusive access to services. FSDMoç has partnered with an online commerce platform called WELELA to support a pilot aimed at enabling micro, small, and medium enterprises' (MSME) business continuity through digital migration and the use of digital payment solutions. The platform enables formal and informal MSMEs to subscribe to e-commerce packages which showcase their companies, products, and services to clients from across Mozambique. In addition, it increases access to potential business opportunities. The approach particularly targeted participation of women and young people. This is allowing MSMEs to overcome overall challenges for growth, including challenges resulting from the COVID-19 pandemic. During the intervention 22 sessions were delivered to 120 MSMEs, comprising 469 individuals. One hundred and twenty-two (of which 88 were women) representatives from MSMEs participated in WELELA training sessions, far exceeding the target of 20 participants. The partner has found that as

a result of this pilot, businesses are more comfortable in using digital services in their day-to-day operations. The growing familiarity of the DFS is important for its expansion to offer further support to business across Mozambique.

DFS challenges at a firm and enabling environment level, and future opportunities

Despite the positive developments seen in Mozambique, a myriad of DFS challenges exist in terms of implementation for firms that are applicable to other contexts. While a virtual client experience provides many advantages for emerging DFS providers including lower overhead costs and increased outreach potential, challenges remain. Attracting a client base requires connecting with the target base and overcoming any concerns regarding safety, reliability, and perceived risk of DFS. Without a physical presence, online customer service requirements are increased and customer expectations for digital services are the same as in-person services. In developing economies such as Mozambique, a key challenge of scaling new DFS solutions from start-ups is the availability of early stage capital and technical support. Without the presence of seed and angel capital along with incubator programmes, commercial banks are inherently reluctant to fund organizations with limited track records.

In terms of the relationship between firms and the enabling environment, firms offering innovative DFS need to ensure alignment with the regulatory environment. Regulatory development in a multitude of developing countries has struggled to keep up with the rapid pace of DFS progression, and has limited financial sector progression. One solution is the adoption of national regulatory sandboxes that have proved effective in Mozambique (FSDMoç, 2020a) to address formal regulatory challenges, and in other countries. Regulatory sandboxes allow live experimentation with products in a controlled environment with regulatory supervision, but can prove time-consuming and difficult to establish. Informal government capacity challenges can also limit the process of regulatory ratification. Aside from formal institutional challenges, digital infrastructure is a significant barrier to the development of the enabling environment in Mozambique and more widely. Solutions such as the cooperation between FSDMoç and M-Pesa are able to address the gap in physical service provision in remote and unstable regions. However, such services do remain vulnerable to the provision of digital infrastructure and connectivity. The interaction between FSDMoç and Paycode provided a solution to the connectivity gap, but it is not possible to deliver all services with an offline model and as such continued government investment in digital infrastructure is crucial.

The expansion of DFS and mobile penetration into rural areas and regions has opened up opportunities for other messaging synergies to be explored. During the first wave of the COVID-19 pandemic, FSDMoç worked with DFS providers including BancABC to deliver digital health messaging about COVID-19 behaviours. With the proliferation of mobile coverage, opportunities exist to utilize these services for wider purposes including humanitarian alert systems and climate warning systems.

While such systems are disparate at this time, with data security, coordination, and regulatory considerations to be taken on board, the technological potential exists for integration. Taking forward this concept, significant practical potential exists in particular for cash transfer programming. The opportunity costs of establishing digital services over traditional financial services allow reduced costs for both governments and donors through government-to-person (G2P) payments. Digitalization of physical payments gives the opportunity for increased ability to target unbanked and informal sector recipients in a more timely, secure, and cost-effective manner (Agur et al., 2020).

Discussion

While FSDMoç has not tracked direct attribution on income levels or food security on the vulnerable populations targeted, latest published figures show at outcome level 1,034,969 individuals previously financially excluded using financial services and at output level 1,756,347 people (36 per cent women) reached by awareness and financial literacy campaigns due to FSDMoç interventions (FCDO, 2020). From this we draw a logical conclusion in accordance with the theory of change (FCDO, 2020) that the programme is translating through responsible use of targeted financial services to sustainable livelihood improvements with increased income and increased security against shocks. The gendered lens integrated into the programme intervention design provides a conceptual basis for ensuring we promote increased resilience for those who already are marginalized by prevailing inequalities.

Drawing away from the quantitative assessment, we also employ an Adopt, Adapt, Expand, Respond (AAER) framework to assess the impact of FSDMoç on DFS. AAER frameworks are employed in market systems programmes to assess systemic change as can be seen in Figure 2, which was the key critical assumption in the high level theory of change.

Across DFS broadly, we can see considerable evidence of systemic change having occurred as a result of FSDMoç interventions:

- *Adopt*. FSDMoç built an evidence base across various interventions in the financial sector, showing various entities the market potential and value of engaging with rural and underserved populations.

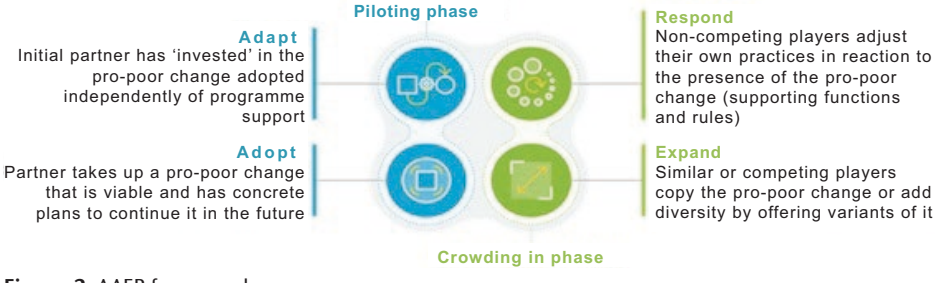

Figure 2 AAER framework

- *Adapt*. Once the initial pilots proved successful, FSDMoç facilitated partners to scale interventions without financial support partners. This led to one DFS partner restructuring their business to have a more specific focus on rural banking, and for an insurance provider to establish a microinsurance service line.
- *Expand*. Since launching interventions in DFS, FSDMoç has seen significant market expansion with proof of concept established. The fintech space has rapidly developed since the original fintech challenge in 2017 and first cohort of regulatory sandbox participants in 2018, with regular fintech community-led events including hackathons for new market entries. Market-led new solutions being developed include ventures in insurtech and climate responses.
- *Respond*. With the adaptations promoted to the market by FSDMoç, market perceptions shifted in responding and supporting the behaviour change. With the increase in microinsurance services, FSDMoç was asked to support the regulatory body, the Instituto de Supervisão de Seguros de Moçambique (ISSM), in developing a roadmap to assist microinsurance development. The roadmap was focused on developing capacity of microinsurance providers in the design and delivery of adequate microinsurance products.

In terms of the direct impact on poverty, FSDMoç concentrated on increasing access to financial services with a focus on rural areas. To this end, FSDMoç was successful, but another point to consider is whether DFS has a demonstrable impact on poverty. Proponents of DFS as a tool for poverty alleviation cite evidence from randomized control trials and empirical studies of several advantages. These include increased shock provision, productivity and remittance flows, faster and cheaper household transfers, along with scalability (Garz, 2021). Yet a counter view suggests that advantages are limited for poorer users (Ozili, 2020). Ozili (2020) cites the risk of fraud, digital protection legislation, and increased financial risk as key considerations. In order to ensure poorer users are protected in their financial exposure, strong digital legislative provision and responsible investment regulation are critical components of the enabling environment. DFS do provide additional opportunities for poorer populations to access shock mitigation products including microinsurance and local savings cooperatives. FSDMoç's high level theory of change has the provision of responsible financial services captured at the impact level, and this must be a central component of scaling any DFS solution. Delivering results at scale requires time and significant resources, with FSDMoç being an established platform since 2013. Considerable time has been taken in understanding the analytics of target audiences through earlier work with assessing unbanked and rural populations (FSDMoç, 2016a, b), and there are the financial considerations of continued support to priority workstreams. The current level of support provided to the fintech ecosystem is £100,000 across five firms from 2020–2021, which builds upon previous funding of £300,000 to support the establishment of the ecosystem. Donor-funded programming brings with it the inherent risk of creating market distortions, but FSDMoç solicited merit-based applications to join the cohort of supported fintechs through an open process which has been expanded over time. Yet with budget constraints to continued FSDMoç support, the challenge now

exists with a nascent industry requiring to grow and scale independently. Scaling interventions across systems is a challenge that programmes face with increasingly constrained resources and timelines, and while reaching scale within sectors and value chains is possible in shorter time periods, true systemic change that crucially benefits vulnerable populations (especially within financial systems) takes considerable concerted and targeted support over a longer period.

Aside from the time and resources challenges with building systemic resilience, there is also the matter of increasing prevalence of crises. While the nature of the COVID-19 pandemic is to some degree unprecedented, it has exposed to a greater degree the risks and vulnerabilities that large proportions of the global population face and the detrimental impact such events can have in increasing extreme poverty (Lakner et al., 2021). In addition, the interconnected nature of the global financial system and continued vulnerabilities that exist remain inherent risks. We have seen the impact of COVID-19 flow down the financial systems, and valuable intermediary functions including agent bankers that offer agency to women operators and serve the poorest have been constrained, concentrating the impact on end-users with least resilience to respond (FSDMoç, 2020b). A further critical factor in limiting resilience is the presence of armed conflict, with the World Bank (2020) detailing how armed conflict tends to be disproportionately concentrated where the global poor live. The impact of conflict reduces resilience in a multifactorial manner, with access to productive resources, healthcare, and education all contributing to not just immediate disruption but also creating longer-term deficits.

Those at greatest risk of crisis require continued support to build systemic functionality to respond, and the increasing prevalence of climatic risk will concentrate risk further on those in vulnerable populations (Gates, 2021). Market-based approaches that maintain a systemic focus have a key role to play in improving vulnerability to crises, and approaches such as blending food security with food systems programming show that market-based solutions can improve income and nutrition outcomes for the most vulnerable (Cruz Zuniga et al., 2019). Taking a perspective across multiple different technical fields is crucial to providing an array of mechanisms to support vulnerable populations to respond to crisis, and continued support over time is crucial. DFS offers one mechanism to which resilience can be built, and in aligning DFS to wider catalytic drivers of resilience we can look towards scaling systemic response.

Conclusions

Microinsurance primer

Microinsurance can be referred to as insurance coverage that is targeted towards vulnerable populations and those with low incomes. Key features of microinsurance include low premiums, and generally lower levels of coverage with products tending to be grouped around personal liabilities including life insurance, funeral coverage, and illness coverage. Those who have limited resources are at greater risk of significant financial disruption when faced with shocks, and the concept of microinsurance is to mitigate these challenges.

Critical findings from the field surround the need to have a deep understanding of the client base, and using this understanding to develop products that meet a demonstrable need. This needs to be aligned with clear strategic vision in outreach (for instance increased investment potential when farmers have crop insurance), and pricing products so that they are in line with client expectations. For the provider, potential exists in scaling products across generally underserved markets and using technological approaches such as GIS to more accurately price products and increase user uptake.

Digital financial services primer

Digital financial services (DFS) can cover a broad array of financial services delivered in a digital manner. Advantages of DFS over traditional financial services include increased accessibility to reach the most vulnerable including in insecure locations, and to engage unbanked or underbanked populations. DFS are also important tools for closing the gender equality gap, increasing financial opportunities and inclusion for women through reducing physical access, when providing unpaid care, and cultural barriers.

However, DFS do require significant infrastructure provision in order to ensure widespread access and also careful consideration of products by providers to ensure national regulatory alignment. The benefits of increased access include increased shock provision, scalability, and opportunities for messaging synergies. Critical views cite limited advantages for poorer users with careful considerations required in relation to fraud and digital protection.

From the field, we see practical points of value in ensuring that providers develop products closely with regulators to ensure adherence. Providers should also pay careful attention to ensure that target clients have sufficient mobile infrastructure access to utilize services, particularly in insecure environments. Financial education and outreach is also a critical component of launching services, ensuring users understand the products offered and are comfortable with online transactions. Lastly, providers need to ensure online service interactions are at the same level, if not higher than physical service interactions.

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