Savings at the Frontier – Getting closer

Expanding outreach and increasing usage through better placement of touchpoints

A focus note by Pete Sparreboom and Mbinya Mutiso

March 2020

Introduction

Savings at the Frontier (SatF) was set up in 2015 to promote formal financial service provision to savings groups and savings collectors (informal savings mechanisms (ISMs))[1]. It has partnered with nine financial service providers (FSPs) in Ghana, Tanzania and Zambia to explore viable business models for reaching "the financial access frontier."

This focus note describes the low-cost, practical methods that SatF and its partner FSPs have developed to make outreach to clients in underserved areas viable. These methods build on the increasing availability of satellite images and publicly available geo-tagged data, as well as the growing ease and affordability of collecting geo-coordinates. A recent paper by OPM describes the methods in greater detail.[2]

Defining the frontier

SatF uses the established term **financial access frontier** to refer to the limits (geographical, economic, social, psychological, etc.) beyond which poor people cease to have access to adequate financial services. This paper focuses on the **geographical frontier**, which we can define as areas where people do not have effective physical access to formal financial services. This is not just a question of distance, and official urban-rural classifications have not proved a useful basis for FSPs trying to identify frontier areas. Some countries distinguish only between urban and rural areas, with no peri-urban category. For example, some parts of areas officially classified as rural are relatively densely clustered and busy, and are as well connected as urban areas. These do not constitute frontier areas.

Even where intermediate categories exist, they differ between countries. In addition, many areas classified as urban or rural are actually mixed. For example, some people in officially urban areas are unable to access agents due to social barriers, particularly in informally organised settlements within and at the edge of urban areas. These can reasonably be considered frontier areas.

After intensive discussions, programme staff and FSP managers agreed to create a set of SatF programme-specific rules to distinguish between urban, peri-urban and rural areas, based on a combination of settlement size, local population density, organisation and infrastructure. Box A gives an example of the rules developed for Zambia.

Box A – Example definition of "the geographical frontier" for formal financial services in Zambia

For Zambia, SatF has defined five levels along the urban spectrum:

Gridded urban	Self-organised infill in large urban	Peri-urban edge to large urban	Mid-sized towns	Out-of-town peri-urban trading centres
Large urban densities (1,500/ sqkm or more) + visible road grids	Very high density with little visible traffic-width road gridding	Suburban density (300+/sqkm) forming the edge of a contiguos large urban area	Standalone contiguous densities of 300+/sqkm in areas titalling 15,000-50,000 people	All other areas classed as urban under Zambian rules
Combining to form towns of 50,000+				

In the above table, the geographical frontier includes: self-organised infill in large urban; peri-urban edge to large urban; and out-of-town peri-urban trading centres.

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[1] Informal savings mechanisms (ISMs) are a set of ways in which groups of people save money together. In some ISMs, savings accumulate over a cycle to be shared-out at completion and this often repeats multiple times. Others roll up saved capital but periodically make distributions from investment returns while some models do this in a circular, not accumulating, manner. Affinity groups help people with common interests to save for shared rather than individual purposes. There are also deposit collection mechanisms that pool individual savings without the formal structures of a group, such as susu collection in Ghana.

[2] Peachey, Steve, and Mbinya Mutiso. "Moving Proximity from Critical Issue to Addressable Challenge: Possible Approaches and Tools." *Oxford Policy Management*, Sept. 2019, www.opml.co.uk/files/Publications/a0600-savings-at-the-frontier/proximity-scoping-main-report-satf.pdf?noredirect=1.

Locating the frontier

Having defined what a geographical frontier is, SatF and its partner FSPs needed to identify the areas that constitute a realistic geographical frontier for the services they offer to savings collectors and savings groups. They noted that countrywide geo-spatial mapping exercises undertaken in several of the countries where SatF partners work had been expensive, one-off exercises, and had not been updated for years. FSPs therefore needed to identify the frontier areas themselves.

Aware of FSP technical and resource constraints, SatF worked with selected partner FSPs in Ghana and Zambia to develop and test methods based on standard MS Office software and free, publicly available data and maps. In broad terms, these methods involved:

1. Official classifications, to identify urban, mixed or rural areas;
2. Census data, to establish general population density in these areas; and
3. Visual inspection of Google Earth, to classify sub-areas according to SatF definitions.

The methods were designed to be simple enough to be applied directly by FSP product or channel managers. To demonstrate this, at a peer learning event for its partner FSPs in September 2019, SatF spent 30 minutes explaining the refined method to representatives from six FSPs. It then gave participants one and a half hours to apply the method to a concrete case in Tanzania. Box B describes a version of the exercise they undertook. Working in small groups, all participants successfully classified the assigned areas within the time available.

Resolving low usage and dormancy in frontier areas....

When SatF asked FSPs to identify their specific frontiers using the newly developed, low-cost method, it found that senior managers were not very motivated to free up staff time for this task. After all, reaching ISMs at the frontier can be hard. While some FSPs persuaded high numbers of savings group members and susu savers to open savings accounts, these were often used less frequently than desired, and sometimes fell dormant.

This situation is not unique. Low account activity is a major problem facing FSPs around the world. CGAP estimates that dormancy of bank and mobile accounts in sub-Saharan Africa in 2017 was 49%.[3] A large proportion of groups that open a current or savings account end up using it only once, or not at all.

...requires proximity to be increased...

SatF's partner FSPs blamed much of the dormancy on a lack of "proximity", particularly proximity to agents providing cash-in/cash-out services. Research shows that use of financial services without proximity is rare.[4] There is considerable consensus that the distance between groups and touchpoints (such as FSP branches and agents) is a common reason for groups not using their accounts.

What constitutes proximity varies by location. Rural residents tend to be willing to travel further than urban residents. It also varies by the type and value of transaction. While rural residents may be willing to travel 5-10km to withdraw a substantial monthly transfer, they may consider 2km to deposit small individual amounts quite far.[5]

[3] Bull, Greta. "Financial Inclusion: Is the Glass Half Empty or Half Full? (Pt 2)." *CGAP*, CGAP, 7 August 2018, www.cgap.org/blog/financial-inclusion-glass-half-empty-or-half-full-pt-2.

[4] Arabéhéty, Pablo García, et al. "Proximity Matters: Five Case Studies in Closing the CICO Gap." *CGAP*, CGAP, May 2018, www.cgap.org/research/slide-deck/proximity-matters-five-case-studies-closing-cico-gap.**Error! Hyperlink reference not valid.**

[5] Forster, D., et al. "Mapping Proximity: Bringing Products and Services Close Enough to the Poor to Be Meaningfully Usable and Still Keep Them Sustainable for WSBI Partner Banks." *FinDev Gateway - CGAP*, World Savings and Retail Banking Institute (WSBI), April 2013, www.findevgateway.org/library/mapping-proximity-bringing-products-and-services-close-enough-poor-be-meaningfully-usable.

Example of an FSP in Tanzania

❓ **Question: What percentage of the FSP's groups is at the frontier?**

Method to be followed by FSP:

Step 1: Establish official classification of groups' ward
- Go to City Population (open source)
- Find boundary map with ward status from census
- Locate groups by ward name
- Determine official government classification of ward as urban, rural or mixed

Boundary map with official urban-rural classification from Thomas Brinkhoff: City Population, http://www.citypopulation.de

Classed as rural
Classed as mixed (look for small-town peri-urban)
Classed as urban (look for infill and fuzzy-edge peri-urban)
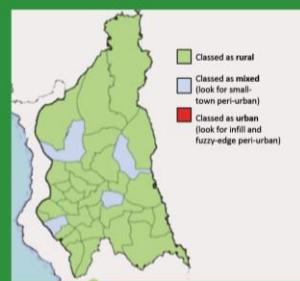
Step 2: Establish population density in groups' ward
- Go to City Population (open source)
- Find boundary map with population density per ward based on census data
- Locate groups by ward name
- Determine the population density of the ward in which the groups are located.

Boundary map with population density from City Population (ibid)

Very remote rural (low tens per sqkm)
Mostly village rural (low hundreds per sqkm)
Rural transition to peri-urban (500 to 1000 per sqkm)
Dense urban (5000+ per sqkm)
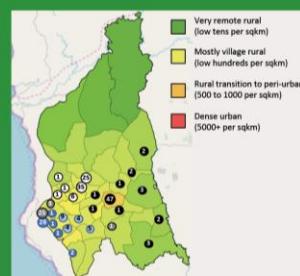
Step 3: Manually inspect wards
- Take density map from City Population
- Select a mixed ward
- Reduce colours so boundaries and roads can be seen - highlight if necessary
- Combine with satellite image from Google Earth – line up on roads
- Enlarge and inspect the location visually
- Determine whether location has a frontier geography
- Consider recolouring the map based on inspection

Top: Satellite image with boundary overlay

Bottom: Detailed image of Mjini, main town in Mbinga ward, from Google Earth

...without forgetting viability

While there is clearly a need to reduce the average distance between clients and touch-points, achieving this is not easy. The principal challenge is that touchpoints need to be viable. A branch or agent needs a minimum number of clients within a certain radius to make the business worthwhile; and these clients need to be active, in the sense that they make frequent transactions. In Tanzania in 2015, the majority of agent tills conducting fewer than ten transactions per day were operating at a loss.[6]

FSPs say that viability is a key consideration in placing agents; but in practice, many put their agents in the same location, often within metres of each other along main roads and in market centres. This does not increase proximity. In Uganda and Kenya in 2013, when mobile money was already widespread, agents only increased proximate access (defined as the number of people within 5km of a touchpoint) by 5-10%

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[6] Bersudskaya, Vera, and Mike McCaffrey. "Agents Count: The True Size of Agent Networks in Leading Digital Finance Countries." *Helix Institute*, Helix Institute of Digital Finance, Feb. 2017, www.helix-institute.com/sites/default/files/Publications/Agents%20Count_0.pdf.

above the 55-67% achieved by traditional touchpoints.[7]

As additional agents are placed in the same areas, overserved catchment zones become less viable for individual agents. At the same time, many potentially viable catchment zones in peri-urban and rural areas remain unserved. For example, in 2013, Tanzania had approximately 45,000 agents, 7,000 medical centres and 5,000 schools. Yet only 44% of the population were within 5km of a mobile money agent, compared with 69% for schools and 58% for medical centres.[8]

Identifying viable catchment areas for agents at the frontier

The main reason FSPs were reluctant to invest time in identifying frontier areas was that they wanted to solve the problem of dormancy before expanding outreach. To do so, they needed a method for increasing proximity. This meant determining the location of alternative/ additional touchpoints that were both closer to clients and were viable.

Conscious of FSP priorities, SatF developed a method to help them increase proximity. The steps in this method are similar to those for classifying areas and clients as urban, peri-urban and rural:

1. Identify priority zones with clusters of existing ISMs, based on ISM location.

2. Identify zones with population clusters close to ISM clusters, based on census data.

3. Identify viable catchment areas, using definitions of proximity and viability.

4. Compare identified catchment areas with the location of existing agents.

FSPs can use this method to determine where viable new agents could be opened, and where non-viable agents should be closed.

To demonstrate that any FSP manager could apply this method in order to identify viable catchment areas for touchpoints in frontier areas, SatF asked participants at the peer learning event in September 2019 to undertake another exercise. Box C summarises the steps they were asked to undertake. As expected, working in small groups, all participants successfully listed a number of new agent locations with high business potential on the map they were given.

Several of SatF's partner FSPs have started using these mapping methods. In a Findev Gateway Webinar showcasing the methods developed with SatF,[9] Marvin Chibuye of Vision Fund Zambia demonstrated how his organisation has used client mapping to place agents within greater proximity of its savings groups.

[7] Forster (see Footnote 4)

[8] McKay, Claudia. "Proximity Matters: Improving the Viability of Frontier Agents." *CGAP*, CGAP, 26 June 2018, www.cgap.org/blog/proximity-matters-improving-viability-frontier-agents.

[9] Balaba, John, et al. "Mapping It Out: Practical Tools for Reaching Remote Clients." *FinDev Gateway - CGAP*, Savings at the Frontier, 19 Dec. 2019, www.findevgateway.org/gateway-webinar/mapping-it-out-practical-tools-reaching-remote-clients.

Box C – A method for identifying viable agent locations

Example of an FSP in Tanzania

? **Question: Where should agents be located to facilitate group linkages?**

Method developed for FSP review of initial rollout:

Steps 1/2: Identify potential locations for agents based on number of existing groups:
- Plot groups in their respective ward
- Identify wards with high number of groups
- Enlarge/inspect rural and mixed wards in Google Earth
- Identify population clusters that may offer a viable market of group and individual clients for a CICO agent

* CICO agents provide cash-in / cash-out services and can be FSP own agents or mobile-money agents

Boundary map with population density from City Population (ibid), including named roads and population clusters
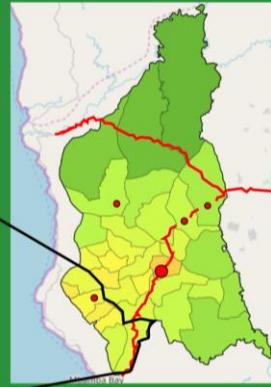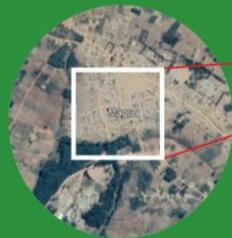
Step 3: Determine potential catchment areas for CICO agents based on population density and distance
- Draw circles with a 3km radius in dense area
- Determine number of people within each circle
- Determine coordinates of viable agent locations

Step 4: Compare location of identified catchment areas with location of existing agents

Collecting geo-coordinates for touchpoints and clients

In working with partner FSPs to develop methods for identifying the frontier and viable catchment areas, SatF discovered that one more obstacle stood in the way of reducing dormancy: the non-availability of location data for FSPs' existing touchpoints and clients. Up to now, national and local surveys that collect geo-coordinates for FSP touchpoints and clients have been fragmented and sporadic. Only one SatF partner FSP had information on the location of some of its own touchpoints, and none had coordinates for clients.

SatF discovered that FSPs believed that collecting coordinates was complicated and labour-intensive, requiring a special budget and separate staff. Clearly they were not familiar with new mobile apps for collecting geo-coordinates, such as Pluscode Finder and What3Words, which have not only made collecting geo-coordinates much

easier, but are entirely free. Box D describes three tools that can be used to geo-locate touchpoints and clients.

As part of its efforts to develop methods to identify the frontier and viable catchment areas, SatF guided selected partners in using the apps to collect geo-coordinates.

To demonstrate to its other partner FSPs how easy it was to use the free mobile apps to collect geo-coordinates, SatF spent 30 minutes at the peer learning event mentioned above to train senior managers from six FSPs in three countries in how to use them. After trying the tools in the classroom, groups of participants took motor-taxis to different crossroads in Msasani high density area in Dar Es Salaam. There they were given 30 minutes to collect the coordinates of as many FSP branches and agents as possible in the area they were assigned.

All participants managed to collect between six and ten sets of coordinates, which were safely stored on their smartphones. The exercise led to a paradigm shift, as FSP managers realised that collecting coordinates was not difficult. Any member of staff could learn how to do it, and it would take them very little time.

Since the exercise, all of SatF's partner FSPs have started using free smartphone apps to collect the geo-coordinates of their ISM clients. And having realised that geo-location is not the obstacle they thought it was, they have become very keen on classifying areas and improving proximity between touchpoints and clients. Given the minimal effort needed to obtain the required data, the tool could clearly help them better place their agents and reduce their clients' dormancy.

The next step: developing an automated tool

The new methods for identifying viable touchpoint locations can be used by FSPs themselves, because they do not require expensive software or sophisticated analytical skills. However, they do need an investment of time to collect information, analyse maps and register findings. To remove this obstacle, SatF engaged NIRAS, a Danish consultancy firm, to create a tool that automates part of the work.

NIRAS has developed a programme that combines a range of satellite images and publicly available data on populations and infrastructure, to create tailor-made maps. It then applies machine learning to identify frontier areas and viable catchment zones. It has also produced an Excel-based tool that FSPs can use to extract useful information from these maps.

To provide proof of concept, the tool has been applied to the Greater Accra region in Ghana. During the webinar mentioned above, Abednego Darko of DSS in Ghana showed how plotting the location of susu collector clients on the multi-layered map generated by NIRAS, and then performing analysis with the help of the Excel add-in, has allowed his organisation to identify overlaps in collector routes. It has also identified viable opportunities for expansion into underserved areas, and for providing value added services along the value chain.

Box D − Methods for collecting geo-coordinates

Three freely downloadable smartphone applications are particularly user friendly. All they require is for users to activate the GPS function on their smartphone, take it to a place, and save its location. The format of the coordinates differs:

- **Google Maps** provides two numbers that specify the latitude and longitude of the place. GPS coordinates are long, not easy to remember and prone to errors in communication.
- **Pluscode Finder** provides a shorter number assigned to the place plus the official village or town. Pluscode addresses exist where there are no streetnames or numbers. Not yet available for iPhone.
- **What3Words** provides a unique combination of three words assigned to the 3m x 3m square. What3Words addresses are easy to say and share, and are as accurate as GPS coordinates.

Google Maps: 40.6893328,-74.04477
Pluscode Finder: MXQ4+M5, New York
What3Words: ///planet.inches.most

SatF is now looking for potential partners interested in co-funding the mapping of other regions and countries, as well as in further developing the tool.

Conclusion

The SatF programme has helped nine partner FSPs to identify frontier areas by agreeing on a definition of what a geographical frontier is and developing low-cost methods and tools to locate these areas. The methods and tools used are all based on standard office software and free, publicly available census, satellite and crowd-sourced data. This makes it practical to apply them in-house. With this contribution, SatF has brought the benefits of satellite imagery and machine learning down from the ivory towers of donors, universities and consulting companies, and onto the desktops of FSP managers.

SatF discovered that FSPs needed to resolve low usage and dormancy of ISM accounts before they were willing to move deeper into rural and peri-urban areas. So the programme further developed its methods for identifying frontier areas, so FSPs could use them to identify viable catchment areas for touchpoints such as agents. By demonstrating to FSPs that field staff can use free smartphone apps to collect the geo-coordinates of touchpoints and clients easily, a major perceived barrier to using these methods was removed. Now that all SatF partner FSPs have gained experience in collecting the geo-coordinates of their own clients, they have started taking the lead in mapping the areas where they work and in further developing the tool.

FSPs that build skills in satellite image reading and geo-location by using the methods and tools developed by SatF can gain a significant advantage over competitors who fail to take advantage of available public data and free applications to identify viable locations for branches and agents.

Acknowledgements

About the SatF consortium

Savings at the Frontier (SatF) is a six and a half year programme (2015-2022) that seeks to bridge the gap between the supply of formal financial services and informal savings mechanisms (ISMs) in Ghana, Tanzania and Zambia, so that ISM users in these countries have a greater choice and use of financial services that best meet their needs. SatF is a $17.6 million partnership between Oxford Policy Management and the Mastercard Foundation. For more information—and to read the full SatF strategy—visit www.opml.co.uk/projects/savings-frontier

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