Technical Report

DFS Rwanda Survey 2014

Research Solutions Africa

InterMedia

November 2014 – February 2015

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2. Acronyms

EA-Enumeration Area

GPS-Global Positioning System

MFS-Mobile Financial Services

NISR-National Institute of Statistics Rwanda

POS-Point of Service

PPS-Probability Proportion to Size

PSU-Primary Sampling Unit

QC-Quality Control

QA-Quality Assurance

RSA-Research Solutions Africa

3. Introduction

InterMedia commissioned RSA to conduct a survey seeking to explore the uptake and usage of financial services generally and mobile financial services in Rwanda. This study sought to understand the role MFS play in money transfers, payments and savings among various consumer segments. Below are the study objectives.

- Track citizens' access to financial services generally and the uptake and use of MFS specifically
- Evaluate service performance amongst MFS agents and customers
- Identify drivers and barriers to further adoption of MFS
- Make forward projections and provide insight that will generate market growth

The survey was conducted among adults (15+) in Rwanda with a national representativeness. The survey fieldwork was conducted during the period November 2014 to February 2015. Data entry and cleaning activities occurred from December 2014 to February 2015.

4. Sampling Design

Sample frame and design

- We used the 2012 NISR Census data as the sampling frame for selecting administrative units to be visited. This data includes all the provinces (5), districts (30) and sectors (416) in Rwanda and their respective population. It also indicates the rural and urban population percentages. After selecting the sectors for the survey, the NISR provided the cells and villages of the selected sectors for sampling up to the lowest level.

- The total sample size was 2,000 interviews distributed across 200 Enumeration Areas (EAs), so 10 interviews per EA. The EAs were equal to the villages, the lowest administrative level in Rwanda.

- We used a PPS (Probability Proportion to Size) approach in compiling the sample. A simple random probability sampling technique was used to distribute the Primary Sampling Units (PSUs, where 10 interviews were to be done) across the 416 sectors, taking into account the rural urban split of 83/17 in Rwanda.

- Within the selected sectors one village was randomly selected (either one rural or one urban). In a few sectors (5) one urban and one rural village were selected. In total 33 urban villages were selected and 167 rural villages.

- The last sampling stages involved the selection of households from the EAs and selection of respondents from the households (see below).

Household and respondent selection

- Random walk and Kish grid methods were respectively used to select households and respondents.

- The survey team, in collaboration with administrative heads and locals, identified the boundaries of each selected EA. Then the team supervisor listed all the prominent landmarks within the EA and if there were more than one landmark, the team leader used the procedure below to identify the one they would use for the starting point in the random walk. Prominent landmarks included, but were not limited to, the ones indicated in the table below.

Table 1: Landmarks

Landmarks	
Markets	Schools
Village meeting arenas	Administrative offices
Sports grounds	Rivers
Hospitals/dispensaries	Prominent valleys
Homesteads of prominent persons	

- The method of randomly selecting the start point was as follows:

- Up to 10 prominent landmarks were listed, starting with the nearest and working down to the furthest away from the designated meeting point within the area

- All questionnaires had serial numbers. From the questionnaire at the top of the pile for the day, the last digit of the serial number was identified. Then the same number was identified at the top row of the Kish grid form.

- The supervisor would then look down that column and read off the number opposite the last prominent landmark listed in the table. That number was the key to the landmark that would then be used as the start point for the random route walk. The landmark corresponding to that number would then be selected.

- Once the single starting point was identified, a stick/pen was spun on the ground and two interviewers would start the random walk in opposite directions, as indicated by the stick/pen, on the nearest path/road. The supervisor would then identify a third different direction to be taken by the third interviewer.

- For the random route, the left hand side of the road was used consistently. While walking the interviewers adhered to the left-hand rule selecting houses to the left-hand side, sticking to the left when turning at each intersection. A skip interval of 3 was applied in urban areas and a skip of 2 was applied for rural EAs.

- From the starting point, the interviewer identified the first household to be interviewed by the last digit of the serial number of the questionnaire on top of the day's pile. For example, if the serial number of the questionnaire was 1003, the interviewer skipped the first 3 households and approached the 4th household on the left.

- From that point, in urban EAs each interviewer skipped 3 households and selected every 4th for interview. In rural EAs, 2 households were skipped and every 3rd household selected for interview. The difference in the number of skip steps between households ensured an adequate distribution of respondents across the EA while taking into consideration differences in population density in urban and rural areas.

- In each selected household, only one eligible respondent was selected for interview using the Kish Grid method.

- Additional instructions on how to deal with multi-story residential units and non-residential buildings were provided in the enumerator manual.

5. Sample size and Allocation

200 EAs were selected in 195 sectors. In 5 sectors both a rural and urban EA was selected. In all other sectors only a rural or an urban EA was selected. Ten households were interviewed in each selected EA. The table below indicates the sample breakdown.

Table 2: Sample Distribution

Province	Sector	Village/EA Name	EA Type Rural Interviews done	EA Type Urban Interviews done
Kigali	Ndera	Ruseno	10	
	Ndera	Gitaraga		10
	Gatsata	Tetero		10
	Gisozi	Nyakariba		10
	Kacyiru	Cyimana		10
	Kimiromko	Abatuje		10
	Kinyinya	Taba		10
	Remera	Agashyitsi		10
	Jabana	Gikingo	10	
	Kagarama	Byimana		10
	Rutunga	Munini	10	
	Gatenga	Isangano		10
	Kanombe	Itunda		10
	Kigarama	Ingenzi		10
	Niboye	Kigarama		10
	Gitega	Izuba		10
	Kimisagara	Akishuri		10
	Nyakabanda	Nkundumurimbo		10
	Nyarugenge	Nyiranuma		10
	Kanyinya	Gatare	10	
	Mageragere	Murondo	10	
West	Bugarama	Misufi		10
	Bweyeye	Muyebe	10	
	Giheke	Kagarama	10	
	Gitambi	Nyakibingo	10	
	Mururu	Karambo	10	
	Nkungu	Rwamaraba	10	
	Nyakarenzo	Kamanura	10	
	Kagano	Rushondi	10	
	Karambi	Rutiti	10	
	Kirimbi	Uwakibaba	10	
	Mahembe	Kanyoni	10	
	Rangiro	Ruhana	10	
	Shangi	Karuhigi	10	
	Bushekeri	buhinga	10	
	Cyato	Nyakabingo	10	

	Bwishyura	Majuri	10	
	Gitesi	Karwiru	10	
	Murambi	Muramba	10	
	Mutuntu	Gasharu	10	
	Rugabano	Kivumu	10	
	Rwankuba	Byimana	10	
	Boneza	Gisiza	10	
	Kivumu	Kagera	10	
	Mukura	Nyarusongati	10	
	Musasa	Rubaya	10	
	Mushubati	Mubuga	10	
	Ruhango	Busenda	10	
	Nyakiriba	bweza	10	
	Nyakiriba	gitarima		10
	Gisenyi	Urubyiruko		10
	Rubavu	Ngugo		10
	Bugeshi	Cyumba	10	
	Cyanzarwe	Gashuha	10	
	Kanzenze	Rugali	10	
	Nyundo	Kiziguro	10	
	Jenda	Ndorwa	10	
	Jenda	Bukinanyana		10
	Kabatwa	Kinkware	10	
	Mukamira	Rwaseka	10	
	Rambura	Myumba	10	
	Shyira	Kagongo	10	
	Gatumba	Gitega	10	
	Kabaya	Nyamugeyo	10	
	Kavumu	Gasibya	10	
	Muhanda	Bugarura	10	
	Ndaro	Gasharu	10	
	Sovu	Mugobati	10	
North	Kinihira	Gatare	10	
	Kinihira	Kirwa		10
	Bushoki	Rusave	10	
	Mbogo	Bukoro	10	
	Ntarabana	Kabirizi	10	
	Tumba	Gatsinde	10	
	Gatebe	Kajerijeri	10	
	Butaro	Gahira	10	
	Cyanika	Nyarutosho	10	
	Kinoni	Mutabo	10	
	Nemba	Ngongwe	10	
	Ruhunde	Rukwavu	10	
	Kinigi	rubara		10
	Musanze	Bukane		10

	Cyuve	Kungo	10	
	Gataraga	Rusambu	10	
	Muhoza	Buhuye	10	
	Nkotsi	Karambo	10	
	Rwaza	Mugogo	10	
	Coko	Vumandi	10	
	Gashenyi	Murambi	10	
	Karambo	Ryarurimbura	10	
	Mugunga	Giheta	10	
	Muzo	Kanini	10	
	Rusasa	Bumonyo B	10	
	Kageyo	Munini		10
	Bukure	Muguruka	10	
	Cyumba	Mugera	10	
	Kaniga	Rugari	10	
	Mukarange	Nyakabungo	10	
	Nyamiyaga	Ruyaga	10	
	Rukomo	Ryandinda	10	
	Ruvune	Mataba	10	
East	Nasho	Kagese I	10	
	Nyarubuye	Nyabayama	10	
	Gahara	Rwabaseka	10	
	Gatore	Rwabigaro	10	
	Kigina	Rebezo	10	
	Mpanga	Busasamana Ii	10	
	Musaza	Runyinya	10	
	Rukira	Gahushyi	10	
	Rukira	rurama		10
	Karembo	Kivugangoma I	10	
	Kibungo	Amarembo	10	
	Mutenderi	Ndarage	10	
	Rurenge	Karama	10	
	Zaza	Nyaruteja	10	
	Kabarondo	Rutagara		10
	Kabare	Nyabugogo	10	
	Mukarange	Rutare	10	
	Murundi	Akamina	10	
	Nyamirama	Kamonyi	10	
	Rukara	Kidogo	10	
	Fumbwe	Irukwaya	10	
	Gishali	Uruhuha	10	
	Musha	Muhogoto	10	
	Mwulire	Byange	10	
	Rubona	Umumeyu	10	
	Kiyombe	Karujumba Centre	10	
	Karama	Ihuriro	10	

Region				
	Rukomo	Huriro	10	
	Tabagwe	Runyeri	10	
	Rwimiyaga	Bugaragara	10	
	Mimuri	Rusororo	10	
	Musheri	Cyenombe	10	
	Nyagatare	Barija		10
	Karangazi	Kahi	10	
	Gatsibo	Nyarukoni	10	
	Kabarore	Kabare	10	
	Kageyo	Nyakabungo	10	
	Kiziguro	Rubungo	10	
	Murambi	Kimironko	10	
	Nyagihanga	Mpangare Ii	10	
	Rugarama	Matare	10	
	Rwimbogo	Humure	10	
	Muhazi	Kabusunzu	10	
	Juru	Majanja	10	
	Mayange	Rukora	10	
	Musenyi	Migina	10	
	Ntarama	Kurugenge	10	
	Nyarugenge	Nyabuhoro	10	
	Rweru	Rwibinyogote	10	
South	Busanze	Bukinanyana	10	
	Kivu	Businde	10	
	Munini	Gacumu	10	
	Nyabimata	Bihembe	10	
	Ruheru	Gahotora	10	
	Rusenge	Bunge	10	
	Tare	Kivuruga		10
	Cyanika	Rusenyi	10	
	Kaduha	Rukeri	10	
	Mugano	Ruhamira I	10	
	Musebeya	Kanyiranzoga	10	
	Uwinkingi	Kimina	10	
	Kibirizi	Kabagoti	10	
	Gishubi	Kanombe	10	
	Kibirizi	Nyabusozi	10	
	Mamba	Kirwa	10	
	Mugombwa	Banzankuru	10	
	Musha	Bukinanyana	10	
	Nyanza	Intuntu	10	
	Ngoma	Nyabitare		10
	Karama	Mukimba	10	
	Kinazi	Rugarama	10	
	Mbazi	Kabakono	10	
	Simbi	Kigarama	10	

Busasamana	bugura	10	
Busasamana	Kamatovu		10
Cyabakamyi	Gahengeri	10	
Kigoma	Butansinda	10	
Mukingo	Birambo	10	
Muyira	Buhaza	10	
Nyagisozi	Gatare	10	
Rusatira	Kagasa	10	
Byimana	Kizibaziba	10	
Kinazi	Kareshya	10	
Kinihira	Gihororo	10	
Mwendo	Gitwa	10	
Ntongwe	Nyarwahi	10	
Runda	Musebeya		10
Kayenzi	Rugoma	10	
Mugina	Runzenzi	10	
Nyamiyaga	Gacumu	10	
Nyarubaka	Tare	10	
Rukoma	Remera	10	
Nyamabuye	Rutenga	10	
Nyamabuye	Gasharu		10
Cyeza	Kajeje	10	
Kibangu	Ruminantege	10	
Muhanga	Gasaka	10	
Rongi	Masizi	10	
Shyogwe	Gasharu	10	
	Totals	**1670**	**330**

6. Questionnaire

Translation

- The study questionnaire was translated into Kinyarwanda by two translators who worked independently. Once they had translated the questionnaire, they met and compared their copies of the translations for similarities and differences, and in the process came up with a harmonized version of the forward translation of the questionnaire.

- A third translator then back-translated into English the harmonized forward translation. The three translators compared the back-translated version against the original English version of the questionnaire for accuracy and similarity in expressions. They noted variations in expression or meaning and rectified these resulting into a final local language version of the questionnaire.

- The translation was further refined with input from the field team during training.

Questionnaire structure

- It consists of the following parts:

a) SECTION AA: Front page, Introduction, Kish Grid and Consent for minors

b) SECTION I: Demographics
    - Subsection 1: General Geographic Characteristics
    - Age, Gender, Marital status, Level of education and Documented/Undocumented status

c) SECTION II: Access to and ownership of mobile technology
    - Mobile Phone ownership, access and use

d) SECTION III: Financial Instruments
    - Subsection I: Formal Financial Instruments
    - Ownership, access and use
    - Subsection II: Digital Financial Services/Mobile Money
    - Mobile money awareness, sources of information
    - Mobile money adoption, use, barriers, drivers
    - Point-of-service (POS)/mobile money agent-related experiences of mobile money users
    - Subsection III: Satisfaction with financial service providers and products
    - Subsection IV: Other financial Services
    - Access and use

e) SECTION IV: Optional Modules
    - Module 1: Financial Literacy
    - Module 2: Digital Literacy
    - Module 3: Interoperability
    - Module 4: Trust
    - Subsection 2: Livelihood
    - Employment status, source of income, occupation

f) SECTION V: Literacy, follow up and photography consent forms, quality checks box

7. Field team recruitment and training

Team recruitment

- Potential field staff were interviewed and screened in one on one session in two days prior to the training.

- A total of 38 were recruited for the training and selected based on their level of experience, proficiency and education

- All the supervisors and enumerators working on the project had a minimum college level education, good knowledge of the training and survey languages (Kinyarwanda and English) and some experience as field researchers.

- We trained a total of 38 staff from which we selected the best 30 to work as interviewers and supervisors in the project.

Team training

- A central training of interviewers was conducted in Kigali during 7 days (20th to 27th November 2014) to ensure uniformity in understanding the study objectives, methodology and questionnaire administration. RSA and InterMedia staff shared in the training.

- Each enumerator was supplied with a translated training manual for use during training and fieldwork. Additionally, the supervisors were provided with a manual detailing their role in leading and quality control.

- Key sessions covered during the training include: study purpose and objectives, sampling methodology, fieldwork rules and regulations, guide to questionnaire administration, and a detailed study of all the questions.

- In addition to theoretical instruction, practical role play was used during training to deepen the teams understanding; especially regarding household and respondent selection. Mock interviews were conducted at the later stages of training to help the field team get a hands-on feel of and internalize the questionnaire.

- Training also covered the data quality control forms used during fieldwork. These include:

    o Interviewer observation form

    o Supervisor field log, issue log and back check form

    o Start point selection form

- A separate targeted training session was conducted for the supervisors to emphasise on their responsibilities and the project QC control procedures.

- An assessment test was given by InterMedia at the end of the training. The result indicated most of the team understood the training.

8. Pilot

Pilot set up

- We piloted on the 28th of November 2014. The team was divided into 7 teams under 7 supervisors and 2 field managers. We chose 7 sectors in the 3 districts of Kigali, which were not to be visited during actual data collection, to pilot in. We then randomly selected an EA in each sector to be visited by each team and instructed the enumerators to do at least one interview.

- There were 3 outcomes from the pilot. The majority were able to complete an interview. A good number began but could not complete an interview. One team could not achieve anything.

Feedback from the pilot

a) Locating EAs

- The pilot made clear that the location of EAs would not always be clearly known by the team members. The team pointed out an omission in the EA location data initially provided. The initial information contained all administrative units except the cell. The team said the cell information was critical.

- Cell information was provided to the teams. We agreed that the EA location would always be first confirmed from the sector office.

b) Administrative bottlenecks to accessing some EAs

- One team reported that a senior administrative official refused them access to the EA because he was not in the office on the pilot day. He asked them to return on a day he was at the office.

- The team (especially the supervisors and managers) was advised to notify administrative officials some time before visiting the EAs.

c) Interview length:

- Many respondents complained that the survey took too long. Some abandoned their interviews mid way; leading to incomplete interviews.

- RSA supervisors advised the team to explain the beneficial use their voluntary information will be put to and to be upfront with the expected interview duration.

d) Sampling and questionnaire administration difficulties:

- Some did report that the number of not-at-homes made sampling household selection very laborious. The RSA supervisors advised that this would be an unavoidable challenge especially in Kigali and other larger towns. There would be no option than persisting.

- Most had problems with following the flow of questions at reasonable pace. The enumerators reported lots of referring back and forth across the tool pages during interviewing. The RSA supervisors agreed that this problem would ease off with increased mastery of the tool while counselling further study and practice before commencement of fieldwork.

e) Data capture and quality issues

- Some ticked while others coded responses. We agreed on coding for uniformity. How to capture responses in the single response questions e.g. DL4 or how to indicate situations such as lost IDs was also explained.

- Upon examination of the pilot data, obvious (e.g. a year of birth that does not agree with age) and subtle (skip errors) logical mistakes were noted and corrected at the group and individual level. At least 2 trainees were disqualified from continuing in the project because of poor performance and delivered quality.

9. Fieldwork

Organization and execution of fieldwork

- Fieldwork was conducted from 10th December 2014 – 15th January 2014. However, one EA whose location was missed during this period was done on 18th February 2015.

- Apart from full time RSA staff, the team consisted of 7 teams of 3 interviewers each, 7 supervisors (or team leaders) and 2 field managers.

- To ease EA access and identification, each team member was supplied with an identification letter and badge. Each of the supervisors and managers had a copy of the NISR study permit/visa.

- We achieved the target of 2,000 interviews in the EAs and numbers originally planned.

- The interviewers had a target of 3-4 interviews per day.

- The questionnaire was read word for word, almost always in Kinyarwanda. All the 2,000 interviews were recorded in Kinyarwanda questionnaires, indicating the interview language as per instruction.

- There were 3 consent forms administered for this study:

  - Parent/ guardian consent form for all respondents who were between 15-17 years of age.
  - Informed consent form to participate in a separate follow-up study for respondents who had registered mobile money accounts.
  - Photography consent form for all respondents.

- During nearly all interviews, GPS readings were captured using GPS readers and recorded on the questionnaire. In a few of cases though (around 10), householders refused to grant permission RSA capturing the GPS coordinates of the location.

- In addition to the study questionnaire, the following forms were also filled daily:

  - Interviewer log sheet
  - Supervisor observation forms, issue log, field log and back check sheets

Substitution of EAs

- Two EAs were substituted:

District	Sector	Village (selected)	Village (replaced by)	Reason
Kicukiro	Kanombe	Intwari	Itunda	Selected village are

				military barracks
Rusizi	Nkungu	Migazo	Rwamaraba	Selected village situated in an evacuated area

Household substitutions

- The following substitution process was put into place after three unsuccessful call backs at the household following the first attempt. The supervisor had to confirm and log that all the call-backs were unsuccessful, and then verify the reasons why.

- Substitution will be done only after one of the following has occurred:

  - Refused entry at household

  - Selected respondent in a household refuses to be interviewed

  - Selected respondent terminates the interview before it is completed

  - Selected respondent is absent for the period of the fieldwork

  - No one in the house speaks English or Swahili

  - All call backs have failed

- Substitution was done within the Enumeration Area (EA). If a respondent could not be obtained at the initial sampled household, the household to the immediate right of the initial household was selected. If the first attempt at this household was unsuccessful the household to the left was selected. If that too was unsuccessful the household to the second right was selected, followed by second left, third right, third left and so on.

Quality Control

- InterMedia had a team of 4 quality checkers who worked with RSA supervisors and managers to administer QA and QC. Sampling and interview observation were the main QA activities. Physical or telephonic back checks, completion and logic checks were the main QC activities. All these activities were documented in respective supervisor sheets. At least 10% of our interviews were observed. A similar number was back-checked. All the interviews were checked for completion and logic first by the interviewers then by the supervisors.

- RSA continuously verified GPS points recorded in questionnaires to ensure the right EAs were being visited.

- Any issues noted were communicated soonest to the individual interviewers and the team.

Data capture and processing

- Data was manually captured using QPSMR (Questionnaire Processing Software Market Research) in double entry (100% verification). A total of 34 data entry clerks participated throughout project in two

shifts (night and day shifts). 25% of the questionnaires were captured concurrently with field work and the rest upon field work completion.

- The questionnaires were given unique serial number starting from 1. They were then grouped into groups of 10 for easier process management given the size of the questionnaire. Verification of entry was also done in the groups of 10.

- The verified data was then exported to SPSS for consistency checks. Variable checks was created using the client's provided codebook for each column to check the consistency in base and by extension also used to pick out missing data points.

Quality Checks during data capture

- 100% double data entry ensured that data entry error is minimised if not completely eliminated.

- Diligent column by column querying of the data to ensure base consistency.

- Below is a table showing the errors encountered and how they were resolved.

Table 3: Summary of errors encountered during data entry and how they were resolved

Nature of Error	Cause of error	Solution
Mismatch error	DEC keying the wrong value during data entry	Right value obtained from the questionnaire
Missing data points	- Omission during fieldwork - Incorrect filter applied during template design	- Missing data points caused by error in the template design was corrected by pulling out the affected questionnaires and right entry made. - Number of cases affected by fieldwork omission had no significant effect on the direction of the survey results. The usual way would be contacting the field team or the respondents for the answers but this would be time consuming and costly for few data points that would in the end not affect the results significantly. The remedy for the missing data points included the following: ✓ Recoding the missing data points a negative response category e.g. "No" or DK/refused where applicable. ✓ In cases where there was no negative response category then statistical imputation was applied where the median of the nearby data points was assigned with a search span of 1. ✓ Pattern of response of related questions within the questionnaire was also used to determine the value to fill in the missing data points.

10. Challenges and Key Lessons Learned

A summary of challenges encountered is presented in the table below.

Table 3: Project Challenges and how they were dealt with

Challenge	Resolution
In some EAs the theoretical skip patterns calculated for each EA proved challenging because of the structure or number of houses. Due to the limited number of households in some of the villages (2 or 3 cases) we applied a skip of 1 instead of 2. In some villages the households were really squattered and distances were too large to cover in a day. In these villages we also reduced the skip to 1 instead of 2 (also few cases).	We adopted practical standard skips for urban and rural areas.
Extremely difficult rural terrain and typically long journeys to EAs.	We stuck to the original EAs but provided more time and finances to enable access.
Problems locating some EAs due to overlapping names.	Consulting and rescheduling to finally enumerate in the right EA.
A few cases of uncooperative administrative officials. In the worst case, a village and cell head kept our team from starting fieldwork until 2PM.	We relied on higher authority. In this particular case, we called the district mayor who intervened and we proceeded.
Quality issues in the first four or so days of fieldwork.	Relentless monitoring and correction.
A few enumerators got sick towards the end of the first week of field work. Similarly, one of the field managers became ill for a number of days.	All were given time off to recover while arrangements were made to do their work after they got well.

Key lessons learned

- At the proposal stage, a French translation of the tool was thought to be necessary. Our experience is now is that French is no longer widely spoken in Rwanda. Kinyarwanda and English are sufficient survey languages.

- Because of rains late November and December the rural terrain in Rwanda were less accessible. The Northern, Western and Southern provinces have the worst terrain. Kigali and Eastern provinces have relatively better terrain/roads. It is important to allocate sufficient time and resources to accessing the EAs especially in rainy periods.