Insight2Impact

Advancing Financial Inclusion

Sustainable data collection: Mobile Modes

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Authors

Grant Robertson and Shirley Jeoffreys-Leach, Data4FI

About insight2impact

Insight2impact | i2i is a resource centre that aims to catalyse the provision and use of data by private and public-sector actors to improve financial inclusion through evidence-based, data-driven policies and client-centric product design.

i2i is funded by the Bill & Melinda Gates Foundation in partnership with The MasterCard Foundation.

For more information:

Visit our website at **www.i2ifacility.org.**
Email Mari-Lise du Preez (i2i's Partnerships Manager)
at **mari-lise@i2ifacility.org.**
Call us on **+27 21 913 9510.**

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Introduction

Sustainable data collection is a central concern for all researchers. Research budgets are under pressure, and response rates using traditional data collection methods are declining. This has put pressure on researchers to critically assess the way in which they design surveys and how they can adopt new technologies to produce more sustainable research.

The evolution of survey methods isn't new, and surveys will always evolve as technology does, as illustrated in the diagram below.

Figure 1

Well-established technologies				Developing technologies			
Verbal surveys	Telephone surveys	Online	Mobile	Passive	Biometrics	Virtual reality	Artificial intelligence
Paper in-person surveys	Computer-aided telephone surveys						
Computer-aided personal interviews							

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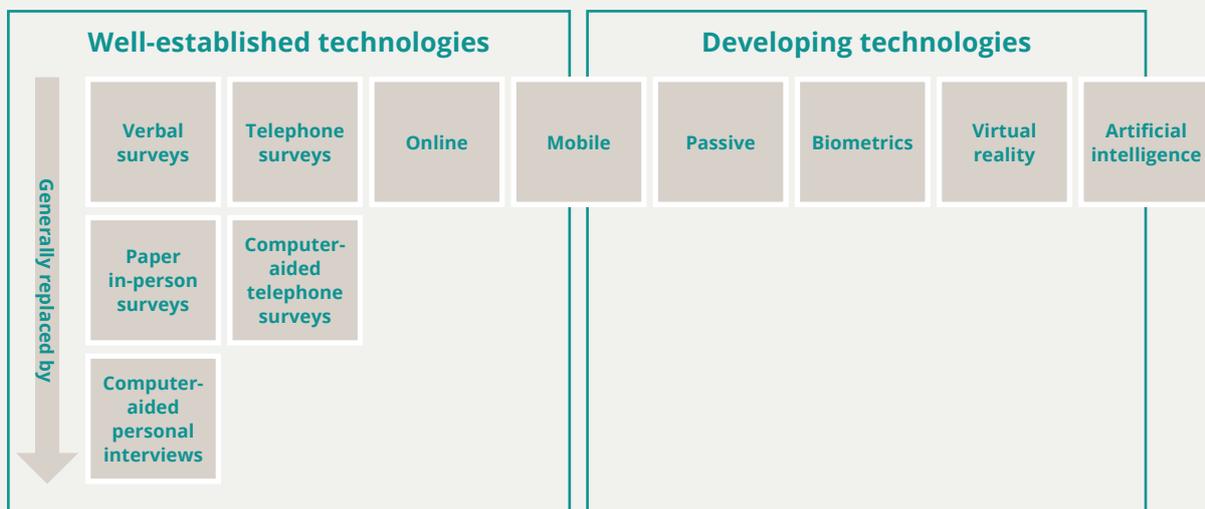
As financial inclusion researchers, we need to ensure that we move with the times, as funding for large-scale demand-side surveys (DSSs) is likely to reduce in the future. Ensuring that primary survey data collection is sustainable is a multi-faceted problem that should be addressed at many levels. Some of these areas are presented in Table 1 below.

Table 1

Issue hindering sustainability	Possible solution
Attempting to collect inappropriate data through surveys	Consult alternative existing data sources such as social media data, transactional data and regulatory data.
Use of limited research design	Embrace and use the rich range of research methods available. Don't rely on DSSs and focus groups alone.
Using expensive and inappropriate data collection modes	Use more cost-effective data collection modes such as those enabled by mobile devices.
Use of rigid and expensive sampling methodologies	Move away from stringent national probability samples to more focused and niche target audiences. Focus on representivity, which can be achieved with non-probability samples.
Over-emphasis of large sample sizes	Conduct surveys more frequently but with smaller sample sizes. Focus on power and effect sizes. See Small Data: The Tiny Clues that Uncover Huge Trends by Martin Lindstrom.
Questionnaires that are too lengthy and irrelevant	Reduce questionnaire length significantly and measure more often, covering more content areas. Consider survey stitching, imputation and data fusion.
Low levels of respondent engagement	Build surveys that respondents find interesting either in the content or the way in which they are administered.
Lack of relevance	Measure what matters to the consumer and produce useful metrics for policymakers and new insights for FSPs.

The focus of this paper is on data collection modes and mobile data collection specifically.

The proliferation of mobile devices has presented researchers with a golden opportunity to rethink the way data is collected. Mobile surveys won't replace traditional demand-side surveys (DSSs) any time soon, but they do provide us with options that allow us to track important market metrics regularly and understand emerging phenomena as and when they start developing. These mobile-generated insights can then be explored further using tailored DSSs or experimental methods.

Honing in on mobile devices as a primary data collection tool makes sense for the following reasons:

- The mobile phone is the fastest adopted technology in history.
- Mobile phone ownership outnumbers landline ownership in most developing countries.
- Mobile network operators and subscriber numbers are growing globally.
- Mobile phone ownership cuts across all socio-economic levels.
- Data costs will decrease over time.
- Users of mobile phones are very competent in the use of their phones. It is thus easy to engage with them through these devices.
- There is widespread adoption of digital payment systems, which makes mobile a perfect mode to reach these customers.

The use of mobile devices promises several benefits for researchers:

- **Reach:** Increased ease in reaching places where interviewers cannot go. For example, regions where crime and violence makes this unsafe. In addition, being able to access highly migratory populations, e.g. people displaced by war. This reach also extends to areas where interviewers often struggle to gain access, e.g. gated communities.
- **Speed:** Quicker data collection turnaround times and live reporting for faster decision support
- **Cost:** Reduced cost, primarily as there are no interviewer and travel costs
- **Data quality:** More engaged respondents and better quality control
- **In context:** The ability to measure the consumer in context (e.g. while shopping or banking)
- **Frequency:** The ability to measure more often as mobile surveys are shorter and cheaper
- **Passive:** The ability to collect data passively (e.g. browsing behaviour and location)

Mobile surveys can be deployed in several ways. These methods include computer-aided telephone interviews (CATI), Interactive Voice Response (IVR), Short Message Service (SMS), Unstructured Supplementary Service Data (USSD), Wireless Application Protocol (WAP), web surveys using smartphone browsers, and survey apps downloaded onto smartphones or through conversational survey bots.

Box 1. Common research bias and mobile surveys

Careful consideration should be given to all the biases that might arise from a particular mode. Bias is simply the extent to which one's estimates depart from the actual values. For survey research in general, one would need to consider the extent of bias emerging from the following:

Table 2

Common sources of bias	General bias	What this means for mobile research
Researcher	The researcher can design the research in a particular way to force a particular outcome; but, more commonly, research bias is due to a lack of design skills on the part of the researcher.	Mobile research has some unique design constraints. these can compound the problem of bias based on a lack of appropriate skills.
Interviewer	The presence of an interviewer may influence how people respond. This can manifest as a "social desirability" bias, where people are less inclined to share what they really think, as they don't want to feel judged or to seem impolite. If a question is designed such that the interviewer must interpret it, they may place their own meaning on it. Finger errors or under-reporting can occur as interviewers try to get through the questionnaire quicker.	With the exception of mCATI, mobile surveys are not administered by an interviewer, and therefore this bias is removed from most mobile modes.
Interview context	When and where a survey takes place can influence responses. For example, if family members are present, a respondent might not share sensitive information (like their personal income); or if a survey takes place in a public place, a respondent may rush to get back to what he/she was doing.	Researchers have no control over the context in which mobile surveys are completed; however, the mobile device is inherently private and designed to allow people to use them at their convenience, so it is highly likely that the interview context is ideal.
Respondent	When surveys become long and complicated the people completing them can become fatigued, which leads to less detailed responses or outright false answers, as they try to get the task out of the way.	The mobile platform tends to force the design to have greater relevance. This leads to better survey engagement and thus better-quality data. Engaged respondents are also more likely to participate in surveys again. This can be a strength, but researchers need to guard against the potential of these repeat, experienced respondents becoming a predominant portion of panels or samples.
Sample coverage	The ideal sample is a cross-section of people that perfectly reflect the universe they are meant to represent. Therefore, if you considered the sample against all those who did not take part (non-responders), they would look exactly the same.	Selection and non-response bias is more challenging with mobile surveys, as entry into the survey is multi-faceted. Respondents must have a mobile phone, their number must be randomly generated or selected from a list, and they must be willing to take part in the survey. This multi-layered selection places a greater onus on the researcher to understand how far the results can be generalised.
Questionnaire design	Questionnaire bias has traditionally been related to the way in which a question can lead a respondent to give a particular answer.	The mobile device has changed the way surveys are presented to respondents. Elements like screen size, format, layout, grids and response options have a large impact on how mobile surveys are deployed and how answers are mapped to questions.

Mobile modes

There is not just one way to conduct a mobile survey, and each of the different modes offers different strengths and challenges.

1 Mobile computer-aided telephone interviews (mCATI)

An mCATI survey is conducted by means of a call centre interviewer calling a respondent on his/her mobile phone, administering a pre-scripted questionnaire over the telephone and entering the responses into a computer system. The mCATI methodology has been shown to produce results similar to those found in household surveys.

mCATI systems can be fairly sophisticated, and the use of random-digit diallers promotes good sample representation. The inclusion of power/predictive diallers in the call-centre technology can improve productivity as interviewers are cued with their next potential respondent immediately, and little time is wasted in contacting new respondents. Call centres that do not have power or predictive diallers need to use a number cleaner to dial through or ping numbers to ensure they are valid numbers.

The technology required for effective mCATI research includes: software to capture survey responses and record interviews, random digit diallers, power/predictive diallers or number-cleaning software and hardware. The more advanced the technology the better the mCATI research will be in terms of time required and the quality of data capture. However, this all comes at a cost which, coupled with the call costs and the cost for actual interviewers' time, drives the cost of mCATI above that of other forms of mobile data collection.

mCATI performance on the key benefits promised by mobile research

Reach	
Strengths	• The potential to offer the furthest reach of all mobile methods, and findings are generalisable to the extent that the database used is representative of a given population • With random digit dialling, anyone with a mobile phone has a chance of being selected, allowing for a random sample of the mobile population. • The presence of an interviewer also increases the likelihood of people participating in the survey, as it is more difficult to say no to an actual person than an electronic invite. • Verbal surveys that don't exclude people who cannot read or write
Challenges	• Those who do not have a mobile phone are excluded.

Speed	
Strengths	• Quicker to set up and collect data than face-to-face interviewing • Logistics are simpler than face-to-face interviews, and interviews are typically not longer than 15 minutes, with 5 to 10 minutes being ideal. • Key metrics such as calls per hour, completed interviews per hour and response rates can be monitored and manged in real time to ensure interviews are completed on time. • Questionnaire changes can be made while interviewing is in progress.
Challenges	• Not as fast as other mobile methods that allow for multiple, sometimes even thousands of, survey invitations to be sent out at once.

Cost	
Strengths	• More cost effective than face-to-face interviewing.
Challenges	• Can still be expensive depending on the length of the questionnaire and the sample size. • More expensive than other mobile methods.

Data quality	
Strengths	• Data obtained from mCATI interviews have been shown to be similar to face-to-face-data and better in some cases where there is a high degree of social desirability involved. • Centralised control of the interviewing process means quality can be closely monitored. • Interviews can be recorded, which allows for greater quality control and greater depth of analysis of open-ended questions. The questionnaire is programmed so that all routing is taken care of and the interviewer can focus on building rapport and questioning.
Challenges	• Generally, stratification isn't possible, but quotas are easy to specify. • Questions that require visual aids cannot be asked, and places where visual aids (such as logos for prompting) can show lower response repertoires than face-to-face interviewing. • Analysis of recorded feedback is time-intensive and, therefore, cost-intensive.

In context	
Strengths	• Surveys can be designed to reach people close to the moment of an actual behaviour.
Challenges	• Close-to-the-moment behaviour will only work for high incidence behaviours as the logistics and cost of reaching enough people to enquire about less common behaviours makes mCATI prohibitive for this methodology. • Location -triggered surveying is not usually set up for mCATI contact, making actual in-context interviewing logistically difficult.

Frequency	
Strengths	• Data can be collected frequently, and mCATI is useful for interim measurement between major face-to-face surveys.

Passive	
	Not applicable

2 Interactive Voice Response (IVR)

An IVR survey is a pre-recorded automated phone survey in which the customer responds by typing numerical responses using the keypad or, for some questions, vocally to a pre-recorded voice prompt. There are inbound, outbound and hybrid options available. Outbound and hybrid options where the call is initiated by the research house are the most common methods. Hybrids refer to a mode where an interviewer calls a respondent and then transfers the call to the IVR.

To conduct IVR surveys, specialised software and hardware are required and, while these are usually integrated with call-centre software, not all survey companies that have call centres have developed IVR capabilities.

IVR performance on the key benefits promised by mobile research

Reach	
Strengths	• Of the self-completion mobile modes, IVR has the potential to offer the best reach. • Findings are generalisable to the extent that the database used is representative of a given population. • With random digit dialling, anyone with a mobile phone has a chance of being selected, allowing for a random sample of the mobile population • Use of a voice prompt means that people with low literacy are not excluded.
Challenges	• Those who do not have a mobile phone are excluded. • Response rates tend to be low as it's easy for people to opt out (by hanging up their phone) if they do not want to or don't have time to do the survey and attrition can be higher due to automated voice features.
Speed	
Strengths	• Surveys can be quick to set up once technology is in place. • Large samples are quick to collect, as multiple invites to participate can be sent at once.
Challenges	• The data collection timeframe is dependent on how many respondents choose to respond and complete the survey.
Cost	
Strengths	• Once the technology is set up and in place costs are low.
Challenges	• Set-up costs are high as scripting and checking the voice prompted survey are labour intensive.

Data quality	
Strengths	• Questions and response options can be asked in a highly standardised way, thereby removing interviewer bias. • Open-ended feedback can be gathered by recording feedback.
Challenges	• Analysis of recorded feedback is time-intensive and therefore cost-intensive. • Entering two digits is problematic, so scales and answer options are limited to single digits (e.g. 0 – 9 for rating scales). • Surveys must take only two to three minutes. This, along with limited routing capabilities, means surveys are limited to top-level measures and likely only one topic.

In context	
Strengths	• Surveys can be designed to reach people close to the moment of an actual behaviour.
Challenges	• Location-triggered surveying is not set up for IVR, making actual in-context interviewing impossible.

Frequency	
Strengths	• IVR surveys typically run continuously, especially if inbound

Passive	
	Not applicable

> To conduct IVR surveys, specialised software and hardware are required and, while these are usually integrated with call centre software, not all survey companies that have call centres have developed IVR capabilities.
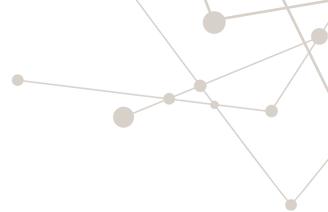
3 SMS

SMS surveys are administered using a mobile networks SMS technology and can be developed either using a stand-alone software or as part of an integrated data collection suite.

Surveys are usually sent using some form of bulk messaging technology where the questions are pre-scripted along with the necessary follow-up questions. These questions are pushed to the respondents who reply with an SMS response, which then triggers the sending of the next question until the survey is complete. The standard encryptions of mobile network providers on SMS ensures that SMS survey data is always securely transmitted.

SMS performance on the key benefits promised by mobile research

Reach	
Strengths	• SMS technology is mobile-device-agnostic, as it works on all mobile phones. • SMS also works consistently on roaming services.
Challenges	• As this method is self-completed and requires reading and responding to questions, the sample is limited to those who have mobile phones and a sufficient level of literacy to respond. • Because response rates are low, random digit dialling requires massive sampling frames and, therefore, panels or databases of recruited respondents work better. The representation of panels varies but, where they have profiles, quotas are very easy to set up and manage to achieve representation.
Speed	
Strengths	• With the right sample source, thousands of interviews can be collected at once, meaning that large samples are possible as rapidly as overnight. • To ensure better sample representation, follow-up reminders are required to ensure that the final collected data represents more than just those who respond quickly. • SMS surveys have to be short at about 8 to 15 questions, making them quick to complete.

Cost	
Strengths	• The software and hardware required to send SMS surveys require investment; but, once set up (by yourself or through a supplier), they can be very cheap to execute.
Challenges	• Costs to reply would typically be carried by the respondent; however, arrangements can be made with mobile operators to ensure that it is free for them to respond. SMS survey providers generally have the required agreements in place with mobile operators to ensure that there is no cost to the respondent.

Data quality	
Strengths	• SMS questions need to be concise with well-thought-out response options, forcing researchers to keep it clear and simple. • Powerful routing and looping capabilities allow for more possible areas of enquiry so, while each respondent can only see up to 15 questions, the survey can dive deep into multiple areas of interest. • As surveys are self-completed, there is no interviewer bias.
Challenges	• The SMS character limit of 160 characters means questions have to be very simple and lists have to be short. • Multiple-mention questions, while possible, are not recommended as people tend to only respond with one answer. In addition, it is recommended to keep answer lists to nine or less, but more than nine are possible as long as the question is a single-mention question. • Open-ended questions produce very short responses, so they should be limited to things that require a one-word answer, e.g. a brand name – not to gain rich detail.

In context	
Strengths	• Surveys can be designed to reach people close to the moment of an actual behaviour.
Challenges	• Location-triggered surveying is not set up for SMS, making actual in context interviewing impossible.

Frequency	
Strengths	• Can be run often due to low costs and low respondent burden • SMS is useful to track broad metrics and emerging trends.
Challenges	• When the sample source is a panel, researchers should be cautious of sampling from the same pool of respondents too frequently.

Passive	
	Not applicable

4 USSD

A USSD survey is administered using a mobile network operator's USSD technology, which is a menu-driven protocol. Questions with response options are pushed to respondents, and they reply by selecting an option from the list supplied. This triggers follow-up questions and responses, which are captured automatically. USSD surveys allow for simple single-mention (yes/no) type responses where a quick answer is required. Participants are sent a short-code and unique survey ID, and they are invited to participate in a survey. They dial the short code, enter their ID and answer the survey on any type of phone. USSD has limited functionality and is best for very short and simple surveys.

USSD technology creates a real-time connection during a USSD session to the server. The connection remains open, allowing a two-way exchange of data, and these sessions last only a few minutes. This means that surveys need to be extremely short to avoid attrition due to the session timing out.

The technology is quite widely used by mobile operators, so most people are quite comfortable with it and it makes use of interactive menus that, while they are quite bland, are easy to use. These menus are also easy to edit or change if needed when the survey is live.

Mobile operator technology ensures that USSD data is transmitted securely and the technology does not save inputs on the respondent's mobile device.

USSD performance on the key benefits promised by mobile research

Reach	
Strengths	• Technology runs on all phone types. • Works on roaming services so the reach is as good as the sample source and mobile coverage allows.
Challenges	• Like SMS, USSD is self-completed and requires reading and responding to questions, so the sample is limited to those who have mobile phones and a sufficient level of literacy to respond. • Message sessions are accessed through unique short-code, which may add a barrier to entry as it requires this action on the part of the respondent. • Sessions can time-out if network is unstable or the respondent takes too long to get through the survey, i.e. there can be a large number of incomplete surveys.

Speed	
Strengths	• With the right sample source, thousands of interviews can be collected at once, i.e. large samples are possible as rapidly as overnight. • To ensure better sample representation, follow-up reminders are required to ensure that the final collected data represents more than just those who respond quickly. • Real-time feedback is achieved, as a response is required immediately, unlike in SMS where the response can be delayed.
Challenges	• High levels of incompleteness due to timing out may slow down data collection.

Cost	
Strengths	• Very cheap to set up and deploy • No cost to the respondent to complete
Challenges	• Costs to reply would typically be carried by the respondent; however, arrangements can be made with mobile operators to ensure that it is free for them to respond. SMS survey providers generally have the required agreements in place with mobile operators to ensure that there is no cost to the respondent.

Data quality	
Strengths	• USSD questions need to be concise with well-thought-out response options, forcing researchers to keep it clear and simple. • As surveys are self-completed, there is no interviewer bias.
Challenges	• The sample will not be random, but can be representative, especially if sampled from a panel. • USSD allows up to 182 alphanumeric characters, allowing slightly more than the SMS; however, not everybody is as familiar with USSD as they are with SMS. • The interactive menus only provide for alphanumeric, numeric and multi-choice inputs so open-ended data collection is not possible. • The menus can also be difficult to navigate, especially backwards.

In context	
Strengths	• Surveys can be designed to reach people close to the moment of an actual behaviour.
Challenges	• Location-triggered surveying is not set up for USSD, making actual in-context interviewing impossible.

Frequency	
Strengths	• Surveying can be very frequent as it is a cheap service.

Passive	
	Not applicable

> USSD technology creates a real-time connection during a USSD session to the server. The connection remains open, allowing a two-way exchange of data, and these sessions last only a few minutes.
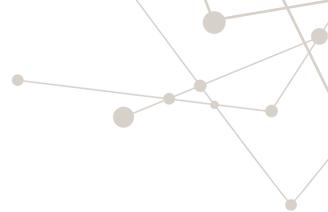
5 Mobile web (including WAP)

A mobile web survey is typically administered using a mobile data connection through a browser on a smartphone, but certain mobile web survey platforms allow for adaption to include WAP-enabled feature phones. A purely WAP-based approach is not used much and will thus not be discussed in detail.

Mobile web surveys direct respondents to a hosted survey where they complete a pre-scripted form. Respondents can be invited to take part via SMS, via an email or by clicking on a link on a webpage or banner advertisement as they browse.

In many ways, web mobile surveys are similar to PC-based or laptop-based online surveys. However, they are different in many ways – mainly due to the small screen and keyboard, which affect the visual design and presentation of the survey and which can affect readability and navigation of the survey and potentially how the questionnaire is interpreted and how the response is cognitively mapped to the question.

There are many cost-effective software solutions available to host and set up a mobile online survey (e.g. Survey Monkey, Qualtrics) and they are relatively easy to use. More advanced software solutions can have extended survey management capabilities built in and questionnaire libraries and templates available.

Mobile web performance on the key benefits promised by mobile research

Reach	
Challenges	• Depending on the survey platform, the technology is limited to either smartphones only or internet-enabled devices only. • Slow and erratic data connections can make surveys difficult to complete.
Speed	
Strengths	• Mobile web surveys can be quick to deploy if the questionnaire is kept short. • Results can be monitored in real time, allowing a top-line view before fieldwork is even completed. • Multiple invites can be sent out at once so large sample sizes can be achieved in a short time if a large panel or database is accessed.
Cost	
Strengths	• The cost drivers of mobile web surveys are, typically, the cost to send out invites and a hosting fee if the data is being stored through a survey management platform. This means that mobile web surveys can be very cheap to administer, especially if sample sizes are small.

Data quality	
Strengths	• Questions and response options can be asked in a highly standardised way, thereby removing interviewer bias. • More complex question formats (like simple grids) can be employed, which are not possible when using USSD or SMS. • More respondent engagement can be generated through using multimedia features, such as audio and video. • Validations and calculations can be done in real time. • Responses are similar to those achieved with PC/laptop and computer self-administered surveys. • Open-ended data yields good-quality, detailed responses. Respondents can use emojis to assist in expressing meaning, and this gives a new level of richness that transcripts of verbal responses do not.
Challenges	• Web survey platforms tend to allow for more complexity, but researchers need to take into account that different designs and device capabilities make the survey experience quite different for different respondents. Data quality can be affected by single or multiple questions on a page, pagination and the need to scroll. Grid questions can also render differently on different phones and sometimes run over multiple screens making them difficult to navigate. • Response lists of up to 15 items have been shown to not cause any order effect, but it is recommended not to allow response options to run over multiple screens. • Audio and visual aids can also be quite data- heavy, so they should be compressed as much as possible without losing quality, while researchers should keep them to a minimum to avoid the survey becoming slow and expensive to complete. • Web surveys have been shown to take up to 25% longer to complete on a mobile device compared to completing it on a PC.

In context	
Strengths	• Surveys can be designed to reach people close to the moment of an actual behaviour. • Surveys taken by clicking a link on a website can also be used for understanding specific online behaviours as and when they happen. • Some survey platforms allow for photos to be uploaded, thereby giving a new layer of depth to survey data collection in the moment.
Challenges	• Analysing photos collected is highly time-consuming, and picture quality can be poor.

Frequency	
Strengths	• Can be run often due to low costs and low respondent burden

Passive	
Strengths	• Mobile web surveys can automatically detect the device that is being used to complete, including specifications like the brand, model, screen size and operating system being used. • Web surveys also allow for time and date stamps to be collected.

6 App survey

An app survey is conducted through a mobile application that is downloaded by the user onto his/her smartphone. App-based surveys can be highly advanced, allowing for gamification, audio and visual elements, dynamic grids, sliders, and photo and video uploads; however, they also require a smart device and for the respondent to have downloaded the app from an app store.

Reach	
Challenges	• The technology is limited to smartphones, and the need to download an app to take part in surveys can be a barrier. • When the app has been downloaded, push notifications are the most common way to inform people when they have been invited to participate in a new survey, and some may disable them.

Speed	
Strengths	• While app development takes time and investment, these surveys are easy to deploy with a setup app. • Results are available and can be monitored in real time, allowing a top-line view before fieldwork is completed. • Multiple invites can be sent out at once, so large sample sizes can be achieved in a short time if a large panel or database is accessed.

Cost	
Strengths	• Once the app has been developed, survey deployment is cheap.
Challenges	• Apps are expensive to develop and can be expensive to maintain. • Recruiting respondents to download the app requires marketing or in-person contact to recruit them. • Ongoing community engagement and incentives are required to keep panellists active.

Data quality	
Strengths	• Similar to mobile web surveys, app survey questions and response options can be asked in a highly standardised way, and more complex question formats can be employed. • Multimedia features, such as audio and video, can generate more respondent engagement. • Validations and calculations can be done in real time. • Responses are similar to those achieved with PC/laptop and computer self-administered surveys. • Open-ended data yields good-quality, detailed responses. • Gamification can be used within and across multiple surveys to build respondent engagement.
Challenges	• Researchers need to consider that apps developed for different operating systems can make the survey experience different for different respondents, but this is likely to be more standardised than mobile web surveys. • Data quality can be affected by single or multiple questions on a page, pagination and the need to scroll. Response options should not be allowed to run over multiple screens. • Audio and visual aids can be data-heavy. • The multiple tiers of recruitment, app download, survey invite via push notification or email, and then actually opting into the survey can skew the profile of a final sample further than other mobile approaches.

In context	
Strengths	• App surveys provide the greatest potential for in-context surveys. They can be configured to record location in real time (with permission), and surveys can be triggered when respondents enter a geo-fenced location or come into range of a beacon. • Apps make the diary methodology easier and (like mobile web photos and audio) can be uploaded.
Challenges	• GPS and Bluetooth respectively need to be active to trigger geo-fenced or beacon surveys.
Frequency	
Strengths	• App surveys can be configured to launch a survey every hour, once a week, etc. allowing for easy longitudinal survey design.
Passive	
Strengths	• With permission, survey apps can detect detailed passive data from a panellist's smartphone, e.g. location, browser history and other apps that are installed. • Similar to mobile web apps, they can automatically detect device details and time and date stamps.
Challenges	• Mining and making sense of passive data require highly specialised skills.

7 Survey bots

Survey bots can be deployed in messenger applications, like Facebook Messenger. They use conversational logic methods to interview respondents in an automated fashion. This is a relatively new technique and is not yet available on all messenger platforms.

> " App-based surveys can be highly advanced, allowing for gamification, audio and visual elements, dynamic grids, sliders, and photo and video uploads; however, they also require a smart device and for the respondent to have downloaded the app from an app store. "
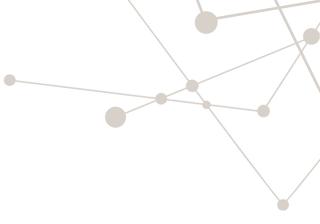
Sampling

The success of any mobile survey depends on the availability of an adequate sampling frame. There are many ways in which contact frames can be constructed for mobile surveys:

- **Working with existing telephone lists.** These can be obtained from organisations whose core business is constructing lists, from an organisation's own customer list or from the mobile network operator directly. These lists can have limited representivity. All privacy laws need to, of course, be adhered to when using these types of sampling lists.
- **Mobile contact numbers.** These can be generated using a random-number generator.
- **Contact details obtained through a panel provider.** This is often beneficial, as they will have basic profiling information attached to each number.
- **Face-to-face recruiting.** This is expensive but can give you a representative list of mobile numbers to survey.
- **River sampling.** This is possible when the survey is deployed online. It entails intercepting respondents while on the web and driving them to a central portal for screening and subsequent deployment to a survey.

No matter the method, careful scrutiny of the sampling source should be made to understand the extent to which the results can be generalised.

❝ The success of any mobile survey depends on the availability of an adequate sampling frame. There are many ways in which contact frames can be constructed for mobile surveys. ❞

Box 2. Mobile SMS – Case study

In a research case study presented at the World Association for Public Opinion Research (WAPOR) in 2015, Kantar TNS and Geopoll presented a paper entitled *Mobile research in emerging markets: Taking the step into the world of probability sampling* in which they demonstrated that an SMS survey could produce comparable results to a FinScope survey. The purpose of the research was to explore the extent to which the results from a non-traditional mobile sample source compare to the results from face-to-face research, based on a face-to-face probability sample in South Africa.

Specifically, three broad objectives were set:

1. Comparing the achieved sample against the sample frame
2. Comparing those who did not respond to the sampling frame
3. Comparing the results of the survey to an existing benchmark

The findings from this pilot suggest:

*   The mobile sample did reflect the sampling frame
*   The non-response profile mirrors the achieved profile
*   It is possible to straight-line through an SMS interview
*   There are limits to the demographic reach of mobile research – because it is mobile
*   There were differences in responses, with sensitive questions showing more variability
*   Mobile works for sensitive questions

Figure 2

Repertoire of membership:
FinScope 0.8
Mobile sample 1.04

■ FinScope n=582 ■ Mobile sample n=769
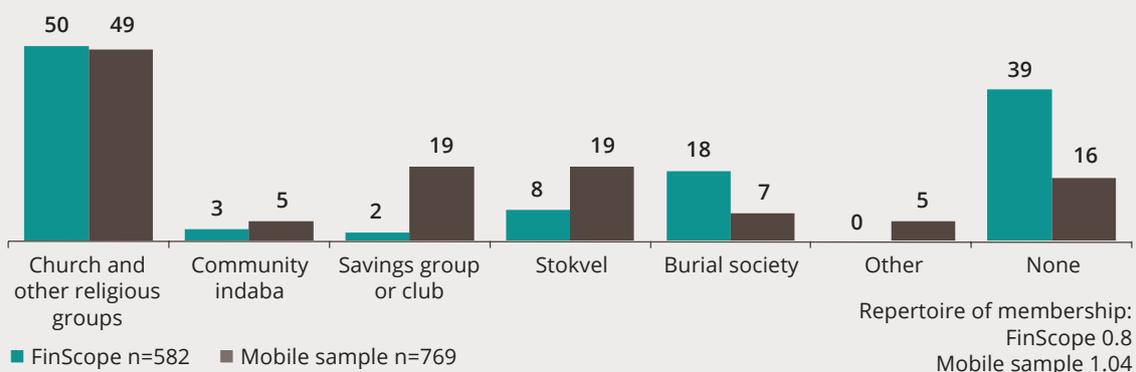
The repertoire of products owned in the two different samples suggests that the mobile sample includes more people with some money to save. The living standards (LSM) profile of the samples does show a higher LSM profile for the mobile sample.

As question sensitivity increases, response patterns of interviewer administered (face-to-face) and self-completion (mobile) change.

■ At least once a week   ■ At least once a month   ■ A few times a year   ■ Once a year or less often   ■ Never
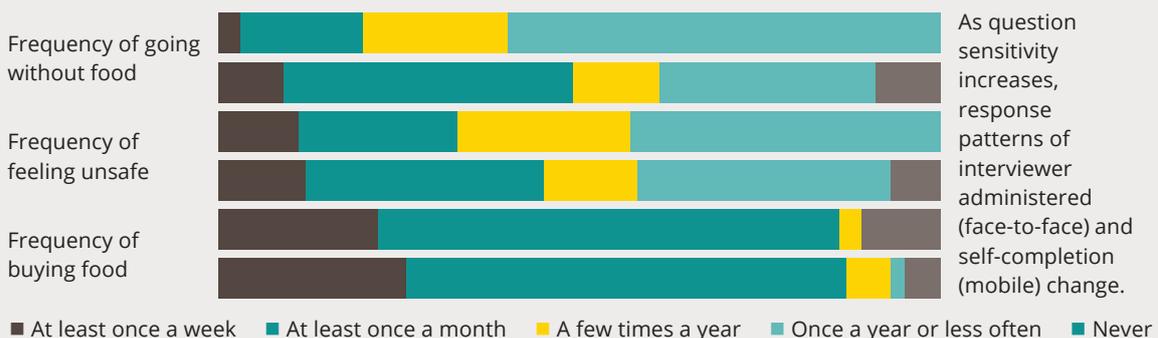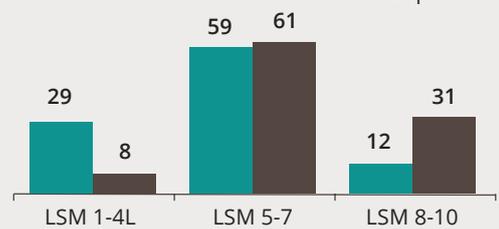
Source: Research on research conducted by Kantar TNS in 2015 for the WAPOR conference
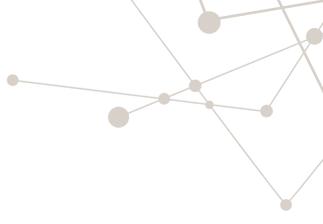
Mixed modes

Access of respondents to mobile technology, along with the quality of existing sampling frames, are the biggest barriers to the success of mobile research. In addition, the limited capabilities of a mode like SMS or USSD means that the future of mobile research likely lies in using a mixed modal methodology.

Mixed modes can take several forms:

- Researchers can use a mobile method to reach a large sample quickly and then use face-to-face interviews to reach those who are excluded due to not having a mobile phone.
- Conversely, researchers could use a face-to-face methodology and then a mobile methodology to reach those who are difficult to access in person, e.g. people who live in gated communities.
- In addition, a mobile method can be designed to be adaptive, to allow the broadest possible reach while taking advantage of the capabilities of a device. An example of this is an SMS survey that can be administered to a certain profile of people, while a mobile web survey can be administered to a different profile. This mobile web survey can be more detailed than the SMS version, but common questions can be asked.
- With mobile web technology that detects the device being used, device adaption can go even further, with feature phone users seeing one version of a questionnaire, smartphone users another and tablet or PC users yet another.

Research on the use and implications of mixed methodologies is not widespread, but in 2014 and 2015 Kantar TNS conducted research on mixed methods using face-to-face, mobile SMS and mobile web modes and mobile propensity weighting to consider a skew towards being more technologically abled in a mobile sample.

Some of the key findings of these research-on-research projects were as follows:

- Mobile web respondents appeared to be more engaged than face-to-face respondents. Using a matched sample and survey, they provided higher repertoires of responses and, therefore, also tended to be routed through more possible questions without drop-out.
- Mobile web respondents give the most detailed responses to open-ended questions, while SMS respondents give poor-quality answers.
- Mobile web respondents are more likely to give lower ratings on rating scales than face-to-face respondents due to them not feeling any pressure to please the interviewer. It is indicative that SMS respondents give lower responses; however, this is not conclusive, as they were only asked to rate their favourite brands, and mean averages of these tracked, quite strongly, responses of face-to-face respondents who were asked to rate all brands used.
- An SMS sample skews towards people aged 18 to 24, while a mobile web sample skews towards people aged 25 to 34. Both skew to LSM 8+.
- Response patterns to behavioural questions are highly comparable across all three modes, with rank orders being largely the same. When it comes to percentages, some categories look very similar, while others don't. Quick service restaurants were tested and came out aligned, while TV service providers showed that mobile respondents are far more likely than face-to-face respondents to be using a video-on-demand TV service, e.g. Netflix. How this manifests in financial services is yet to be determined.

- Using a propensity model that looks for those things that make someone more or less likely to be a mobile respondent or face-to-face respondent, data can be weighted across modes to smooth out differences.

The core design implications for mixed modal research is that consistency across modes should be put first. Researchers need to design for the platform that has the lowest capability and try to allow for a similar respondent experience. So, if there is a face-to-face sample and an SMS sample, the face-to-face sample should self-complete the survey as much as possible and the questions should be designed to fit the SMS capabilities with allowances for additional questions or detail to be obtained from the face-to-face sample.

Box 3. Summary of strengths and weaknesses

Each of the modes discussed in this note has its own strengths and weaknesses and is more or less appropriate as a survey method, depending on the specific research context one finds oneself in. It is useful to compare these methods to the standard face-to-face interview, which for many years has been regarded as the gold standard data collection method, particularly in developing countries.

Figure 3

Most robust capacity ←———————————————→ Most limited capacity

Attribute	Ordering from most robust to most limited capacity
Sample coverage	Face-to-face → mCATI → IVR → SMS → USSD → Mobile web → App
Random selection	Face-to-face → mCATI → IVR → SMS → USSD → Mobile web
Response rates	Face-to-face → mCATI → SMS → IVR → USSD → Mobile web → App
Cost to researcher / frequency of measurement	USSD → IVR → SMS → Mobile web → App → mCATI → Face-to-face
Monetary cost to respondent (least to most)	Face-to-face → mCATI → IVR → SMS → USSD → Mobile web → App
Speed of data collection	SMS → USSD → IVR → Mobile web → App → mCATI → Face-to-face
Questionnaire length (longest to shortest)	Face-to-face → mCATI → App → Mobile web → SMS → IVR → USSD
Complex questionnaire design capabilities	Face-to-face → App → Mobile web → mCATI → SMS → IVR → USSD
Gamification	App → Mobile web → Face-to-face
Open-ends	App → Mobile web → mCATI → IVR → SMS
In context measurement	App → Mobile web → Face-to-face
Panel / longitudinal data collection	App → Mobile web → mCATI → SMS → IVR → USSD → Face-to-face

Legend: Face-to-face, mCATI, IVR, SMS, ∗# USSD, Mobile web, App

Conclusion

The belief that digitally based data collection is easy and can be executed properly by non-researchers is unfounded. Deploying surveys through mobile devices requires, in some ways, more methodological rigor than traditional techniques, as more factors come into play. Designing mobile surveys requires a high degree of expertise and skills to address all the potential biasing influences present in a digital world. There is no doubt that mobile survey methods have a key role to play in the sustainable collection of financial inclusion data.

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How to find us:

Get involved. Contact us.

Grant Robertson
E: grant@i2ifacility.org

Bobby Berkowitz
E: bobby@i2ifacility.org

Damola Olowade
E: damola@i2ifacility.org

Shirley Jeoffreys-Leach
E: shirley@i2ifacility.org

+27 11 315 9197
i2ifacility.org

🐦 **@i2ifacility**
in **/insight2impact**
f **/insight2impact**
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