



# Bridging the gap between researchers and respondents

An innovative methodology to  
improve data integrity

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Established and driven by



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## About insight2impact

insight2impact 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.

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# Foreword

**A core challenge faced by researchers when designing surveys is ensuring that all of the study objectives are covered by the survey without fatiguing and confusing the people who take part in it.**

When approaching a mobile self-completion survey, this challenge becomes even more acute. Mobile surveys must be short, both in terms of the number of questions and in the question wording itself. Participants in a mobile self-completion survey complete the survey in the absence of an in-person interviewer, which means there is no one to encourage them to take part, to keep going (rather than opting out) or to clarify any questions they may have.

It is best practice for survey questions to be phrased and understood in way that ensures that participants give answers that accurately reflect their lives. Even when an interviewer is present it is not ideal for people to need clarity from them. Asking for clarity from the interviewer can lead to the meaning of the question ultimately being determined by the researcher in the field and not the researcher who designed the survey.

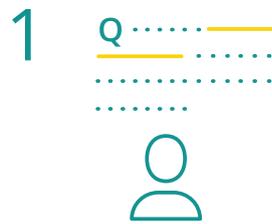
Survey designers often aim to maintain control of the meaning of questions by providing highly detailed questions that map out the meaning they are looking to convey, but this is problematic both for interviewer-administered surveys (as they can become too complex) and for mobile self-completion surveys where the question length is limited to either the length of an SMS or the size of mobile-phone screen in the case of mobile web surveys.

While the skill of designing questions that are 160 characters or fewer can be learned and becomes easier with practice, reducing questions to this extent raises the question: Are people able to answer these short-form questions in a way that truly reflects their reality?

With a plan to gain insight into how best to design a mobile survey to ensure that the questions are clear enough to provide accurate results, the insight2impact facility set out to test our mobile pilot survey with cognitive interviews. This task was taken on in collaboration with Iske van den Berg of the Corporate Research Consultancy and Sarah Slabbert and Nadja Green of the Plain Language Institute. This team of researchers applied an innovative approach to cognitive interviewing that included insights from the field of linguistics. The method and approach taken by them provided strong recommendations for best-practice survey questions and are detailed in this paper.

Beyond recommendations for specific question wording, the work revealed several core insights for survey design best practice.

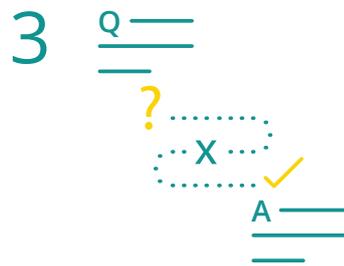
### Survey design best practice: four core insights



People don't necessarily read the whole question.



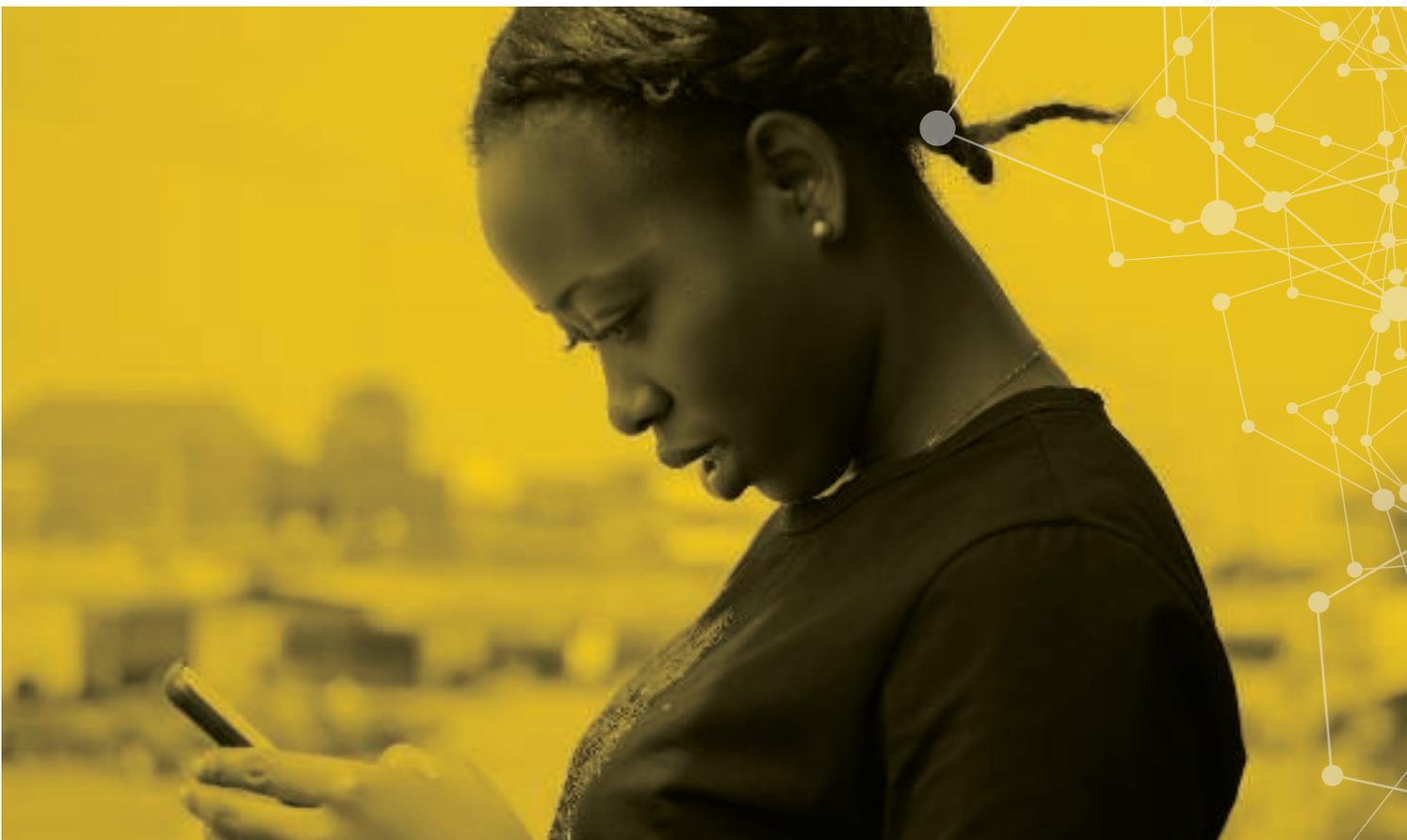
A single concept is best practice, but not always practical.



Not understanding a question fully doesn't necessarily produce an incorrect answer.



Be very careful of your own assumptions.





**The research indicated that many people make assumptions about what they think is being asked.**



## 1. People don't necessarily read the whole question.

The research indicated that many people make assumptions about what they think is being asked. They will read a question to the point where they think they understand it and then answer based on that. This can be detrimental to accuracy if the question contains any complexity. As much as possible, multiple concepts should not be included in a single question. For instance, if the survey is looking to understand how many children in a household are of school-going age, this may need to be asked as multiple questions, as people may read the word "children" and decide that they know what is being asked, and therefore give the number of children in total in the household and not just those who are of a particular age group.

## 2. A single concept is best practice, but not always practical.

While the ideal is to keep each question to a single concept, this is not always practical, and thus it is important to remember that people will focus on the elements of questions that are relevant to them. Used correctly, this can be a useful tool for survey design; having too many concepts, however, can run the risk of driving misinterpretation.

As mobile surveys have to be short, we sometimes need to allow for questions that cover more than a singular concept. For example, categorising people based on their use of any advanced financial service: In an interviewer-administered survey, this can be asked for each service that counts as being advanced; however, in a mobile self-completion survey, this will require several questions that then drive up the length of the survey. Typically, in the mobile survey, we will list all the services in a single question and ask whether people use "any of them", without getting into the specifics of which ones they do or don't use. People taking part in the survey are then likely to scan the list for the first one that is relevant to them. Once they have found something relevant to them, they may stop reading the question entirely and give their answer. Best practice, when this type of question is necessary, is to try to order the list from most to least likely to be used, as this ensures that people quickly see what is relevant to them.



### 3. Not understanding a question fully doesn't necessarily produce an incorrect answer.

While aiming to keep surveys as relevant to all respondents as possible is the ideal, it is acceptable to ask people about concepts that they are not familiar with. For example: The use of microfinancers is extremely low in most markets, and people who do not actively use a microfinancer are unlikely to know what they are. In the cognitive testing, when people were asked whether they had used a microfinancer, the majority did not know what a microfinancer was – therefore they did not fully comprehend the question. However, this lack of understanding is extremely unlikely to lead to people giving an incorrect response to the question. Those who are unfamiliar with microfinancers correctly answered that they do not use one. Obviously, if there are too many questions of this nature, people will lose interest in the survey, so it is recommended to keep such questions to a minimum.

### 4. Be very careful of your own assumptions.

Finally, this type of testing is a critical step to take when designing new surveys – not just because it helps to craft the wording of more complex concepts but because it challenges our existing assumptions about what we have done in the past. For example, in a question on gender, the assumption might be that people don't understand the word gender but that the answer options of male and female give clarity; however, we have found that for non-native English users there may even be some confusion as to which is male and which is female. Focusing on simple language and the way in which people actually speak is of critical importance.

Given the insights generated from this cognitive testing exercise, we recommend that this form of testing become a standard practice for designing mobile surveys.



Data integrity is therefore essential for these financial inclusion measurement studies.



## Summary

This article explores the impact that the gap between the researcher's and respondent's perspectives has for questionnaire design and hence data integrity, and it proposes an innovative research methodology to address the gap and improve data integrity.

The methodology added insights from action research, Plain Language<sup>1</sup> and reading-processing strategies to the methodology of cognitive interviewing. The new method is called cognitive action research. The methodology was applied to an SMS survey questionnaire of the insight2impact facility (insight2impact).

The study found a large percentage of inappropriate responses in the first round of testing. The methodology was able to reduce the risk of inappropriate answering quite drastically in the subsequent rounds. This demonstrated the application potential of cognitive action research as the final stage of questionnaire development prior to piloting.

## Introduction

Data plays a vital role in the development of policies and products that support economic development. Major policy, regulatory and market strategy decisions are based on the findings of financial inclusion surveys such as FinScope, Financial Inclusion Insights (FII), Global Findex, FinAccess and the Financial Inclusion Tracker Survey (FITS). These measurement studies are mostly conducted as quantitative surveys with large representative samples to ensure validity and reliability of results.

Data integrity is therefore essential for these financial inclusion measurement studies.

<sup>1</sup> Plain Language is capitalised in this note to distinguish the legal meaning from the lay meaning (plain language is simple language).



# The mandate and role of the insight2impact facility

insight2impact is mandated to improve data quality in financial inclusion measurement. In the Data for Financial Inclusion team's first blog about Financial Inclusion Measurement (2016), they asserted: "You manage what you measure". This implies that all aspects that might have a negative impact on the data integrity must be explored.

In addition, the insight2impact team is mandated to explore ways to ensure the sustainability of data collection. More frequent data collection is highly desirable, but the cost of data collection remains a strong barrier to sustainability. With this in mind, insight2impact has explored various mobile data collection technologies that offer faster, cheaper and more relevant data collection methods. Based on the analysis, insight2impact selected SMS as the preferred method for financial surveys, as it is the most universal in reach and the simplest to use.

In 2017, the insight2impact facility piloted five SMS surveys in three African markets. The pilots were cautiously considered successful in demonstrating that SMS surveys can be used to measure some financial inclusion indicators. Based on the learnings of the 2017 pilots, insight2impact has extended the pilot programme to more markets and included more detailed statistical modelling and analysis for the potential transition from face-to-face interviewing to mobile SMS data collection as the primary method.

Some of the results from the 2017 pilots indicated that there might be a gap between the researchers' and respondents' interpretations of survey questions, which could have a negative impact on data integrity.

Respondents' understanding and interpretation are particularly relevant for an SMS survey, since there is no option to ask an interviewer to clarify the question or to explain the intent. (Asking interviewers for clarification or translation is practised in face-to-face interviews, even though the practice is usually discouraged.) The limited number of characters available for an SMS poses another challenge.

Therefore, as a starting point for the extended phase of piloting, insight2impact wanted to make sure that the responses to self-completion questions indeed reflect the reality of survey participants. It was therefore decided to go back to the basics and test the survey questionnaire.

A Terms of Reference was written for a project to review and revise insight2impact's SMS survey questionnaire by using cognitive interviewing. The objective would be to ensure that the survey questionnaire captures what insight2impact was trying to measure and is easy for ordinary people to understand and respond to. The Corporate Research Consultancy, in association with The Plain Language Institute, was commissioned for the project.

The sections that follow explain the methodology that was used and discuss the findings.



Verbal probing involves questions that unpack how the respondent got to their answers.



# An innovative methodology to improve data integrity

## Research approach

The researchers used cognitive interviewing as per the Terms of Reference but added insights from other fields, creating an innovative approach to test and improve survey questionnaires, called cognitive action research.

Insights from the following fields were incorporated:

- Action research
- Plain Language
- English as a foreign language (EFL) reading-processing strategies

We will now briefly discuss cognitive interviewing, action research, Plain Language and EFL reading-processing strategies, as they relate to the improvement of the SMS survey questionnaire.

### Cognitive interviewing

In the 1980s, psychologists and survey methodologists joined forces to create a new field of study, called CASM or Cognitive Aspects of Survey Methodology (Schwarz, 2007).

The CASM researchers developed models to identify and evaluate the psychology of response errors in survey questionnaires (Schwarz, 2007). In particular, the cognitive interviewing technique has been widely researched in cognitive laboratories at survey research centres or statistical agencies. The literature makes little reference to the in-field application of cognitive interviewing in a real setting and not a laboratory (Willis, 1999).

The literature (Willis, 2004) describes cognitive interviewing as “techniques to study the manner in which target audiences understand, mentally process and respond to the materials represented with a special emphasis on potential breakdowns in this process”.

The cognitive interviewing methods used most frequently are:

- Verbal probing
- Think-aloud
- Vignettes

Verbal probing involves questions that unpack how the respondent got to their answers. There are different categories of probes, including comprehension/interpretation probes, paraphrasing, confidence judgement, recall probes, specific probes and general probes (Willis, 1999).

The think-aloud method refers to a very specific activity where respondents are explicitly asked to “think aloud” as they answer a question. While answering the question, the respondent should describe in detail how they have reached their answer. The interviewer should not interject or interrupt except to ask for more



detail (Willis, 1999). Respondents are usually trained on how to perform the think-aloud method before the interview.

The vignette method appears in more recent literature (Collins, 2003; Willis, 2004). Vignettes are brief descriptions of hypothetical situations that are presented to respondents. Respondents are asked to base their answers to the survey questions on the vignette. When answering the questions, respondents are asked to explain their thinking out loud.

Blair and Brick (2010) propose the coding frame of Presser and Blair (1994) as a framework for the analysis of cognitive interviews. The proposed framework is depicted in Figure 1.

### Figure 1. Coding frame of Presser and Blair (1994)

- Semantic: Problems affecting how readily the question is understood or remembered due to:
  - Amount of information
  - Structure/organisation
  - Flow or relation between questions
- Semantic: problems affecting the way the question (or some part of it) is understood due to:
  - Boundary lines
  - Insufficient knowledge
    - Technical term is not understood
    - Common term is not understood
  - Multiple subjects
- Respondent task: Problems for the respondent retrieving or formulating information or reporting a response:
  - Recall/response formulation is:
    - Difficult
    - Impossible
    - Redundant
    - Resisted by respondent
- Report affected by:
  - Overlapping response categories
  - Response categories is insufficient
  - Response categories making too fine a distinction
  - Response categories not appropriate to question
  - Sensitivity

#### How was cognitive interviewing used in this study?

The researchers used verbal probing to identify and evaluate response errors and issues in the SMS survey questionnaire. (The English language skills of respondents were not adequate for the think-aloud method).

The coding frame of Presser and Blair (1994) was expanded to include structural and logic issues as a result of the insights gained from the two language fields.



**Kemmis et al. (2014:2) define action research as “an approach to research and change which is best represented as a self-reflective spiral of cycles of planning, acting and observing, reflecting and then re-planning in successive cycles of improvement”.**



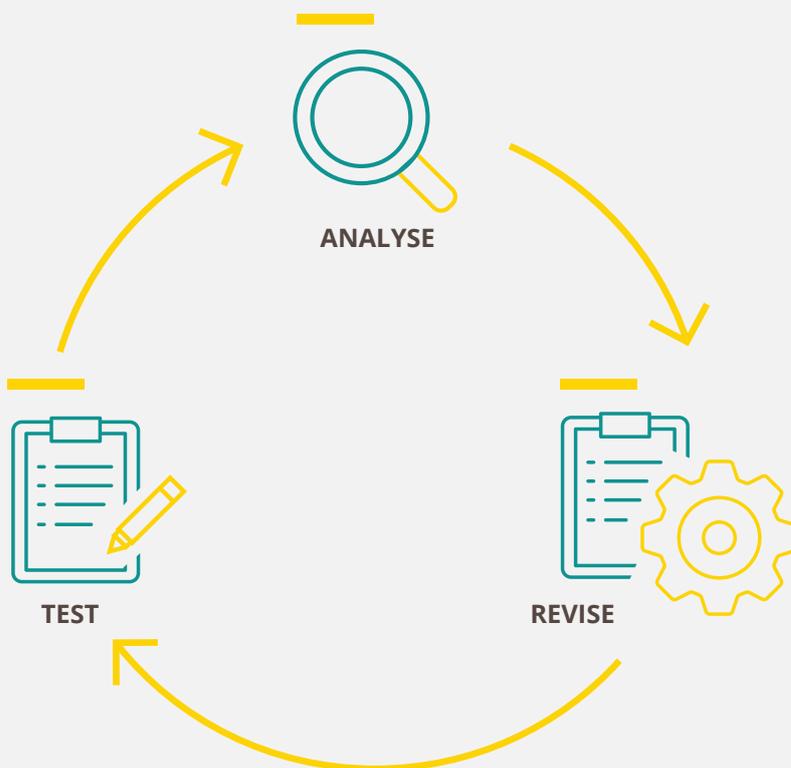
## Action research

Kemmis et al. (2014:2) define action research as “an approach to research and change which is best represented as a self-reflective spiral of cycles of planning, acting and observing, reflecting and then re-planning in successive cycles of improvement”. Participatory action research involves the subjects of the research as researchers of their own practice.

### How was action research used in this study?

Action research was applied in this study in six successive rounds (cycles). Each round comprised testing the questionnaire with respondents, analysis and revision. The researchers reflected critically on the findings and adjusted the questionnaire to address semantic, structural, logic and respondent task issues that respondents experienced in that round. The revised questionnaire was subsequently tested, analysed and revised in the next round. This process was repeated six times.

### Continuous improvement



## Plain Language

In the literature (PLAIN, 2019; Article 22 of the National Consumer Act 68 of 2008) Plain Language is defined as an outcome and not as a ‘language’: Communication is in Plain Language if a member of the target audience with minimal experience of the content can easily find what they need, understand what they find and use what they find. The definition implies that user testing is the only way to determine whether communication is indeed in Plain Language.



Research into barriers to understanding has led to a set of Plain Language tools or techniques that can be used to improve clarity and understanding (PLAIN, 2011). These tools cover all aspects of communication and range from structure, order and language to layout and design.

#### How was Plain Language used in this study?

In this study, the methods to test user experience were integrated into the cognitive interviewing. Plain Language tools and techniques were used to analyse the issues that respondents had with certain questions and to improve their clarity for respondents.

#### English as a foreign language (EFL) reading-processing strategies

In the field of EFL, there have been many studies on the cognitive strategies that foreign language speakers employ to make sense of a written message (such as Mohd et al., 2010; Knight et al., 1985). For example, EFL speakers typically “latch” onto familiar words and structures, and they deduce the meaning of the rest based on what is familiar.

#### How were EFL reading-processing strategies used in this study?

Knowledge of these strategies assisted the research team to analyse response behaviour. It was also used to improve questions so that it was easier for respondents to process the meaning.

## The survey questionnaire

The survey questionnaire included several financial inclusion indicators. Some questions were taken or adapted from the face-to-face FinScope questionnaire, others from the Poverty Probability Index (PPI) generated by Innovation for Poverty Action (IPA).

If one looks at the questionnaire in Appendix 1, the questions seem straightforward, and it was hard to imagine that respondents might have difficulty with questions such as:

- How many people are living in this household?
- In your whole life, how long have you had a mobile phone for?
- Does any member of your household work for a private company?
- Have you ever used a bank or a post office bank?
- In what year were you born? Reply with a four-digit number like 1980

## Data collection

Two qualitative data collection methodologies were used:

- Individual interviews – 34 interviews
- Focus group discussions – two groups (total of 12 respondents).

The interviews and focus groups were conducted across six rounds (cycles) of improvement. (See the description of action research above.)



## Sampling

The sample used for each round of this study appears in Appendix 2.

The sample size was a function of the available budget. In total, 46 respondents were interviewed, which is regarded as adequate in qualitative research terms (Blair & Conrad, 2018). The sample for each of the six rounds varied between 5 and 14 respondents – in line with the recommendations for cognitive interviewing (Willis, 2004).

The SMS questionnaire was to be tested with respondents from Kenya, Nigeria, Tanzania, Uganda, Bangladesh, India and Pakistan. As it would have been too expensive to interview respondents in each of these countries, the sample was drawn from people who were originally from these countries but, at the time of the fieldwork, resided in Johannesburg.

Respondents were recruited to be between 25 and 45 years old and “low-income earners”, with a household income below R8 000. Respondents from African countries were equally split between male and female; only male respondents from Asian countries were interviewed. (Due to cultural issues, women from the Asian countries were not willing to participate in the research.)

The final questionnaire for the SMS survey will be translated into the relevant languages, and respondents will be given a choice to complete the questionnaire in the local language or English. insight2impact found in other SMS surveys that most EFL speakers choose to complete such surveys in English. For this reason, the questionnaire was tested in English only. Respondents were required to have basic English reading and conversation skills, similar to what the respondents in the actual SMS survey are likely to have.

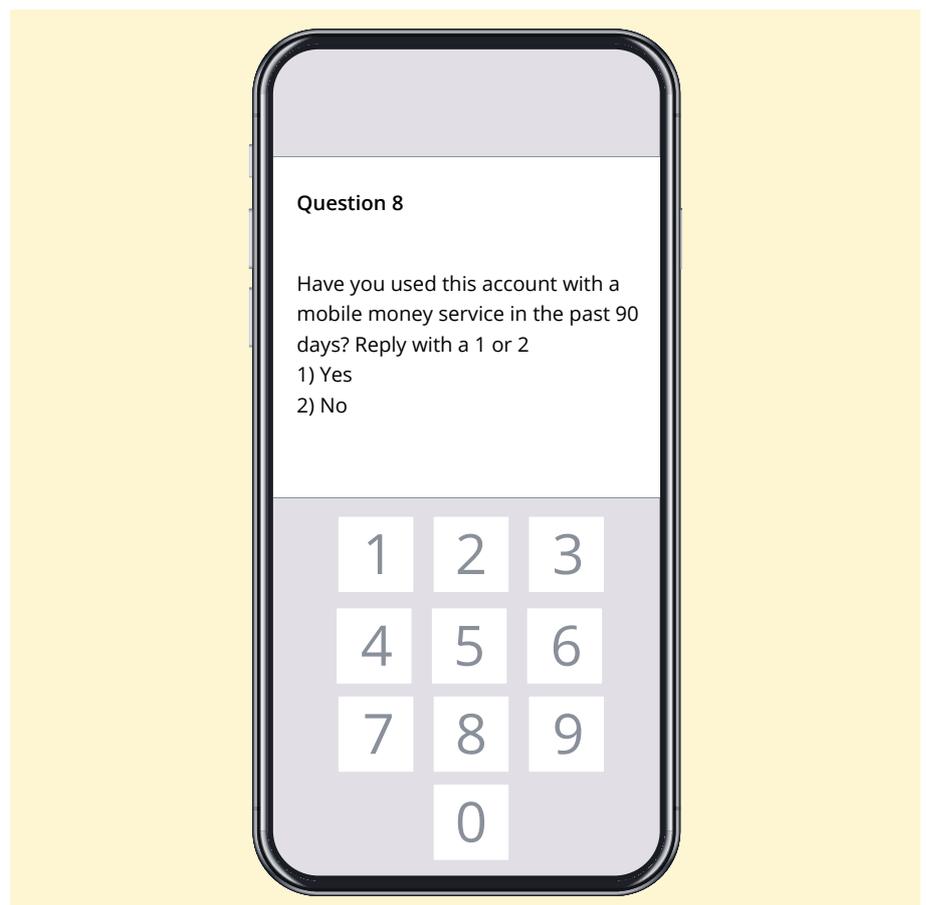
## Flow of the interview

The interview started off with an informal chat (similar to a warm-up in a focus group) about their countries of origin, where they lived, whether they still had family in their home countries and have contact with them, and their current employment situation. The researchers used these interactions to establish trust and to gain insight into respondents' lives. These insights were used during the second part of the interview to make the probes more specific and more personal.

The interviewers briefly explained to respondents that the research was part of the process of developing an SMS questionnaire.

Respondents first completed the SMS questionnaire individually without any assistance from the interviewers. The questions were on a piece of paper that simulated a phone. Respondents had to circle their answers on "the keypad". See Figure 2. (This study therefore did not test the functionality of an SMS survey; this aspect was covered in the first set of pilots conducted by insight2impact.)

**Figure 2. Example of "SMS" question on paper**





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**The importance of their role and input was emphasised. In this regard, the method draws on participatory action research. Respondents were pleased to be given this opportunity and, in most instances, participated enthusiastically.**

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The interviewers did not assist respondents when they asked for clarification. They were given the assurance that there would be a discussion after they had completed the questionnaire. If a respondent asked a question, the interviewer noted the question and referred to it during probing.

Before the cognitive interview, the interviewers again explained to respondents that their input was required on how the questionnaire could be made easier for people to answer. The importance of their role and input was emphasised. In this regard, the method draws on participatory action research. Respondents were pleased to be given this opportunity and, in most instances, participated enthusiastically.

During probing, each survey question was discussed separately. General probing questions to determine the cues, strategies or frames of reference that respondents used to answer the question were asked first. The general probes were followed by specific probes relevant to each question. For example, specific probes referred to the terminology used in a question. If a response did not correspond with the contextual information obtained during the warm-up phase, the interviewers probed further to understand why the respondent gave a different answer.

The figure on the next page illustrates probing questions and responses.



### Figure 3. Examples of responses to questions on the use of a bank

Question asked in Round 1: **Have you ever used a bank or a post office bank?** Reply with a 1 or 2

Question asked in Round 2: **Have you ever used a bank?** Reply with a 1 or 2

Question asked in Round 2: **Do you have a bank account?** Reply with a 1 or 2

**Female from Tanzania; sending cash home with trusted friends**

**Have you ever used a bank or post office bank?**

1) Yes

2) No

**General comments**

She has a bank account in South Africa.

**Probing questions**

**What does the word “post office bank” mean to you?**

She had no idea what it means.

**If yes: How have you used the bank/post office bank?**

She sends cash with a friend and gets cash from her family in Tanzania in the same way.

**Male from Uganda; sending money home through Western Union and MoneyGram**

**Have you ever used a bank?**

1) Yes

2) No

**General comments**

Although the respondent answered “no”, he mentioned that he had an account in South Africa (when things were still going well in his business). He also said that he had an account in Uganda around the same time but unfortunately had to close it when his business was not doing well.

**Male from Tanzania; sending money home using a friend’s account**

**Have you ever used a bank?**

1) Yes

2) No

**General comments**

He usually asks his South African friends to send money to Tanzania via their accounts. He deposits money into their accounts, and they send it.

**Male from India; sending money home using Hello Paisa**

**Have you ever used a bank?**

1) Yes

2) No

**Probing questions**

**How have you used the bank?**

He gets his salary with e-Wallet. He has an e-Wallet card that he uses at the FNB ATM to withdraw money from his e-Wallet account.

**Female from Nigeria; does not send money home**

**Have you ever used a bank?**

1) Yes

2) No

**Probing questions**

**How have you used the bank?**

“To receive an e-Wallet”

**Male from Uganda; sending money home using a friend’s account**

**Do you have a bank account?**

1) Yes

2) No

**General comments**

He said that he used his friend’s account for sending money home; he usually deposits money into the account and the friend transfers it to the respondent’s family member’s account in Uganda.



# Analysis

As a first stage of the analysis, interviewers recorded the verbal and non-verbal responses to each survey and probing question on a summary sheet of the interview.

After each round of individual interviews, interviewers took part in a debrief session as a second stage of the analysis. This session was attended by an insight2impact representative. The responses to each survey question and its associated probes were discussed, and the reasoning behind answers were unpacked in detail.

Two types of **inappropriate responses** were identified:

- i. Responses that result from total or partial incomprehension
- ii. Responses that result from a mismatch between the respondent’s interpretation of the questions and the interpretation intended by the questionnaire designer.

### Example of type i:

<p>Have u ever used a cooperative group or microfinancer, that is a place which lends to members in a group, such as (INSERT EXAMPLES) or other?</p> <p>1) Yes</p> <p>2) No</p>	<p>Total incomprehension</p> <p><b>Semantic and respondent task issues:</b> The question is too complex. Respondents did not know what “cooperative group or microfinancer” refers to. The question is also too long for comprehension.</p>
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### Example of type ii:

Objective: number of children of school-going age in the household	Respondents’ interpretations
<p>How many children between the ages of 6 and 12 are living in your household?</p> <p>1. 1</p> <p>2. 2</p> <p>3. 3</p> <p>4. 4</p> <p>5. 5</p> <p>6. 6</p> <p>7. 7</p> <p>8. 8 or more children</p> <p>9. No children of these ages</p>	<ul style="list-style-type: none"> <li>• Counted all the children; did not read “between the ages of 6 and 12”</li> <li>• Misinterpreted “between 6 and 12”</li> <li>• Gave multiple answers by marking the ages of the children</li> <li>• Unsure which children should be considered. Siblings also regarded as children.</li> <li>• Did not know the ages of the children</li> </ul> <p><b>Across all the rounds, only half of the respondents answered this question correctly.</b></p>

“

**As part of each cycle of improvement, the researchers and insight2impact representatives had discussions to ensure that the revised questionnaire remains on track in terms of its objectives.**

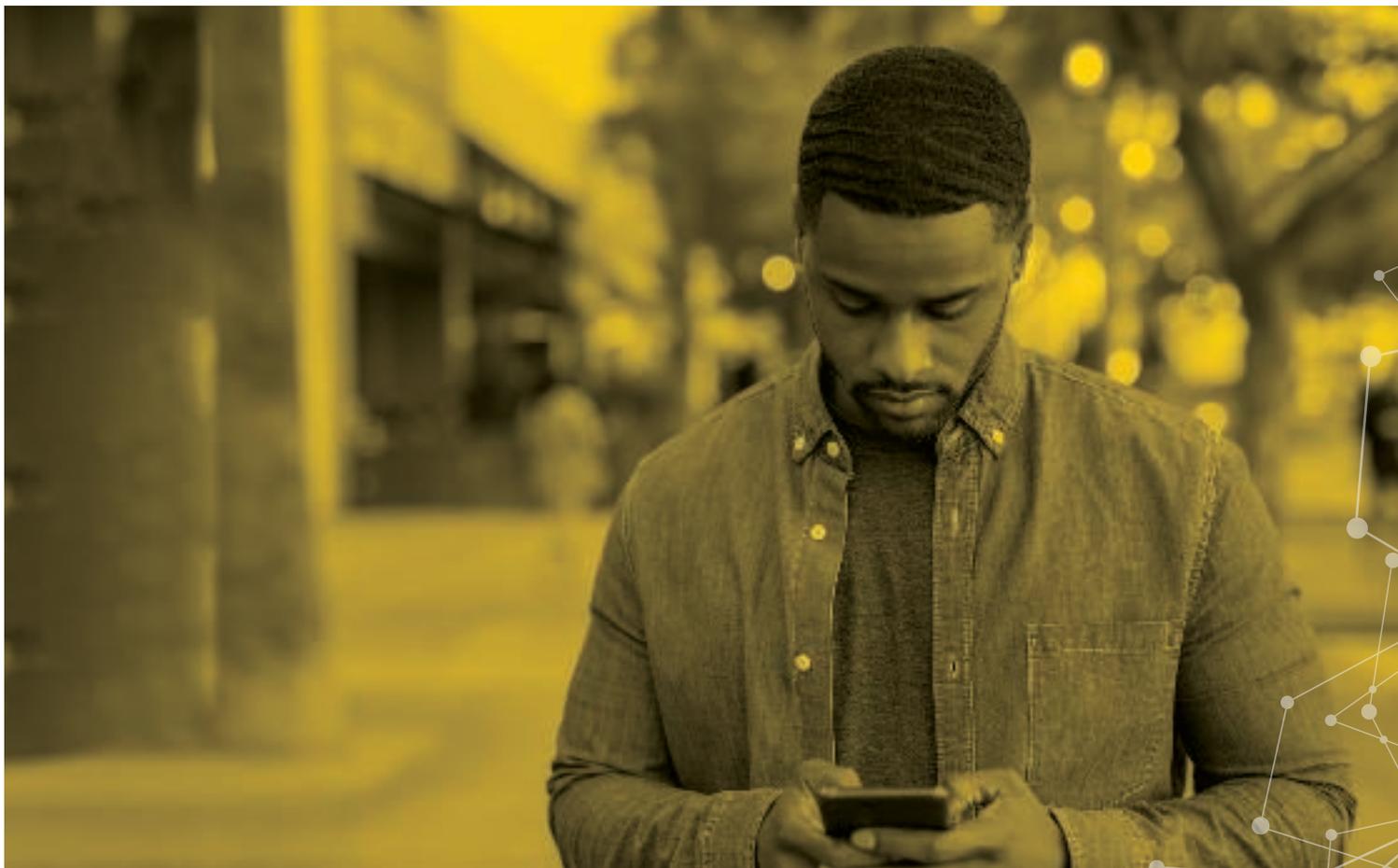
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The next stage of analysis was done by the linguists of the Plain Language Institute. They analysed the linguistic structure of the questions and interpreted the responses in terms of the insights from all the mentioned fields of knowledge. The linguists then mapped the issues onto the expanded framework for analysis.

## Revision

At the end of each round of interviews, the survey questionnaire was revised for the next round. Plain Language tools and techniques were useful to address some of the issues that the analysis identified.

As part of each cycle of improvement, the researchers and insight2impact representatives had discussions to ensure that the revised questionnaire remains on track in terms of its objectives.



# Findings

## Three different pathways

The pathway to achieve appropriate answers was not the same for all the survey questions, as Figure 4 illustrates. Please note that the charts are illustrative. Because some of the questions were split or taken out, it was not possible to do such a comparison for each question.

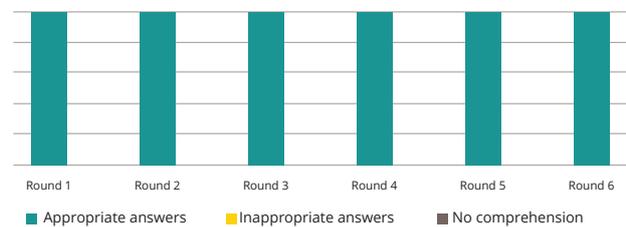
- For some questions, full understanding and appropriate answers were achieved quickly. This was the case, for example, with the washing machine question: *Do you have a clothes-washing machine in your home?*
- For other questions, it took the full six rounds to achieve full understanding and appropriate answers.
- A few questions, for example the question about the number of children between 6 and 12 in the household, still gave inappropriate answers in the last round. For these questions, a recommendation was made, based on the analysis of the last round, but the recommendation was not tested further.

**Figure 4. Three pathways towards full comprehension**

### Three pathways

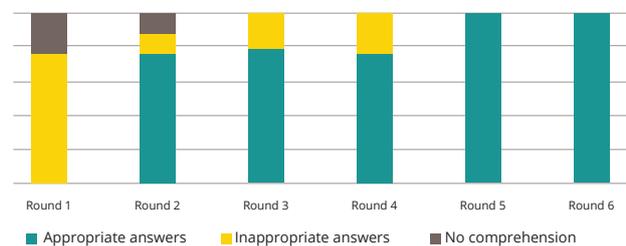
- Full understanding and appropriate answers from the start, e.g. washing machine question

Correct from the start scenario



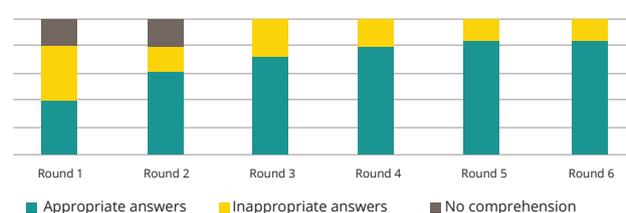
- Needed full six rounds to achieve full understanding and appropriate answers, e.g. mobile money questions

From no comprehension to full comprehension



- Still some inappropriate answers after six rounds, e.g. the question about the number of children between 6 and 12 in the household

Mixed scenario



# Barriers to appropriate answering

Figure 5 depicts the analytical framework with examples found in the study.

## Figure 5. Barriers to appropriate answering

### Structural or logic issues

- Flow or relation between questions: The first question asked year of birth; the last question asked age. The respondent interpreted this as a confirmation question and responded again with their year of birth.
- Structure or organisation of information: *Have u ever used a cooperative group or microfinancer, that is a place which lends to members in a group, such as (INSERT EXAMPLES) or other?*
- Amount of information: *Accounts are used to save, borrow, get wages, get money from government, invest, insure & pay bills. Have you ever used any account for any of these?*

### Semantic issues

- Semantic categories: Respondents distinguished between a city and a village, but town, farmland and countryside were not familiar categories.
- Weak verbs like “use”: The question *Do you use a bank?* can mean anything from having a bank account to receiving cash at an ATM via e-Wallet.
- Insufficient knowledge:
  - Technical term is not understood: “microfinancer”, “digit”, “registered”
  - Common term is not understood: “company”, “gender”, “male/female”, “farmland”, “countryside”
  - Abbreviations not understood: “e.g.”, “5+”, “yrs”.
- Inability to analyse the relationship between clauses in a complex sentence: *Do you have an account with a bank or post office bank that is registered in your own name?*
- Conceptual variability: “number of children between 6 and 12 in the household”.

### Respondent task issues

- Recall: *In your whole life, how long have you been using a mobile phone for?*
- Inappropriate response categories:
  - Overlapping response categories: “city”, “town”, “village”, “farmlands”, “countryside”
  - Response categories are insufficient: Yes/No for the question *Have you ever used a bank?* (See Figure 3)
  - Response categories making too fine a distinction: “1 to 3 months/4 to 6 months/7 to 12 months” for the question *In your whole life, how long have you been using a mobile phone for?*
  - Too many response categories:  
*In your whole life, how long have you been using a mobile phone for?*
    - 1) 1 to 3 months
    - 2) 4 to 6 months
    - 3) 7 to 12 months
    - 4) 1 year to 3 years
    - 5) 3 to 5 yrs
    - 6) 5+ yrs
- Sensitivity: no examples in this study.
- Accuracy of responses to open questions:
  - Spelling: spelling of home address and nearest post office
  - Incompleteness: Respondents were asked to provide their home address; however, some did not give the complete address.

# From high risk to low risk

The study enabled the researchers and the insight2impact team to identify questions that:

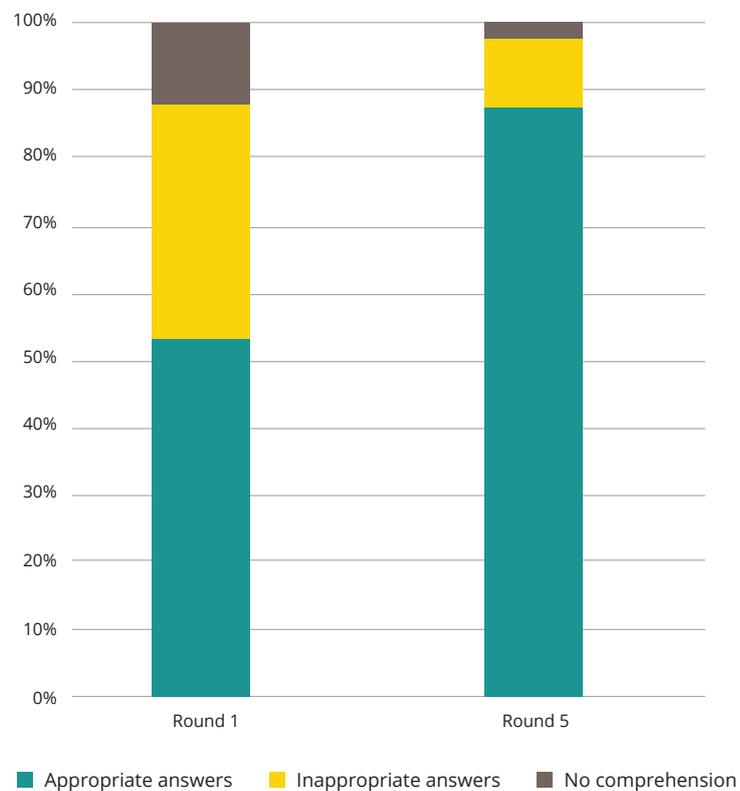
- some respondents were unable to understand; and/or
- some respondents were unable to answer in the way that the questionnaire designers intended.

**The methodology of cognitive action research that the study applied reduced the risk that inappropriate answering holds for data integrity.**

The reduction in inappropriate answering was quite dramatic, as is evident in the following chart:

**Figure 6. Improvement from Round 1 to Round 5<sup>2</sup> across all questions**

## Round 1 vs Round 5



## From high risk to low risk

	Round 1	Round 5
% Appropriate answers	53,47%	87,88%
% Inappropriate answers	34,65%	10,10%
% No comprehension	11,88%	2,02%

<sup>2</sup> Round 6 was not considered because only the remaining issues were tested in the focus group.



About 47% of the responses in Round 1 were inappropriate or arbitrary (no comprehension).

If this was the case in an actual survey with a sample size of a few thousand, it would have meant that a large financial investment resulted in half of the responses being inappropriate or arbitrary. **More importantly, had the results of the original survey been used for strategic decision-making, policymakers and other stakeholders might have based these decisions on data without integrity. The risk associated with this is immense.**

Cognitive action research is not a solution to all questionnaire challenges, as was evident from the results in the final round. Some interpretations of questions are culture- or country-specific, and no amount of tweaking of the wording of the questionnaire will overcome the resulting conceptual variability. Sometimes, inappropriate answering is simply the result of the particular circumstances of a particular respondent. For example, a respondent who has had a mobile phone for many years was so excited about her new phone that she selected the option “less than three months ago” instead of “more than a year ago” when she had to answer the question *When did you get your first phone?*



This study shows how critical it is to have a dedicated study that tests for inappropriate answers.



# Implications for financial inclusion surveys

Why do questions that respondents do not understand or do not answer as intended by the questionnaire designers slip through survey pilots? It is almost incomprehensible that terminology like “male/female” that has been used for years in surveys might not be understood by all.

**Survey pilots typically test a process; testing understanding is not the primary focus.**

This study shows how critical it is to have a dedicated study that tests for inappropriate answers.

**An additional level of testing is therefore recommended where every aspect of every question on a questionnaire is explored in detail to ensure that respondents understand what is being asked and can provide appropriate answers. This should be done within a timeframe that allows for changes.**

It is, however, problematic to follow this route for tracking surveys, as any change in questionnaire wording might interfere with tracking the results. For these studies, the researchers recommend that, if you suspect issues with certain questions, you only test those questions with the methodology described in this positioning note. The methodology will identify issues and suggest ways in which these questions can be improved. A decision can then be made as to what the biggest risk would be, to keep questions that give inappropriate answers or to change these questions and compromise the tracking capacity.

However, **all new survey questionnaires** should ideally be tested using this methodology.

The research methodology is also particularly relevant for questionnaires that are **translated**. Unfortunately, a translation will not necessarily produce an understandable question. Questionnaires are usually developed in standard language. Typically, the translator will match the register<sup>3</sup> of the source language, which, in this case, would be the register of the questionnaire designer. The practice of back-translating to check the accuracy of translations reinforces this practice because the back translation must match the source questionnaire.

As a result, respondents using a register that is different from that of the questionnaire designer, for example the register of people living in an inner-city informal settlement, might not understand a translated term. Cognitive action research can play an important role to ensure that translated survey questionnaires are understood and interpreted as intended.

<sup>3</sup> A register is a variety of a language used for a particular purpose or in a particular social setting (Agha, 2008).

# The way forward

The study discussed in this article “piloted” an innovative methodology, cognitive action research, which incorporates insights and approaches from different theoretical fields, most importantly, action research, Plain Language and reading-processing strategies. The methodology, the analytical framework and the analysis need to be further developed and refined in future studies.

The study has demonstrated that cognitive action research could be an essential tool to close the gap between the researcher and the respondent in the quest for data integrity. It is proposed that cognitive action research be added as the final stage of questionnaire development prior to piloting.





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# Appendix 1: Original questionnaire

1. In what year were you born? Reply with a four-digit number like 1980.
2. Where do u live? Reply with a number
  - 1)Region 1
  - 2)Region 2
  - 3)Region 3
  - 4)Region 4
  - 5)Etc
  - 6)
  - 7)
  - 8)Don't Know
3. What is the name of the city, town, or place where you live? Write the name e.g. Kinshasa or Delhi
4. Which of these best describe where you live? Reply with a number.
  - 1)City
  - 2)Town
  - 3)Village
  - 4)Farm land or countryside
  - 5)Other
  - 6)Don't know
5. What is your gender? Reply with 1 or 2.
  - 1)Male
  - 2)Female
6. Mobile phone money services let people send & get money, pay & buy things or do other financial things. Have you ever used a mobile money service?
  - 1 - Yes
  - 2 - No
7. And do you have an account with a mobile money service that is registered in your own name?
  - 1)Yes
  - 2)No
8. Have you used this account with a mobile money service in the past 90 days? Reply with a 1 or 2.
  - 1)Yes
  - 2)No
9. Have you ever used a bank or postbank? Reply with a 1 or 2.
  - 1)Yes
  - 2)No



10. And do you have an account with a bank or postbank that is registered in your own name?
  - 1)Yes
  - 2)No
11. Have you used this account with a bank or post bank in the past 90 days? Reply with a 1 or 2.
  - 1)Yes
  - 2)No
12. Have u ever USED a cooperative group or microfinancer, that is a place which lends to members in a group, such as Pride Microfinance, FINCA or other?
  - 1)Yes
  - 2)No
13. And do you have an account at a cooperative group or microfinancer that is registered in your own name?
  - 1)Yes
  - 2)No
14. Does the cooperative or microfinance institution OFFER or HAVE: savings, money transfer, insurance or investment services?
  - 1)Yes
  - 2)No
  - 3)Don't know
15. Does the cooperative/microfinancer HAVE these: card for a cash machine or buying things, a website or phone app or transfers without cash?
  - 1)Yes
  - 2)No
  - 3)Unsure
16. Have you used this account at a cooperative group or microfinancer in the past 90 days? Reply with a 1 or 2.
  - 1)Yes
  - 2)No
17. Accounts are used to save, borrow, get wages, get money from government, invest, insure & pay bills. Have you EVER USED any account for any of these?
  - 1)Yes
  - 2)No
18. And how many people are living in your household?
  - 1)1
  - 2)2
  - 3)3
  - 4)4
  - 5)5
  - 6)6
  - 7)7
  - 8)8
  - 9)9 or more people



19. How many children between the ages of 6 and 12 are living in your household?
- 1)1
  - 2)2
  - 3)3
  - 4)4
  - 5)5
  - 6)6
  - 7)7
  - 8)8 or more children
  - 9)No children of these ages
20. How many of these children are attending pre-school, school or college?
- 1)1
  - 2)2
  - 3)3
  - 4)4
  - 5)5
  - 6)6
  - 7)7
  - 8)8 or more children
  - 9)None of them
21. Does any member of your household have a job where they have a written contract with the employer?
- 1)Yes
  - 2)No
  - 3)Don't know
22. Does any member of your household work for a private company?
- 1)Yes
  - 2)No
  - 3)Don't know
23. Do you have a clothes-washing machine in your household?
- 1)Yes
  - 2)No
24. In your whole life, how long have you been using a mobile phone for?
- 1)1 to 3 months
  - 2)4 to 6 months
  - 3)7 to 12 months
  - 4)1 year to 3 years
  - 5)3 to 5 yrs
  - 6)5+ yrs
25. Do you personally own the mobile phone that you are using right now?
- 1- Yes
  - 2- No
26. Please confirm your age. Reply with a number like 32.

# Appendix 2: Sample and data collection methodology

	Data collection methodology	Respondents' country of origin
<b>Round 1</b>	Individual interviews	Nigeria (1) Tanzania (2) Uganda (2)
<b>Round 2</b>	Individual interviews	Kenya (1) Nigeria (2) Tanzania (5) Uganda (2)
<b>Round 3</b>	Individual interviews	Bangladesh (5) India (5) Pakistan (4)
<b>Round 4</b>	Focus group discussion	Bangladesh (1) Kenya (2) Nigeria (2) Pakistan (1)
<b>Round 5</b>	Individual interviews	Kenya (3) Nigeria (2)
<b>Round 6</b>	Focus group discussion	Kenya (2) Tanzania (1) Uganda (3)

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