

National Survey and Segmentation of Smallholder Households in Nigeria

**Understanding Their Demand for Financial,
Agricultural, and Digital Solutions**

Jamie Anderson, Collins Marita, David Musiime, and Mamadou Thiam

June 2017

TABLE OF CONTENTS

A. INTRODUCTION AND KEY FINDINGS	1
Introduction	1
Key Findings	2
B. ABOUT THE PROJECT	6
C. FINDINGS	11
1. Smallholder Household Dynamics in Nigeria: Who They Are.....	11
2. Smallholder Household Dynamics in Nigeria: Income and Expenses	23
3. Risks and Mitigation	35
4. Mobile Phone Tools.....	46
5. Financial Inclusion Among Smallholder Households in Nigeria.....	50
6. Desires and Aspirations	59
7. Tools and Financial Inclusion: Household Segmentation.....	67
ANNEX: METHODOLOGY AND RESEARCH DESIGN	85
Sample Design	85
Questionnaire	87

ACKNOWLEDGMENTS

The authors extend sincere appreciation and gratitude to Annemarie Matthes (GIZ), Corinne Riquet (CGAP), Denise O'Reilly, Samuel Schueth, Xiaoyan Hu, Mary Ann Fitzgerald, Loice Cherwon, Beatrice Cheronoh, Hao Tang, and Jiayin He (all from InterMedia) for their valuable contributions and feedback during the preparation of this paper.

A. INTRODUCTION AND KEY FINDINGS

Introduction

Nigeria is home to approximately 184 million people—the largest population of all West African countries. Over 60 percent of the population is 24 years old or younger, and over 40 percent is under 15 years old. Nigeria's young population faces challenging economic circumstances. The country's economy contracted in 2016, after gross domestic product (GDP) growth slowed to a rate of 2.7 percent in 2015, from 6.3 percent in 2014. Nigeria's economic contraction has been accompanied by a decline in oil output, fuel and power shortages, currency depreciation, and declines in foreign currency reserves. The economy is expected to return to growth in 2017, but at a rate of about 1 percent of GDP.¹

While agriculture accounts for 21 percent of GDP, the sector employs 70 percent of the labor force.² Based on Nigeria's official definition of smallholders, more than 80 percent of farmers in Nigeria are considered smallholders because they own less than 5 hectares of land. Smallholders produce 99 percent of Nigeria's agricultural outputs, yet their productivity is hindered by several limitations. Major constraints to smallholder farming in Nigeria include the lack and high cost of labor and agricultural inputs in rural areas; limited access to information, modern agricultural technology, and adequate financial services; a land tenure

system that prevents the acquisition of new land; and inconsistent support from local government councils.³

Recent financial inclusion data⁴ indicate that 35 percent of the adult population of Nigeria is financially included (i.e., defined as having an account with a formal financial institution that is registered in their name).⁵ Banks are the key institutions that provide financial services to the included population. Nigerian adults have active financial lives and use advanced services; 25 percent of the population reported completing at least one advanced financial transaction in 2016.⁶

While mobile money has seen almost no uptake in the Nigerian market, nearly one-third (32 percent) of Nigerian adults are nevertheless digitally included, meaning that their financial services providers (mainly banks) offer some form of digital access to their registered accounts. However, most transactions are conducted in cash. Thus, there is a big opportunity for the uptake of digital financial services that are designed to serve the low-income population, especially smallholder farmers, at scale.⁷

Like other Nigerians, smallholder farmers have a wide range of financial needs—for both agricultural activities and family life. To better understand the needs and aspirations of smallholder families in Nigeria, CGAP conducted

1 World Bank website, accessed 26 May 2017. <http://www.worldbank.org/en/country/nigeria/overview>

2 Central Intelligence Agency. World Factbook. <https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html>

3 Mgbenka, R. N., and E. N. Mbah. 2016. "A Review of Smallholder Farming in Nigeria: Need for Transformation." *International Journal of Agricultural Extension and Rural Development Studies*, Vol. 3, No. 2, pp. 4–54, May. <http://www.eajournals.org/wp-content/uploads/A-Review-of-Smallholder-Farming-In-Nigeria.pdf>

4 InterMedia Nigeria FII Tracker Survey Wave 4 (N=6,352, 15+), August–October 2016. www.finclusion.org.

5 Adults are defined as ages 15 and older. To be considered financially included, individuals must have accounts with institutions offering financial services beyond credit. Some banks and many nonbank financial institutions offer only credit services to their customers.

6 Advanced services are defined as transactions other than basic deposits, withdrawals, and account management. They include paying bills, receiving wages, receiving government transfers, paying loans, and receiving insurance claims.

7 InterMedia Nigeria FII Tracker Survey Wave 4 (N=6,352, 15+), August–October 2016. www.finclusion.org

a nationally representative survey of smallholder households between November 2016 and March 2017 in close collaboration with the Nigeria National Bureau of Statistics, local stakeholders in Nigeria, and InterMedia. This study sought to create a comprehensive map of the many activities, interests, barriers, and pressures smallholder households face. The questionnaire also explored nonagricultural household activities, financial practices and interests, and the difficulties and aspirations of smallholder families.

The study sought to answer the following questions:

- What does the community of practice need to know or do to help smallholder farmer households build resilient and productive livelihoods?
- How can financial mechanisms respond to the relevant needs and desires of smallholder households?
- What types of market strategies and approaches can cultivate uptake and use of financial mechanisms?

This report shares the findings, observations, and insights from the National Survey of Smallholder Households in Nigeria. It begins with an overview of the research approach, core program objectives, research questions, preliminary phases of development, and topics included in the questionnaire. The report examines the ways in which households manage their income and expenses and the issues they face that threaten income and often lead to financial instability. It then describes financial inclusion in the smallholder sector, exploring household tools that are essential for financial inclusion, including mobile phones and national identification documents, as well as adoption, awareness, barriers, and interests in financial products.

A full explanation of the research methodology is included in Annex 1 and in the user guide that accompanies the data set.

The three main goals of this report are to:

- Build the evidence base for those working in agricultural finance so that assumptions and/or isolated observations can be paired with known, reliable representative data about the population.
- Connect readers with the unique realities of smallholder farmers in Nigeria that could otherwise be overlooked, oversimplified, or erroneously generalized from other smallholder farmer markets.
- Catalyze conversations about “what’s next” for smallholder-farmer-centered strategies, products, and approaches that facilitate agricultural, as well as household finance.

Key Findings

Fundamental Characteristics

- **Men dominate the leadership of smallholder households, leaving little room for women and youth to participate in decisions regarding agricultural activities.** A majority of smallholder households are headed by men, who are more educated compared to their female counterparts. Few women play an important role in decisions regarding agricultural activities. Most decisions are made by men only and, in fewer instances, jointly by husband and wife.
- **There is significant diversification in agriculture, in both livestock and crops.** The average smallholder household grows six different crops

and does not depend on a single crop for food or income. The large majority of households (67 percent) both grow crops and raise livestock. More than half of smallholder farmers raise livestock both for consumption and income, and a minority raise livestock for consumption only.

- **A majority of farmers report they are able to provide for their families' monthly needs, despite the fact that they live in poverty.** A majority of smallholder farmers earn their income from agricultural activities and consider farming to be their primary job. Although the majority live below the poverty line, farmers manage to provide for their families' monthly needs. Buying groceries and paying for transportation are their largest routine expenses.
- **Smallholders take pride in agricultural activities, though the sector offers limited opportunities to move out of poverty.** Great enjoyment is derived from agricultural activities, and almost all smallholders would like to expand these activities. However, staying in farming and flourishing will require innovation and entrepreneurship to diversify their income-generating activities, both in the agricultural sector and beyond agriculture. Smallholders also need to use information, good agricultural practices, and better market access to improve their agricultural activities.
- **The youngest generation shows the most interest in agriculture and values hard work and achievement.** The youngest age group (15–29 years old) accounts for 36 percent of smallholder households. Smallholder farmers are highly tenured and experienced with a big proportion of the youngest

generation having been in farming for more than six years. A majority of smallholder households intend to remain in agriculture and value hard work and the production of surplus crops.

- **Family provides labor and information.** Smallholder farmers view farming as a family business, and labor is largely sourced from family members. Information on agricultural activities, including financial advice, is sourced from family members and friends. There is thus opportunity for spreading information about new products and services through social networks.

Financial Mechanisms

- **Saving is common, but through informal methods. There is an unmet need for a formal savings mechanism that serves smallholder demand.** A majority of smallholder farmers are saving through informal methods—mainly at home, in cash, and with circles of friends. Fewer are saving through formal methods, such as banks, mobile phones, and cooperatives. Formal savings products that address their agricultural needs should be developed as a complement to saving through informal methods.
- **There is an unmet need among smallholders for agricultural financing.** Smallholders in Nigeria rely on savings to finance their agricultural activities and to mitigate the risk of crop failure. While a majority of smallholder farmers see the importance of setting money aside for key agricultural expenses—most notably fertilizer, seeds, pesticides, and equipment—their savings are too small to finance all of their priorities. For some smallholder households,

insurance and savings tools could be used to increase their capacity to finance agricultural activities and mitigate risk.

- **Budgeting and risk planning is not common among smallholders.** Most smallholders report they do not stay on budget and that they lack a plan to manage unexpected expenses. As such, they struggle to mitigate risks and respond to emergencies. Building financial capability and creating awareness of financial products that target farmers will help smooth cash flows and mitigate risk.
- **Cash as a form of payment prevails.** Cash is the prevalent payment method among smallholder farmers when purchasing farm inputs from retailers and wholesalers. Digitizing this payments channel would create transaction and credit histories linked to individual accounts. And this would create enabling conditions to provide credit, savings, and insurance products to smallholders.
- **Knowledge and exposure to financial mechanisms is limited.** Only a quarter of smallholders are financially included, meaning they hold an account, registered in their own name, at a full-service financial institution. Low levels of trust in financial institutions and a lack of perceived need for formal financial services are key constraints that may be addressed by targeted communications, especially for women and younger smallholders who use financial services less than men do.

Strategies to Increase Financial Well-Being among Smallholder Households

- **Support the creation and uptake of digital payment products that target farmers.** Smallholder

farmers conduct some transactions electronically—mainly basic activities such as airtime top-ups and cash-in and cash-out (CICO). Strategies to promote basic access to mobile wallets and uptake of DFS are the starting point for increasing engagement with DFS among smallholders. Digital merchant financial products should be developed to target farmers involved in CICO activities to facilitate day-to-day transactions (e.g., grocery purchases). Digital payments are not only a convenient way for farmers to pay merchants for goods, but they also allow farmers to store their money in their accounts. Digital payments thus encourage saving and reduce the risks related to handling cash, such as fraud and theft.

- **Promote digital credit options to support more agricultural production for the market.** Increasing the volume of agricultural produce sold by smallholders can be an important avenue out of poverty. Smallholders who have land certificates that can serve as collateral for loans are a good target for credit services to finance commercial agriculture.
- **Use mobile information channels that target women and youth to provide reliable and timely financial information.** Communication channels like mobile phones, SMSs, and radios can supplement agricultural information from friends and family. Information received through mobile channels may be disseminated through informal groups and associations, which are critical sources of information for some farmers during major agricultural seasons. These types of information channels and tools can be used to convey the knowledge needed to improve agricultural practices. Given Nigeria's large youth

population and the key role youth play in sustaining the country's smallholder agricultural sector, it is imperative to understand young people's needs for information and preferred delivery channels.

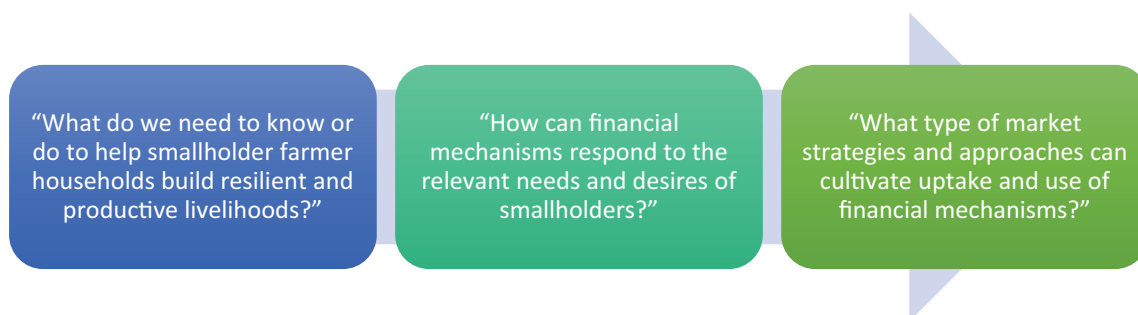
- **Develop USSD services for basic phones to expand the delivery of agricultural information via mobile technology.** Smallholders in Nigeria lack knowledge of how a mobile phone can be used beyond basic calling and texting functions. The majority view the phone as an important tool only for communication and not for other purposes that could contribute to their livelihoods. As a result, they have mainly basic phones. Applications using USSD can be developed to give them the professional, tailored agricultural assistance they need at various times of the agricultural cycle.
- **Focus on youth leadership to drive the use of DFS among smallholder households.** While there is little difference between the rate of mobile phone ownership in the 15–29 age group (62 percent) and the average for all smallholders (61 percent), youth are more technologically advanced, more educated, and more willing to take risks and try out innovations that may improve farming practices. Youth should be targeted to lead the adoption of DFS.
- **Digitize transactions through mobile technology to allow smallholders access to financial services anytime, anywhere.** Smallholders who have bank accounts typically access their accounts over the counter at a bank branch or through an ATM. Most smallholders, however, do not live close to these points of service. The challenge of proximity stands in the way of smallholders becoming financially included. The expansion of mobile financial services is therefore the best way to serve the smallholder population.
- **Use mobile technology to encourage smallholders to use formal financial institutions in addition to informal institutions.** Smallholder farmers in Nigeria prefer to use informal financial services, despite the greater risk of loss, fraud, or theft relative to formal financial services. Trust and proximity are key to persuading them to use formal services. Providing formal financial services using mobile technology is well-suited in the smallholder context because farmers prefer to use the channels that are near them and validated by people they know and trust.
- **Improve information and transportation infrastructure.** Smallholder incomes would benefit greatly from improvements in transportation infrastructure that would facilitate less costly and more reliable access to markets for their produce. Access to financial points of service would benefit from a better transportation infrastructure. Adopting regulatory frameworks that enable the broad expansion of mobile money to the unbanked population elsewhere in Africa will help to improve the infrastructure for mobile financial services.

B. ABOUT THE PROJECT

Working to build the evidence base on smallholder farming households, CGAP sought to explore in more detail the financial and agricultural lives of smallholder households in Nigeria. The

research consisted of a survey with an accompanying household listing, a segmentation, and focus groups with smallholders. It sought to answer three key questions.

Main questions for research



Reviewing Stakeholder Discussions and Existing Research. In advance of the National Survey and Segmentation of Smallholder Households in Nigeria, CGAP met with a range of organizations and potential partners that were active in inclusive finance and agriculture, including Babban Gona, Cellulant, Enhancing Financial Innovation and Access (EFInA), Fortis Microfinance Bank, GIZ, IFAD, Sahel Capital, and USAID. The stakeholder discussions were designed to (i) raise awareness of this research, (ii) better understand stakeholders’ objectives and the outputs needed to advance them, and (iii) lay the groundwork for collaboration on financial solutions for smallholder families that build on this market intelligence.

Building on other household surveys in sub-Saharan Africa (e.g., agricultural censuses, Living Standards Measurement Study [LSMS], FinScope, AgFiMS) and the 2013 CGAP global segmentation,⁸ the methodology and survey instrument

were designed to answer a number of questions about smallholder households in Nigeria:⁹

- **Understanding and segmentation of smallholder households.** What are the key characteristics of the smallholder sector at the national level (e.g., demographics, poverty status, hectares, crops and livestock, level of intensification, market relationships)? What segments of smallholder households emerge?
- **Attitudes and perceptions of smallholder households.** How do smallholder households perceive their agricultural activities (e.g., subsistence activity, business)? Do household members, especially youth, see a future in farming? On the financial side, how comfortable are smallholders with digital financial services and other channels and services providers?

⁸ See Christen, Robert Peck, and Jamie Anderson. 2013. “Segmentation of Smallholder Households: Meeting the Range of Financial Needs in Agricultural Families.” Focus Note 85. Washington, D.C.: CGAP, April.

⁹ CGAP retained the services of InterMedia to implement the smallholder studies. National survey and segmentation studies of smallholders in Mozambique were released in March 2016, Uganda in April 2016, Tanzania in May of 2016, Côte d’Ivoire in March 2017, and Bangladesh in May 2017.

- **Opportunities to improve financial inclusion for each segment of smallholder households.** What financial mechanisms does each segment of smallholder households demand, through the lens of customer needs (crop storage, transfer, build, secure) and products (e.g., credit, deposit, insurance)? What informal and formal suite of financial mechanisms does each segment use? Where are the opportunities to add value with new services and/or delivery channels?

The first months of the project were spent doing a series of deep dives into the existing research in the smallholder space to determine what questions had already been asked, identify their findings, and determine how to complement and expand on the knowledge of the sector. Several sources were consulted in the process, including IFC, Dalberg, Finmark Trust, AgFiMS, FinScope, FAO, GIZ, IFAD, professional agricultural organizations, research centers, financial institutions, mobile network operators (MNOs), World Bank Group, and the LSMS team. This secondary research informed the design of the instruments that were

used to collect data from smallholder households and other stakeholders in Nigeria.

The extensive secondary research and discussions with stakeholders identified a gap in information about the actual needs, desires, and perceptions of smallholder households. This research sought to connect the agricultural data to the financial data to dissect the interactions and intersections between the two.

Identifying the Target Group of Smallholder Households. Discussions with stakeholders in sub-Saharan Africa and extensive desk research concluded that there is no clear agreement on the characteristics that define a smallholder, in part because of the heterogeneity of this group.¹⁰ A matrix was developed for each of the key criteria that was used to distinguish smallholder households from other households (see Table 1).

Desk research indicated that there is a range of definitions of a smallholder household across countries, reflecting variations in agricultural sectors. Some governments define smallholders solely

TABLE 1. Key criteria in defining smallholder households

Key Criteria	Considerations
Market orientation	Subsistence vs. market-oriented vs. hybrid
Landholding size	Threshold
Labor input	Family vs. hired
Income	Shared income from farming, multiple sources
Farming system	Technology, irrigation
Farm management responsibility	Owner, influence over how to farm
Capacity	Storage, management, administration
Legal aspects	Formal vs. informal
Level of organization	Member of group—producer, supply chain, services provider

¹⁰ Defining Smallholders: Suggestions for a RSB smallholder definitions; Roundtable on Sustainable Biomaterials; October 2013.

by their landholding size. The range differed greatly across Asian and African countries—from a maximum of 2.5 hectares in India to a maximum of 46 hectares in Malaysia. Following the official definition, Nigerian smallholders' production capacity falls between 0.1 to 4.99 hectares of land holding.¹¹ Smallholder farmers contribute a majority of the country's total agricultural output.

A threshold was identified for defining smallholder households in a way that was as inclusive as possible, without diluting or distorting the population representation. The identification measure used two key criteria—landholding size and livestock count—as the starting point for identifying the target group for sample selection. Self-identifying perception questions were asked to ensure that each smallholder household selected for the study viewed agriculture as a meaningful part of the household's livelihood, income, and/or consumption.

A household listing exercise was conducted to identify potential households to include in the survey sample. The listing exercise targeted smallholder households with criteria related to their agricultural activities and their perception of the role that agriculture plays in their household (see Figure 1).

Methodology¹²

Sample Design. The Nigeria Smallholder Household Survey used a stratified multistage sampling design to draw a nationally representative sample of smallholder households, with a target sample size of 3,000 households. Working closely with the National Bureau of Statistics (NBS), the sample was designed to provide reliable survey estimates at the national level and from the 36 states, including the Federal Capital Territory (FCT), Abuja.

Sampling Frame. Based on the 2006 Census, the National Integrated Survey of Households (NISH) master sample serves as the sampling frame for all household survey samples designed by NBS for 2014–2019. The smallholder survey used NISH as the sampling frame, and retained only the 21,415 census enumeration areas (EAs) that contain agricultural households.

Sample Allocation and Selection. EAs were in Nigeria's six major regions and the federal states within each region. A total of 215 EAs was selected with equal probability within each stratum. Within each selected EA, a household listing operation was carried out to identify smallholder households and to provide a frame for the selection of a maximum of 17 households. Households were selected in each EA with equal probability. A total

FIGURE 1. Listing criteria to identify eligible smallholder households

Household with up to 5 hectares	AND	Agriculture provides a meaningful contribution to the household livelihood, income, or consumption (self-identified)
OR		
Farmers who have less than: 50 heads of cattle; or 100 goats/sheep/pigs; or 1,000 chickens		

11 National Agriculture and Food Security Strategy (NAFSS) (2010–2020), Federal Republic of Nigeria Ministry of Agriculture and Rural Development, 25 August 2010, p. 17.

12 The methodology and design are detailed in Annex 1.

TABLE 2. Framework for the smallholder questionnaire

Section	Demographics	Household economics	Agricultural practices	Mobile phones	Financial services
Examples of topics covered	Relationship	Income	Land ownership	Use (own or borrow)	Formal institutions
	Marital status	Jobs	Crops grown	Types of phones	Less than formal institutions
	Age	Government payments	Livestock	Barriers	Informal financial service providers
	School attendance	Saving	Value chain	Habits	Importance
	Income	Investing	Market relationship	Products	Borrowing
	Decision-making	Emergency planning	Water		Products
	Financial situation	Risk mitigation	Labor		
	Progress out of Poverty Index (PPI)		Inputs		
			Storage		
			Coping		

of 3,457 households was selected for the survey, of which 3,310 were found to be occupied during data collection. Of these occupied households, 3,026 were successfully interviewed, yielding a household response rate of 91 percent.

Questionnaire Design. The questionnaire design process began by using the secondary research and stakeholder discussions as core inputs into the design of the survey instrument. This process also involved defining the end goal of the research by doing the following:

- Drawing from existing survey instruments.
- Considering the objectives and needs of the project.
- Accounting for stakeholder interests and feedback.

These led to a survey instrument framework that would be shared across stakeholders. The framework ensured that the research captured all the necessary elements of a smallholder household. The framework was built around the sections shown in Table 2.

Organization of the Survey. Three different questionnaires were used to collect data from household members (see Table 3) to capture the complexity of smallholder households. Certain questions were asked of all relevant individuals in the household, not just one household member.¹³ First, the Household questionnaire was administered to the head of the household, the spouse, or another knowledgeable adult household member to collect information about household characteristics. Second, the Multiple

13 The three questionnaires can be found in the user guide that accompanies the data set for this research.

TABLE 3. Design of smallholder questionnaires

	Household questionnaire	Multiple Respondent questionnaire	Single Respondent questionnaire
Target respondent(s)	Head of the household, spouse, or a knowledgeable adult	All household members over 15 years old who contributed to the household income or participated in its agricultural activities	One randomly selected adult in the household
Topics covered	<ul style="list-style-type: none"> • Basic information on all household members • Information about household assets and dwelling characteristics 	<ul style="list-style-type: none"> • Demographics • Agricultural activities • Household economics 	<ul style="list-style-type: none"> • Agricultural activities • Household economics • Mobile phones • Formal and informal financial tools
Number of completed interviews	n=3,026	n=5,128	n=2,773

Respondent questionnaire was administered to all adult members in each selected household to collect information on their agricultural activities, financial behaviors, and mobile money use. Third, the Single Respondent questionnaire, which was the longest of the three questionnaires, was administered to one randomly selected household member to collect data on individual behaviors, knowledge, attitudes, and perceptions.

The questionnaire was translated into Pidgin, Yoruba, Igbo, and Hausa, and then tested and validated to ensure the integrity of the questions and alignment with social and cultural customs.

Data collection took place from 21 November to 9 December 2016, using computer-assisted data collection tools that regularly yielded data for analysis and quality control to provide timely feedback to field staff.

C. FINDINGS¹⁴

1. SMALLHOLDER HOUSEHOLD DYNAMICS IN NIGERIA: WHO THEY ARE

Smallholder households span the country and are led mostly by men

Nigeria is divided into six geopolitical zones, and with their associated states:

- North Central: Benue, Federal Capital Territory (FCT), Kogi, Kwara, Nasarawa, Niger, and Plateau states
- North East: Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe states
- North West: Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, and Zamfara states
- South East: Abia, Anambra, Ebonyi, Enugu, and Imo states
- South South: Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and River states
- South West: Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo states

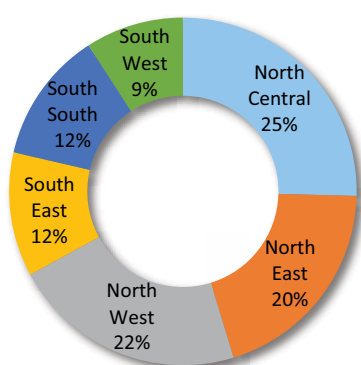
Smallholder households are found in Nigeria's six zones. Over two-thirds

are in the northern geopolitical zones (25 percent in North Central, 22 percent in North West, and 20 percent in North East) (Figure 2). Of the remaining one-third, 9 percent are in the South West zone and an equal percentage (12 percent) are in the South East and South zones.

Nearly nine in 10 smallholder households (88 percent) in Nigeria are headed by men (Figure 3). More than half (56 percent) of female household heads are divorced, separated, or widowed.

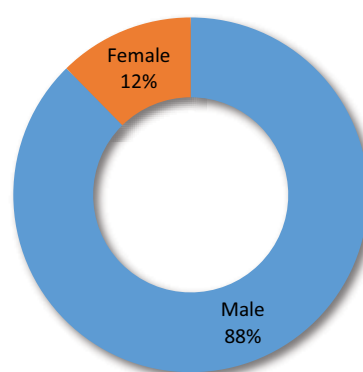
The Nigerian smallholder population includes a robust older generation. Over half of smallholder heads of household (55 percent) are between the ages of 30 and 49; 33 percent are over the age of 50 (Figure 4). With just over one-tenth of smallholder household heads under the age of 30, there is a relatively small presence of the "next generation" of farmers among the heads of households. Given high unemployment rates, particularly

FIGURE 2. Regional zone



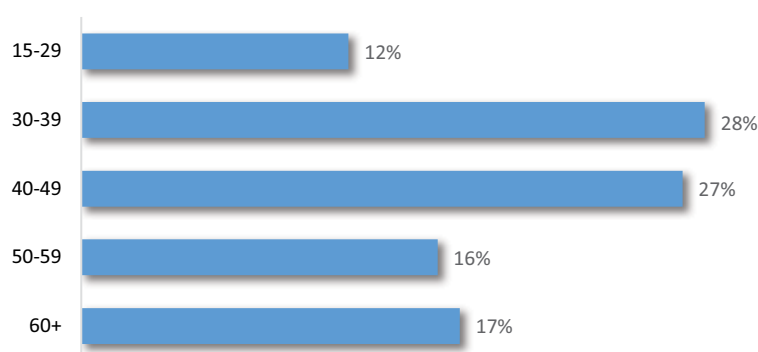
Sample: Smallholder households, n=3,026

FIGURE 3. Gender of head of household



Sample: Smallholder households, n=3,026

¹⁴ Graphs and tables in the main body of the report include references to the unweighted base size and, therefore, at times will not look proportional to the graphs that show subsets of other graphs. Due to rounding, not all percentages in charts total 100.

FIGURE 4. Age of head of household

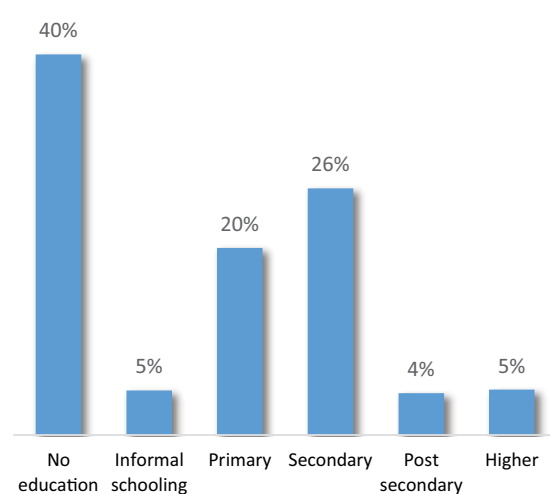
Sample: Smallholder households, n=3,026

among youth,¹⁵ farming could be an option for current and potential young smallholder farmers, but appealing opportunities and incentives to stay in farming would be important.

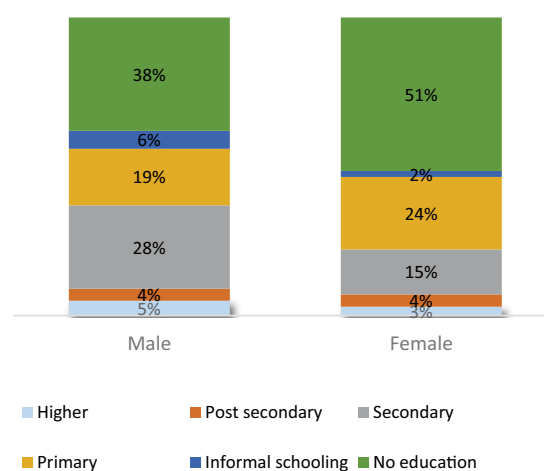
Four in 10 smallholder household heads never attended school (Figure 5), and only 20 percent attended primary school. Twenty-six percent attended secondary school, and 9 percent attended beyond secondary. There is a large gender difference in education levels (Figure 6).

Half of female heads of household never attended school, compared to 38 percent for male household heads.

Overall, most smallholder household heads in Nigeria are married or cohabiting (85 percent), and about one-tenth are divorced, separated, or widowed (Figure 7). However, there is a gender difference in marital status. Male heads of households are overwhelmingly married or cohabiting, while over half of female heads of household

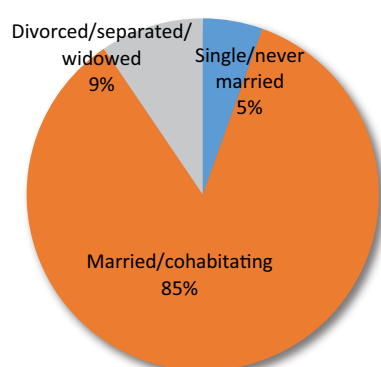
FIGURE 5. Highest education attended by head of household

Sample: Smallholder households, n=3,026

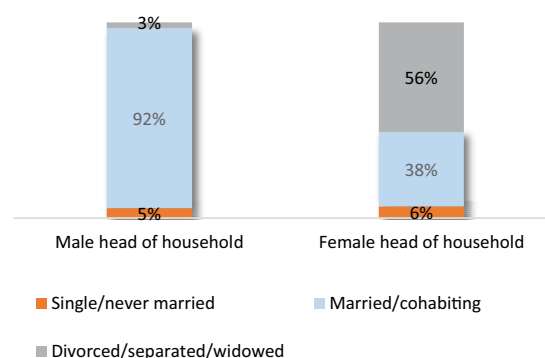
FIGURE 6. Highest education attended by gender of head of household

Sample: Smallholder households, n=3,026

15 The unemployment rate for people 15–29 years old is 24 percent, according to the Nigerian Bureau of Statistics report for Quarter 2 in 2016.

FIGURE 7. Marital status of head of household

Sample: Smallholder households, n=3,026

FIGURE 8. Marital status by gender of head of household

Sample: Smallholder households, n=3,026

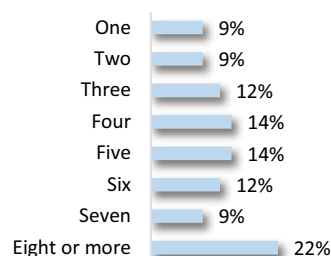
are divorced, separated, or widowed (Figure 8).

With an average household size of 5.5, smallholder households tend to be large. About six in 10 households comprise five or more people; nearly a quarter include eight or more people. Four in 10 households have four or fewer people. Eighteen percent are very small, with just one to two members (Figure 9).¹⁶

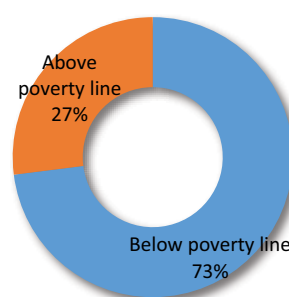
The large household sizes are significant because nearly three-quarters of households fall below the poverty line

(i.e., entire household living on less than \$2.50/day), meaning there is a strain on limited resources (figures 10 and 11).¹⁷ Smallholder farming households live without much of a financial cushion to meet additional expenses.

Smallholder households in Nigeria show variation in levels of wealth. Nearly half of surveyed households reported they have enough money for food and clothes; 22 percent have money for food and clothes and can save a bit (Figure 12). Twenty percent of smallholder households do not have enough money for food.

FIGURE 9. Number of people in household

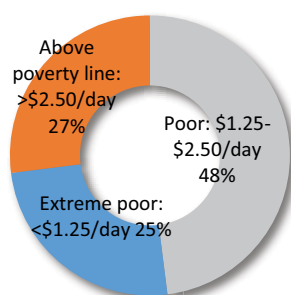
Sample: Smallholder households, n=3,026

FIGURE 10. Poverty status of household

Sample: Smallholder households, n=3,026

16 For the purposes of this survey, "household" was defined as a group of related or unrelated persons who live together in the same dwelling unit, eat together from the same pot, and share most household expenses. Visiting relatives and domestic workers are not considered members of a household and will, therefore, not be included in this study. Note, however, that domestic servants and other workers living and eating in the same household should be included as household members.

17 Progress out of Poverty Index, 2013, Grameen Foundation, <http://www.progressoutofpoverty.org/>.

FIGURE 11. Extreme poverty status of household

Sample: Smallholder households, n=3,026

Smallholder farmers in Nigeria value hard work and achievement. Eighty-six percent said that they have many aspirations. In a context of limited means and economic vulnerability, almost all report they work hard and do their best (97 percent), and 88 percent are looking for opportunities to improve their situation (Figure 13). However, 60 percent of smallholder farmers agree that it is not wise to plan too far ahead because luck might factor more heavily into future outcomes than their own planning.

There is also some level of impulsivity among smallholder farmers in Nigeria. Forty percent self-identify with the statement “I am impulsive,” and 37 percent feel they say things without thinking them through. Despite this inclination to speak quickly, a large majority of smallholders (88 percent) indicate that they do things after giving them much thought.

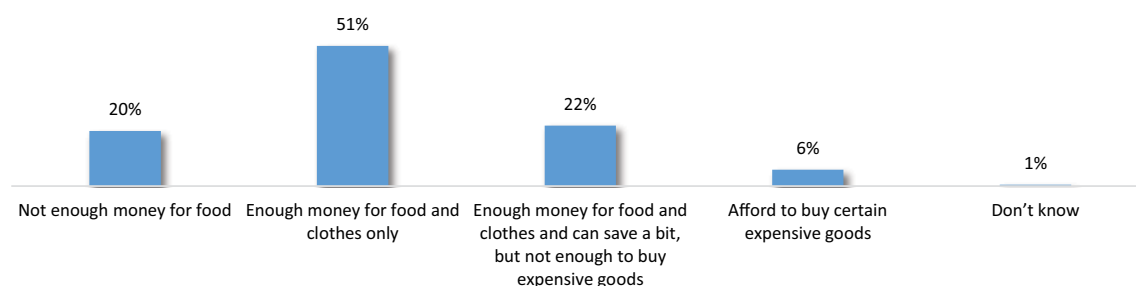
Farm as income, a source for subsistence, sale, and trade

Smallholder farmers in Nigeria typically own their plots of land (Table 4). Four in 10 possess a lease or certificate, which makes them good candidates for financial services, especially loans, because these offer collateral. One-fourth own farms under customary law and probably do not have official documentation of ownership, which means that maintaining ownership of their property is possibly at risk. Twenty-six percent of smallholders have communal land.

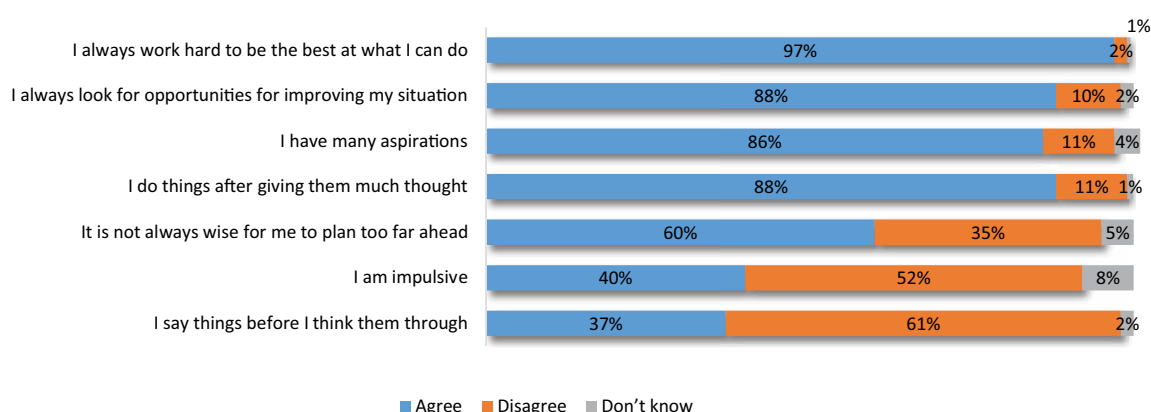
The land owned by smallholders tends to be larger than the land smallholders rent (Figure 14). Nearly twice as many smallholder household members (surveyed using the Multiple Respondent questionnaire) reported owning land (83 percent) than reported renting land (42 percent). The average size of owned land was 1.9 hectares, compared to 1.5 hectares rented by smallholder household members. Less than one hectare was the most frequently reported landholding.

Smallholder farmers in Nigeria typically grow a diverse range of crops. On average, they grow six crops. Maize, cassava, yams, beans, millet, groundnuts, pepper, sorghum, and paddy rice are the most commonly grown crops (Figure 15).

There are some gender variations when considering type of crops grown. Maize

FIGURE 12. Household's current financial situation (self-assessed)

Sample: Smallholder households, n=3,026

FIGURE 13. Do you agree or disagree with the following statements?

Sample: Smallholder farmers, n=2,773

TABLE 4. What is the form of ownership of your land?

	Total (%)	North Central (%)	North East (%)	North West (%)	South East (%)	South South (%)	South West (%)
Individual ownership with lease or certificate	39	51	40	34	27	29	42
Individual ownership under customary law	24	27	14	36	28	19	18
Communal (resources are shared)	26	15	37	19	39	29	26
State ownership	0	0	1	0	0	0	1
Other	6	7	3	7	3	11	6
Don't know	5	1	6	3	3	13	7

Sample: Smallholders who participate in agricultural activities by regional zone, n=4,532

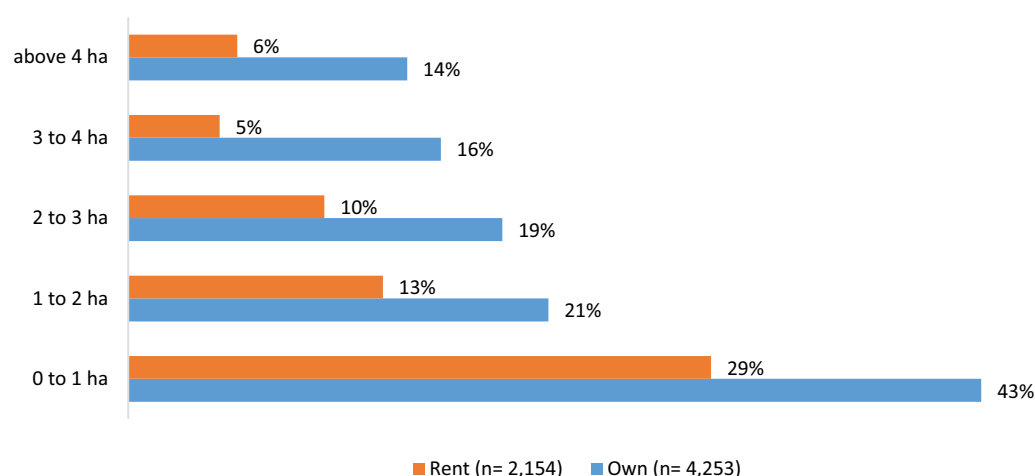
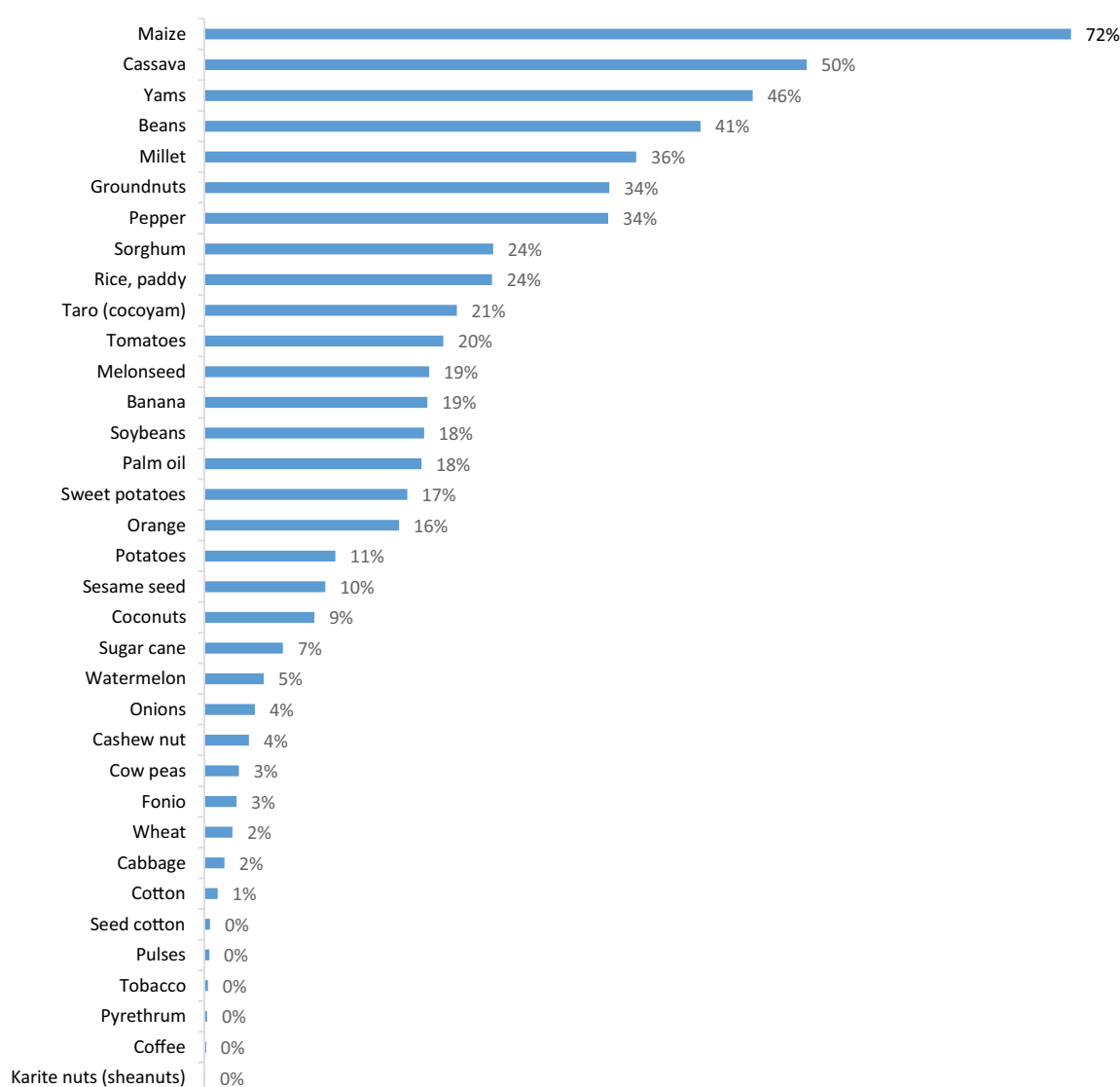
FIGURE 14. How many hectares (ha) of agricultural land do you own/rent?

FIGURE 15. Which of the following crops do you grow?

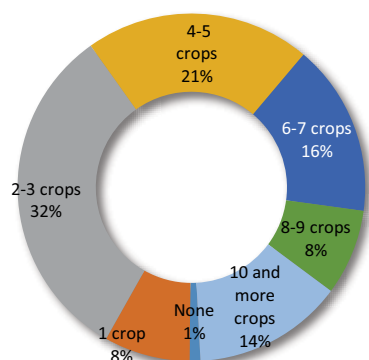
Sample: Smallholder farmers who participate in household's agricultural activities, n=4,532

was the crop most commonly grown by both men (74 percent) and women (68 percent). After maize, women most often grow cassava (63 percent), yams (54 percent), and pepper (43 percent). Men most often grow beans (48 percent), millet (45 percent), and cassava (42 percent).

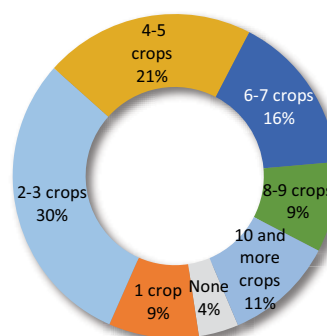
Nigerian smallholder households grow a diverse set of crops to sell, trade, and consume at home. The median number of crops grown for sale is four; likewise, the median number of crops grown

for consumption is four. This suggests that smallholders strategically diversify their sources of agricultural income. Nearly all smallholder households (96 percent) grow at least one crop for sale. Trading (i.e., exchanging crops for something else of value without using money) is rare.

Given that the number and type of crops grown are both diverse and abundant, there is no dependency on a single crop. The impact on their livelihood of losing one particular crop can be mitigated

FIGURE 16. Number of crops grown for consumption

Sample: Smallholder farmers who grow crops, n=4,446

FIGURE 17. Number of crops grown for selling

Sample: Smallholder farmers who grow crops, n=4,446

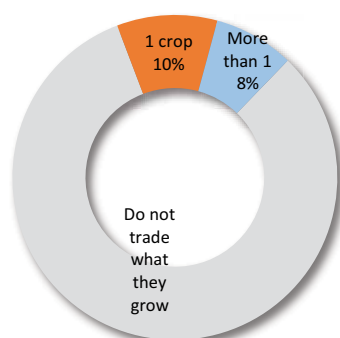
by the other crops they can depend on. Moreover, a large majority (82 percent) do not trade the crops they grow (figures 16, 17, and 18).

Cassava, maize, and yams are the most important to smallholder farmers due, in part, to their perceived value as a source of revenue (Figure 19 and Table 5).

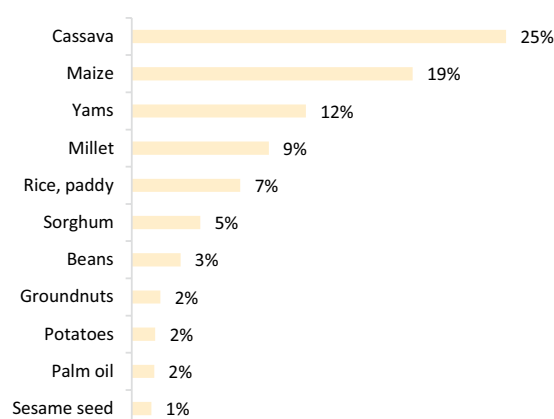
About six in 10 smallholder farmers raise livestock (Figure 20). Chicken (broilers and layers), sheep, and goats are the most commonly raised livestock, followed by indigenous cattle and dogs (Table 6).

Like crops, livestock is raised for both the household's own consumption and

for income. Of the smallholder households that raise livestock, herds, other farm animals, fish, or poultry, 90 percent do so for their own consumption and nearly all (94 percent) raise livestock for income (Figure 21). While any one type of livestock could serve both purposes, all types of livestock, except chickens, appear to be raised for income more than for consumption. Smallholders who raise each type of livestock more often raise larger animals such as pigs, goats, and cattle for income, and consume smaller animals, such as fish and poultry.

FIGURE 18. Number of crops grown for trading

Sample: Smallholder farmers who grow crops, n=4,446

FIGURE 19. Which of the following crops that you grow is the most important to you and your family?

Sample: Smallholder farmers participating in agriculture who grow at least one crop, n=4,446

TABLE 5. Which of the following crops that you grow do you consume the most/get the most money from selling?

	Consumption (n=4,409)	Selling (n=4,236)
Cassava	30%	24%
Maize	25%	10%
Yams	12%	11%
Millet	10%	3%
Sorghum	6%	1%
Paddy rice	6%	8%
Beans	3%	10%
Pepper	1%	1%
Palm oil	1%	3%
Potatoes	1%	3%
None	0%	0%
Groundnuts	0%	6%

Sample: Smallholder farmers who grow crops (% of smallholder farmers participating in agriculture who grow and consume/sell at least one crop)

Household decisions are mainly made by men, although women have a significant say in decisions

Men head a majority of smallholder households in Nigeria, and this is reflected in decision making for agricultural activities. In every agricultural decision-making category, decisions are much more likely to be made by the

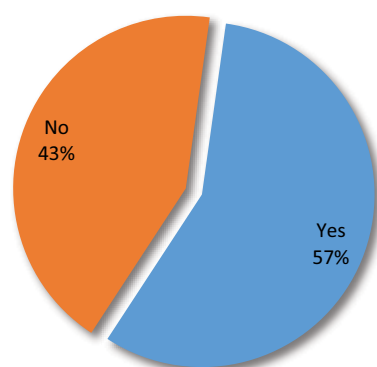
husband or boyfriend alone (Figure 22). However, in a significant percentage of cases, agricultural decisions are jointly made by both husband and wife or by the wife or girlfriend alone.

Dedicated to agriculture and looking to expand their activities

Nigerian smallholder farmers are highly tenured and experienced. About two-thirds of smallholder farmers have been farming for more than 10 years; 22 percent have been farming for six to 10 years (Figure 23). There are a few newcomers to farming in Nigeria: 1 percent have been farming less than two years and 12 percent for two to five years.

Even the youngest generation has been working in agriculture for a long time. Forty-four percent of young people have been in farming for more than 10 years, and 30 percent for six to 10 years (Figure 24).

A majority of smallholder households in Nigeria intend to remain in agriculture

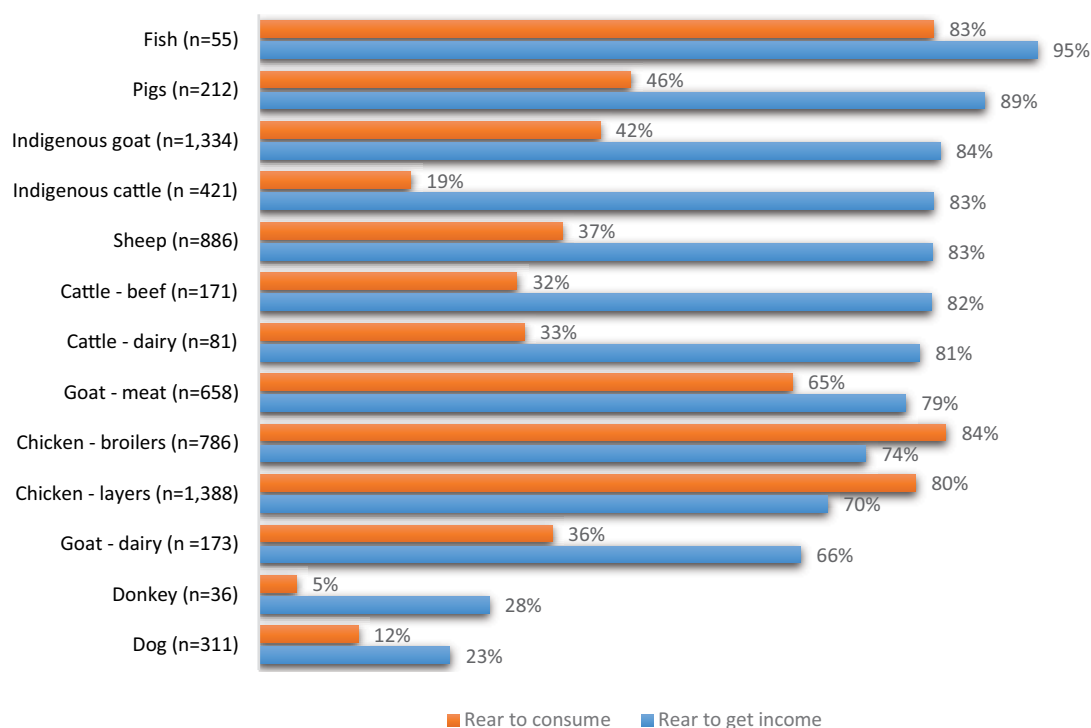
FIGURE 20. Do you have any livestock, herds, other farm animals, fish, or poultry?

Sample: Smallholder farmers who participate in agricultural activities, n=4,532

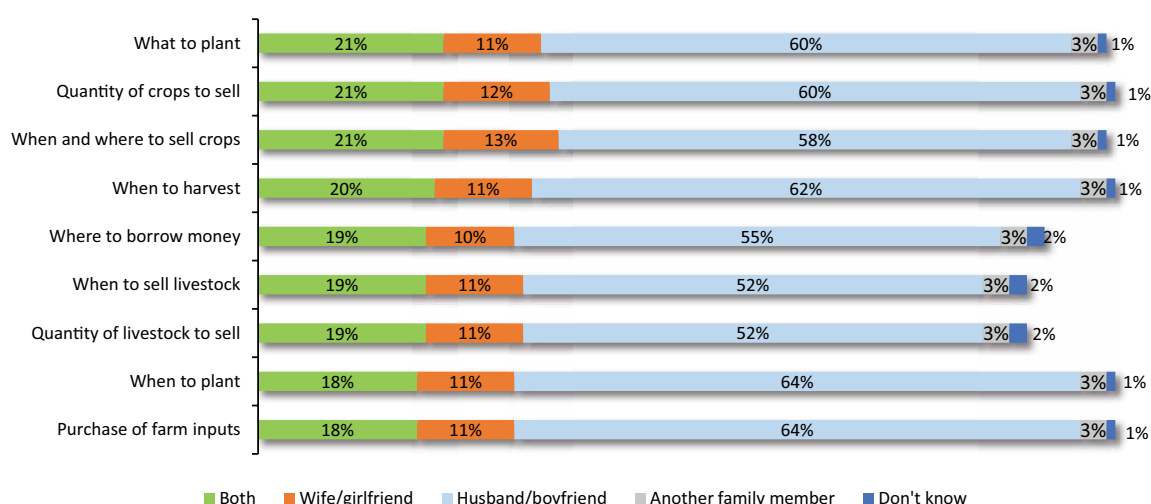
TABLE 6. Which of the following do you rear?

Livestock	Percentage	Unweighted number of cases
Chicken layers	54	1,388
Indigenous goat	52	1,334
Sheep	35	886
Chicken broilers	28	786
Goat meat	26	658
Indigenous cattle	15	421
Dog	11	311
Pigs	9	212
Cattle beef	7	171
Goat dairy	6	173
Fish	3	55
Cattle dairy	3	81
Donkey	1	36
Camel	1	10
Bees	0	9
Horse	0	2

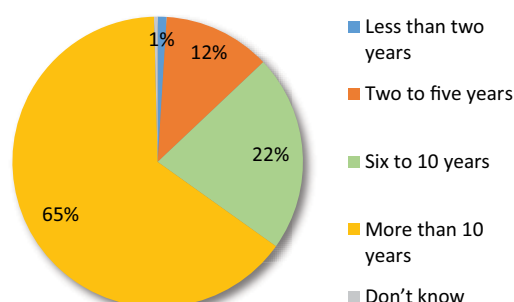
Sample: Smallholder farmers who have any livestock, herds, other farm animals or poultry, n=2,555
Multiple responses allowed

FIGURE 21. Which of the following do you rear and get income/consume?

Sample: Smallholder farmers who have any livestock, herds, other farm animals, fish, or poultry
Multiple responses allowed

FIGURE 22. Generally, who makes decisions on the following agricultural activities?

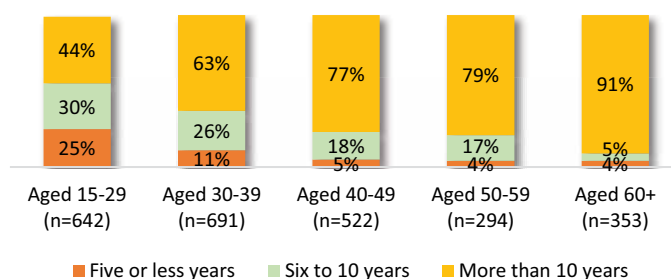
Sample: Smallholder households, n=3,026

FIGURE 23. How many years have you been farming?

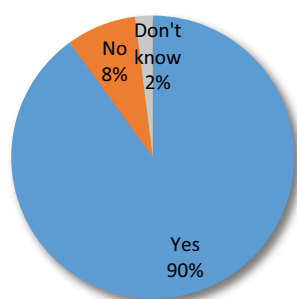
Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502

(Figure 25). This intent is consistent across tenure in farming; however, slightly fewer of the newest smallholder farmers (farming for five years or less) believe they will continue farming (Figure 26). Regardless of their financial situation, their dedication to agriculture is high (Figure 27). Eighty-six percent of those who self-report they “don’t have enough money for food” (even though it might be the farm that feeds the family) want to continue working in agriculture.

A majority of Nigerian smallholder farmers enjoy agricultural activities and view agriculture as a legacy to leave for their families (Figure 28). They

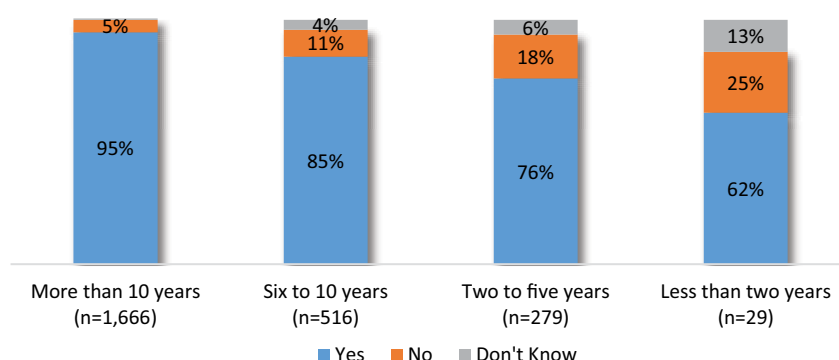
FIGURE 24. How many years have you been farming? By age of respondent

Sample: Smallholder farmers, n=2,502 (% of smallholder farmers who participate in household's agricultural activities and in each age category)

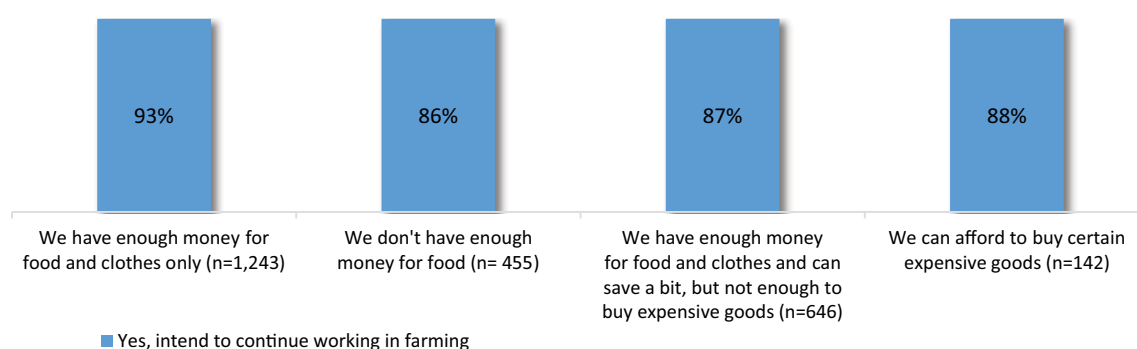
FIGURE 25. Do you intend to keep working in agriculture?

Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502

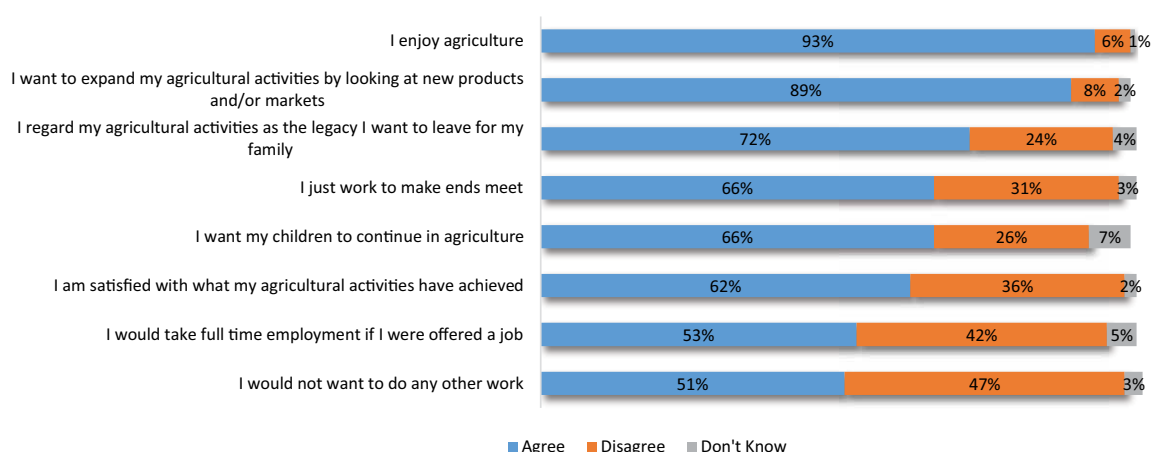
also want to expand their agricultural activities. However, only 62 percent of smallholder farmers are satisfied with what their agricultural activities have achieved, and 53 percent of them would consider full-time employment if they were offered a job. Two-thirds of smallholder farmers want their children to continue in agriculture. This suggests that the realities of limited resources and agriculture's risks force Nigerian smallholder farmers to think about life outside of farming.

FIGURE 26. Do you intend to keep working in agriculture? By number of years in farming

Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502

FIGURE 27. Do you intend to keep working in agriculture? By household's current financial situation (self-assessed)

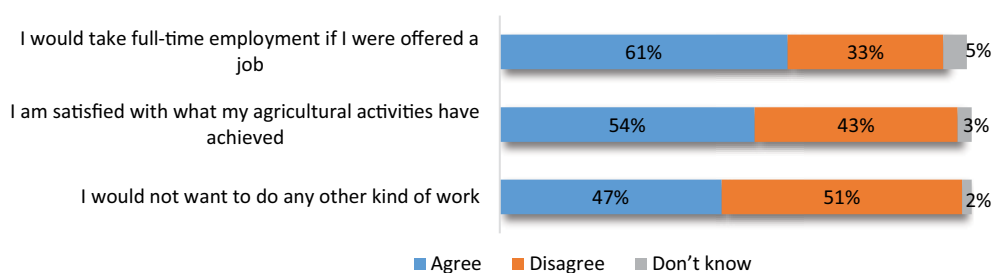
Sample: Smallholder farmers who participate in household's agricultural activities

FIGURE 28. Do you agree or disagree with the following statements?

Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502

The youngest generation of smallholder farmers in Nigeria (age 15–29) shows more interest in full-time employment outside of farming than the other age groups. Sixty-one percent would take full-time employment if offered the opportunity, and half of them disagree with

the statement, “I would not want to do any other type of work” (Figure 29). These perceptions from the youngest generation, who represent about one-third of the smallholder population (36 percent), could impact the future of farming in Nigeria.

FIGURE 29. Do you agree or disagree with the following statements?

Sample: Smallholder farmers aged 15–29 who participate in household's agricultural activities, n=642

2. SMALLHOLDER HOUSEHOLD DYNAMICS IN NIGERIA: INCOME AND EXPENSES

Smallholders are mainly employed in farming, and many also earn income from other sources

Seven in 10 smallholder household members say that farming is their primary job (i.e., where they spend most of their time) (Figure 30); 13 percent consider their business (separate from the household's farming activities) to be their primary job.

Farming is an important source of income for smallholder households. About three-quarters (77 percent) of smallholder farmers report they generate income from growing and selling crops. About one-third (36 percent) generate income from raising and selling livestock (Figure 31). Thirty-two percent generate income from selling both crops and livestock. In addition to these agricultural sources of income, nearly one-third of smallholder farmers receive income from other sources, such as running

their own business or remittances from family and friends (Figure 31).

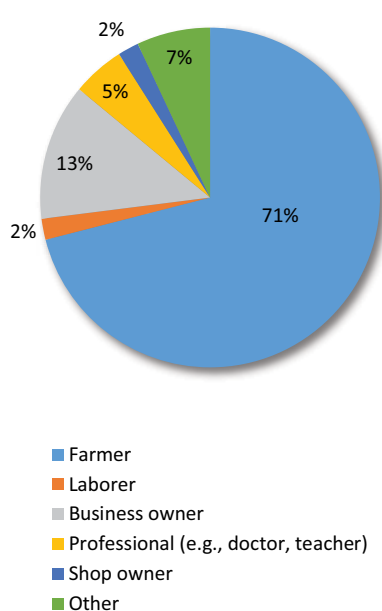
Smallholders also reported on their perceptions of their sources of income. They consistently reported that growing and selling crops is their most important, most reliable, and most enjoyable income-generating activity (Table 7). In comparing these three perspectives, the data show that about two-thirds of smallholder farmers equate the most important income source with the one they like getting the most and with the one that is the most reliable. This proportion increases to about 95 percent among those who report farming as their primary job. Very few smallholders report any other significant sources of income.

Besides crop production, few smallholders earn income from other agricultural sources (Figure 32). Seven percent process crops from other farmers into other products for sale. An equal percentage get income by reselling agricultural products they buy from processors and other farmers. Other income-generating activities are insignificant.

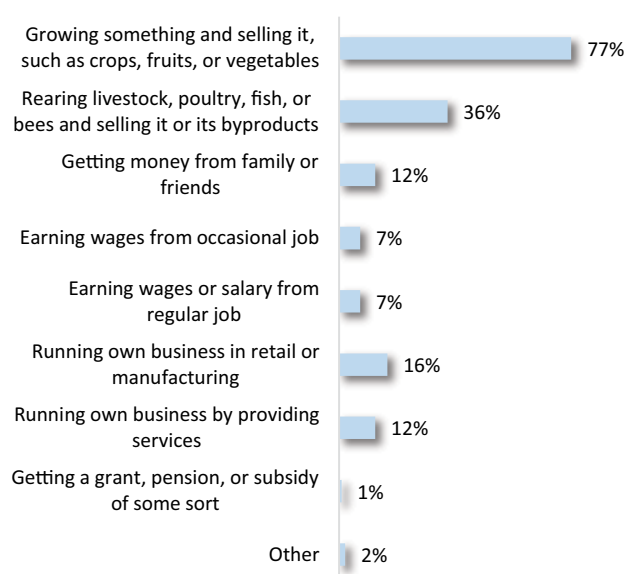
There are additional sources of income for some households. Remittances are an important source of cash for 20 percent of smallholder household members (Figure 33). These can include one-off contributions and help in time of need, as well as a steady stream that contributes to monthly income.

Only 1 percent receive payments from the government (e.g., pension, disability, welfare) (Figure 33). Of the few smallholder farmers who do receive these payments, most receive it via direct deposit to a bank account or via personal pick-up in cash or check (Figure 34).

FIGURE 30. What is your primary job (where you spend most of your time)?



Sample: Smallholder farmers, n=5,128

FIGURE 31. Do you generate income from any of the following sources?

Sample: Smallholder farmers, n=5,128
Multiple responses allowed

Self-reported expenses are often within income parameters, but smallholders still struggle to get by

About three-quarters (73 percent) of smallholder households in Nigeria live below the poverty line, earning less than

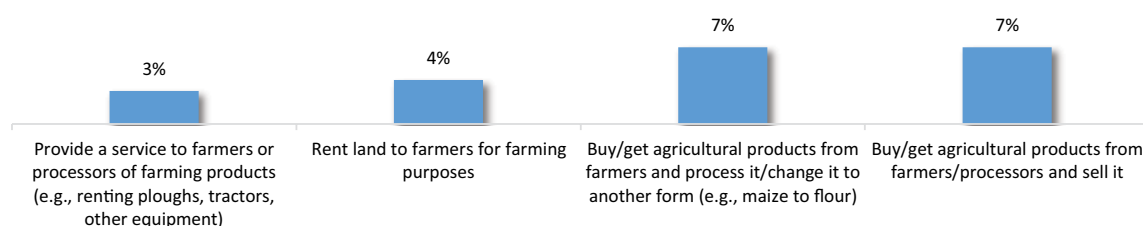
\$2.50 a day;¹⁸ one-fourth live in extreme poverty, earning less than \$1.25 a day. Fifty-six percent of smallholder farmers report they need less than 20,000 Naira (US\$63.30) a month to cover expenses. Seventeen percent say they need 20,001–30,000 Naira (US\$63.40–95.10),

Table 7. Which of the following income sources is. . . ?

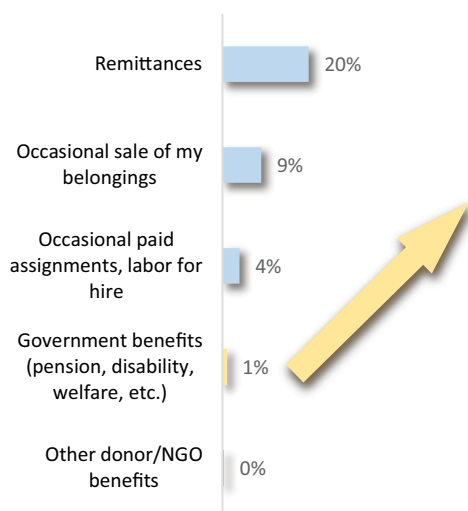
Income sources	Most important (%)	Most enjoyable (%)	Most reliable (%)
Growing something and selling it, such as crops, fruits, or vegetables	65	64	64
Running own business in retail or manufacturing (selling or making goods)	10	10	10
Earning wages or salary from regular job	5	5	5
Getting money from family or friends	2	2	2
Earning wages from occasional job	3	4	3
Raising livestock, poultry, fish, or bees and selling	6	6	6
Running own business by providing services	7	7	7
Getting a grant, pension, or subsidy of some sort	0.2	0.1	0.2
Don't know	2	2	2

Sample: Smallholder farmers, n=5,128 (highlighted rows are agricultural sources of income)

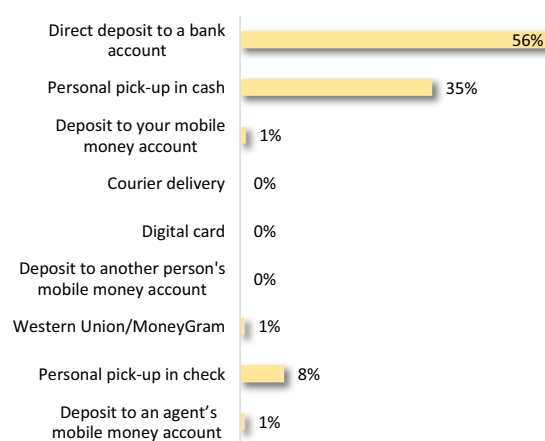
¹⁸ The \$2.50 and \$1.25 poverty lines are per-person, per-day income measures. That is, in a household that falls below a poverty line, each household member is equally likely to have an income below the line.

FIGURE 32. Are there any other ways that you get income?

Sample: Smallholder farmers, n=5,128
Multiple responses allowed

FIGURE 33. Do you receive income from any of the following?

Sample: Smallholder farmers, n=5,128
Multiple responses allowed

FIGURE 34. How do you usually get this government payment?

Sample: Smallholder farmers who receive income from government benefits, n=75
Multiple responses allowed

and 16 percent of smallholder households need 30,001–50,000 Naira (US\$95.10–158.50) per month to manage their households. Eleven percent need more than 50,000 Naira (approximately US\$158.50 at the time of writing) per month (Figure 35).

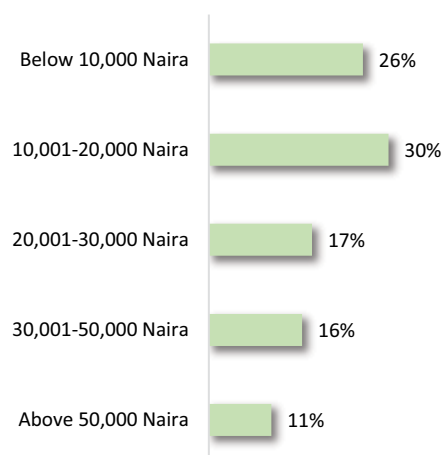
Smallholders, particularly those who report they need relatively small amounts each month to meet their survival needs, tend to generate enough income to cover their expenses. Figure 36 shows that households with lower monthly needs are more likely to have income that exceeds the minimum required to

survive, resulting in surplus income. At least 60 percent of smallholders in each expense category have a monthly surplus.

Traditional spending framework and prudent spending

Smallholder households in Nigeria tend to incur smaller expenses more regularly than they incur larger expenses (Figure 37), reflecting what is considered a more traditional spending framework. Groceries and transportation are the most common, frequent expenses. At least once a week,

FIGURE 35. What is the minimum amount your household needs to survive per month (for personal expenses)? Quintile



Sample: Smallholder households who gave a minimum amount for households' survival n=2,918

54 percent of smallholder households purchase groceries, and 57 percent spend money on transportation. These expense categories could potentially

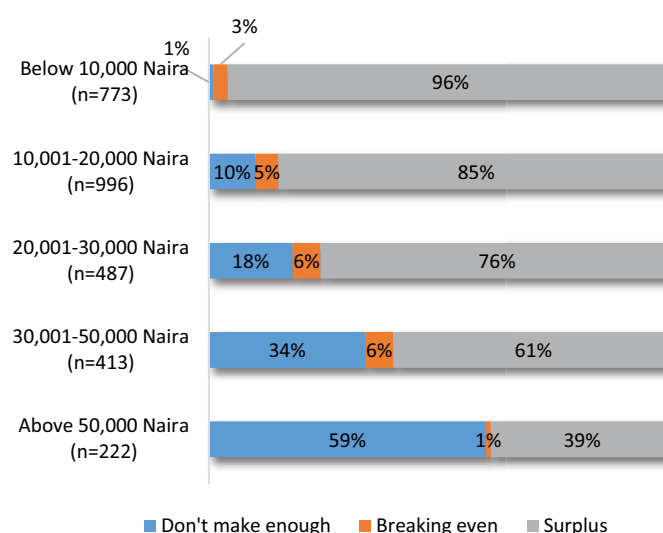
serve as a merchant channel for expanding the digital financial ecosystem, given their prevalence in the population.

Apart from grocery and transportation expenses, payments for utilities, rent, or airtime are incurred less frequently than once a week; 41 percent of smallholder farmers incur these expenses less often than grocery and transportation expenses, and 38 percent never make bill payments.¹⁹ Other larger expenses such as investments, educational expenses, home repairs, or large purchases are incurred infrequently, if at all.

While there is no significant gender difference, urban households spend more frequently on groceries but less frequently on transportation than do rural households (Table 8).²⁰

Smallholder farmers in Nigeria make few financial transactions. In the past

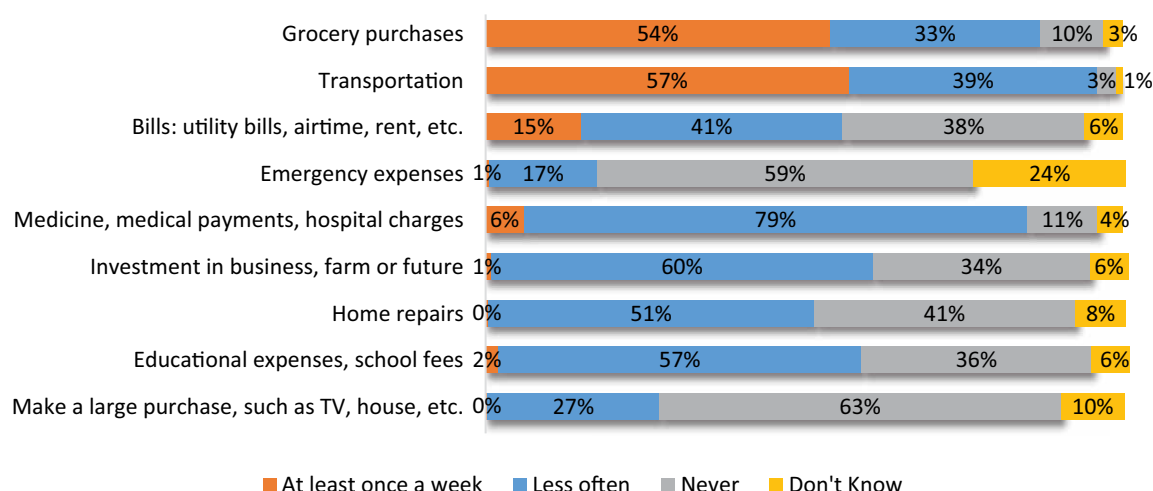
FIGURE 36. What is the minimum amount your household needs to survive per month (for personal expenses) and is your income sufficient to meet your household's survival needs?



Sample: Smallholder households, n=3,019

¹⁹ "Less often" combines the following response categories: At least once a month, a few times a year, once a year, and at harvest.

²⁰ Urban smallholder households are those in urban areas and include household members who participate in agricultural activities, often by commuting from the urban area to work on the farm. The Nigerian National Population Commission classifies an area as urban if it has a population of 20,000 or more.

FIGURE 37. How often do you make each of the following expenses?

Sample: Smallholder households, n=5,128

30 or 90 days before the survey, the most frequently conducted transactions were airtime top-ups, school fees, and withdrawals and deposits. Nevertheless, each of these transactions was performed by less than one-third of smallholders. The percentage of smallholder farmers who took a loan in the past 30 or 90 days before the survey is very small (Figure 38).

Risky money management practices leave few options to mitigate an emergency

Smallholders in Nigeria find themselves in vulnerable, at-risk situations, despite their best intentions and desires. They recognize the importance of sound financial behaviors, such as saving money and preparing for unexpected events, but despite their best efforts, some face debts and/or expenses greater than their savings and income.

Only one-fourth of smallholders feel they always or most of the time spend less than they make (Figure 39). Forty-one percent report that they rarely or never pay their bills on time.

Half of them rarely or never have an emergency fund to cover unplanned expenses, and even for smallholders who do save (35 percent), the amount saved is rarely or never larger than debts.

Most smallholder households do not have plans to manage unexpected expenses. When plans are in place, they most commonly focus on coping with a major medical emergency, failed harvest, loss of livestock, and lack of food (Figure 40). Few have a plan to cope with the loss of their house or property, a death in family, or bankruptcy.

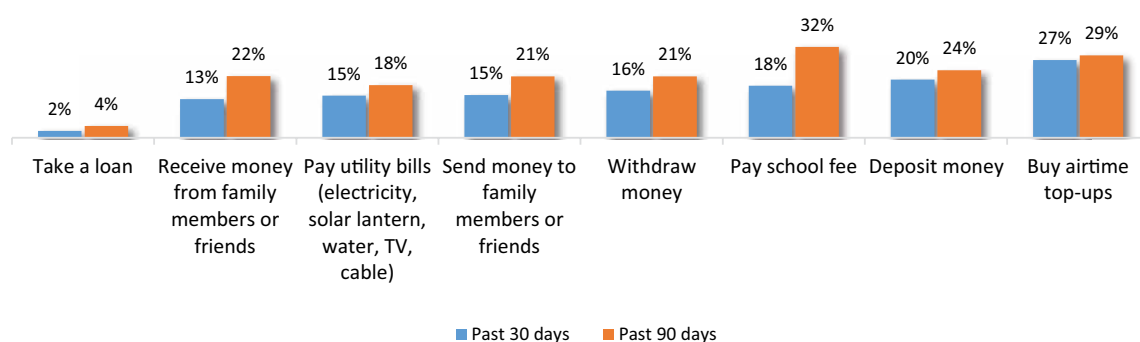
Despite frequent reporting that they do not plan for unexpected expenses, 88 percent reported saving money with at least one mechanism in the past year before the survey; 20 percent reported saving with three or more mechanisms (Table 9). Those who attended school use more savings methods than those who are uneducated.

Most smallholders who are saving use informal channels: about three-quarters (77 percent) report saving at home, 41 percent with friends and family,

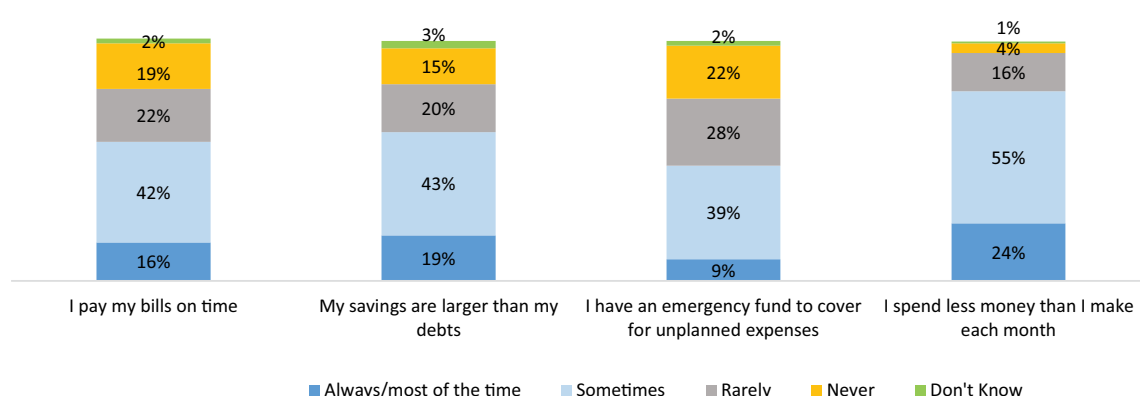
TABLE 8. Expenses by demographics

Expenses	Frequency	Male (%)	Female (%)	Rural (%)	Urban (%)
Grocery purchases	At least once a week	52	57	51	71
	Less often	35	31	36	18
	Never	10	10	10	10
Transportation	At least once a week	58	54	58	46
	Less often	37	41	37	49
	Never	3	4	3	5
Medical/health/hospital	At least once a week	6	7	6	4
	Less often	80	76	79	78
	Never	10	12	10	15
Education/school fees	At least once a week	1	2	1	3
	Less often	61	52	58	50
	Never	33	40	34	44
Bills (utilities, mobile phone, rent, taxes, etc.)	At least once a week	18	13	15	16
	Less often	43	38	42	36
	Never	34	43	37	45
Emergency	At least once a week	1	0	1	1
	Less often	18	14	16	21
	Never	58	60	58	63
Investment in business, farm or future	At least once a week	1	1	1	1
	Less often	63	56	61	54
	Never	31	37	32	41
Large purchases (TV, car, bicycle, house, etc.)	At least once a week	0	0	0	0
	Less often	31	23	29	16
	Never	59	67	60	80
Home repairs	At least once a week	0	1	1	0
	Less often	57	43	53	42
	Never	36	47	38	55

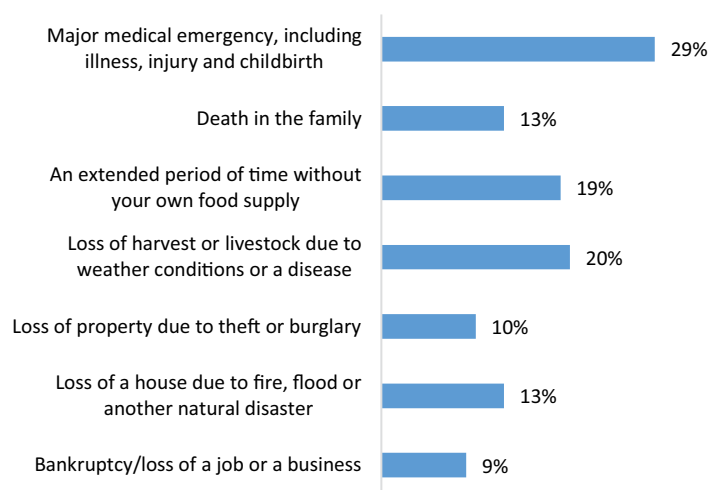
Sample: Smallholder households, n=5,128

FIGURE 38. Did you do the following activities AT LEAST ONCE in the past 30/90 days?

Sample: Smallholder farmers, n=2,773

FIGURE 39. How often does the following apply to you?

Sample: Smallholder farmers, n=2,773

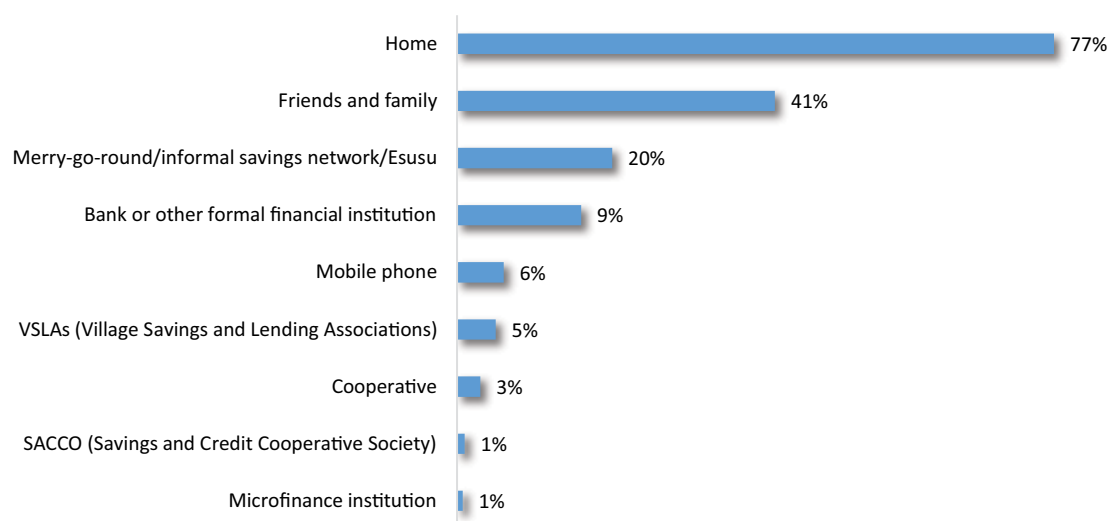
FIGURE 40. Does your family have a plan to manage these unexpected expenses, which might result from the following? "Yes" answers

Sample: Smallholder farmers, n=2,773

TABLE 9. Saving methods, by demographics

Number of savings methods	Gender			Ever attended school	
	Total (n=2,773)	Male (n=1,723)	Female (n=1,050)	Yes (n=1,777)	No (n=996)
1 and plus	88%	88%	88%	91%	83%
0	12%	12%	12%	9%	17%
1	31%	31%	31%	29%	33%
2	38%	37%	39%	38%	38%
3	14%	15%	13%	17%	9%
4	4%	3%	4%	5%	2%
5	1%	1%	1%	1%	1%
6	1%	0%	1%	1%	0%

Sample: Smallholder farmers, n=2,773

FIGURE 41. In the past 12 months, have you saved money with any of the following?

Yes answers

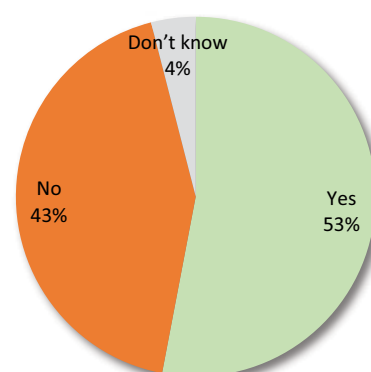
Sample: Smallholder farmers, n=2,773

and 20 percent with merry-go-round/Esusu mechanisms (Figure 41). While informal channels are used most, some smallholder farmers report saving with formal channels: 9 percent use a formal financial institution, and 6 percent save with a mobile money service.

In terms of how smallholder households cope with shocks, 43 percent of smallholder farmers report that, in the event of an emergency, they could not get extra money through relatives sending money or by selling assets (Figure 42). A nearly equal percentage (45 percent) believe it would not be possible to come up with Naira 100,000 (US\$315.70) within a month in the event of an emergency (Figure 43).²¹ Just over half who consider it “very possible” or “somewhat possible” would most likely look to family or friends for the money or draw it from their limited savings.

Frequent exposure to events that seriously affect agricultural activities

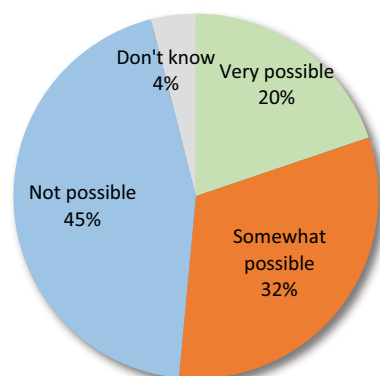
About two-thirds of smallholder farmers (66 percent) in Nigeria experienced a major life event that affected their income in the year before the survey (Figure 44). Specifically, 35 percent re-

FIGURE 42. In the event of an emergency, could you get extra money through relatives sending money or by selling assets?

Sample: Smallholder farmers, n=2,773

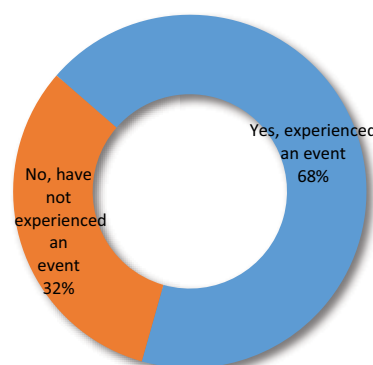
²¹ This amount was derived from the World Bank Global Findex question series, which tests whether respondents could come up with a nominal amount, set at 1/20th GNI per capita in local currency. Source: <http://bit.ly/1QqNaHl>.

FIGURE 43. Imagine that you have an emergency and you need to pay 100,000 Naira. How possible is it that you could come up with 100,000 Naira within the next month?



Sample: Smallholder farmers, n=2,773

Figure 44. In the past 12 months, have you experienced any events that seriously affect agricultural activities?



Sample: Smallholder farmers, n=2,773

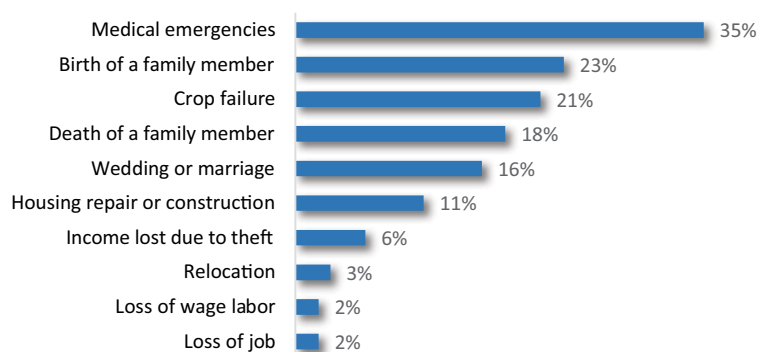
port experiencing a medical emergency, 23 percent the birth of a family member, and 21 percent a crop failure (Figure 45).

Pests/diseases, weather-related events, market prices, and the price and availability of inputs were cited as the greatest risks to their agricultural activities (Figure 46). In the past three years before the survey, 64 percent reported that their agricultural activities were “seriously affected” by pests or diseases, while unexpected input price fluctuations seriously affected 43 percent (Figure 47). Weather-related events and unexpected market price fluctuations affected 40 and 33 percent of smallhold-

er farmers, respectively. Although only 2 percent reported health-related events as a significant risk (Figure 46); 28 percent had their agricultural activities seriously affected by health-related events in the past three years (Figure 47).

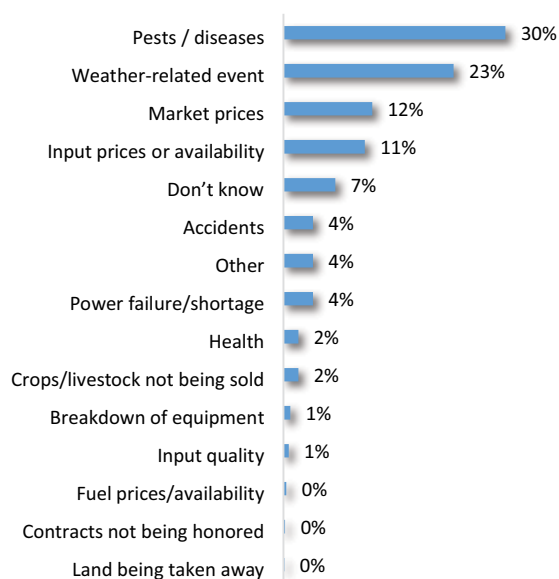
The six geopolitical zones of Nigeria generally face the same types of unexpected events, though there were some exceptions. For example, problems with pests or diseases are more prevalent in the South South and North Central zones compared with the North West zone. The South East zone is the least affected by an unexpected market price fluctuation (Figure 48).

Figure 45. In the past 12 months, have you experienced any of these events?



Sample: Smallholder farmers, n=2,773
Multiple responses allowed

Figure 46. What poses the most significant risk to your agricultural activities?



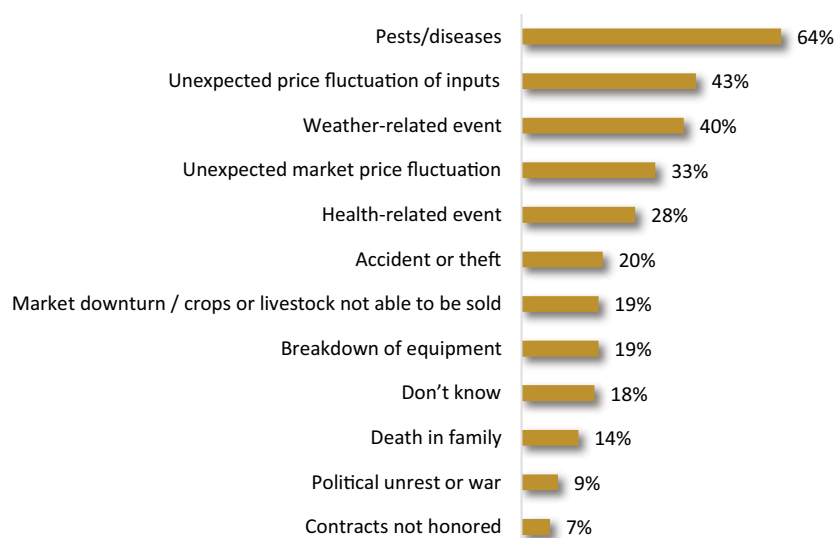
Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502

Smallholders in Nigeria tend to do one of two things when they experience these events: they either use their savings to address the problem, or they do nothing. A smaller portion sell their livestock or crops or borrow from family and friends (Figure 49). This reflects both the reported lack of planning for unexpected expenses and the limited tools at hand for response.

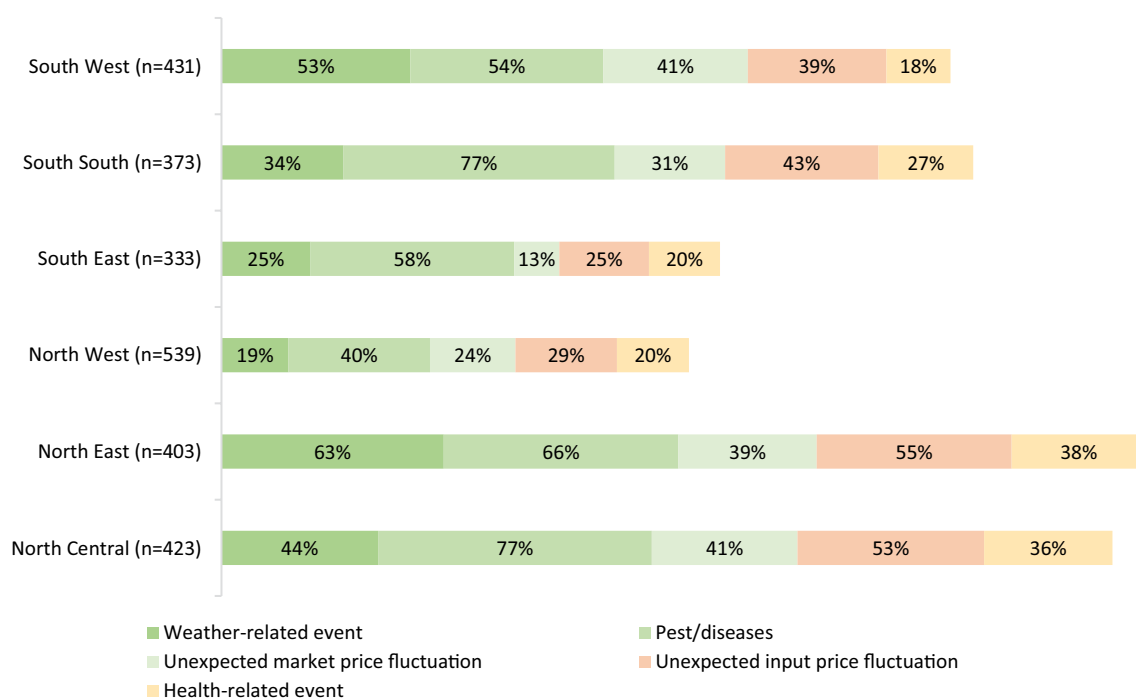
Enough water supply for most smallholder farmers

Most Nigerian smallholder farmers do not face challenges related to their water supply. About two-thirds (67 percent) report they always have enough water for their farming activities (Figure 50). Twenty-four percent report they have intermittent access to a water supply that does not affect their agricultural activities.

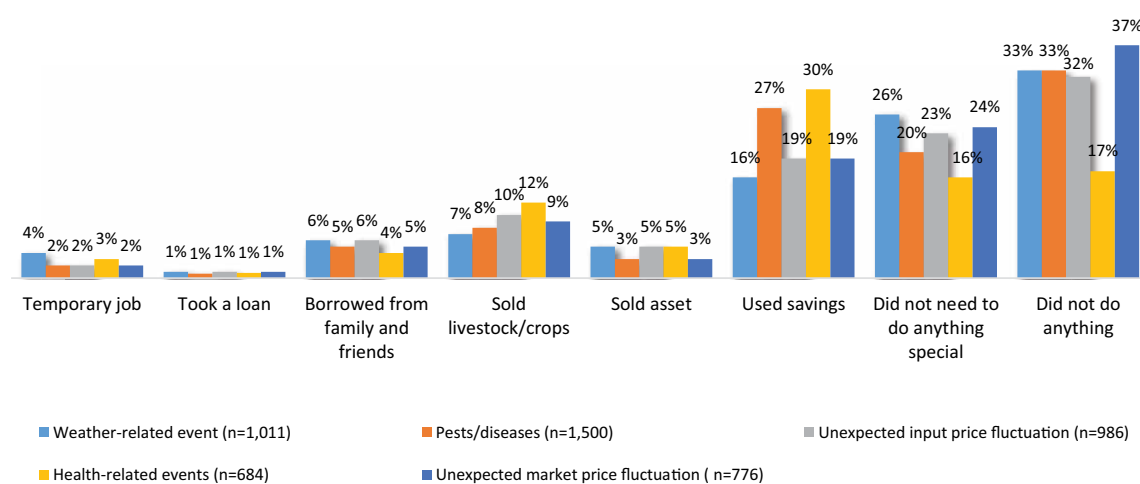
Figure 47. Have your agricultural activities been seriously affected by any of the following events in the past three years?



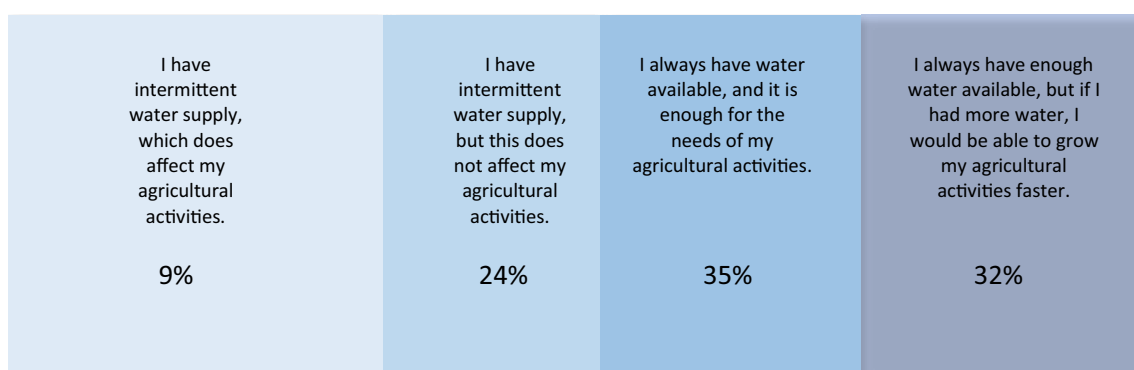
Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502

Figure 48. Have your agricultural activities been seriously affected by any of the following events in the past three years?

Sample: Smallholder farmers who participate in household's agricultural activities in each zone

Figure 49. How did you mainly cope when this happened?

Sample: Smallholder farmers who say their agricultural activities have been seriously affected by each category

Figure 50. Which of the following best describes your water situation?

Sample: Smallholder farmers who participate in household's agricultural activities, n=4,532

3. RISKS AND MITIGATION

Tools for Agricultural Risk Mitigation

Known importance, desire for risk mitigation

Smallholder farmers in Nigeria face many risks related to their agricultural activities, including weather shocks, pests and diseases, lower-than-expected yields, and insufficient crop storage. Since they depend on their agricultural output—consuming, trading, and selling crops and livestock—and they have aspirations for themselves and their farms, risk mitigation can play an important role.

Risk mitigation involves planning and accessing resources, such as savings mechanisms, which may be outside the reach of smallholders. To gauge their ability to mitigate risk, the national survey of smallholder farmers in Nigeria assessed various tools that help foster the following:

- Preparedness, in the form of savings for known agricultural expenses.

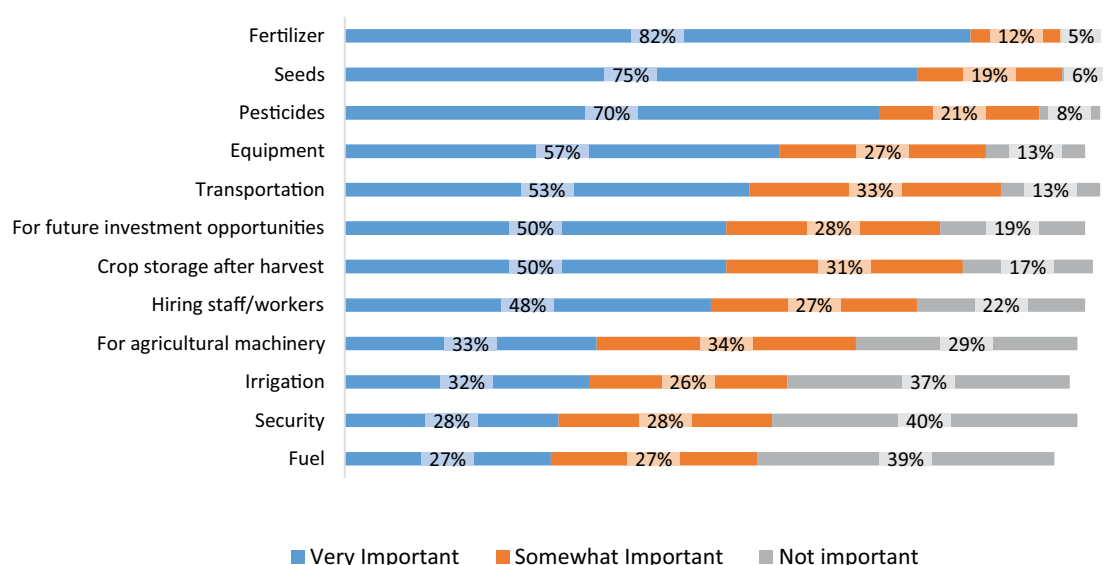
- Monetization of crops, in the form of being able to store and sell goods.
- Maintenance of land, by being able to manage the land (e.g., weeding, planting).
- Knowledge, by way of having information channels related to agriculture.

Preparedness: Importance and ability to save for needs

A large majority of smallholders in Nigeria see the importance of keeping money aside for key agricultural expenses, most notably fertilizer, seeds, and pesticides (Figure 51). There is less perceived relevance in keeping money aside for fuel, security, irrigation, or agricultural machinery.

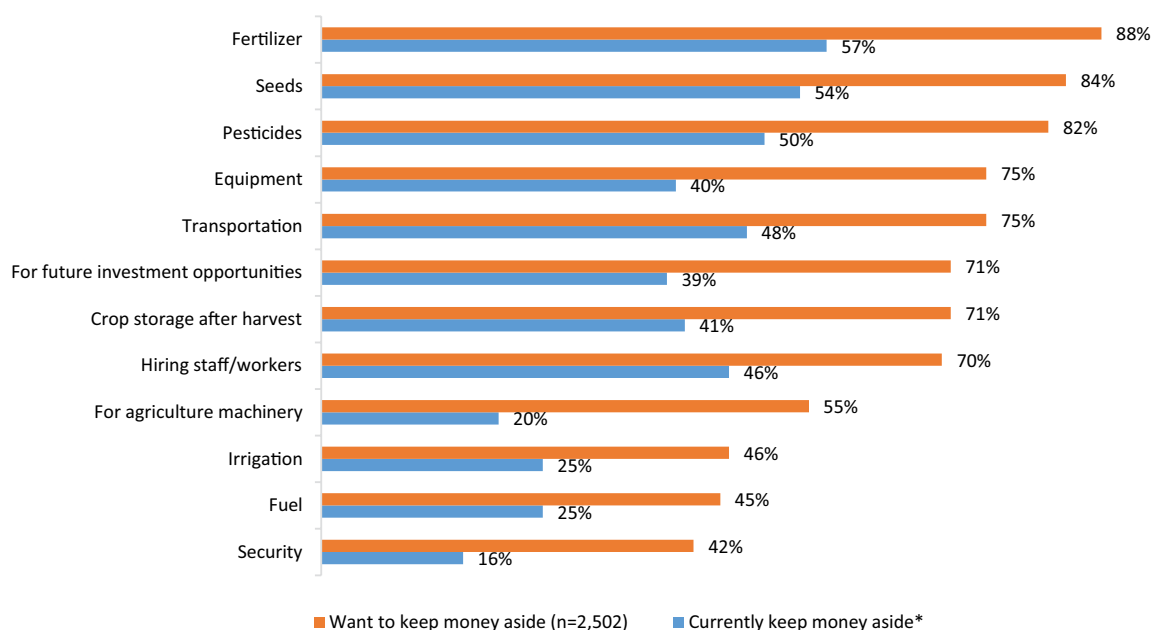
When it comes to saving for their agricultural activities, there is a disparity between what smallholders say they want to do and what they actually do (Figure 52). In addition to considering it important, most smallholders *want* to be able to keep money aside for their agricultural expenses, particularly for

FIGURE 51. How important is it to keep money aside for the following agricultural needs?



Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502
Ranking by very important

FIGURE 52. Do you want to keep money aside for any of the following agricultural needs? vs. Do you currently keep money aside for any of the following agricultural needs?



*Base is the proportion of smallholder farmers who participate in household's agricultural activities and said that it is very important or somewhat important to keep money aside for the respective items.

activities that are most closely connected with planting crops and labor. But their desire to save for their agricultural needs surpasses their actual practice (Figure 52).

Smallholders have to make potentially tough choices about where to dedicate their savings. Therefore, the difference between what farmers want to save for and what they actually save for is a reflection of how they prioritize limited resources. They save what they can, when they can, and they put those savings where they think it will help them the most.

Smallholder households present themselves as proactive savers. They recognize the need for savings, and they do what they can to proactively plan for needs or to anticipate unfortunate circumstances, both of which can help them to mitigate risks.

Overall, close to eight in 10 (74 percent) of smallholders set aside money for at least one agricultural expense over the

course of a season. There are few minor differences between gender and education levels regarding the total number of expenses for which smallholders save (Table 10).

Opportunities for broadening savings as a risk mitigation tool

Figure 53 illustrates all three dimensions of agricultural expenses: (1) importance of saving for them, (2) desire to save for them, and (3) current practices. The importance of each element is equivalent to the size of the bubble on a 10-point index, where the largest bubbles are perceived by smallholders as the most important. The proportion of the smallholder population that saves for each category is shown as a percentage on the X (horizontal) axis, and the desire to keep money aside for that purpose is represented as a percentage on the Y (vertical) axis.

The bubbles that represent fertilizer, seeds, pesticides, equipment, and transportation are the largest and appear in the top right, which indicates that they

TABLE 10. Keeping aside money for agricultural expenses or pursuits, by demographics (n=2,502)

Number of expenses	Total (%)	Gender (%)		Education (primary or higher)	
		Male	Female	Attended (%)	Did not attend (%)
None	26	24	28	25	27
Net (1+)	74	76	72	75	73
1	9	9	8	6	13
2	10	9	11	12	7
3	9	8	9	7	11
4	9	9	8	8	9
5	8	8	7	8	8
6	8	8	8	8	7
7	7	8	6	8	5
8	6	7	3	6	4
9	4	3	6	4	2
10	2	3	1	3	1
11	3	3	2	2	3
12	1	2	1	1	1

are perceived as the most important expenses, and the ones for which smallholders most often save and consider saving to be necessary. This suggests that savings and layaway products or, in

some cases, credit mechanisms for pesticides, equipment, and seeds could be good options for bundled products that would meet the greatest demand from smallholders.

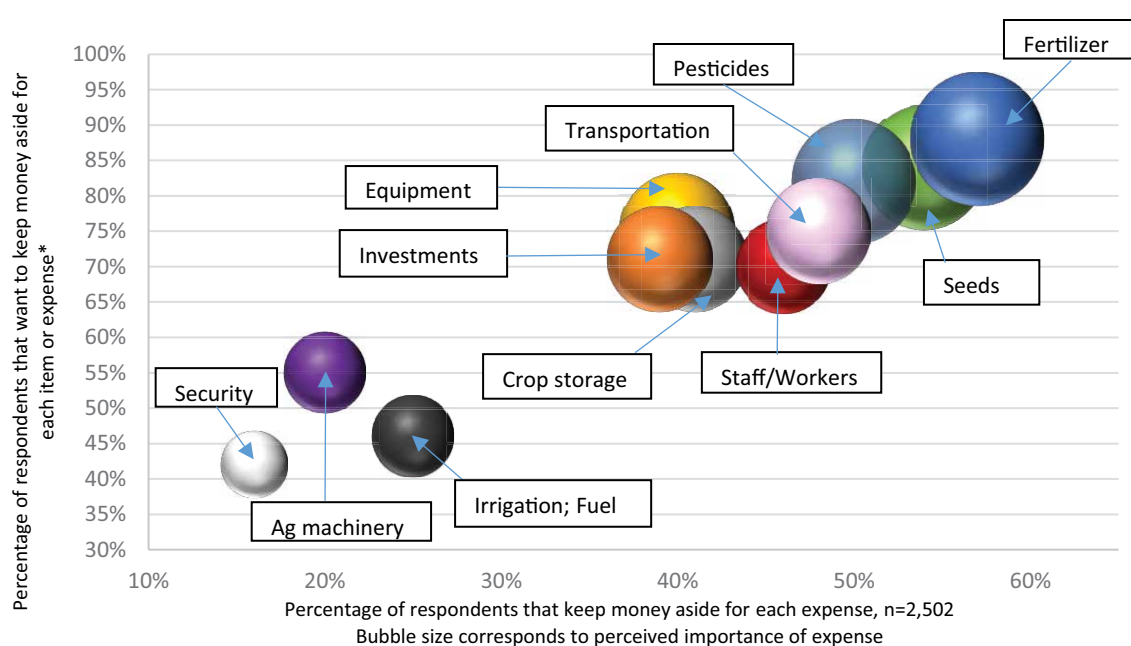
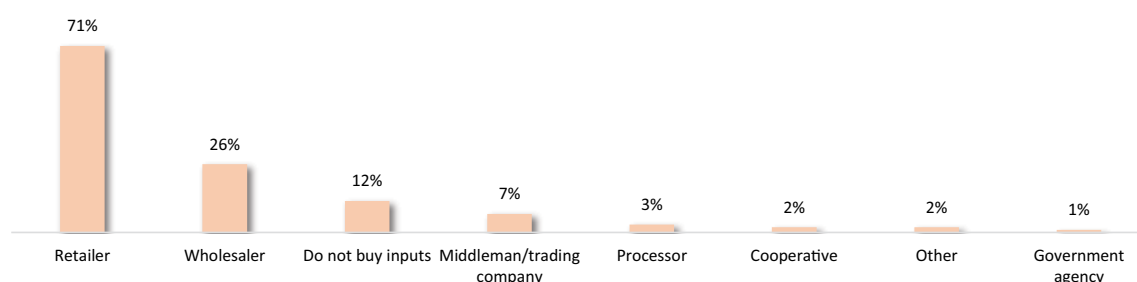
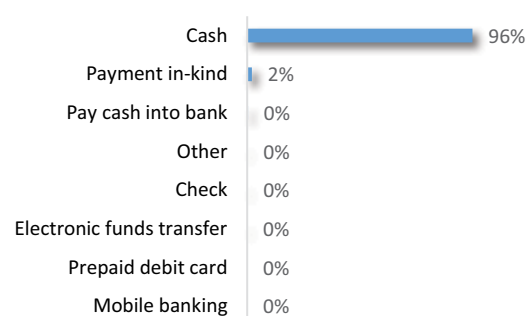
FIGURE 53. Perceptual map: Importance, desires and possession of agricultural expense

FIGURE 54. Who do you normally purchase your agricultural and livestock inputs from?

Sample: Smallholder farmers who participate in household's agricultural activities, n=4,532
Multiple responses allowed

As illustrated in the center of the figure, investments, crop storage, and hiring staff/workers are commonly perceived as important, and the object of both desired and actual savings (though less so than fertilizer, pesticides, and seeds). This suggests that there may be some opportunity and potential appeal in financial mechanisms that put more farmers within reach of investment, crop storage, and staffing options.

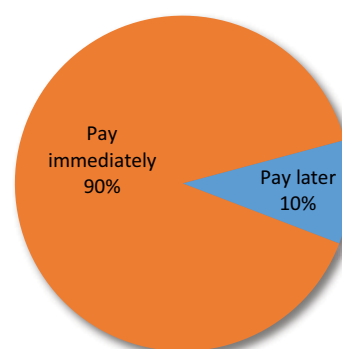
Saving for other agricultural interests, such as security, fuel, irrigation, and agricultural machinery, are relevant to smaller proportions of the smallholder population. Promoting more pro-active risk management in these areas would require a robust value proposition to generate widespread interest.

FIGURE 55. How do you usually pay your suppliers of inputs?

Sample: Smallholder farmers who purchase main agricultural and livestock inputs, n=3,978
Multiple responses allowed

Preparedness: Purchasing inputs and contracts

Nine in 10 smallholders (88 percent) purchase inputs such as seeds, fertilizers, and pesticides. Seven in 10 purchase these inputs from retailers; a quarter (26 percent) buy them from wholesalers; while a few buy them from middlemen or cooperatives (Figure 54). Transactions across all sources tend to be in cash and be paid at the point of purchase (Figure 55). Few smallholders have an option to pay later (Figure 56), which can strain their budgets, limit access to inputs, and explain their emphasis on saving for inputs.

FIGURE 56. Do your suppliers give you the option to pay them later or do you have to pay immediately?

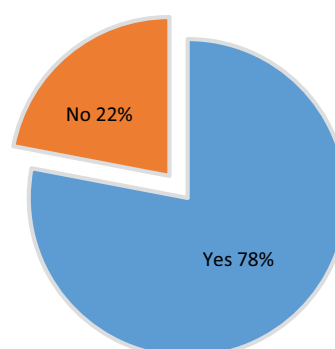
Sample: Smallholder farmers who pay suppliers for inputs, n=3,863

Monetization: Storing and selling goods

Smallholder farmers in Nigeria store crops as a form of savings. Close to eight in 10 store crops after the harvest (Figure 57). The most commonly stored crop is maize (Figure 58), as most smallholder farmers in Nigeria grow this crop. The storage location is frequently at home (54 percent) or in a granary (31 percent) (Figure 59).

Crop storage is also a means of risk mitigation. Smallholders report that their main reason for storing crops is for family consumption later. This further emphasizes their dependence on their own agricultural outputs (Figure 60). Smallholders also use crop storage as a way to monetize their surplus. Half of them (49 percent) store their crops until they

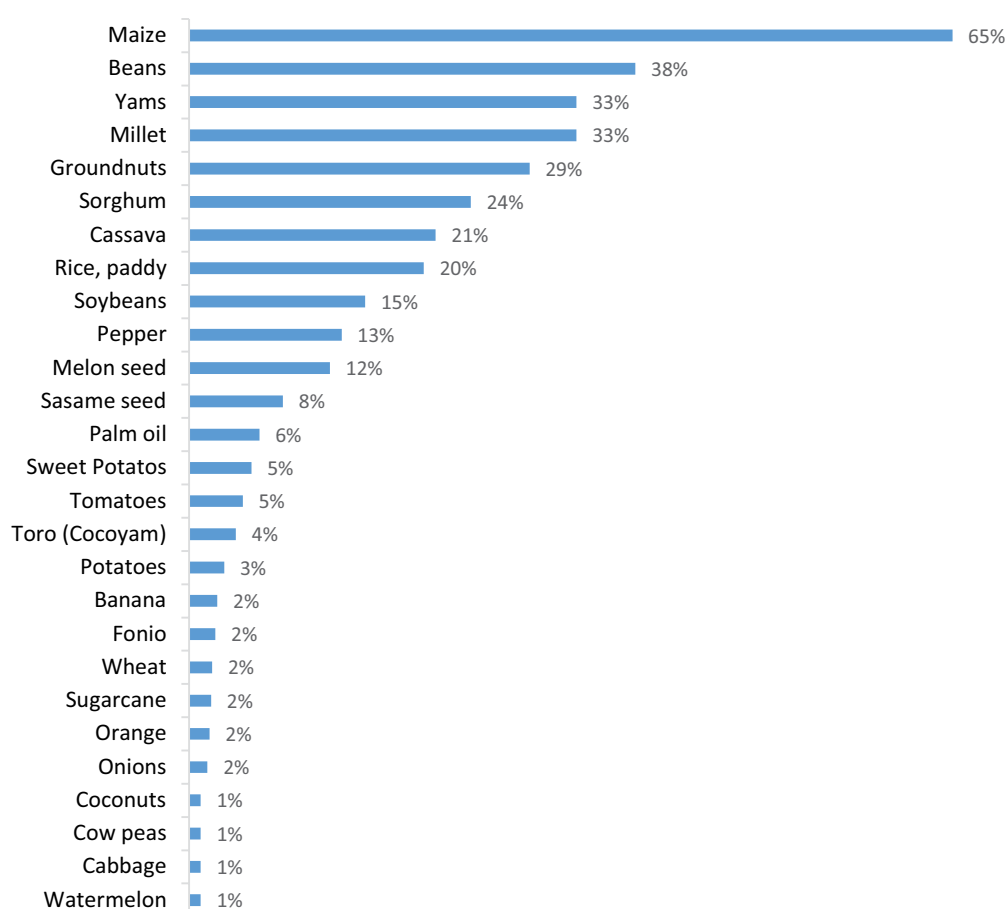
FIGURE 57. Do you currently store any of your crops after the harvest?



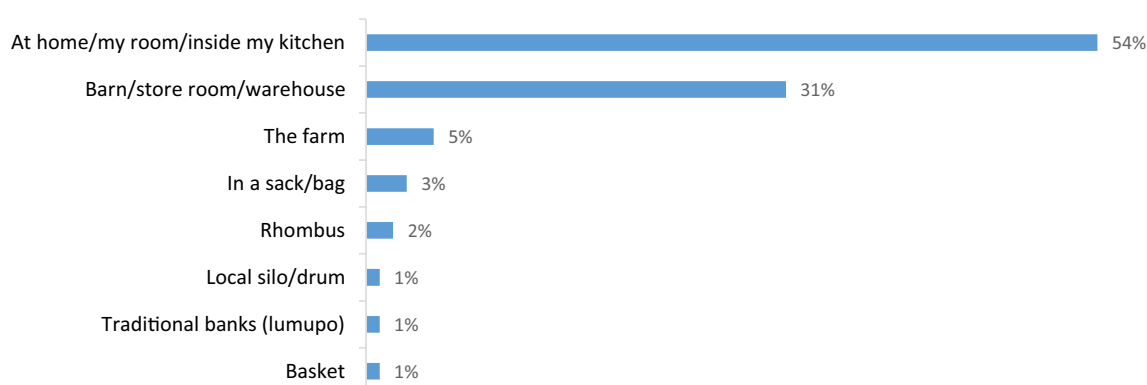
Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502

get the market price they want, indicating their willingness to wait to maximize the returns from their crop. They also store crops so that their families can have extra money after harvest (39 percent) and for another major expense (33 percent).

FIGURE 58. Which crops do you normally store?



Sample: Smallholder farmers who currently store any crops after harvest, n=1,843
Multiple responses allowed

FIGURE 59. Where do you store your crops?

Sample: Smallholder farmers who currently store any crops after harvest, n=1,843
Multiple responses allowed

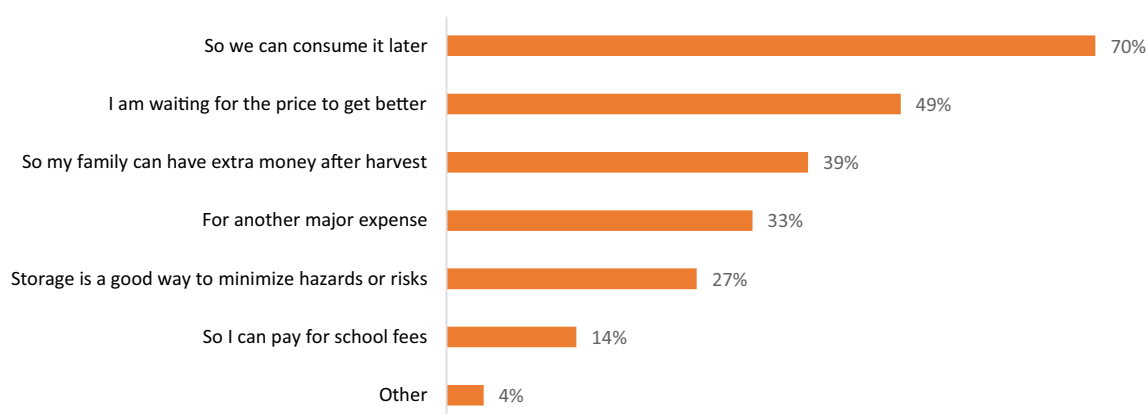
Slightly over one-quarter (27 percent) who store crops view crop storage explicitly as a risk mitigation strategy in the event of an unforeseen hazard.

Two in 10 smallholder farmers do not store their crops after the harvest (Figure 61). This occurs largely because there are no leftover crops or there is an immediate need for money after the harvest (Figure 62).

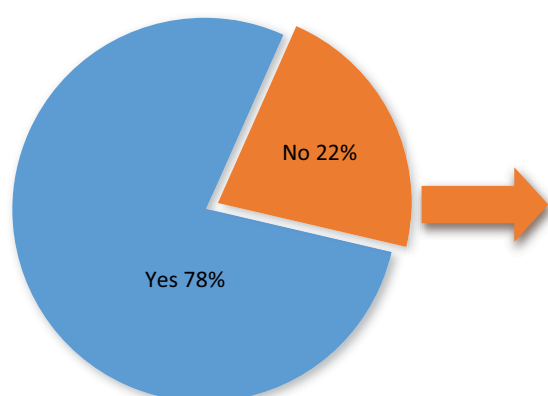
Most smallholder farmers sell directly to the public (Figure 63), usually at a local market (Figure 64). Other less common sales outlets include village and regional markets and neighboring farms.

A majority of smallholder farmers choose their market based on price-related factors. Most are motivated by the perceived competitiveness of the prices at their market (64 percent). A quarter do not have access to transport to get to other markets (26 percent), and 25 percent report that they do not produce enough to make it worth transporting their crops to a bigger market (Table 11).

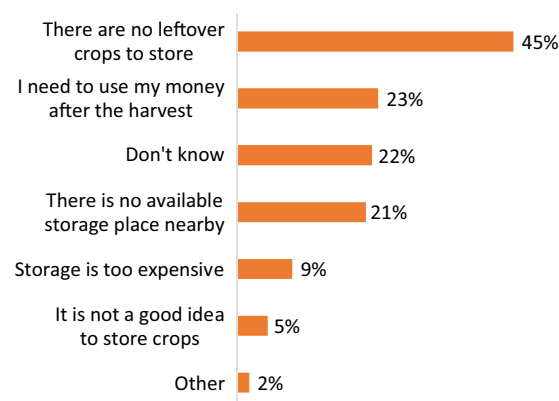
A majority of smallholder farmers (79 percent) think they are getting the current market price for their goods (Figure 65). Smallholders report the most common reason for getting less than the current market price is no

FIGURE 60. Why do you currently store any of your crops?

Sample: Smallholder farmers who currently store any crops after harvest, n=1,843
Multiple responses allowed

FIGURE 61. Do you currently store any of your crops after the harvest?

Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502

FIGURE 62. Why do you not currently store any of your crops?

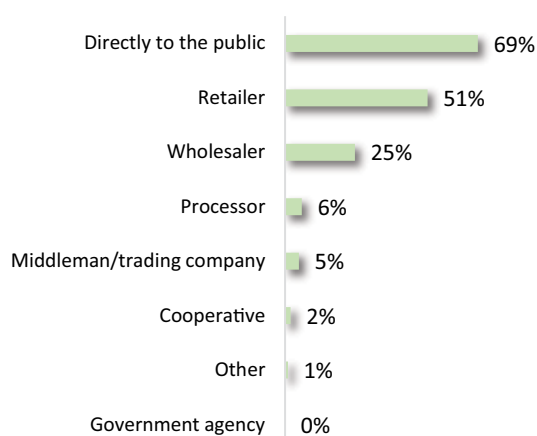
Sample: Smallholder farmers who participate in agricultural activities but currently do not store any crops after harvest, n=659
Multiple responses allowed

access to transport to other markets, followed by those who report there are simply too few customers (Figure 66).

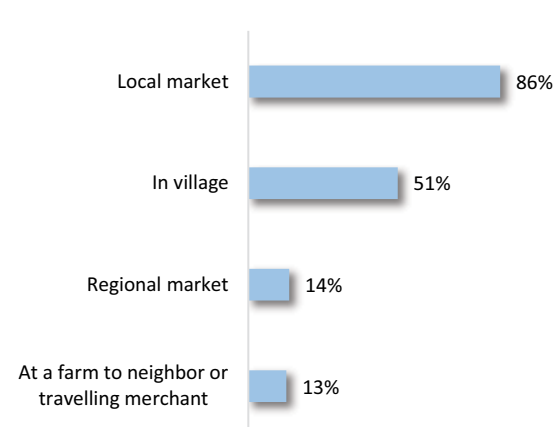
The survey also asked about circumstances surrounding the sale of goods. Nearly all sales happen outside of a formal agreement (Figure 67), and transactions are almost entirely conducted in cash (Figure 68).

Monetization: Livestock as investment

Investing in livestock is a significant means of risk mitigation for smallholder households. Two in five smallholders have ever made this type of investment, and a large portion of those who have purchased livestock as an investment own livestock assets. (Figure 69).

FIGURE 63. Who do you sell your crops and livestock to?

Sample: Smallholder farmers who grow at least one crop for selling, n=4,236
Multiple responses allowed

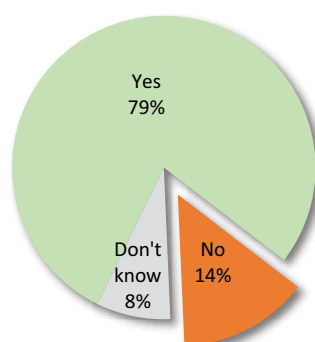
FIGURE 64. Where do you normally sell your crops and livestock?

Sample: Smallholder farmers who grow and sell crops, n=4,236
Multiple responses allowed

TABLE 11. Why do you sell your crops and livestock at this location?

	(%)
I get the best price at this market	64
I do not have access to transport to other markets	26
Do not produce enough to transport to bigger market	25
Poor road conditions to other markets	17
I am not aware of prices at other markets	11
Other reason	2

Sample: Smallholder farmers who know where crops and livestock were sold, n=4,226
Multiple responses allowed (%)

FIGURE 65. When you sell your crops and livestock, do you get the current market price?

Sample: Smallholder farmers who grow at least one crop for selling, n=4,236

Land maintenance: Resources

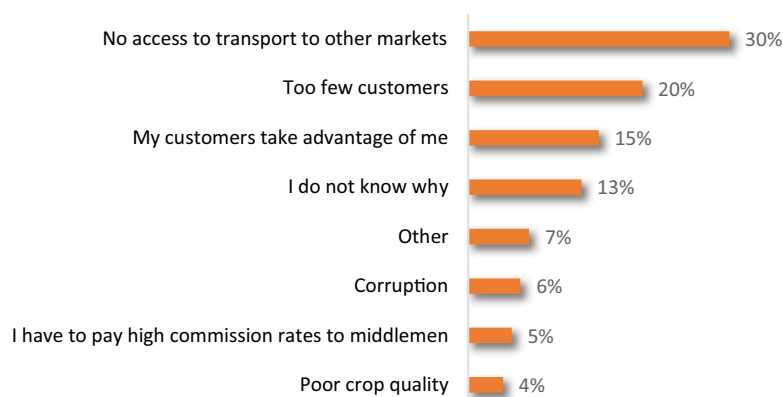
Smallholder farmers tend to rely primarily on their families for labor to support their agricultural activities (Figure 70). In addition to this, smallholders hire outside

labor for extended periods of time to supplement family labor. Use of labor is widespread among smallholder farmers. Only 8 percent report using no labor (Figure 70). Of those who do use labor, it is used throughout all phases of the crop cycle, from planting to harvest (Figure 71).

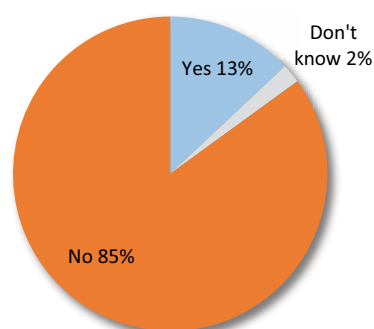
Knowledge gathering: Information sources

Smallholders most frequently turn to their families, friends, and communities for information on their agricultural activities, followed by what they can find on their cell phone/SMS and radio (Table 12). All other sources of information are used much less often.

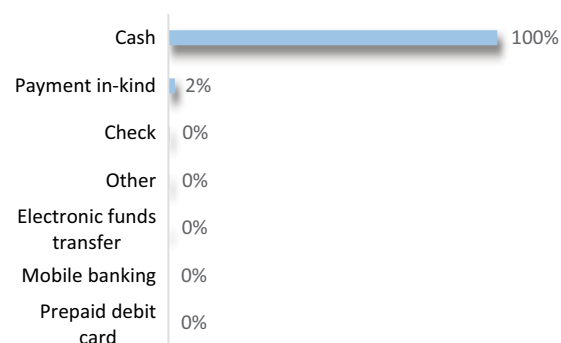
Friends and family, including the respondents' spouses, are the primary sources of financial advice. Sixty-nine percent

FIGURE 66. Why do you not get the current market price?

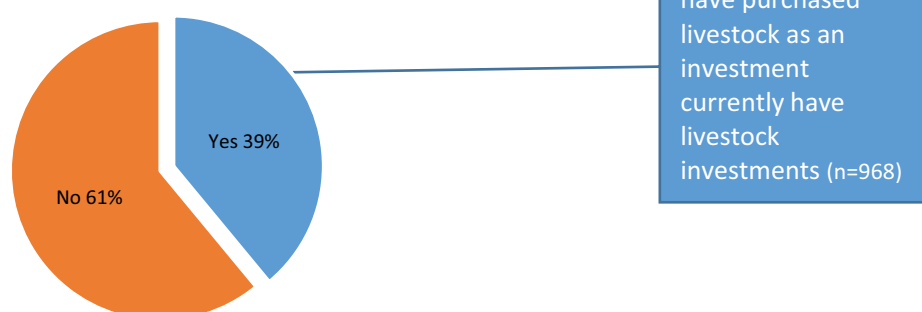
Sample: Smallholder farmers who do not get current market price for crops and livestock sold, n=566
Multiple responses allowed

FIGURE 67. Do you have a contract to sell any of your crops or livestock?

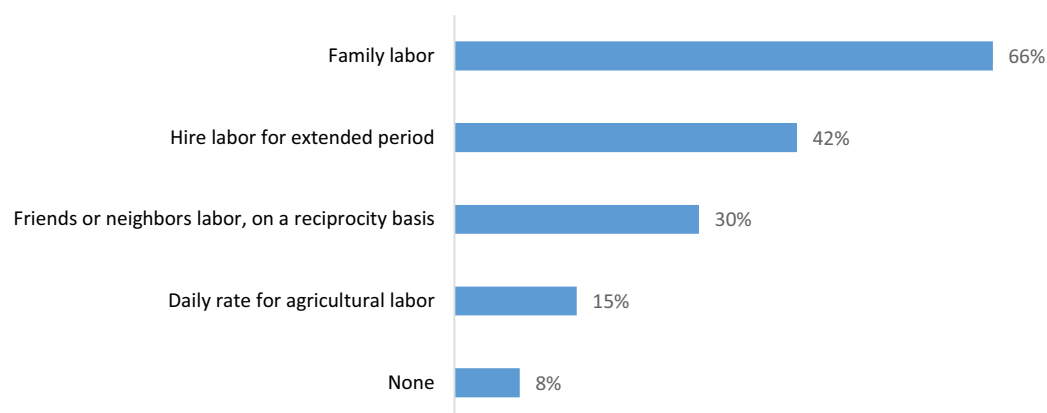
Sample: Smallholder farmers who grow at least one crop for selling, n=4,236

FIGURE 68. How do you usually get paid for what you sell?

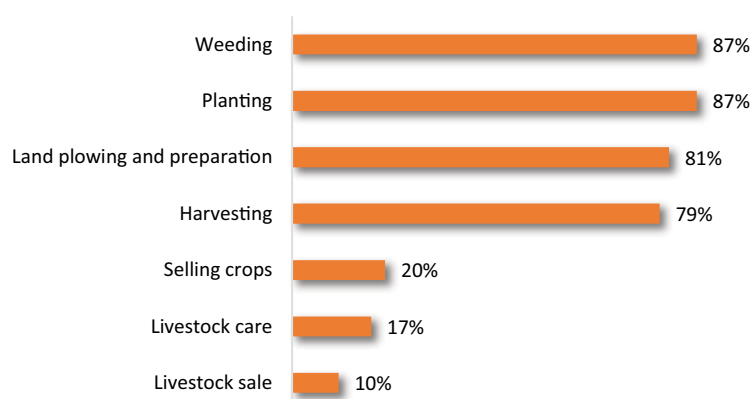
Sample: Smallholder farmers who grow at least one crop for selling, n=4,236
Multiple responses allowed

FIGURE 69. Have you ever purchased livestock as an investment?

Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502

FIGURE 70. For managing the land and livestock, what types of labor do you use?

Sample: Smallholder farmers who participate in household's agricultural activities, n=4,532
Multiple responses allowed

FIGURE 71. What do you use the labor for?

Sample: Smallholder farmers who use labor for managing land and livestock n=4,254
Multiple responses allowed

of smallholders go to their families, and just under half confer with their spouses. The local lead farmer is often the next to be consulted for advice. Six percent of smallholders said that they do not ask anyone for advice (Figure 72).

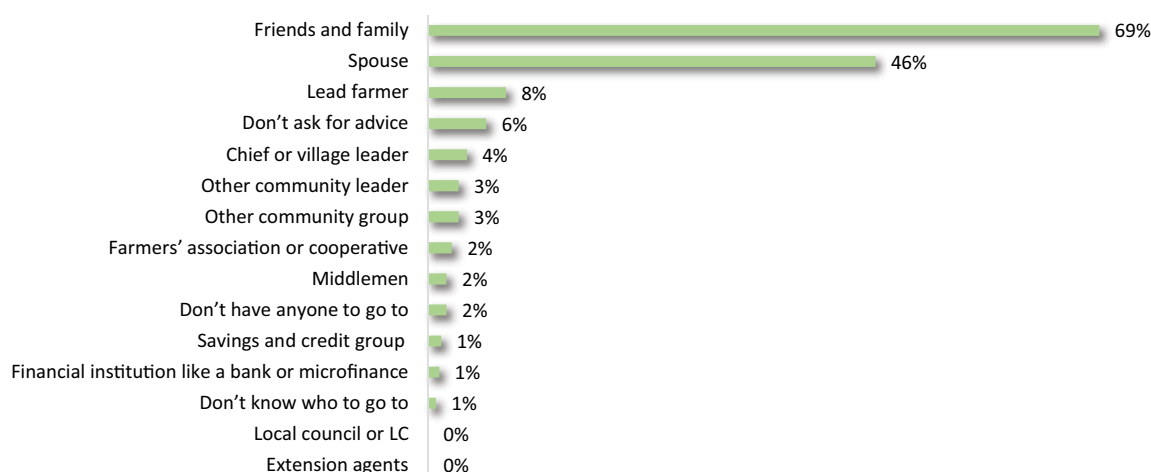
Some smallholder farmers (both men and women) are members of groups or associations related to farming, saving, or credit. Informal savings networks and planting, weeding, and harvesting groups are the most common types of

TABLE 12. How often do you use each of the following sources of information for agricultural activities?

	Daily (%)	Weekly (%)	Monthly (%)	More than monthly (%)	Never (%)	DK (%)
Friends or family members	29	19	11	15	24	2
Cell phone/SMS	26	12	4	4	49	6
Radio	21	16	6	9	41	6
Community members	9	17	11	14	45	4
Television	4	6	5	9	69	7
Religious leaders	3	16	7	10	58	6
Merchants	0	3	5	5	79	8
Input suppliers	1	4	8	19	61	7
Intermediaries/middlemen	0	3	3	6	79	8
Newspapers/magazines	0	2	2	4	87	5
Internet or social media	0	1	2	1	88	7
School teachers	0	3	4	5	80	8
Government officials/ Ag extension officer	0	1	3	6	82	8
Rural development agents/ NGOs	0	2	2	4	83	9
Government extension workers	0	1	2	5	83	9

Note: Table shows rated sources of information only.

Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502

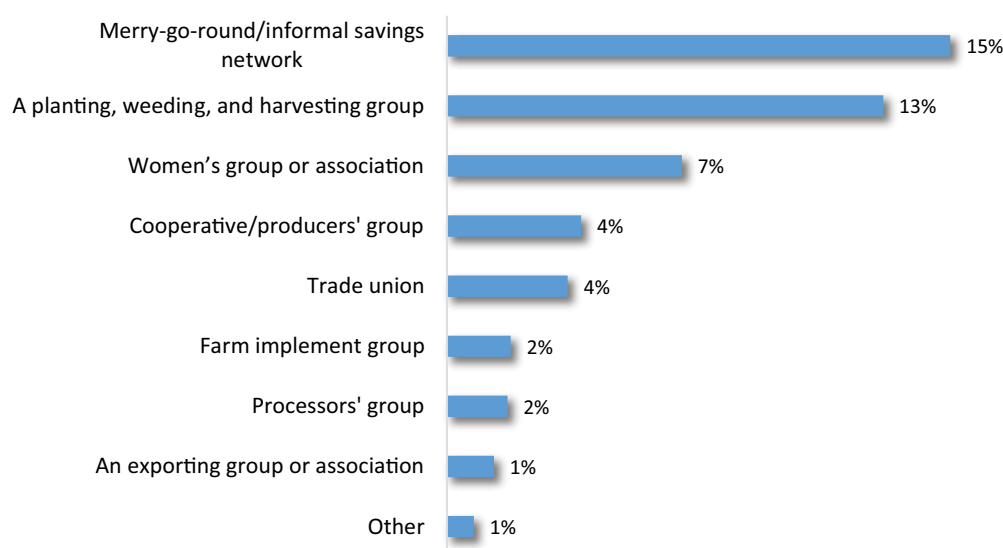
FIGURE 72. When it comes to financial or income-related advice, who do you regularly talk to?

Sample: Smallholder farmers, n=2,773
Multiple responses allowed

association; a few women have access to women-only organizations (Figure 73). These groups may provide an opportunity for outreach to smallholder households.

The survey also reveals a need for more information about financial- and income-related topics among smallholder farmers, especially information about risk mitigation. Information is an essential component for smallholders' agricultural development. The concentration on family and friends as a source

of financial advice, combined with very limited exposure to other outside sources, suggests that there could be a lack of information channels for accessing new and relevant news about financial mechanisms. Farmers may seldom feel the impact of agricultural innovations because of lack of access to or poor dissemination of information. This also suggests that family, friends, and community members could be circulating information based on their own experiences, but not necessarily from a position of expertise.

FIGURE 73. Are you a member of any of the following groups or associations?

Sample: Smallholder farmers who participate in household's agricultural activities, n=2,502
Multiple responses allowed

4. MOBILE PHONE TOOLS

Mobile phones: An important tool for households and agriculture activities

Mobile phones are important to smallholder farmers in Nigeria, and farmers recognize them as such. Six in 10 (61 percent) own a mobile phone. Phone ownership is dominated by basic phones. Seventy-three percent of those who own phones own a basic phone, compared to 20 percent who own feature phones, and only 7 percent who own smartphones. In comparison, more smallholder farmers in Côte d'Ivoire have their own mobile phones (86 percent),²² while 69 percent of smallholder farmers in Uganda,²³ and 46 percent of smallholder farmers in Mozambique have their own mobile phones.²⁴

There is widespread belief among smallholder farmers that it is important to own a mobile phone. Nearly two-thirds recognize the relevance of mobile phones to their agricultural activities as “very important.” This finding suggests that, while phones are perceived as important, there is significant

opportunity to expand use cases for mobile to help meet needs related to agriculture.

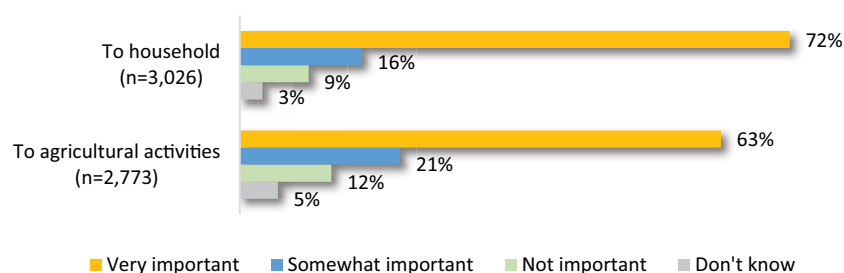
Perceived importance, relevance to farming

The mobile phone itself is considered an important household device. Eighty-eight percent of smallholders say that a mobile phone is “very” or “somewhat important” to the household; 72 percent report it is “very important.” In comparison, the importance of a mobile phone to agricultural activities is somewhat less: 63 percent deem it “very important” (Figure 74). Smallholder farmers recognize the value of a mobile phone in meeting certain needs (other than agricultural needs) more than they recognize the importance of a mobile phone as a tool that can support their agricultural activities.

Limited knowledge

Smallholder farmers see the main benefit of a mobile phone as a tool to use to

FIGURE 74. Regardless of the type of phone you have, how important is it to your household/agricultural activities to have a mobile phone?

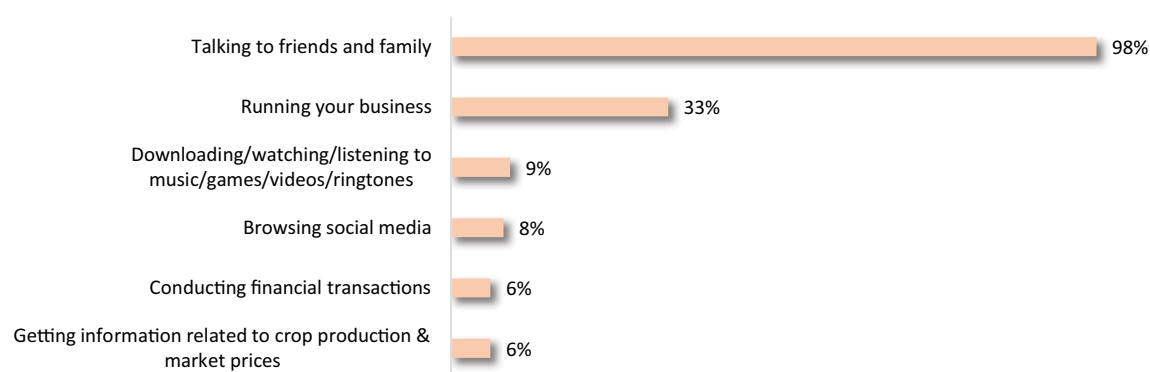


Sample: Smallholder households, n=3,026; Smallholder farmers, n=2,773

22 <http://microdata.worldbank.org/index.php/catalog/2789>.

23 CGAP National Surveys and Segmentation of Smallholder Households in Uganda, 2015–2016; <http://www.cgap.org/publications/national-survey-and-segmentation-smallholder-households-uganda>.

24 CGAP National Surveys and Segmentation of Smallholder Households in Mozambique, 2015–2016; <http://www.cgap.org/publications/national-survey-segmentation-smallholder-households-mozambique>.

FIGURE 75. What are the benefits to having your own mobile phone or SIM card?

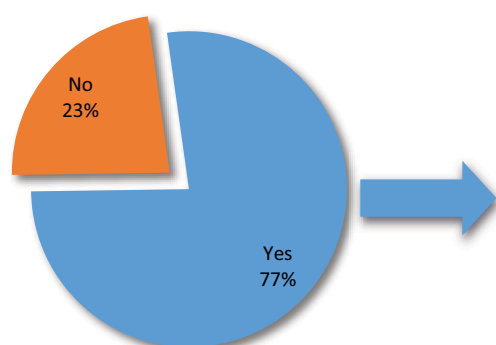
Sample: Smallholder farmers who have ever used a mobile phone, n=2,119
Multiple responses allowed

communicate with friends and family (98 percent). Eighty-five percent of smallholder farmers consider their farms to be businesses, but only 33 percent reported that a phone helps with “running your business” (Figure 75). Few smallholder farmers see conducting financial transactions (6 percent) or obtaining market information related to crops (6 percent) as a benefit of phone ownership. Given the low perceived utility of conducting financial transactions and receiving agricultural information on a mobile phone, there is substantial opportunity to teach farmers about the connection between their mobile phones or SIM cards and financial transactions and agricultural

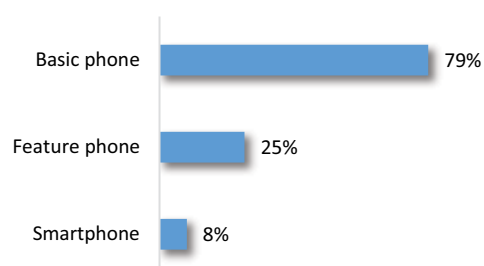
activities, and thus expanding financial product offerings.

Widespread phone ownership and use

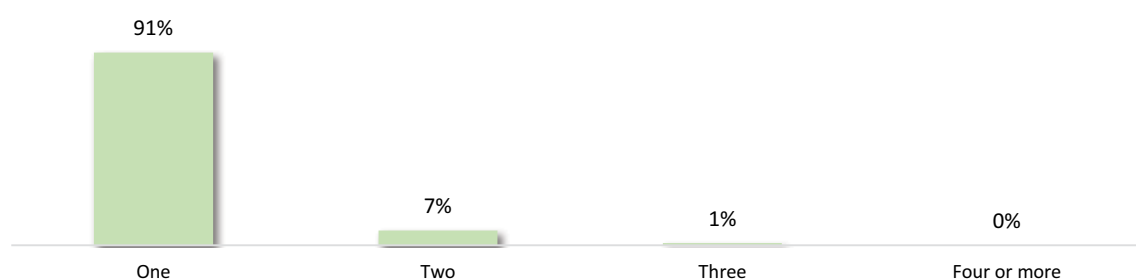
Sixty-one percent of smallholder farmers in Nigeria own their own mobile phone. Seventy-seven percent have ever used their own or a borrowed mobile phone (Figure 76). A majority of smallholders who have ever used a mobile phone have used a basic phone without internet capability (Figure 77). Feature and smartphone use is low among smallholders who have ever used a mobile phone (25 and 8 percent, respectively). The prevalence of basic phones may account

FIGURE 76. Have you ever used a mobile phone?

Sample: Smallholder farmers, n=2,773

FIGURE 77. What type of phone have you used?

Sample: Smallholder farmers who have ever used a mobile phone, n=2,119

FIGURE 78. How many mobile phones do you own?

Sample: Smallholder farmers, who currently own a personal mobile phone, n=1,652

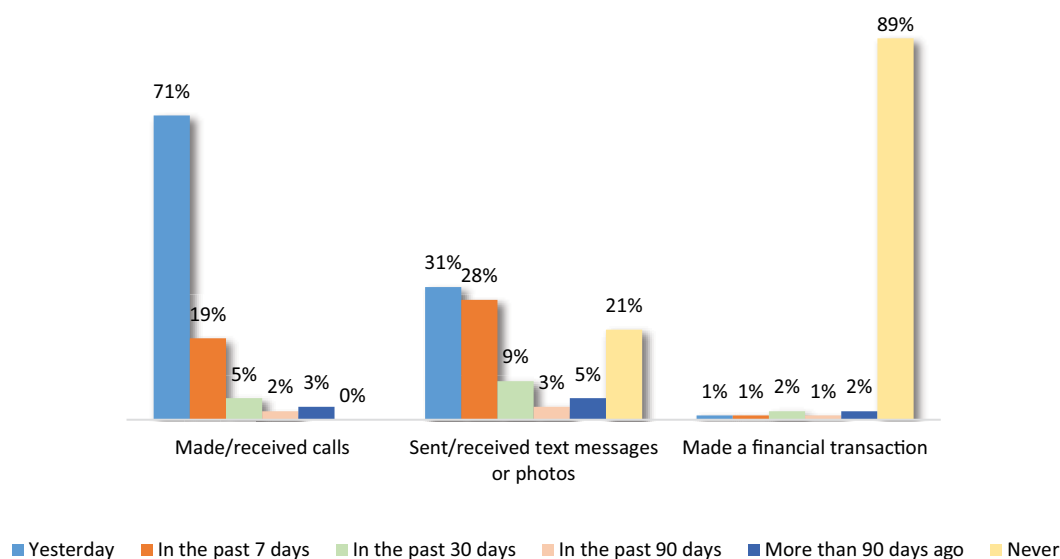
for some of the low perceived utility of phones as channels for receiving agricultural information (Figure 75).

A majority of smallholder farmers who own a phone, own one phone (91 percent) (Figure 78). Men own more phones than women do. Sixty-six percent of men own a mobile phone compared to 53 percent of women. The gender gap is slightly more pronounced in urban areas (a difference of 18 percentage points) than in rural areas (a difference of 12 percentage points). Overall, there is no urban-rural difference in phone ownership (both are 61 percent).

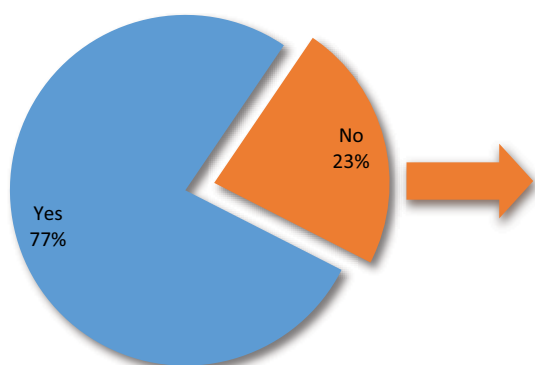
Mobile phones seem to be used only to make and receive calls, or to send and receive texts (Figure 79). Most smallholders made/received calls or sent/received text messages in the week preceding the survey. They rarely use phones to make financial transactions. Data also suggest that gender is not a barrier to accessing a financial account via a mobile phone for those who have access to a phone.

Interest in phone ownership

Smallholders who have never used a mobile phone (23 percent) show strong

FIGURE 79. Apart from today, when was the last time you performed the following activities on the mobile phone you use?

Sample: Smallholder farmers who currently own a phone or borrow or pay to use a mobile phone, n=1,952

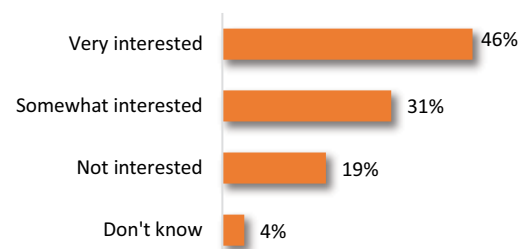
FIGURE 80. Have you ever used a mobile phone?

Sample: Smallholder farmers, n=2,773

TABLE 13. What is the main reason you do not have a mobile phone?

I don't have money to buy a phone	42%
There is no network where I live/work	11%
I don't have a need to use a phone	10%
No specific reason	9%
I am not allowed to use a phone by my spouse or family	6%
I don't have money to pay for airtime	2%
I worry that the phone will get stolen	2%
I don't know how to use a phone	2%
There is no place to charge a phone	1%
Other	13%

Sample: Smallholder farmers who currently do not own a phone but have used a phone, n=467

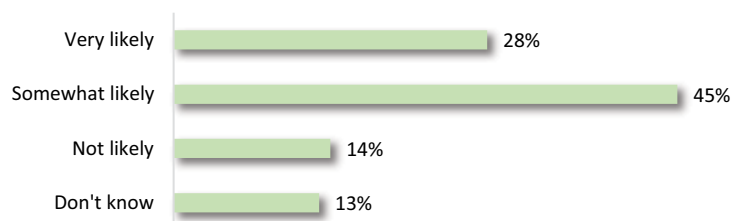
FIGURE 81. How interested would you be in using a mobile phone?

Sample: Smallholder farmers who have never used a mobile phone, n=654

interest in using one. Over four in 10 (46 percent) are “very interested”, and 31 percent are “somewhat interested” in using a mobile phone (figures 80 and 81).

The main reason for not owning a mobile phone is its perceived cost. Forty-two percent report they do not have the money to purchase a handset (Table 13). No other barrier is as pervasive as the perceived cost of obtaining a handset. Network unavailability and the perceived lack of need for a handset (11 and 10 percent, respectively) are the second and third most reported barriers to ownership.

In addition to self-professed interest in using a phone, 28 percent of those who do not have a phone say they are “very likely” to purchase a phone in the next 12 months (Figure 82). Forty-five percent say they are “somewhat likely” to purchase a mobile phone in the next 12 months.

FIGURE 82. How likely are you to purchase a mobile phone in the next 12 months?

Sample: Smallholder farmers who currently do not own a phone but have used a phone, n=467

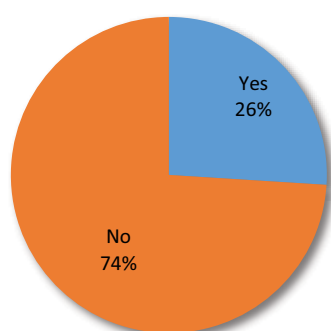
5. FINANCIAL INCLUSION AMONG SMALLHOLDER HOUSEHOLDS IN NIGERIA

Nearly three in 10 smallholder farmers (26 percent) are financially included (Figure 83), meaning they have a formal financial account registered in their name at a bank or nonbank financial institution (NBFI) or with a mobile money operator. Bank accounts are the most common among smallholders (21 percent), followed by NBFI accounts (8 percent) and mobile money accounts (less than 1 percent). Women own fewer formal financial accounts compared to men. Those who are under 30 years old, and between 50 and 59, own the fewest accounts (Figure 84).

Smallholders have the necessary ID to open an account

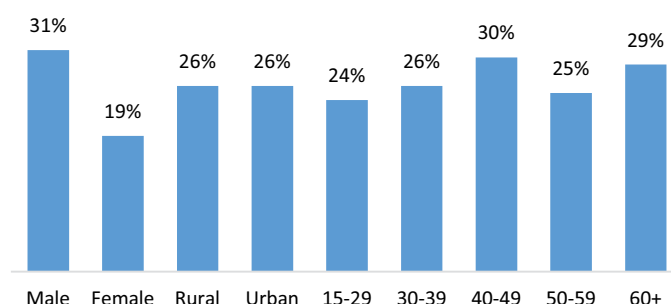
Most smallholder farmers have the necessary identification to open an

FIGURE 83. Financially included



Sample: Smallholder farmers, n=2,773

FIGURE 84. Financial inclusion



By gender, region and age
Sample: Smallholder farmers, n=2,773

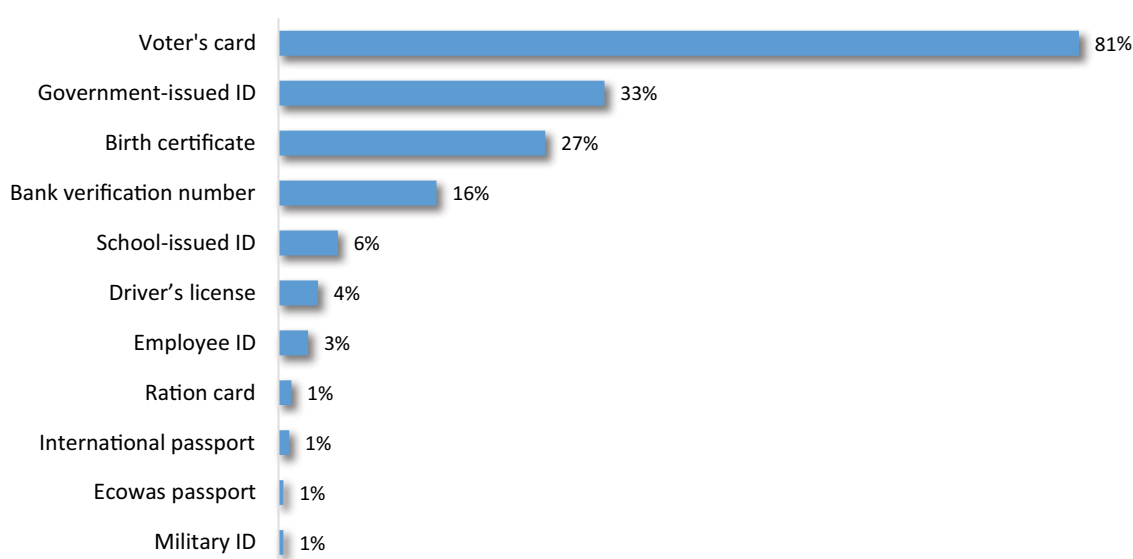
account at a formal financial institution. Eight in 10 smallholders have a voter's card, which can also be used to open accounts or engage in other financial transactions, including mobile money transactions. Thirty-three percent have government-issued identification, 27 percent a birth certificate, and 16 percent a bank verification number (Figure 85).

Bank exposure and use

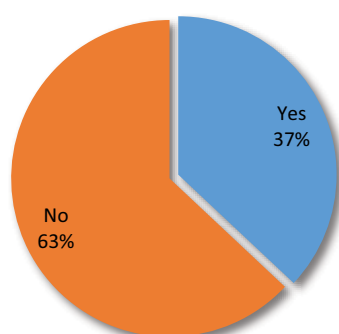
Banks are the most widely used form of formal financial accounts among smallholders, but only 37 percent of smallholder farmers have ever been inside a bank (Figure 86).

Smallholders in Nigeria see savings as the largest benefit offered by formal financial institutions (60 percent), and the security of their money as the second-largest benefit (34 percent). The ability to make person-to-person transfers is the next most recognized benefit (Figure 87). However, a quarter of smallholders do not know of any benefits to having a formal account.

Just over two in 10 smallholder farmers have a bank account registered in their names (Figure 88). Men are twice as likely as women to have a bank account

FIGURE 85. Do you have any of the following types of an official identification?

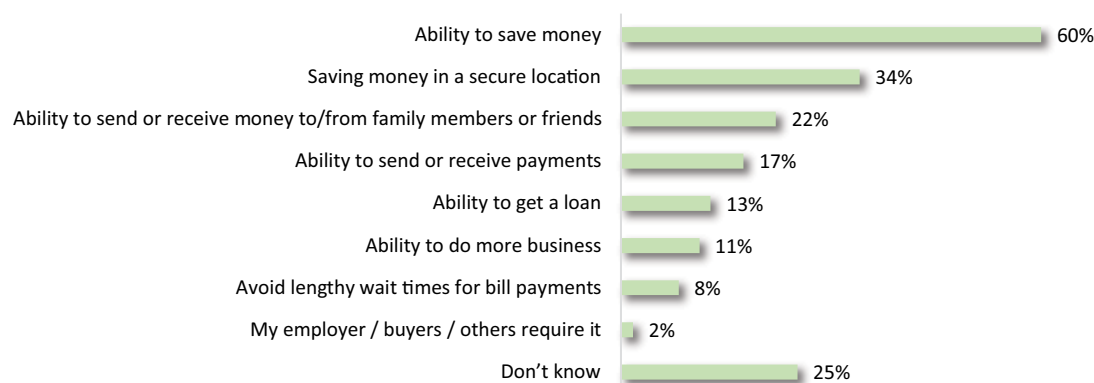
Sample: Smallholder farmers, n=5,128
Multiple responses allowed

FIGURE 86. Have you ever been inside a bank?

Sample: Smallholder farmers, n=2,773

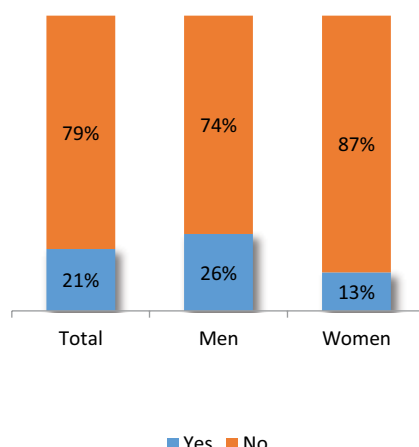
(26 percent vs. 13 percent). The bank where most smallholder farmers have an account is the First Bank of Nigeria (27 percent), followed by Diamond Bank (18 percent) and United Bank for Africa (16 percent) (Figure 89).

Smallholder farmers mostly access their accounts over the counter at a branch (82 percent) and through an ATM (70 percent) (Figure 90). Only 18 percent report using their bank accounts for business transactions.

FIGURE 87. What are the benefits to having an account at a formal financial institution?

Sample: Smallholder farmers, n=2,773
Multiple responses allowed

FIGURE 88. Do you personally have a bank account that is registered in your name?



Sample: Smallholder farmers, n=2,773

Perceived lack of money, distance to a bank, and never considering the use of an account were reported as the main reasons for not having a bank account. Other barriers include unfamiliarity with the products or processes associated with banks (Figure 91).

Barriers to having a bank account cut across gender. This suggests that despite facing similar challenges, the reasons fewer women than men own bank accounts may be related to other barriers.

NBFI use contributes little to financial inclusion

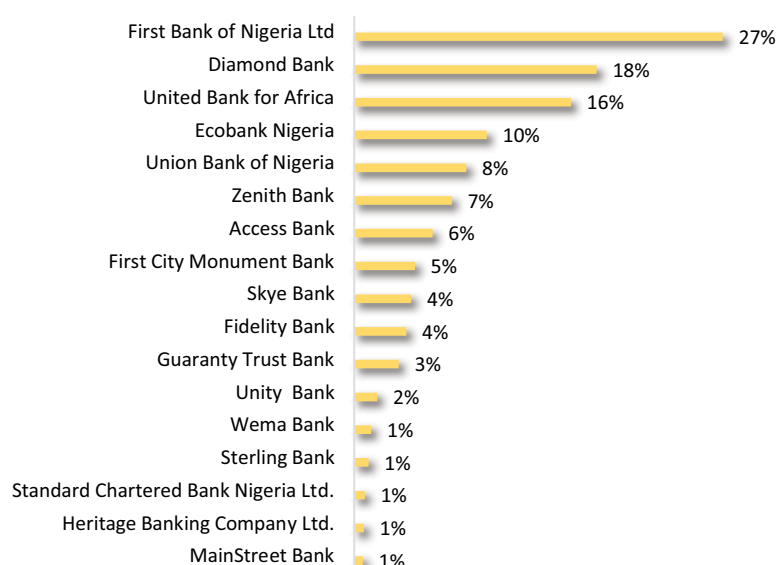
Overall, only 9 percent of smallholder farmers recall having ever used an NBFI; 8 percent have a registered NBFI account. The highest use is among village savings and loan associations (VSLAs) at 5 percent, followed by cooperatives at 4 percent (Figure 92). No more than 1 percent have ever used or currently have an account with a post office, microfinance institution (MFI), or savings and credit cooperative organization (SACCO). A majority of NBFI transactions include cash-in and cash-out activities (Figure 93).

Informal financial services

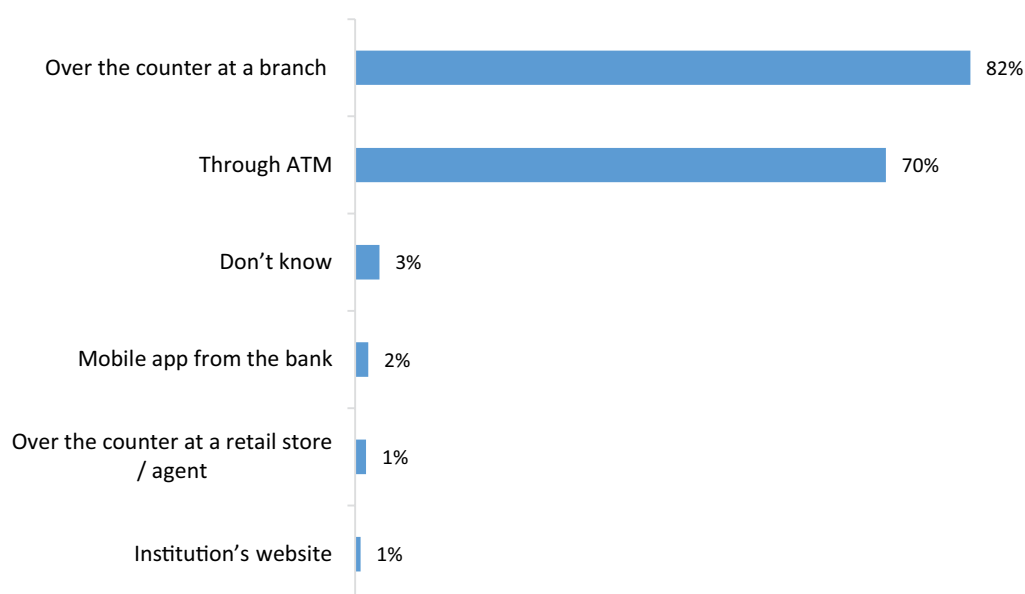
Overall, 28 percent of smallholders have ever used at least one kind of informal financial service (some may use more than one); rotating savings and credit associations (ROSCAs) and merry-go-rounds are the most commonly used informal services (Figure 94).

Smallholders who have ever used ROSCAs/merry-go-rounds, savings collectors, money guards, or shopkeepers do so somewhat regularly. Among

FIGURE 89. Bank account ownership



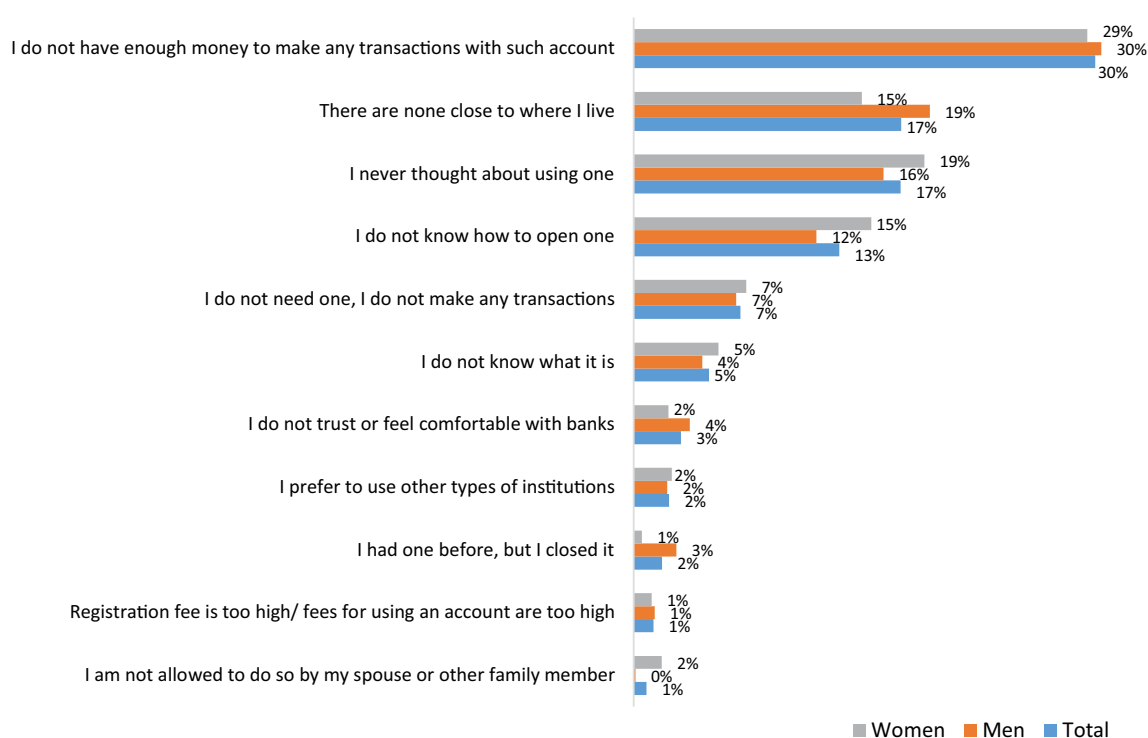
Sample: Smallholder farmers who personally have a bank account, n=538

FIGURE 90. Most common method of bank account access

Sample: Smallholders farmers who have ever used a bank account for any financial transaction (n=555)

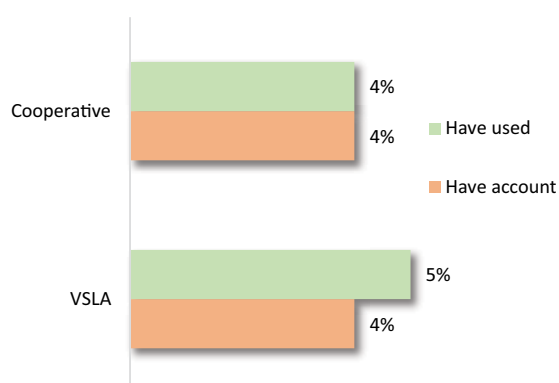
those who have ever used each type of service, 55 percent used a savings collector or shopkeeper, 42 percent had used a ROSCA, and 34 percent had used a money guard (Figure 95) in the past week.

The main reason smallholders do not join any informal financial services group is a lack of trust. They also feel they do not need their services and that they do not have money to warrant using a service (Figure 96).

FIGURE 91. What is the main reason you do not have a bank account?

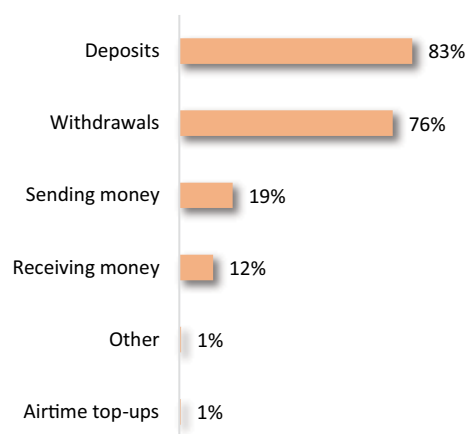
Sample: Smallholder farmers who don't have a bank account, n=2,235

FIGURE 92. Have you ever used any of the following? Do you have an account/membership in your name with any of the following?



Sample: Smallholder farmers, n=2,773

FIGURE 93. What NBFIs account holders do with their accounts

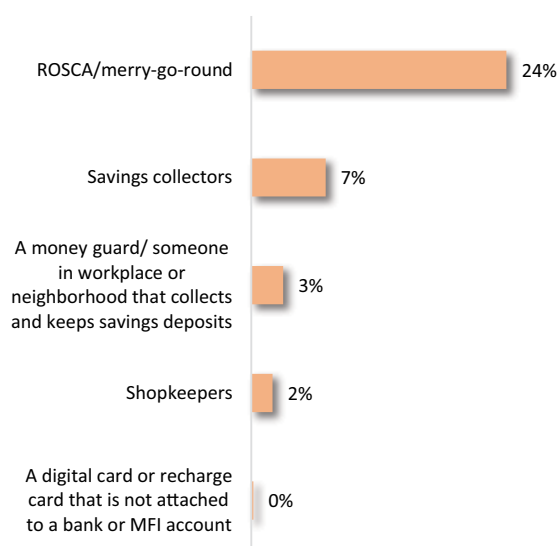


Sample: Smallholder farmers who have an NBFi account, n=215

Mobile money awareness

Mobile money was introduced in Nigeria in 2011 under a national regulatory framework under the dual supervision of the Central Bank of Nigeria (CBN) and the Nigerian Communications Commission (NCC). Under Nigeria's "bank-led"

FIGURE 94. Have you ever used any of the following?

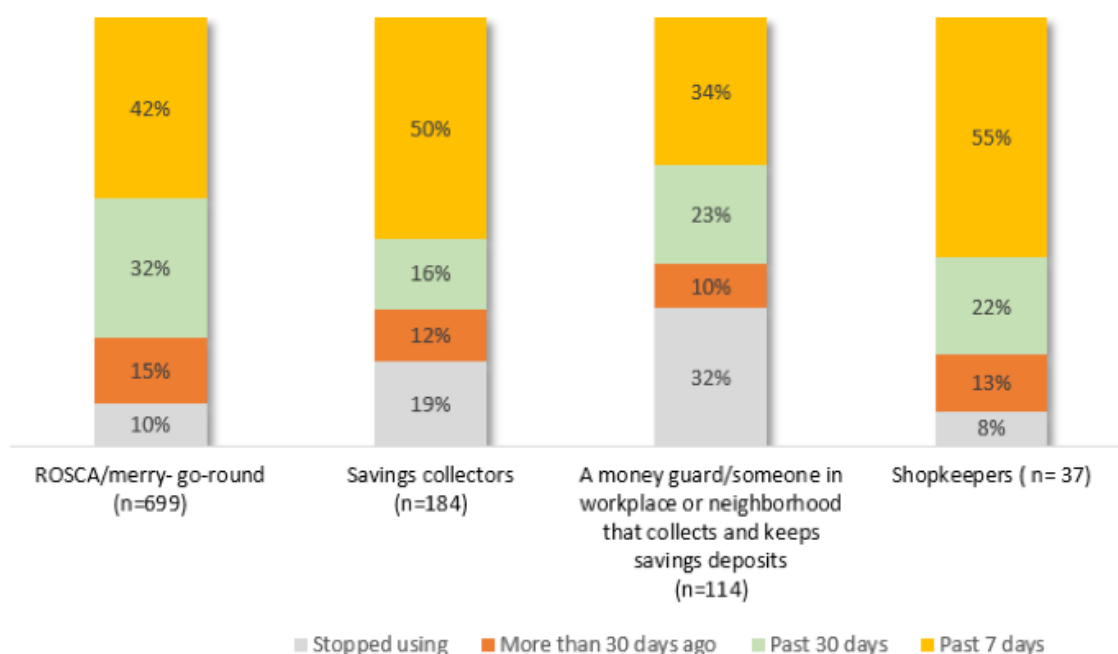
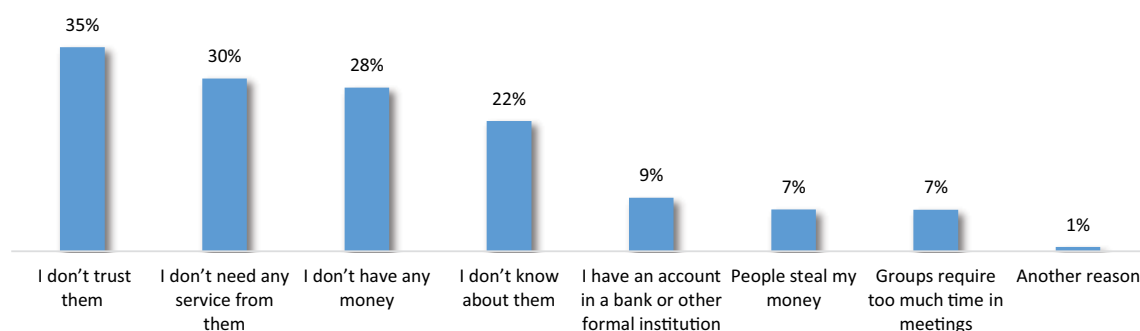


Sample: Smallholder farmers, n=2,773

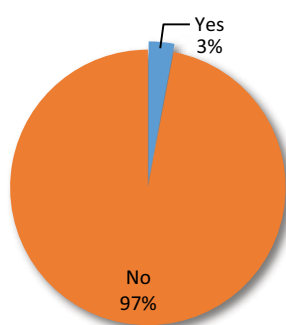
regulatory model, banks, rather than mobile network operators, are given operating licenses for mobile money services. In this regulatory framework, mobile network operators have few economic incentives to partner with banks to provide mobile money services. Concerns persist about "the efficiency of the mobile money operators (MMOs) in the payments ecosystem, with most critics citing operators' insufficient capital and lack of industry knowledge as key challenges." In 2015 there were 21 licensed MMOs—the largest number of MMOs in the world operating in a single country. Despite the high number of MMOs, Nigeria is yet to see a significant increase in the use of mobile money. CBN is therefore allegedly planning to revoke the licenses of MMOs that are dormant and have yet to provide mobile money services.²⁵

Only 3 percent of Nigerian smallholder farmers say they have heard of mobile money (Figure 97). Among those who have heard of it, 27 percent see no benefits to having such an account (Figure 98).

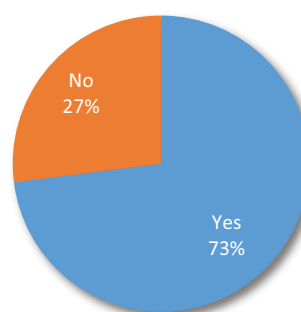
25 A Guide to the Nigerian Mobile Money Market in 2015; <http://barcode.stillwaterslaw.com/1.1/2015/12/21/a-guide-to-the-nigerian-mobile-money-market-in-2015/>.

FIGURE 95. Apart from today, when was the last time you used these services or service providers for any financial activity?**FIGURE 96.** Why do you not have a membership with any of these groups?

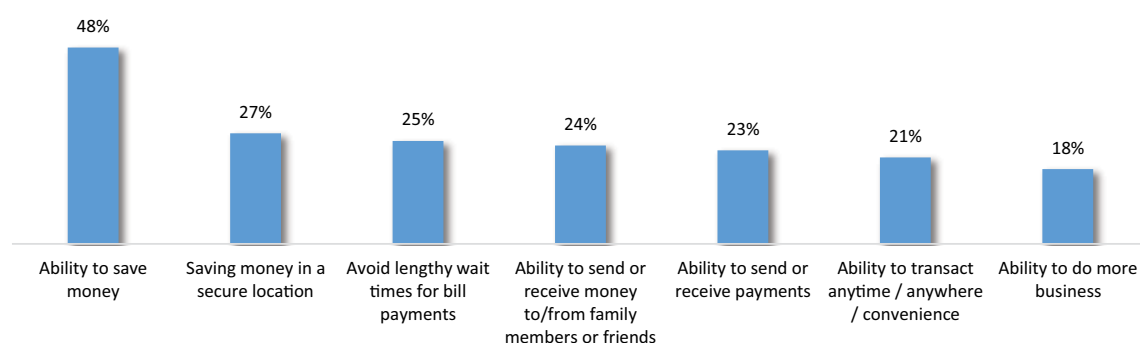
Sample: Smallholder farmers who have never used informal financial services, n=1,956
Multiple responses allowed

FIGURE 97. Have you ever heard of something called mobile money?

Sample: Smallholder farmers, n=2,773

FIGURE 98. Are there benefits to having a mobile money account?

Sample: Smallholder farmers who are aware of mobile money, n=84

FIGURE 99. What are the benefits to having a mobile money account?

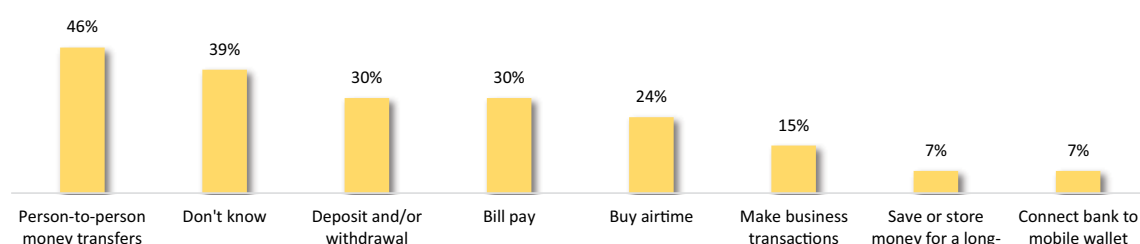
Sample: Smallholder farmers who believe there are benefits to having a mobile money account, n=51
Multiple responses allowed

Only eight survey respondents reported having a mobile money account. These respondents account for 0.3 percent of the sample, which is within the survey margin of error, and therefore statistically equal to zero.

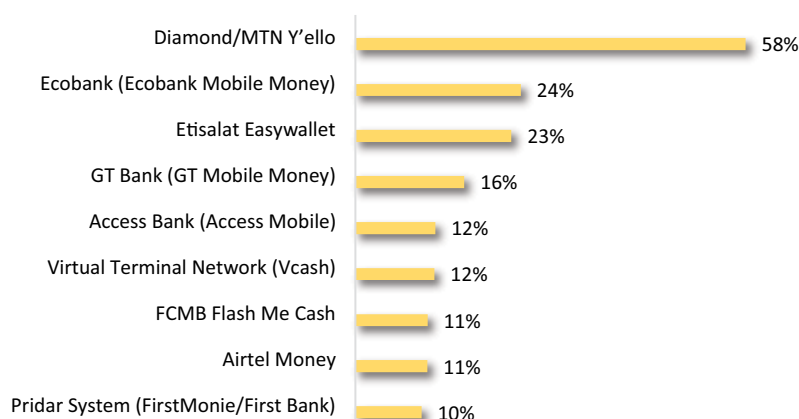
Among those who have heard of mobile money and believe there are benefits to having a mobile money account, the ability to save money and to save in a secure location are the benefits cited most often (Figure 99). The ability to conduct more business via a mobile money account was the least cited. Further analysis of mobile money was not possible because of the very small number of smallholders who reported use (n=8).

Apart from perceived benefits, the survey explored smallholders' thoughts on how they could use mobile money. Those who have heard of mobile money are most confident that mobile money lets users transfer money, deposit/withdraw funds, and pay for bills. Close to four in 10 do not know what financial activities can be done using mobile money. Furthermore, while saving is a big perceived benefit of mobile money, there is less actual knowledge of the service's ability to support savings for a long-term purpose (Figure 100).

The overall awareness of mobile money providers is low. More than half of the respondents are aware of Diamond/MTN Y'ello. Less than 25 percent are aware of other providers (Figure 101).

FIGURE 100. To the best of your knowledge, for what types of financial activities can you use mobile money?

Sample: Smallholder farmers who are aware of mobile money, n=84
Multiple responses allowed

FIGURE 101. Please tell me the names of any mobile money providers that you are aware of?

Sample: Smallholder farmers who are aware of mobile money, n=84
Multiple responses allowed

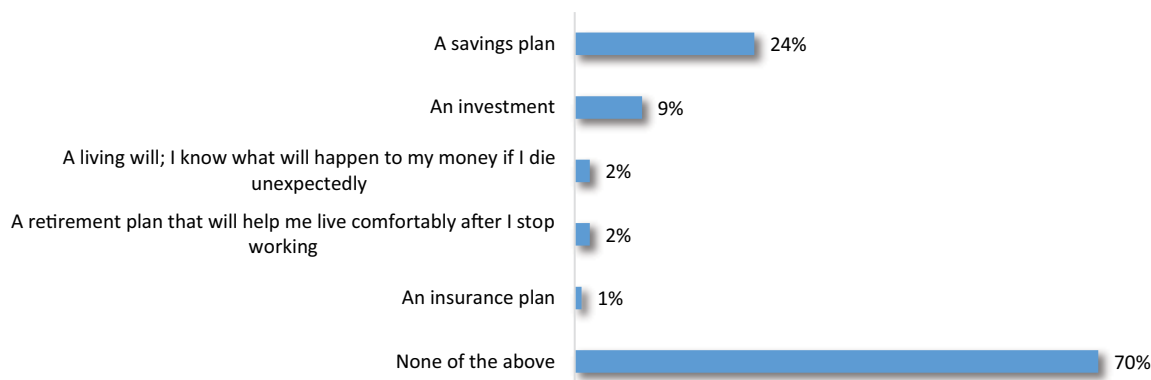
There is little traction for financial planning products

Formal financial planning products have little traction among smallholder farmers. About a quarter (24 percent) have a savings plan; 9 percent have an investment. The use of living wills, retirement plans, and insurance is less common (Figure 102).

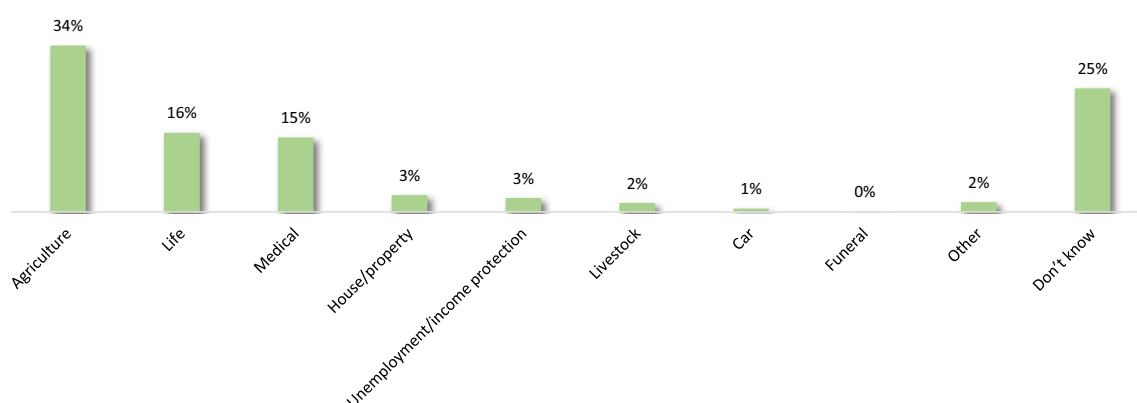
Nigerian smallholder farmers value a variety of insurance types: agricultural, life, and medical insurance are the most desired. However, a quarter do not know what insurance their households need the most (Figure 103).

Lack of trust in banks, MFIs, and mobile money are key barriers for smallholders

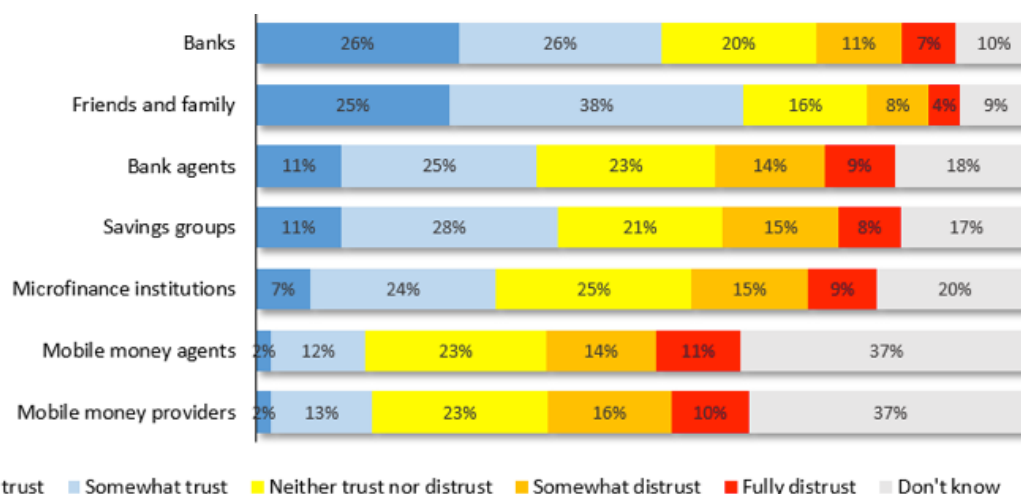
A quarter of smallholders “fully trust” banks. They have even lower levels of trust in MFIs (7 percent) and mobile money agents and providers (2 percent each) (Figure 104). This low level of trust in financial institutions is a weak foundation for building financial inclusion among smallholder farmers. When “fully” or “somewhat trusted” sources are taken together, informal sources like friends and family are more trusted than formal institutions.

FIGURE 102. Do you have any of the following?

Sample: Smallholder farmers, n=2,773

FIGURE 103. Which of the following types of insurance do you feel your household needs the most?

Sample: Smallholder farmers, n=2,773

FIGURE 104. How much do you trust each of the following as financial sources?

Sample: Smallholder farmers, n=2,773

6. DESIRES AND ASPIRATIONS

The national survey of smallholder households in Nigeria includes a series of questions on what financial and agricultural tools farmers consider relevant to their agricultural and financial lives, what they want and need, and how that differs from what they have now. This section analyzes these desires and aspirations to identify where financial and agricultural mechanisms can be most relevant, and what farmers think they want (or need) the most.

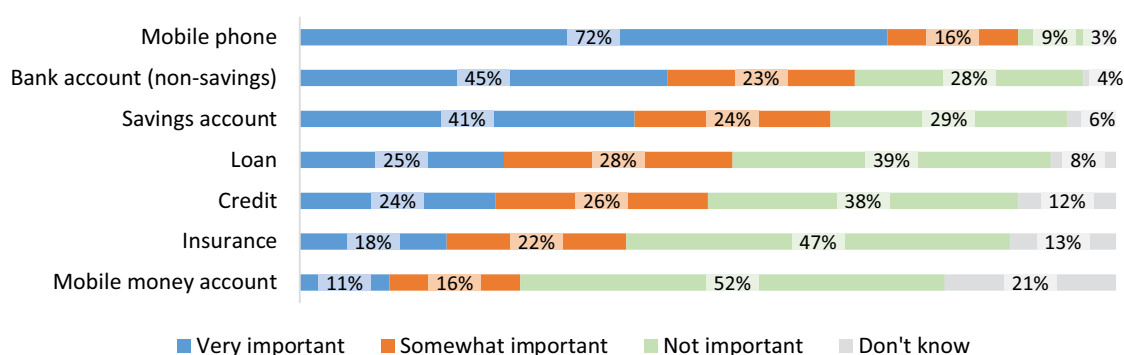
Smallholder households place importance on having a mobile phone, but do not consider mobile money accounts and financial products such as credit and insurance to be important to their households

There is a relatively low level of perceived importance of financial products among all smallholder households. Most notably, smallholders do not consider mobile money accounts, insurance, credit, or loan products to be important to their households.²⁶ More than three in 10 perceive loans, credit, insurance, and mobile money accounts as “not important.”

Owning a mobile phone, however, is considered most important (Figure 105). The findings are similar when smallholder farmers are asked about the perceived importance of these financial products to their agricultural activities (Figure 106). This presents a major challenge for financial services providers.

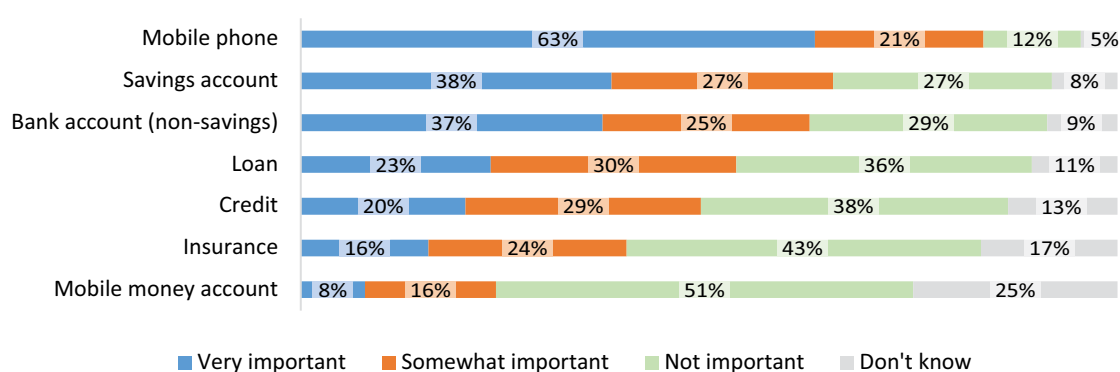
The perceived lack of importance of formal financial tools, for either household or agricultural activities, is also reflected in how smallholders evaluate the importance of formal savings channels. Over half of smallholder farmers (58 percent) believe it is “very important” to save money at home. This proportion drops to 45 percent for saving at a financial institution and to 27 percent for saving with an informal group (Figure 107). The perceived importance of saving at home presents a big challenge to transforming savings behavior from informal to formal channels. This is particularly true for saving via a mobile phone, which is the least important as a savings mechanism. Only 9 percent of smallholder farmers consider a mobile phone “very important” for saving.

FIGURE 105. Regardless of what you have, how important is it to your household to have the following?



Sample: Smallholder households, n=3,026

²⁶ A loan is what is received directly in the form of cash from informal and formal financial services, while credit is not in the form of cash (e.g., a farmer may go to an agro vet and receive inputs to pay for them later after harvest).

FIGURE 106. How important is it to your agricultural activities to have the following?

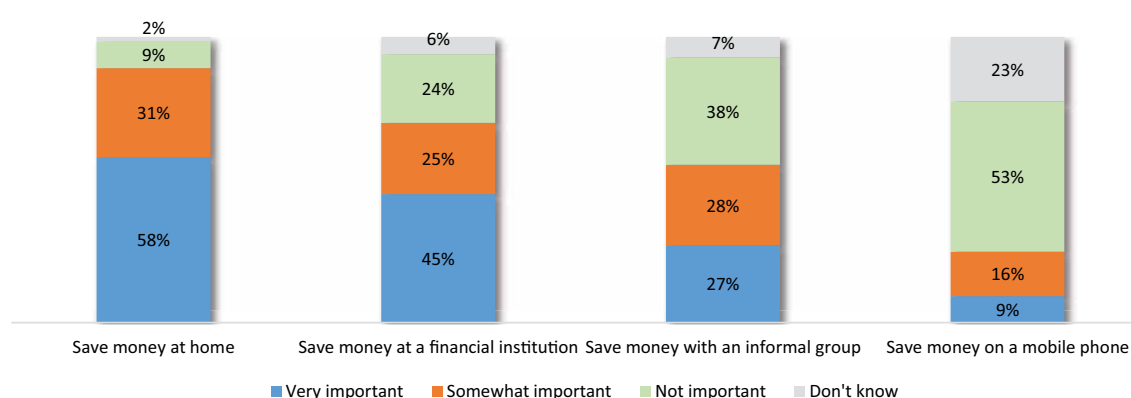
Sample: Smallholder farmers, n=2,773

A majority of smallholder farmers feel it is “very important” to save for future purchases, regular purchases, unexpected events, health care, and school fees (Figure 108). When asked to identify what their households need to save for the most, they favor future purchases (40 percent), followed by unexpected events (18 percent) (Figure 109).

Smallholder farmers report that trust, ease of access, and the specific purpose for which money is being stored are important factors to consider when choosing among savings tools. Storing money in a place they trust, that can be easily accessed in case of an emergency, and that presents minimal risk of loss is

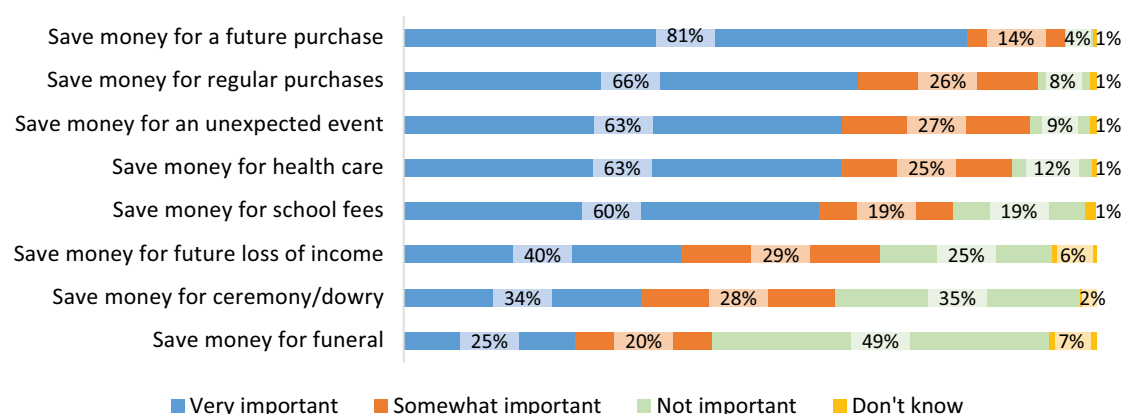
important to them. Smallholder farmers disagree with the idea that when money is in an account, it is working for them—43 percent disagree with that concept, and 15 percent do not know. About two-thirds of smallholder farmers (64 percent) agree that storing money somewhere else (i.e., not in an account) is easier than saving in an account (Figure 110).

Smallholder farmers place the highest level of importance on investing in their farms, which is consistent with the five other countries where national surveys of smallholder households were conducted.²⁷ More than half of smallholder farmers report that it is

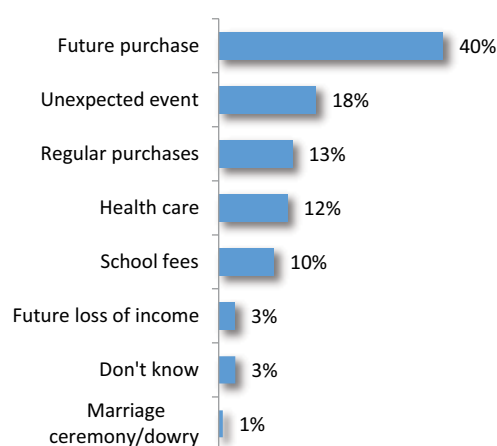
FIGURE 107. How important is it for your household to save at each of the following?

Sample: Smallholder farmers, n=2,773

27 National surveys of smallholder households were conducting in Bangladesh, Côte d'Ivoire, Mozambique, Tanzania, and Uganda.

FIGURE 108. How important is it for your household to save for each of the following?

Sample: Smallholder farmers, n=2,773

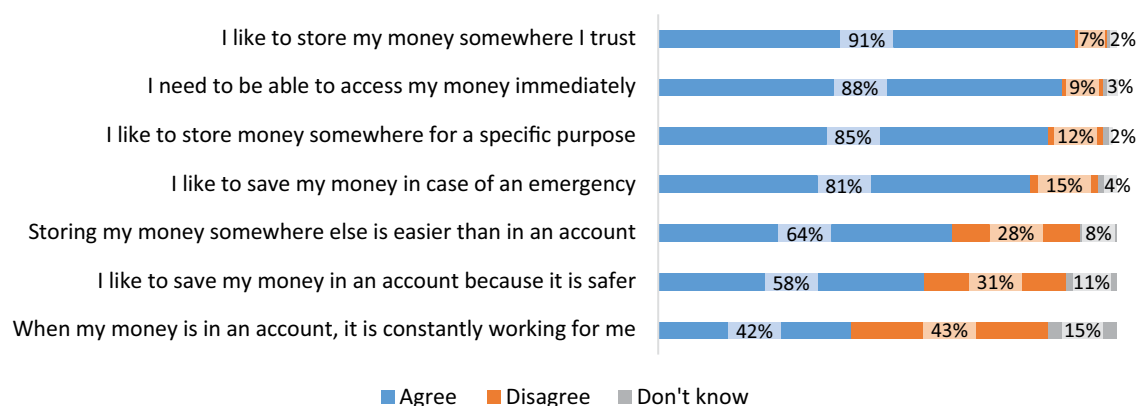
FIGURE 109. Which of the following do you feel your household needs to save for the most?

Sample: Smallholder farmers, n=2,737

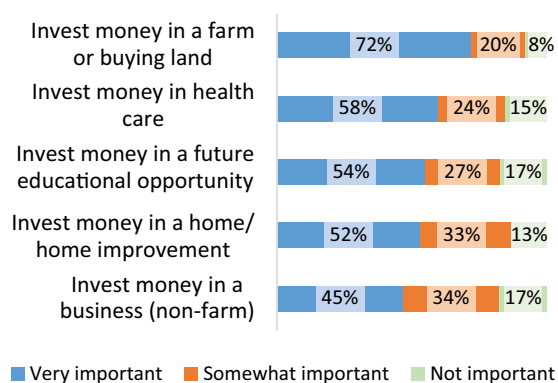
very important to invest in health care, a future educational opportunity, or a home (Figure 111). They regard their farms as the most important investment priority, which indicates the importance of the farm to their livelihoods (Figure 112).

Desires and aspirations: Smallholder households prefer to borrow informally

Smallholder farmers do not recognize the importance of borrowing from formal institutions such as banks. Family and friends are preferred over formal institutions as a source for borrowing

FIGURE 110. Do you agree or disagree with the following statements?

Sample: Smallholder farmers, n=2,773

FIGURE 111. How important is it for your household to invest in each of the following?

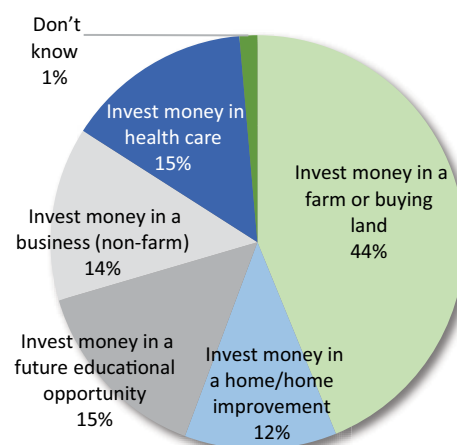
Sample: Smallholder farmers, n=2,773

money (Figure 113). About eight in 10 smallholder farmers say they would go to friends and family first, if the need to borrow arose (Figure 114).

One in five farmers would consider VSLAs as a source for future borrowing; in the 12 months before the survey, 5 percent of smallholder farmers attempted to borrow from a VSLA (Figure 115).

Thirty-six percent say they would like to borrow from banks in the future. However, only 3 percent had borrowed from banks in the 12 months before the survey (figures 114 and 115), though 21 percent owned a bank account.

Smallholder farmers consider quick access, convenience, ease of use, repayment

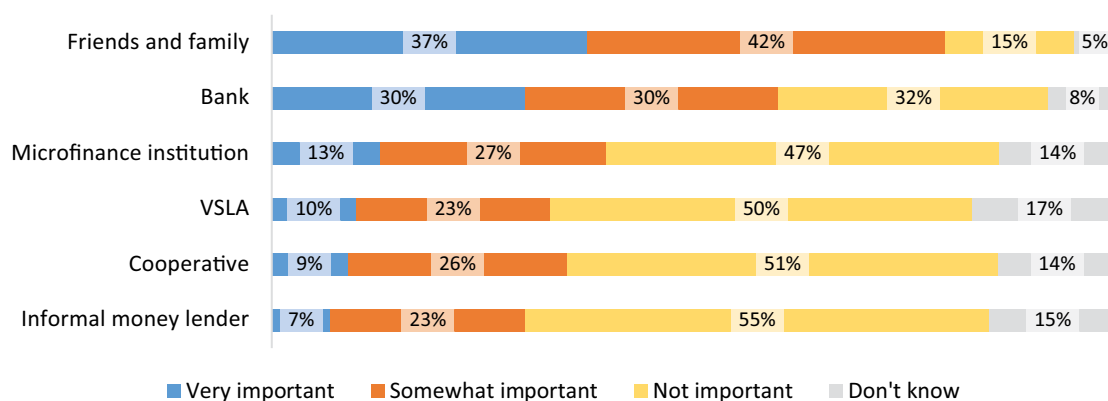
FIGURE 112. Which of the following do you feel your household needs to do the most?

Sample: Smallholder farmers who say any investments are important, n=2,707

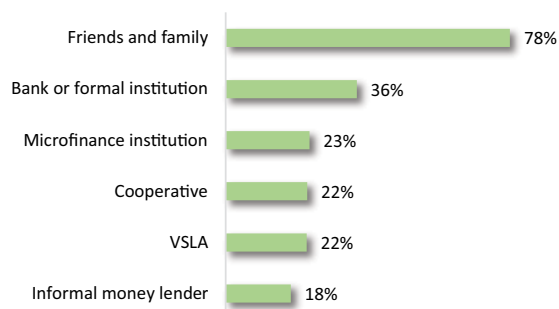
terms, confidentiality, and the best interest rates to be important factors when borrowing and comparing financial services providers and their products (Figure 116). Only 4 percent have any loans (Figure 117). The top reasons for borrowing money are focused on their agricultural activities, businesses, or emergency expenses, in that order; the only other major reason unrelated to the three is the need to pay school fees (Figure 118).

There is some interest in financial products for inputs and school fees

Many smallholder farmers consider savings and payment plans for inputs

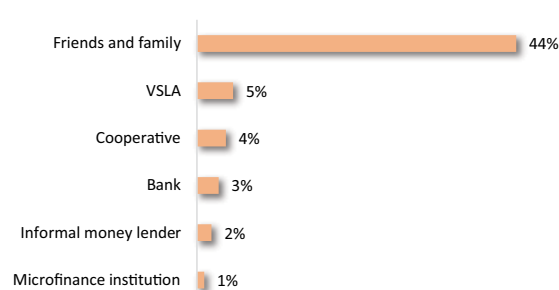
FIGURE 113. For your agricultural activities, how important to you is it to borrow from each of the following?

Sample: Smallholder farmers, n=2,773

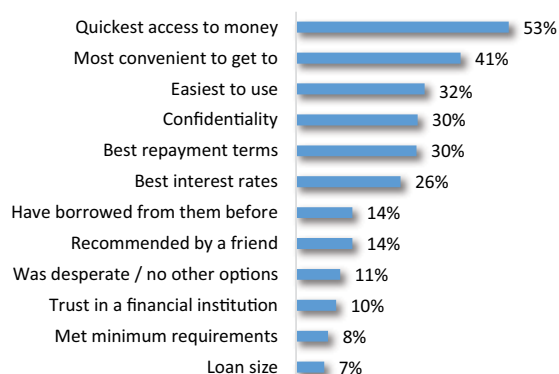
FIGURE 114. If the need arose, would you attempt to borrow from any of the following?

"Yes" answers

Sample: Smallholder farmers, n=2,773

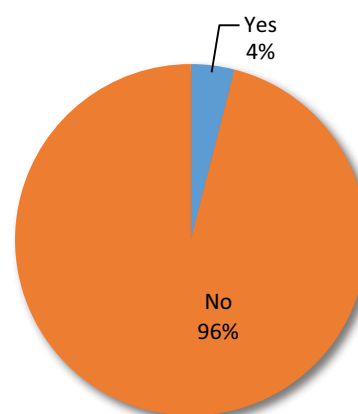
FIGURE 115. In the past 12 months, have you attempted to borrow from any of the following? Percentage answering "Yes"

Sample: Smallholder farmers, n=2,773

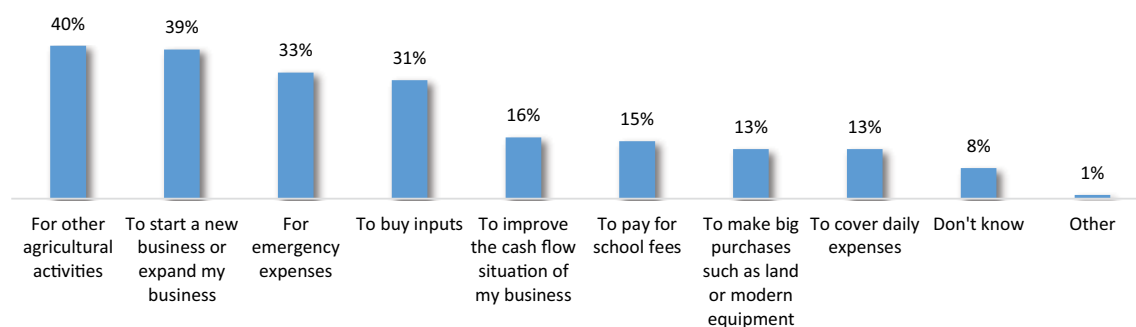
FIGURE 116. What factors would you consider when you want to borrow money?

Sample: Smallholder farmers, n=2,773

Multiple responses allowed

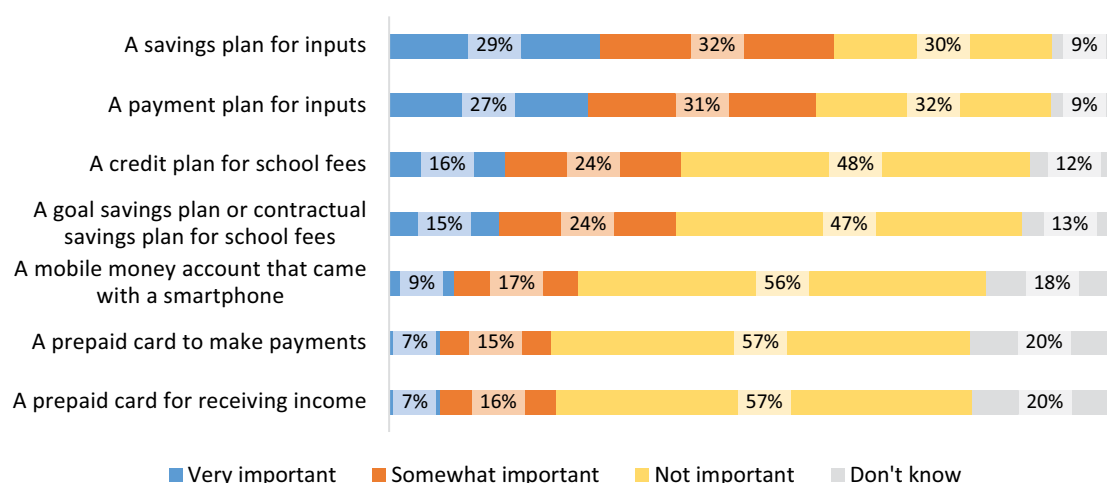
FIGURE 117. Do you currently have any loans?

Sample: Smallholder farmers, n=2,773

FIGURE 118. What would be the main reasons for borrowing money?

Sample: Smallholder farmers, n=2,773

Multiple responses allowed

FIGURE 119. How important is each of the following products to your agricultural activities?

Sample: Smallholder farmers, n=2,773

and credit plans for school fees to be important financial tools for their agricultural activities (Figure 119). However, some also view these same plans as “not important” to them, perhaps because of their lack of exposure to and trust in the financial system. Prepaid cards and mobile money accounts have less recognized importance.

Few smallholder farmers own these products. Only 11 percent have savings plans for inputs, 9 percent have payment plans for inputs, and 4 percent have a credit plan for school fees. However, demand is substantial. Nearly half of smallholders want to have a savings plan for inputs, and 46 percent want a

payment plan for inputs. School fees present an important opportunity for financial inclusion—about one-third of smallholder farmers want a credit or savings plan for school fees (Figure 120).

Smallholders place moderate to low importance on loans that come with a particular service or are linked to an account. Loan products connected to a bank or MFI account are considered the most important (Figure 121). However, very few smallholder farmers have any of these loans, and less than half of them say they want them (Figure 122). This suggests these financial products are not appealing to smallholder farmers, perhaps because the products are inaccessible.

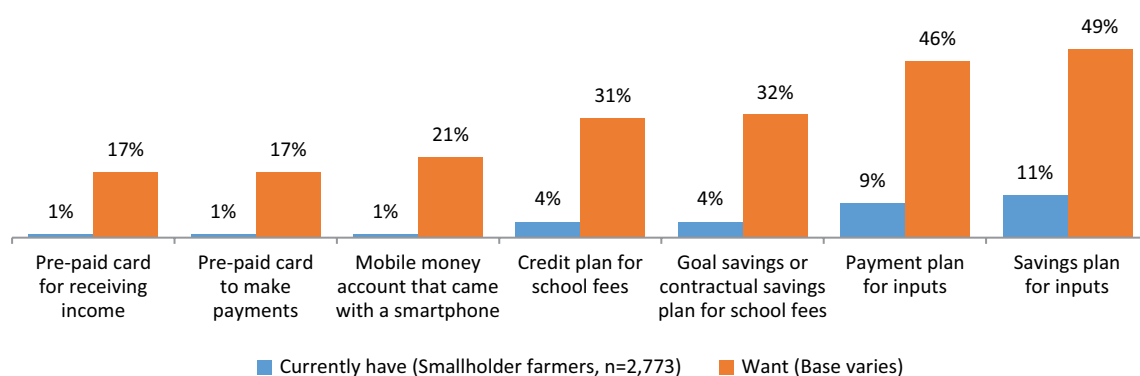
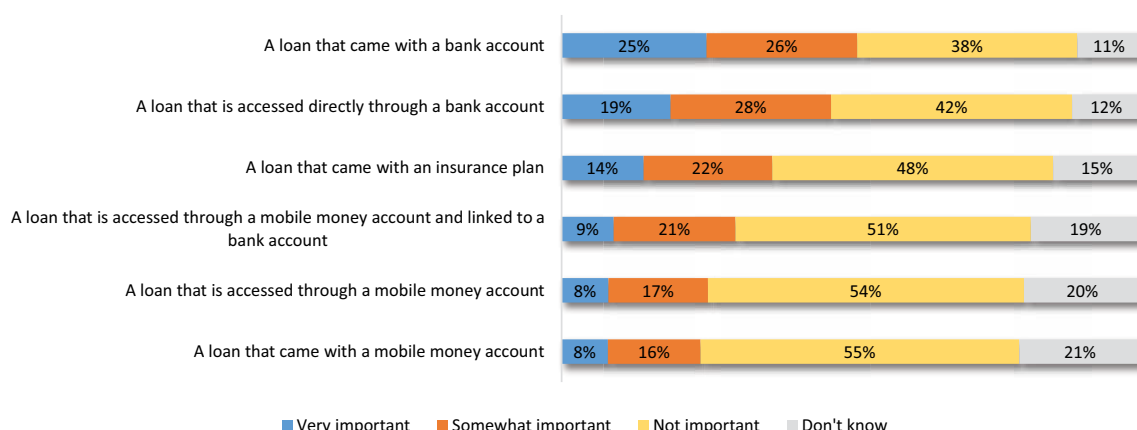
FIGURE 120. Do you currently have any of the following products for your agricultural activities? Do you want to have any of the following products for your agricultural activities?

FIGURE 121. How important is each of the following products to your agricultural activities

Sample: Smallholder farmers, n=2,773

Desires and aspirations: Mobile products receive moderate to low interest

There is not wide recognition among smallholder farmers of the importance of mobile phones as a tool for agricultural activities. About 32 percent of smallholders find the ability to access agricultural information on a mobile phone to be “very important” (Figure 123). Accessing weather and market price information ranks highest in importance, while the ability to buy and sell, access financial services, and track transportation using a mobile phone rank the lowest. This low level of

importance of mobiles phones for agricultural activities corresponds to the low level of ownership of these mobile products for agriculture.

Despite the low level of perceived importance of a mobile phone for agricultural activities, just over half of Nigerian smallholder farmers want to be able to access weather or farming and market price information on a mobile phone (Figure 124). This disconnect between the perceived importance of these mobile capabilities and their desires suggests that smallholders may not be aware of the full benefits of mobile phones and mobile products for agriculture.

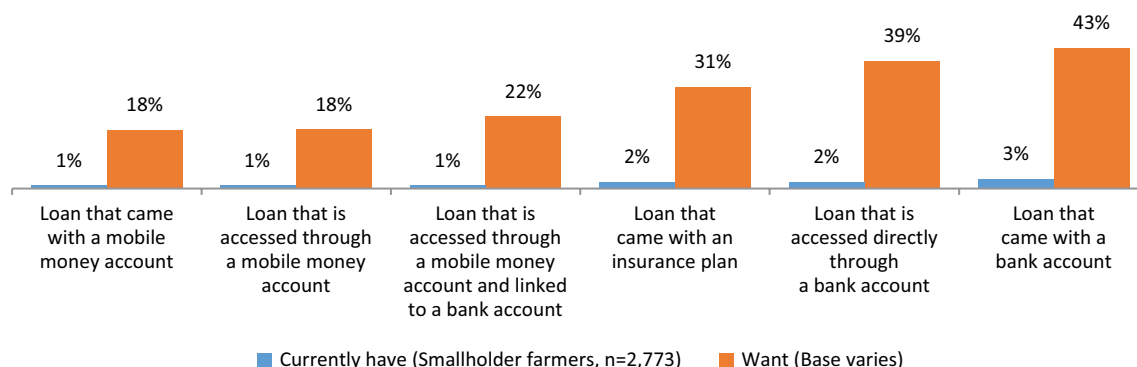
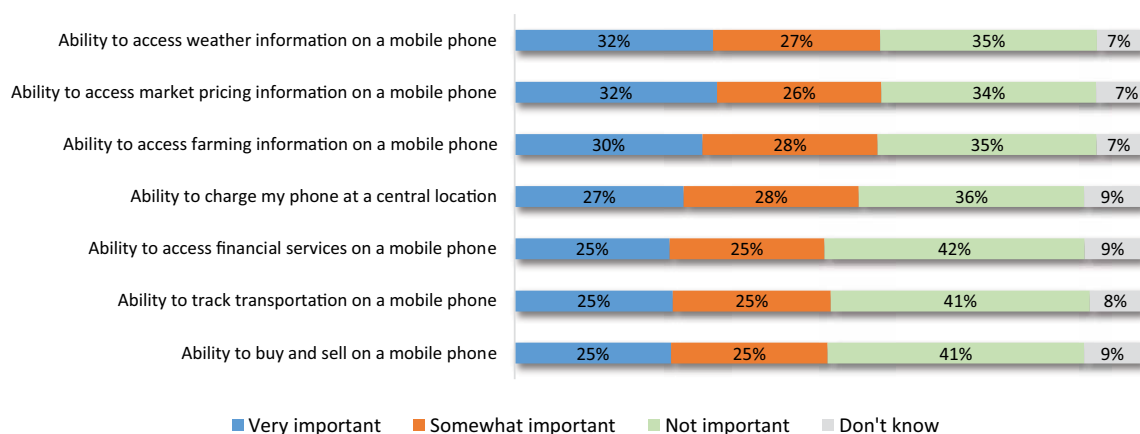
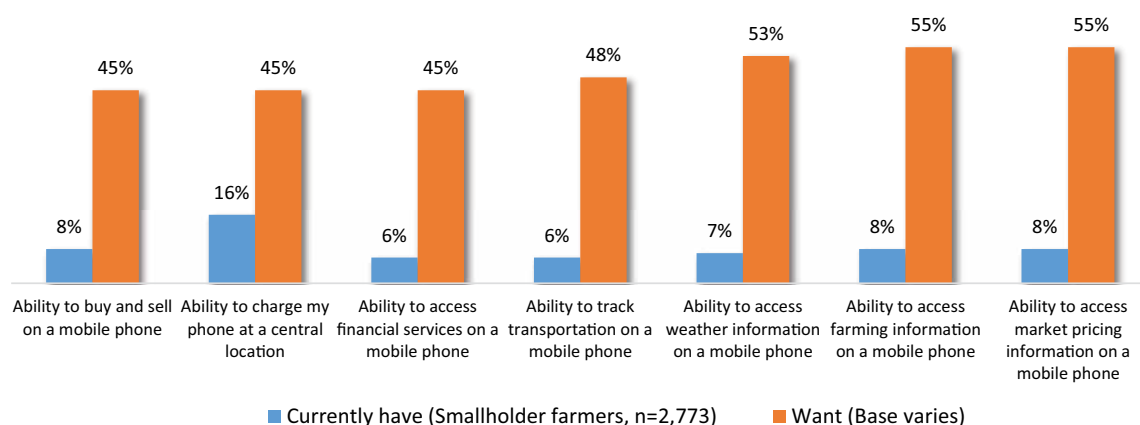
FIGURE 122. Do you currently have any of the following products for your agricultural activities? Do you want to have any of the following products for your agricultural activities?

FIGURE 123. How important is each of the following abilities to your household's agricultural activities?

Sample: Smallholder farmers, n=2,773

FIGURE 124. Do you currently have any of the following abilities for your agricultural activities? Do you want to have any of the following abilities for your agricultural activities?

7. TOOLS AND FINANCIAL INCLUSION: HOUSEHOLD SEGMENTATION

Tools and financial inclusion: Segmentation—Nigeria's four unique smallholder household segments

The segmentation technique

A collection of demographic, economic, behavioral, and attitudinal dimensions often characterizes subgroups within an overall population, more so than any single factor or variable. The CGAP National Survey and Segmentation of Smallholder Households in Nigeria anticipated the complexity of smallholder households and set out to identify the key dimensions that differentiate important subgroups. The survey was designed such that every indicator would provide a dimension of measurement of the smallholder population that is relevant to financial inclusion. The commonalities that define important groups within the smallholder population are found in commonalities among the indicators. The subgroups defined by the key dimensions were identified using a segmentation analysis.

Segmentation is a form of statistical multivariate analysis that uses dimension-reducing and clustering techniques to identify commonalities that define subgroups within a population. The segmentation methodology used principle components analysis (PCA) of smallholder attitudes and characteristics to reduce the range of variables to a few key dimensions, or principle components, that describe their commonality. A cluster analysis was then performed on the principle components to segment the smallholders into subgroups. The segmentation was performed using data from the Single Respondent questionnaire combined with the data from the Household questionnaire.

This approach allows for considering an individual respondent as representing the household as a whole.

The segments that emerged from the analysis allow for developing a deeper understanding of how financial inclusion varies across major subgroups in the smallholder population. The segmentation process uncovered the structure that underlies the survey data. The population subgroups exist within the population sample; the segmentation analysis did not create these groups. Rather, the technique is a type of summative analysis that incorporates a wide range of indicators to find commonality within groups, and differences between groups. Compared to describing the characteristics of the population overall, the segmentation produces a deeper understanding of challenges on the path to financial inclusion that affect different groups differently.

Truly effective segmentation analyses are rooted in the dimensions that reflect the aspects of the population that are most meaningful for guiding strategic interventions. This strategic approach produces a segmentation analysis that is targeted for use by interested parties. For the smallholder households in Nigeria, the shared goal is to build strategies that lead to more useful, reliable, trusted, consumer-focused financial services solutions, formal or informal, both those related to agriculture and those that meet the wide range of other household needs. This segmentation, therefore, is rooted in defining elements that correlate with greater formal financial inclusion for smallholder households.

Looking beyond the initial analysis presented in this section, the segmentation can be repeated in follow-up or

tangential studies and can be used to guide targeted interventions. The key characteristics of the different segments, described in the following sections, provide stakeholders with a clear road map for how to work with and within this population to promote their intended outcomes. For instance, an organization that is bringing a financial product to market can use the segmentation to do the following:

- Identify which segment would be most likely to take up the product, given the strength of demand in this segment compared to that of others.
- Customize the product to meet the different needs of the different segments.
- Fine-tune the product and its go-to market strategy based on market readiness of the segment.
- Optimize market positioning of the mechanism to capture a specific segment of the population.
- Set realistic expectations for uptake and use based on the size of the desired segment.
- Evaluate the impact of a product within the most relevant and intended segment.

Additional segmentations may be conducted using data from the National Survey of Smallholder Households. This first segmentation of the population focused on identifying the key factors that drive financial inclusion among smallholders. Alternative segmentations could generate more

population subgroups that have different geographies and are focused on different outcomes, such as poverty status, resilience to economic shocks, and agribusiness diversification.

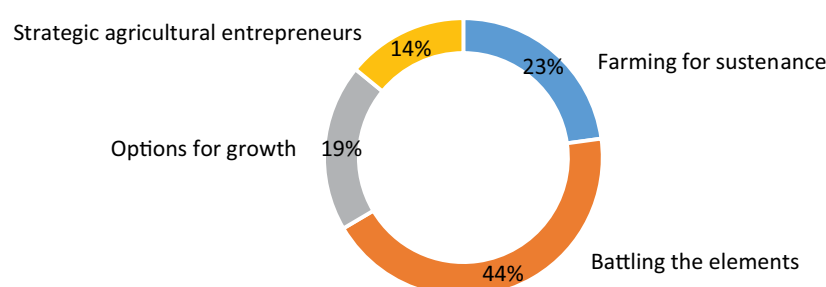
Phases of the smallholder household segmentation²⁸

The segmentation methodology involved dimension reduction and cluster analysis using the R-Statistics software. First, the data were prepared for PCA by dividing the survey questions into two categories: those that measure financial inclusion, such as behaviors related to financial accounts, and those that do not measure financial inclusion, such as demographic and attitudinal indicators. The second category of indicators was used for segmentation. The financial inclusion indicators (the first category) were used to evaluate each segment and determine the strategic implications of the segmentation for agricultural product marketing and digital interventions.

To prepare the data for PCA, all eligible variables (numeric, ordinal, and categorical) were standardized and scaled. The PCA generated scores for each individual survey respondent. The scores for the three largest principle components, representing most of the underlying commonalities between the variables, were retained for the cluster analysis.

The next step in the analysis involved hierarchical clustering on the distance between the scores using the Ward method. Four distinct clusters were ultimately retained from this process after

²⁸ The segmentation analysis is based on a three-part survey, which gathered information from all aspects of the smallholder farmer—the household, all household members who contribute to the income of the household, and a randomly selected household member. The term “smallholder household” is used throughout this report to refer to the sampled population, which draws information from the head of household or a randomly selected household member.

FIGURE 125. Nigerian smallholder segments

Sample: Segmented households, n=2,773

evaluating their characteristics related to financial inclusion.

Four segments of smallholder households emerged from this analysis (Figure 125):

- **Farming for sustenance.** The Farming for Sustenance segment is the most vulnerable group of the Nigerian smallholder household population. This segment is very low on the Progress Out of Poverty Index: 87 percent of its households live on less than \$2.50 per day. As the least likely segment to leave farming, these smallholders rely on their agricultural activities to sustain their households. It is the most financially excluded segment and has the lowest rate of mobile phone ownership.
- **Battling the Elements.** The Battling the Elements segment is also vulnerable, but does not face the same severity of limitations as the Farming for Sustenance segment. This group comes after the Farming for Sustenance segment in terms of being the least financially included. Smallholders in the Battling the Elements group are challenged by unexpected life or farm-related events. They are least likely to perceive the importance of having a savings account for agricultural activities. Although they enjoy and take pride in farming, they would consider full-time employment outside of agriculture if the opportunity presented itself.
- **Options for Growth.** The Options for Growth segment has the highest rate of secondary education and is more financially included than the Battling the Elements segment. These smallholder farmers are relatively new to farming and are the least satisfied with their agricultural achievements, suggesting that they may be open to income-earning opportunities outside of agriculture. They do not store their crops mainly because they do not have leftover crops (45 percent) or nearby storage facilities (21 percent), and they need to use money after the harvest (23 percent). They are also less interested than the other smallholder segments in the ability to access agricultural information on a mobile phone.
- **Strategic Agricultural Entrepreneurs.** The Strategic Agricultural Entrepreneurs segment is distinguished by household heads who are relatively younger and more educated than those in the other segments. These smallholders are most likely to leave farming for full-time employment compared

to smallholders in the other segments. However, they want their children to continue in agriculture more so than those in any of the other segments. Their agricultural activities have been affected the most by unexpected events, but they have been able to rely on their savings or other resources to cope with tough times. This segment has greater access to emergency funds and more financial mechanisms at its disposal.

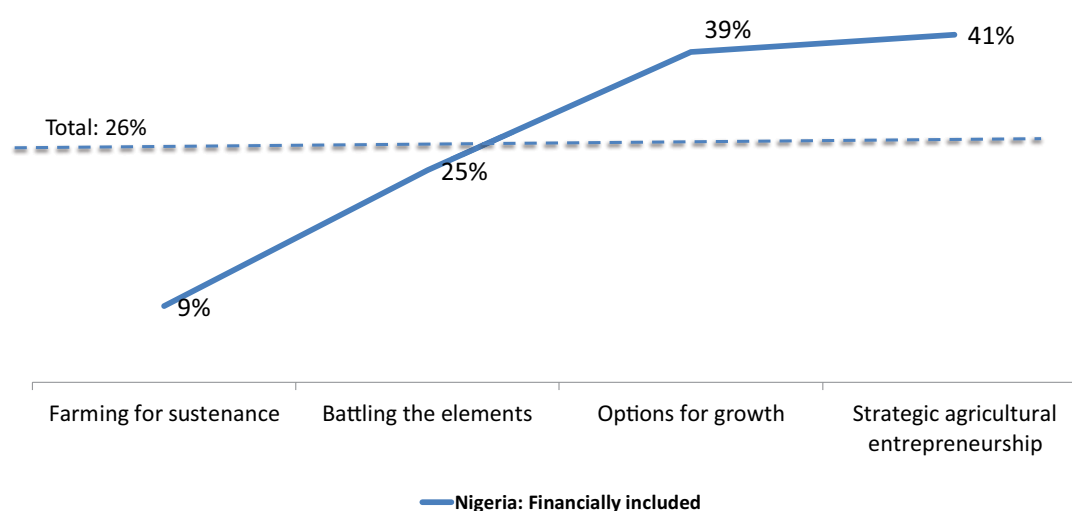
The segmentation model is built on predictors of financial inclusion, which is defined here as having a personal bank, mobile money, or NBFI account. Overall, 26 percent of Nigerian smallholders are financially included. Bank accounts are the most common among smallholders (21 percent), followed by NBFI accounts (8 percent) and mobile money accounts (less than 1 percent).

Figure 126 depicts the average level of financial inclusion of each segment, with the lowest level of financial inclusion being seen among smallholders in the Farming for Sustenance segment and the highest level (41 percent) seen

in the Strategic Agricultural Entrepreneurs segment. The segments show a linear relationship with financial inclusion.

Table 14 illustrates how each segment compares to the other segments on several key dimensions: education, socioeconomic status, access to emergency funds, mobile phone ownership, attitude toward the future, and experience with unexpected events. Level of education, living above the poverty line, and access to emergency funds also correlate with financial inclusion and, therefore, tend to increase across the segments. Interestingly, only the poorest, Farming for Sustenance segment, showed a significantly lower rate of mobile phone ownership than did the other three segments. In Nigeria, geographic location in the North emerged as a key variable for differentiating the Farming for Sustenance segment from the others—89 percent of the households in this segment lived in the North. Nonstorage of crops emerged from the segmentation analysis as a key variable for defining the Options for Growth segment; none of the households in this segment stores crops.

FIGURE 126: Proportion of smallholder farmers in each segment who are financially included*



Sample: Segmented households, n=2,773

TABLE 14. Nigeria smallholder household segments by key indicators

Segmented households total n=2,773	Farming for sustenance n=613	Battling the elements n=1,093	Options for growth n=659	Strategic agricultural entrepreneurs n=408
Educational attainment of household head (%)				
Never attended school	50	37	27	30
Preprimary	9	5	5	3
Primary	15	20	23	21
Secondary	17	29	35	32
Higher education	9	9	10	14
Socioeconomic status (%)				
Above the poverty line	13	28	31	32
Below the poverty line	87	72	69	68
Access to emergency funds: Can come up with 100,000 Naira within the next month (%)				
Very possible	13	20	17	31
Somewhat possible	30	32	37	26
Not possible	53	45	39	39
Don't know	4	2	7	4
Mobile phone ownership—at least one mobile phone in the household (%)				
Yes	60	89	86	92
No	40	11	14	8
Attitude: The future will take care of itself (%)				
Agree	58	62	62	51
Disagree	37	36	35	47
Don't know	5	2	2	2
In the past 12 months, experienced any unexpected events (including, but not limited to, death, illness, accidents, etc.) (%)				
No, I didn't	35	29	33	19
Yes, I did	65	71	67	81

Sample: All smallholder farmers.

Segment 1. Farming for Sustenance—Dependent on the farm for day-to-day survival

Demographics

The Farming for Sustenance segment accounts for 23 percent of all smallholders and mostly spans across the northern geopolitical zones of Nigeria (89 percent): 33 percent in North Central, 24 percent in North East, and 32 percent in North West.

Seven in 10 household heads are 40 years old or older (Figure 127). This segment has the largest proportion of households (60 percent) that are headed by someone who never attended school or had no formal schooling. It has the largest proportions of female household members (58 percent) and youth (age 15–29) (40 percent).

With 87 percent of its households living below the poverty line of \$2.50 per day and 41 percent living in extreme poverty

SEGMENT SYNOPSIS

The Farming for Sustenance segment is the most vulnerable group of the Nigerian smallholder household population. It is very low on the Progress Out of Poverty Index: 87 percent of its households live on less than \$2.50 per day. As the segment that is the least likely to leave farming, this group relies on agricultural activities to sustain its households. This segment is more excluded than the others and would perhaps benefit the most from financial and agricultural mechanisms, such as insurance and payment plans for inputs, that can help them face adversity.

(on less than \$1.25 per day), the Farming for Sustenance segment is the poorest among all the segments. Fifty-three percent of smallholders in this segment say they could not come up with 100,000 Naira within the next month to respond to an emergency. This reflects their lack of access to credit and loans. About one-third (31 percent) do not own a mobile phone, making this segment the least likely of all the segments to own a mobile phone.

Farming

Farming for Sustenance households are highly tenured. About three in four (74 percent) have more than 10 years in farming, and 15 percent have been farming for six to 10 years.

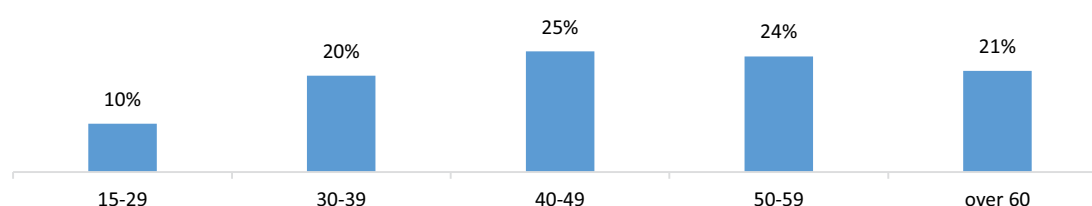
A majority enjoy farming (91 percent) and intend to stay in it (89 percent). Of all the segments, this one had lowest proportion of smallholders that agreed with the statement, “I would take full time employment if I were offered a job,” making this segment the least likely to leave farming.

The households in this segment grow six crops on average. The main crops grown are paddy rice (32 percent), maize (81 percent), millet (64 percent), sorghum (39 percent), cassava (33 percent), yams (31 percent), beans (69 percent), soybeans (30 percent), and groundnuts (53 percent).

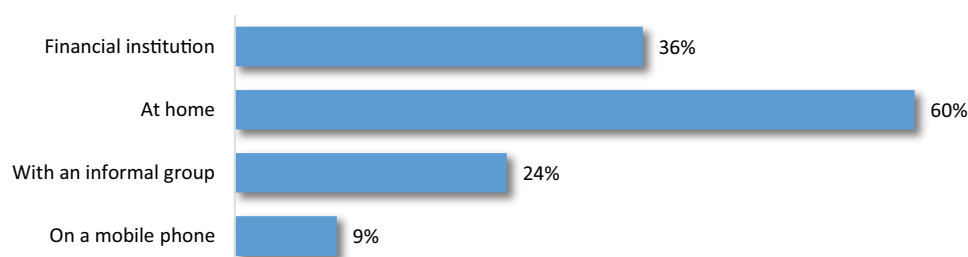
Every household in this segment consumes and sells its crops. Only 21 percent of farmers in this segment trade what they grow with their neighbors. Crops sold are the same as the main crops grown and, for the most part, are sold directly to the public/open market (72 percent), retailer (56 percent), and wholesaler (19 percent). Fifty-six percent of Farming for Sustenance smallholders store crops (five crops, on average).

Like smallholders in other segments, Farming for Sustenance smallholders experienced events that seriously impacted their agricultural activities. In the past three years before the survey, 45 percent experienced weather-related events (e.g., drought, floods, late rains),

FIGURE 127. Age distribution of household head



Sample: Farming for sustenance households, n=613

FIGURE 128. Percentage reporting that it is “very important” to save at each of the following

Sample: Farming for Sustenance households, n=613

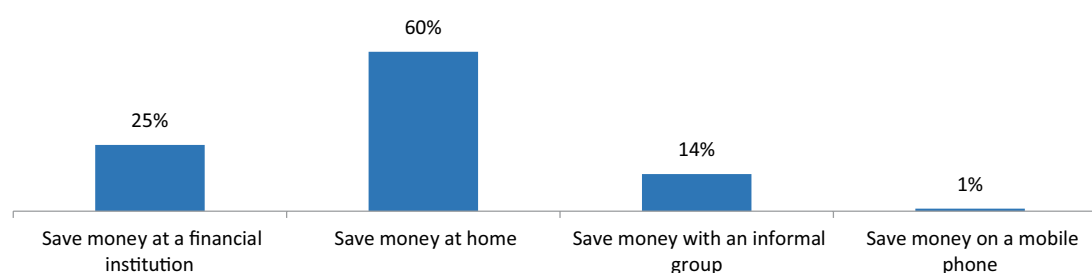
and 66 percent were affected by pests/diseases. To a lesser degree, their agricultural activities were seriously affected by fluctuations in input and market prices (37 percent and 25 percent, respectively).

Financial attitudes

Of the four segments, the Farming for Sustenance segment is the least financially included. Nearly all smallholders in this group (94 percent) do not have a bank account registered in their name. Only 9 percent of smallholders in this segment are financially included, only 4 percent have an NBFi account, and the rest have bank accounts. A negligible portion of this segment has mobile money accounts. A very small proportion of this segment—only one in five—has ever used informal financial services such as a merry-go-round, money guard, and savings collectors.

This segment has the lowest proportion of smallholders who trust banks (45 percent) and the highest proportion of those who do not recognize the importance of bank accounts. About four in 10 say that it is “not important” for their households to have a bank account—39 percent say that nonsavings bank accounts are not important, and 37 percent say that saving accounts are not important.

This low level of trust for and perceived relevance of banks is reflected in their views of saving channels. Sixty percent report that it is very important to save money at home compared to 36 percent who said it was very important to save at a financial institution, and 24 percent who said the same about saving with an informal group. Saving money at home is perceived as the most important saving channel and is also the place where smallholders report that they most often save (figures 128 and 129).

FIGURE 129. Where do you feel your household needs to save at the most?

Sample: Farming for sustenance households, n=613

SEGMENT SYNOPSIS

The Battling the Elements segment is also vulnerable but does not face the same severity of limitations as the Farming for Sustenance segment. This segment is more educated but is also challenged by unexpected life or farm-related events. Having a savings account for agricultural activities is recognized the least in terms of importance by this segment. Although they enjoy and take pride in farming, they would also consider full-time employment outside of agriculture if the opportunity presented itself.

Smallholders in this segment have better access to financial services compared to the Farming for Sustenance smallholders, though significant gaps remain in their portfolio of financial tools.

Segment 2. Battling the Elements—Challenged and with limited resources, but perseverant

Demographics

The Battling the Elements segment is the largest segment. It comprises 44 percent of smallholder households in Nigeria. It spans across all the six geopolitical zones: North Central (28 percent), North East (21 percent), North West (20 percent), South East (10 percent), South South (15 percent), and South West (6 percent). Seventy percent of households in the Battling the Elements segment are headed by someone who is over 40 years old (Figure 130).

Men account for 70 percent of household members in this segment. The Battling the Elements segment is the third most educated segment, with 61 percent of its household members having attained primary school and beyond.

Seven in 10 smallholder households in this segment live below the poverty line of

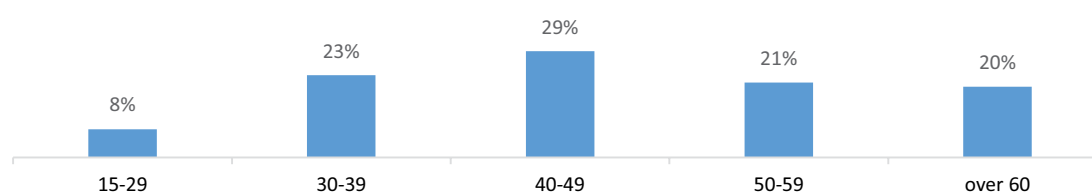
\$2.50 per day and one in four lives in extreme poverty, on less than \$1.25 per day.

Farming

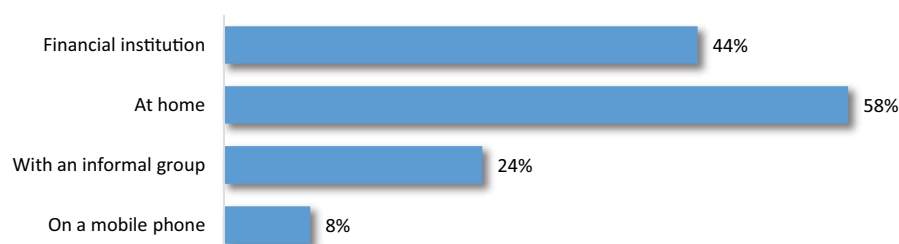
The Battling the Elements households are marked by highly experienced farmers. Sixty-three percent of them have been in farming for more than 10 years, and 24 percent have between six to 10 years of experience. The majority (91 percent) intends to remain in farming, but 56 percent would take full-time employment outside of agriculture if offered a job. This is the second highest proportion, which makes this the second group mostly likely to leave farming after the Strategic Agricultural Entrepreneur segment.

They grow, on average, seven crops, and all of them store crops. The main crops grown are maize (81 percent), millet (46 percent), cassava (49 percent), yams (50 percent), beans (52 percent), groundnuts (43 percent), and pepper (41 percent). On average, they store four crops, consume six crops, and sell six crops.

FIGURE 130. Age distribution of household head



Sample: Battling the elements households, n=1,093

FIGURE 131. Percentage reporting that it is “very important” to save at each of the following

Sample: Battling the elements households, n=1,093

About one-third of smallholders in this group (38 percent) experienced drought, floods, and late rains. About two-thirds (65 percent) were affected by pests/diseases. The Battling the Elements smallholders are the second most affected by unexpected fluctuations in input and market prices (44 percent and 34 percent, respectively). To cope with the negative events affecting their agricultural activities, the majority (90 percent) of these smallholders use savings, sell crops and livestock, or have no specific coping response.

Financial attitudes

Battling the Elements smallholders have the second-lowest percentage of those who are financially included. One in four (25 percent) of Nigerian smallholder households in this segment is financially included. Twenty-two percent have a personal bank account registered in their name. Only 5 percent have an NBFi account, and 19 percent have ever used informal financial services such as a merry-go-round, money guard, and

savings collectors. A negligible number reported having a mobile money account.

About half (52 percent) trust banks and other financial institutions. Moreover, if the need to borrow arises they tend to prefer formal financial institutions over MFIs, SACCOs, and cooperatives. Thirty-six percent would attempt to borrow from a bank or other formal financial institution compared to 24 percent from an MFI, 21 percent from a cooperative, and 10 percent from a SACCO.

Despite the relatively greater level of trust in formal financial institutions compared to the Farming for Sustenance smallholders, 58 percent of the Battling the Elements smallholders perceive saving at home as very important, versus the 44 percent who say saving at a financial institution is very important (Figure 131).

After the Farming for Sustenance segment, the Battling the Elements segment is the second largest group to report that saving at home is the most important savings channel for the household (55 percent) (Figure 132). It is also the

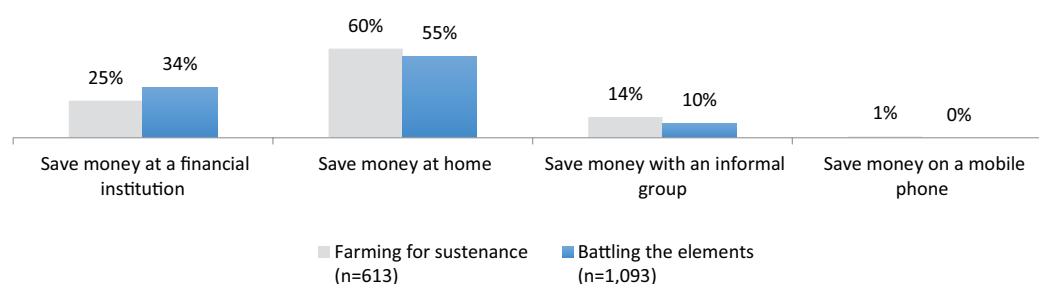
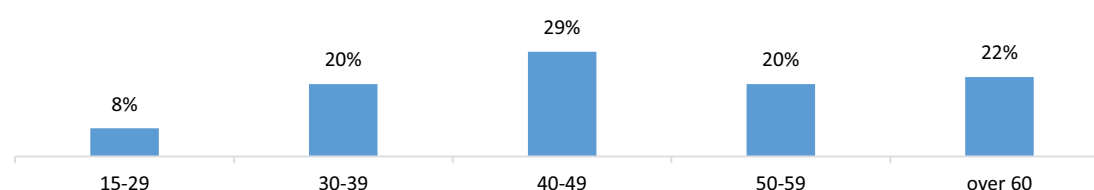
FIGURE 132. With which of the following do you feel your household needs to save the most?

FIGURE 133. Age distribution of household head

Sample: Options for Growth households, n=659

segment with the largest proportion of households that do not have a plan to manage unexpected expenses resulting from loss of harvest due to weather conditions or disease (80 percent). The smallholders in this segment were least likely to recognize the importance of having a savings account for agricultural activities (32 percent).

Segment 3. Options for Growth—Stable, optimistic and building various paths for the future

Demographics

The Options for Growth segment accounts for 19 percent of all Nigerian smallholders and spans all geopolitical zones with the North East having the smallest share (5 percent). Like the Battling the Elements segment, seven in 10 smallholder household heads in the Options for Growth

segment are over 40 years old (Figure 133). The Strategic Agricultural Entrepreneurs segment and the Options for Growth segment have the smallest proportion of households headed by someone who never attended school or did not have formal schooling (32 percent). This is the most educated segment of smallholders; 73 percent of household members having primary school education or higher. These households also tend to have more male members than average—only about one in three of all household members (35 percent) is a woman.

Over two-thirds of Options for Growth smallholders (69 percent) live below the poverty line of \$2.50 per day and 18 percent live in extreme poverty, on less than \$1.25 per day. They are the least likely to get extra money through relatives or by selling assets in case of an emergency (51 percent).

SEGMENT SYNOPSIS

The Options for Growth smallholders are the most educated of the segments and have greater access to financial tools relative to the Battling the Elements and Farming for Sustenance segments. They are relatively new to farming and are the least satisfied with their agricultural achievements. This suggests they may be open to seeking income-earning opportunities outside of agriculture and new opportunities to advance their agricultural activities. In stark contrast with other segments, they do not store their crops and are less interested than the other smallholders in the ability to access agricultural information on a mobile phone.

Options for Growth smallholders are exposed to a lesser degree than the other two segments to unexpected events that disrupt their agricultural activities. They are more likely than other smallholders to do nothing when they face these negative events.

This segment has the highest proportion of smallholders who agree with the following statements:

- “I focus only on the short term” (41 percent).
- “The future will take care of itself” (62 percent).
- “I am impulsive” (51 percent).

Smallholders in the Options for Growth segment are relatively new to farming. This group has the smallest proportion of smallholders with more than 10 years in farming (56 percent) of the four segments. Like smallholders in other segments, a majority enjoy farming (88 percent) and intend to stay in it (86 percent). However, 48 percent agree with the statement, “I would take full-time employment if I were offered a job.”

Smallholders in the Options for Growth segment are the least satisfied with their agricultural achievements: 44 percent agree with the statement “I am satisfied with my agricultural achievements” compared to over 60 percent for each of the other segments. This level of dissatisfaction may explain why this segment has the smallest proportion of farmers who agree with the statement, “I want my children to continue in agriculture” (52 percent) compared to 67 percent that agree in the Farming for Sustenance segment, 69 percent in the Battling the Elements segment, and 76 percent in the Strategic Agricultural Entrepreneur segment.

On average, the Options for Growth smallholders grow six crops and tend not to store them. The main reasons for not storing crops are the lack of left-over crops (45 percent), lack of a nearby storage facility (21 percent), and a need to use money after the harvest (23 percent). They consume their crops (99 percent), sell them (95 percent),

or trade them (12 percent). The main crops they grow are maize (69 percent), cassava (74 percent), yams (62 percent), and peppers (42 percent).

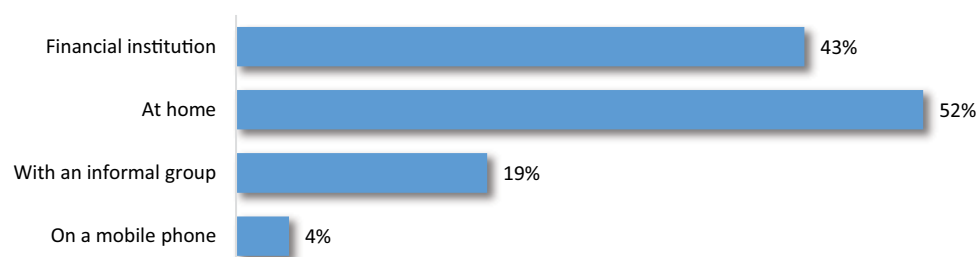
As with the other segments presented, the Options for Growth smallholders are exposed to unexpected events that disrupt their agricultural activities, but to a lesser degree. In the past three years before the survey, 32 percent experienced weather-related events (e.g., drought, floods, late rains), 55 percent were impacted by pests/diseases, and 36 percent and 27 percent by fluctuations in input and market prices, respectively. These proportions are the lowest across all segments. To cope with these negative events, this segment is more likely than any other segment to do nothing.

In keeping with their relatively low level of satisfaction with agriculture, the Options for Growth smallholders are the least interested in the ability to access agricultural information on a mobile phone, despite the fact that more than eight in 10 having a mobile phone. About half do not want to have access to information on weather, market prices, or farming via a mobile phone; although eight in 10 say it is important to have a mobile phone for agricultural activities.

This segment has the smallest proportions of smallholders who keep money aside for agricultural inputs: 38 percent save money for fertilizer, 44 percent for seeds, and 37 percent for pesticides.

Financial attitudes

Compared to smallholders in other segments, the Options for Growth smallholders have greater access to financial tools. Thirty-nine percent are financially included, compared to the overall rate of 26 percent among smallholders. About one-third (31 percent) have a bank account registered in their name, 11 percent have a registered

FIGURE 134. Percentage reporting that it is “very important” to save at each of the following

Sample: Options for Growth households, n=659

NBFI account, and 27 percent have ever used informal financial services. No smallholders in this segment have a mobile money account.

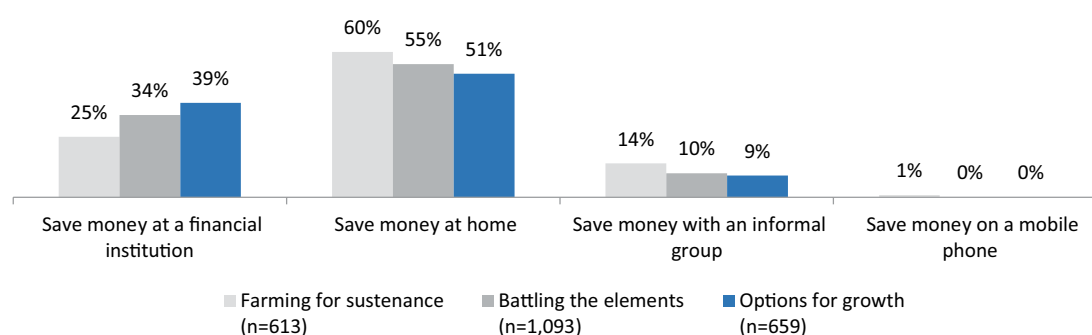
Options for Growth smallholders value saving at home more than saving with financial institutions. Just above half (52 percent) believe it is very important to save money at home, compared to 43 percent who say that it is very important to save money at a financial institution (Figure 134). In the past 12 months before the survey, only 24 percent saved money with a bank or other financial institution. When asked about the most important savings channel, saving at home comes first (51 percent), followed by saving at a financial institution (39 percent) (Figure 135).

Segment 4. Strategic Agricultural Entrepreneurs—Younger and more empowered and resilient

Demographics

The Strategic Agricultural Entrepreneur segment includes 14 percent of Nigerian smallholder households. Two-thirds of the households in this segment are in North Central (20 percent), North West (25 percent), and South South (20 percent).

The average household size is seven, and men account for 64 percent of household members. Two-thirds of household members have at least a primary education, making it the second most educated segment. Household heads in this segment are relatively younger and more educated: about one

FIGURE 135. Which of the following do you feel your household needs to save at the most?

Sample: Smallholder farmers by segment

SEGMENT SYNOPSIS

In the Strategic Agricultural Entrepreneur segment, heads of smallholder households are relatively younger and more educated. This group of smallholders is highly tenured and is the most likely to leave farming for full-time employment. However, they want their children to continue in agriculture more so than those in any of the other segments.

Their agricultural activities have been affected the most by unexpected events, but they have been able to rely on their savings or other resources to cope with tough times. This segment is more enabled than the others, has greater access to emergency funds, and has more financial mechanisms at its disposal.

in three (34 percent) is younger than 40 (Figure 136), and 67 percent have primary schooling and beyond.

As with the Options for Growth segment, 68 percent of smallholders in the Strategic Agricultural Entrepreneur segment live below the poverty line of \$2.50 per day. This makes it one of the two most affluent segments. Yet, 18 percent of its smallholders live in extreme poverty on less than \$1.25 per day.

Farming

Strategic Agricultural Entrepreneur smallholders are highly tenured in farming. Seventy-five percent have more than 10 years of experience in farming, and 17 percent have between six and 10 years of experience. A majority enjoy farming (95 percent) and intend to stay in it (92 percent). About three in four (76 percent) agree with the statement “I want my children to continue

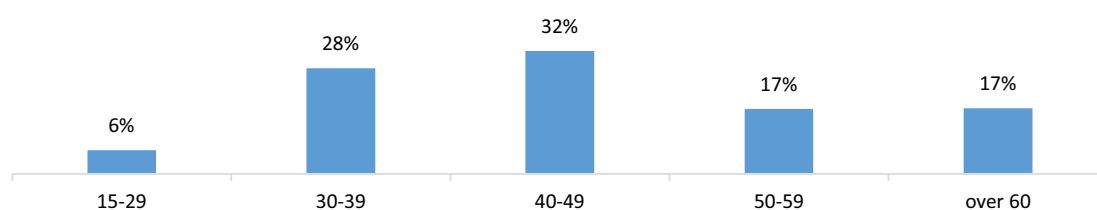
in agriculture”—the highest proportion among all Nigerian smallholders.

However, 33 percent report the lack of land makes it less likely they will stay in farming. Fifty-eight percent say they would take full-time employment outside of farming if offered a job, making this segment and the Battling the Elements segment the two groups mostly likely to leave farming.

Smallholders in this segment grow, on average, seven crops. Their main crops are maize, cassava, yams, beans, groundnuts, pepper, and paddy rice. All of them store crops. They store, on average, three crops. On average, they consume and sell six crops.

A majority of these smallholders have livestock (81 percent), the largest proportion across all segments. The main livestock they own are chicken (layers) (60 percent), indigenous goats (60 percent), sheep (41 percent), chicken

FIGURE 136. Age distribution (household head)



Sample: Strategic agricultural entrepreneur households, n=408

(broilers) (34 percent), goats (30 percent), indigenous cattle (23 percent), and dogs (14 percent).

The Strategic Agricultural Entrepreneur segment has the largest proportion of farmers whose agricultural activities have been seriously affected by unexpected events in the past three years before the survey. Just over half (51 percent) experienced weather-related events (e.g., drought, floods, late rains), and 69 percent were affected by pests/diseases. Unexpected fluctuations in inputs and market prices affected 53 percent and 43 percent of them, respectively. In response to these negative events, smallholder farmers in this segment tend to rely on their savings, sell livestock and crops, or do nothing.

Financial attitudes

The Strategic Agricultural Entrepreneur segment is the most financially included segment. About four in 10 smallholders in this segment (41 percent) are financially included, compared to the overall financial inclusion rate of 26 percent for smallholders. One-third of them have a bank account registered in their name, 16 percent have an NBFIs account, and 69 percent have ever used informal financial services. Remarkably, none of them has a mobile money account, although 83 percent own a mobile phone.

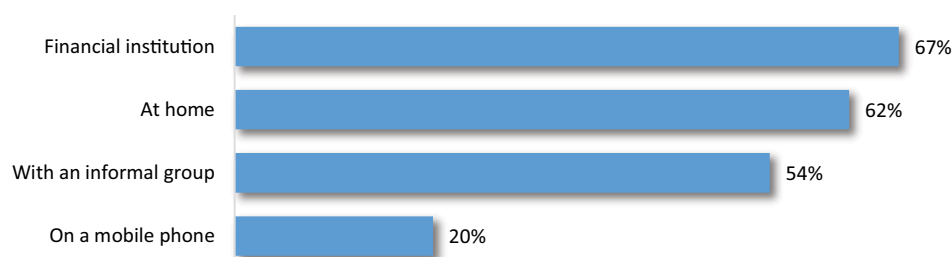
This segment has the largest proportion of smallholders who:

- Could get extra money through relatives sending money or by selling assets in the event of an emergency (70 percent).
- Have a savings plan (45 percent), at least twice the proportion of those in any other segment.
- Have access to credit (38 percent).
- Have a plan to manage unexpected expenses resulting from loss of

harvest or livestock due to weather conditions or a disease (37 percent).

- Agree with the statements, “I can mostly determine what will happen in my life” (63 percent) and “I have many aspirations” (91 percent).
- Want the ability to use a mobile phone to access weather information (74 percent), market pricing information (77 percent), and farming information (77 percent). Almost all of them (97 percent) say it is important for their agricultural activities to have a mobile phone.
- Recognize the importance of insurance (59 percent) and savings (86 percent) for their agricultural activities.
- Trust banks and financial institutions (61 percent) and savings groups (59 percent), and would borrow from banks or formal financial institutions (52 percent) and/or MFIs (34 percent).
- Currently keep money aside for agricultural inputs: fertilizer (69 percent), seeds (70 percent), pesticides (62 percent).
- Recognize the importance of saving for school fees (95 percent).

Strategic Agricultural Entrepreneur smallholders view saving through each savings medium as “very important” at a rate greater than that of the other three segments. Financial institutions are particularly valued; 67 percent report that saving through a financial institution is “very important,” and 42 percent report that a financial institution is the most important among the different savings options (figures 137 and 138). This is the only segment where saving money at home comes in second, closely following saving at a financial institution. Despite the higher level of perceived importance of financial institutions among

FIGURE 137. Percentage reporting that it is “very important” to save at each of the following

Sample: Strategic agricultural entrepreneur households, n=408

this group, only 27 percent of smallholders saved money with a bank or another formal financial institution in the past 12 months before the survey.

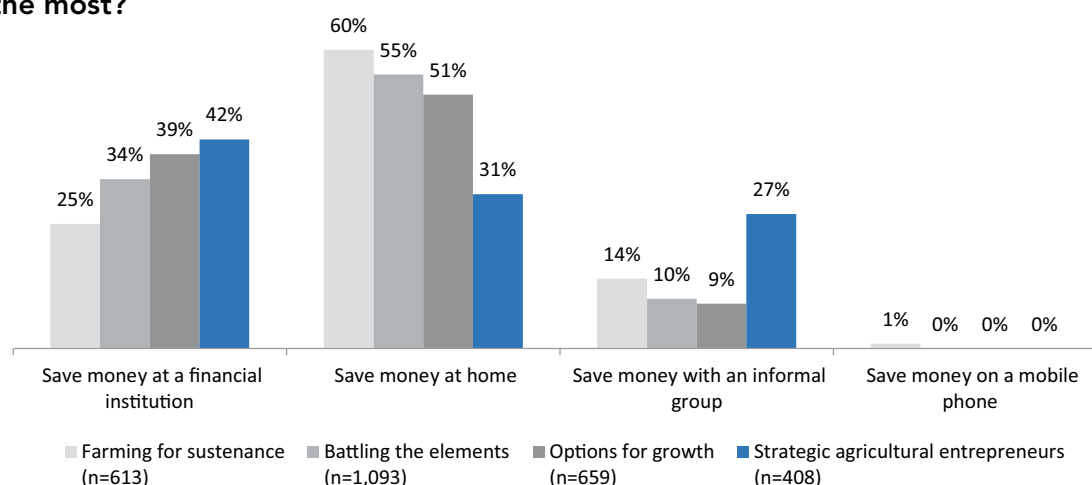
Market Implications

Smallholder farming in Nigeria is defined by a collection of attitudinal, behavioral, and circumstantial factors. This segmentation model shows unique opportunities and constraints in each segment for market interventions.

The four segments of smallholder households characterize different circumstances, behaviors, and attitudes that prevail across different groups within the smallholder population across Nigeria. The Battling the Elements segment dominates the landscape (44 percent) of smallholders followed by the Farming

for Sustenance segment (which accounts for 23 percent of smallholders). Therefore, to have an impact in the marketplace, more financial services should be marketed to these two large groups of smallholders in Nigeria.

- The **Farming for Sustenance** group is the second largest group of smallholders. They are mostly in the northern geopolitical zones of Nigeria and comprise a mix of both the older and younger household heads. They are the poorest among all segments. They are highly tenured, and the majority enjoy farming and intend to stay in it, although their ability to continue farming is threatened by poor returns and age/health reasons. Of the four segments, the Farming for Sustenance segment is the least financially included, affected the most by

FIGURE 138. Which of the following do you feel your household needs to save at the most?

fluctuations in input and output prices, and reports the greatest lack of trust in formal financial institutions. The key need for these smallholders is to digitize informal channels and provide products that allow them to take advantage of market opportunities by providing quick and reliable access to information. As the least educated, reaching smallholders in this group should be through targeted messages to equip them with information, because their lack of information may prevent them from taking full advantage of financial products that could enable them to improve their welfare.

The smallholders in this segment face the greatest challenge to becoming financially included, but the high levels of risk they face may make them amenable to products that help to mitigate risk. However, their lack of resources and formal education are additional barriers that come into play. Beyond using formal financial services the least, they do not use informal financial services. These smallholders may need more in terms of financial education and of incentives and support to bring them into the financial fold.

- The **Battling the Elements** segment is the largest segment of the smallholder population in Nigeria. These households are spread across the country and are headed by older men who live below the poverty line. They grow on average seven crops, and all of them store crops. This segment is the second-largest group of farmers who report that saving at home is the most important saving channel for the household, and it is the second-most financially excluded segment. Because this is the largest segment, focusing on these smallholders presents the opportunity to influence a sizable number of smallholder farmers.

They are adversely affected by market forces, the risk of which can be tempered by greater access to information, particularly through mobile phones.

- The **Options for Growth** segment comprises 19 percent of Nigerian smallholders and spans across all geopolitical zones. Most of the household heads in this segment are over 40 years old, much like in the Battling the Elements segment. This segment is the most educated among all the segments. Smallholders in this segment are the least tenured and are relatively new to farming. Thirty-nine percent are financially included (compared to the overall rate of 26 percent) and have relatively greater access to financial tools.

- The **Strategic Agricultural Entrepreneurship** segment includes 14 percent of smallholder households in Nigeria and is the smallest segment. Most of these households are in North Central, North West, and South South. The household heads are relatively younger and more educated, they are highly tenured, they enjoy farming, and they intend to stay in farming.

The Strategic Agricultural Entrepreneurship segment is the most financially included segment. This segment is most likely to take up new financial products and services because they are the most optimistic and ready to experiment with new products. In addition to being early adopters, they are most likely to be influencers who can help to generate change among those in the other segments.

They present the greatest desire for accessing information on mobile phones, but indicate no desire to conduct digital financial transactions. Though their profile could be attractive to providers, they do not have exposure to digital financial

services and, therefore, would not know the advantages of having a mobile money account. Focusing on this segment may spur the increased use of mobile money accounts for smallholder farmers in Nigeria.

Generally, smallholders lack trust in formal financial institutions and prefer informal sources. This leads to the conclusion that formal institutions may not be meeting their needs or may not be adequately presenting the value proposition of their products. This segmentation helps identify specific groups for targeting tailor-made products and developing strategies to influence adoption and change. The most critical objective for influencing the smallholder population is to develop trust in formal institutions across the board.

This segmentation further highlights some agricultural and digital financial implications for consideration by stakeholders. These implications could foster greater financial inclusion, agricultural stability and growth, and overall economic well-being.

Agricultural and Digital Finance Implications

Implication 1. A balanced mix of an older and younger generation of farmers presents an opportunity for cross-generation learning.

The Farming for Sustenance segment presents a balance between younger and older household heads. Options for Growth and Strategic Agricultural Entrepreneurs also have relatively younger household heads. With all the segments reporting interest in staying in farming, this mix of the younger and older smallholder household heads presents an opportunity for cross-generation learning. The younger generation, which is more educated and tech savvy, can transfer knowledge gained in agricultural best practices and financial education to the older generation.

Implication 2. Risk planning and mitigation is critical for agricultural sustenance among smallholders in Nigeria.

Weather-related events (e.g., drought, floods, late rains), pests/diseases, and unexpected fluctuations in inputs and market prices have taken a toll on smallholder farmers in all segments. There is an acute need for risk planning and risk mitigation at both the micro (household) and macro (stakeholder/government) levels to help smallholders cope with tough times in the agricultural cycle. The Farming for Sustenance segment has the greatest need for products that help to mitigate risk, such as crop insurance. Smallholders generally are not able to acquire insurance because they have minimal resources and sources of information. A key objective is to increase access to information, particularly on good agricultural practices and financial services to help reduce vulnerability. New mobile information services that are more relevant to smallholder agriculture should be introduced to help mitigate risk.

Implication 3. Integration of the mobile phone into financial and agricultural activities is critical to improve smallholder livelihoods.

Mobile phones are important tools for communication among smallholder farmers in Nigeria but their integration into financial and agricultural activities is limited. Phone ownership is relatively high across all the segments, except for Farming for Sustenance. High rates of phone ownership suggest that mobile technology presents the most viable channel for promoting digital financial inclusion, and specific products, such as crop insurance, could promote resilience.

Most of the smallholders in the various segments are interested in using mobile phones to enhance farming activities. The Options for Growth smallholders are

the least interested in the ability to access agricultural information on a mobile phone. About half of Options for Growth smallholders do not want to have access to information on weather, market price, or farming via a mobile phone. The Strategic Agricultural Entrepreneurs segment has shown the most interest in solutions and products that use mobile phones. This segment can drive financial product adoption and be the entry point for smallholder households in other segments. This segment can be targeted through various channels to increase the use of mobile phones in agriculture and farming.

Implication 4. Savings presents an opportunity to increase both agricultural sustainability and financial inclusion.

Smallholders across all the segments recognize saving in financial institutions or at home as important for various reasons, including the mitigation of agricultural risks. The smallholders in the Strategic Agricultural Entrepreneur segment view saving through various channels as “very important” more so than those in the other three segments. Financial institutions are particularly valued and trusted by smallholders in this segment. Options for Growth and Battling the Elements smallholders value their homes more than financial institutions as a saving channel. Battling the Elements smallholders do not view saving as important for their agricultural activities. Because they do experience risk, products such as insurance may resonate with this market.

The Farming for Sustenance segment has the lowest proportion of smallholders who trust banks and the highest proportion of those who do not perceive the importance of bank accounts. These smallholders pose the greatest challenge to financial services providers as they look to penetrate this market. This segment also has the largest proportion of households that do not have a plan to

manage unexpected expenses from loss of harvest due to weather conditions or a disease. However, they do recognize the importance of saving to pull through difficult times. In addressing the perceived need for savings, providers may want to look at digitizing savings channels or products or to offer a bundle of products that optimize the use of mobile phones.

Fostering Financial Inclusion among the Segments

Nigeria presents significant challenges in increasing financial inclusion and improving levels of financial well-being. The challenges include the high poverty rate, lack of product offerings, very limited uptake of mobile money and other financial services that are accessible via basic phones, general lack of information on financial services, low levels of understanding of how financial services are used, and high exposure to risk.

On the other hand, smallholders in Nigeria have high levels of mobile phone ownership and access to phones. Mobile phones and the implications addressed in this paper provide strategic direction to new approaches in supporting the different segments of smallholder households. These new approaches will require services providers to tailor products and services to the segments that struggle to become financially included and meet the needs of segments that are more stable and already financially included. It is important to keep smallholders, especially youth, satisfied so they continue to be a productive part of the agricultural sector.

In Nigeria, multiple strategies for meaningful uptake and use within a population will be required. Ultimately, this will give providers the opportunity to better plan their approaches and calculate potential returns. And stakeholders that are shaping this sector will have the knowledge necessary to better direct resources to the targeted needs of these smallholder groups.

ANNEX. METHODOLOGY AND RESEARCH DESIGN

Sample Design

The smallholder household survey in Nigeria is a nationally representative survey with a target sample size of 3,000 smallholder households. To take nonresponse into account, the target sample size was increased to 3,225 households assuming a response rate of 93 percent. The sample was designed to produce national-level estimates and estimates for each of Nigeria's six geopolitical zones:

- North Central: Benue, Federal Capital Territory (FCT), Kogi, Kwara, Nasarawa, Niger, and Plateau
- North East: Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe
- North West: Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, and Zamfara
- South East: Abia, Anambra, Ebonyi, Enugu, and Imo
- South South: Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers
- South West: Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo

For the purposes of this survey, the smallholder households for this sample were defined as households with the following criteria:

Household with up to 5 hectares	AND	Agriculture provides a meaningful contribution to the household livelihood, income, or consumption
OR		
Farmers who have less than: 50 heads of cattle, or 100 goats/sheep/pigs, or 1,000 chickens		

Sampling frame

Nigeria is divided into 774 Local Governments Areas (LGAs). Its latest housing and population census took place in 2006. In preparation for this census, the National Population Commission demarcated over 662,000 enumeration areas (EAs) for the country. From these EAs, two hierarchical master sample frames were developed by the Nigeria Bureau of Statistics: the LGA master frame and the National Integrated Survey of Households (NISH).

The smallholder survey used NISH as the sampling frame but retained only the EAs that included agricultural households.

Sample allocation and selection

The total sample size was first allocated to the geopolitical zones in proportion to their number of agricultural EAs in the sampling frame. Within each zone, the resulting sample was then further distributed to states proportionate to their number of agricultural EAs. Given that EAs were the primary sampling units and 15 households were selected in each EA, 215 EAs were selected.

A stratified multistage sample was used for the smallholder survey. A stratum corresponds to a state, and the sample was selected independently in each stratum.

In the first stage, EAs were selected as primary sampling units with equal probability. A household listing operation was conducted in all selected EAs to identify smallholder households and to provide a frame for the selection of smallholder households to be included in the sample. In the second stage, 15 smallholders were selected in each EA with equal probability.

In each selected household, a Household questionnaire was administered to the head of the household, the spouse, or any knowledgeable adult household member to collect information about household characteristics. A Multiple Respondent questionnaire was administered to all adult members in each selected household to collect information on their agricultural activities, financial behaviors, and use of mobile money. In addition, in each selected household one household member, selected using the Kish grid, was administered the Single Respondent questionnaire.

Household listing

The household listing operation was conducted in all selected EAs on 6–18 October 2016. For this purpose, InterMedia developed a manual that described the listing and mapping procedures. The manual included listing forms and questions used to identify smallholder households according to the agreed definition for the survey. The manual was used to train 74 listing teams, each consisting of one lister and one mapper. The training involved both classroom sessions and field practice.

The household listing was done on smartphones, which required that a script be developed in Dooblo Survey-ToGo software for the listing forms. The script was field tested and validated before it was used for the listing operation.

Deviations in the sample design

The household listing operation identified fewer than 15 smallholder households in many sampled EAs. Because of this, the sample take of 15 households per EA could not be implemented in those EAs. To avoid a sample shortfall, the sample take was increased to 17 smallholder households where possible

while retaining in the sample all smallholder households in EAs with fewer than 17 smallholder households. This yielded 3,457 sampled households.

Sampling weights

The sample for the smallholder household survey was not self-weighting. Therefore, sampling weights were calculated. The first component of the weights was the design weight based on the probability of selection for each stage. The second component used the response rate at both household and individual levels.

The design weights for households were adjusted for nonresponse at the household level to produce adjusted household weights. Sampling weights for the Multiple Respondent data file were derived from adjusted household weights by applying to them non-response rates at the individual level. For the Single Respondent data file, the same process was applied after accounting for the subsampling done within the household.

Finally, household and individual sampling weights were normalized separately at the national level so the weighted number of cases equaled the total sample size. The normalized sampling weights were attached to the different data files and used during analysis.

Sampling errors

The sample design for the smallholder household survey was complex and featured clustering, stratification, and unequal probabilities of selection. For key survey estimates, sampling errors that took into account the design features were produced using either the SPSS Complex Sample module or STATA based on the Taylor series approximation method.

Questionnaire

To capture the complexity of smallholder households, the smallholder household survey was divided into three questionnaires: the Household questionnaire, the Multiple Respondent questionnaire, and the Single Respondent questionnaire (Table A-1). The survey was designed in this way to capture the complete portrait of the smallholder household, as some members of the household may work on other agricultural activities independently and without the knowledge of others.

The Household questionnaire collected information on the following:

- Basic household members' individual characteristics (age, gender, education attainment, schooling status, relationship with the household head)
- Whether each household member contributes to the household income or participates in the household's agricultural activities. This information was later used to identify all

household members eligible for the other two questionnaires

- Household assets and dwelling characteristics

Both the Multiple and Single Respondent questionnaires collected different information on the following:

- Agricultural practices—farm information such as size, crop types, livestock, decision making, farming association, and markets
- Household economics—employment, income, expenses, shocks, borrowing and saving habits, and investments

In addition, the Single Respondent questionnaire collected the following information:

- Mobile phones—attitudes toward phones, use, access, ownership, desire, and importance
- Financial services—attitudes toward financial products and services such as banking and mobile money, including ownership, use, access, and importance

TABLE A-1. Design of smallholder questionnaires

	Household questionnaire	Multiple Respondent questionnaire	Single Respondent questionnaire
Target respondent(s)	Head of the household, spouse, or a knowledgeable adult	All household members 15 years old and older who contribute to the household income or participate in its agricultural activities	One randomly selected adult in the household among adults who contribute to the household income or participate in its agricultural activities
Topics covered	<ul style="list-style-type: none"> • Basic information on all household members • Information about household assets and dwelling characteristics 	<ul style="list-style-type: none"> • Demographics • Agricultural activities • Household economics 	<ul style="list-style-type: none"> • Agricultural activities • Household economics • Mobile phones • Formal and informal financial tools

TABLE A-2. Response rate for the Household questionnaire

	Urban	Rural	Total
Households selected	381	3,076	3,457
Households occupied	345	2,965	3,310
Households interviewed	336	2,690	3,026
Household response rate	97%	91%	91%

The questionnaires were translated into Igbo, Hausa, Yoruba, and Pidgin and were pretested on 5–7 November 2016. After the pretest, debriefing sessions were held with the pretest field staff, and the questionnaires were modified based on the observations from the pretest. After the questionnaires were finalized, a script was developed to support data collection on smartphones. The script was tested and validated before it was used in the field.

Training and data collection

Ipsos Nigeria, InterMedia's local field partner, recruited interviewers and supervisors for the main fieldwork, taking into account their language skills. After field staff were recruited, training was conducted in two phases. First, a centralized training of trainers was conducted in Lagos on 1–8 November 2016. This training was attended by the regional trainers for the different states, the field teams for Lagos state, and the independent field quality control (QC) team hired by InterMedia. The training covered interview techniques and field procedures, a detailed review of the survey questionnaires,

mock interviews between participants in the classroom, and field practice with actual respondents in the areas outside the sampled EAs in Owode Apa and Iragon.

In addition, six regional training sessions were conducted by 36 supervisors who were trained during the centralized training session. The regional trainings were attended by the locally hired enumerators and QC team on 14–19 November 2016, except in Enugu and Kaduna, in which the trainings were held on 21–26 November 2016. Data collection took place from 15 November to 9 December 2016 and was conducted by Ipsos Nigeria. Seventy-four interviewing teams collected the survey data on smartphones. Each team consisted of one supervisor and two to five interviewers.

Response rates

Tables A-2, A-3, and A-4 show household and household member response rates for the Nigeria Smallholder Household Survey. A total of 3,457 households was selected for the survey. Of those households, 3,310 were found to be occupied during data collection. Of these occupied households, 3,026 were successfully

TABLE A-3. Response rate for the Multiple Respondent questionnaire

	Urban	Rural	Total
Eligible household members	5,872	771	6,643
Eligible household members interviewed	4,511	617	5,128
Response rate	77%	80%	77%

TABLE A-4. Response rate for the Single Respondent questionnaire

	Urban	Rural	Total
Eligible household members	336	2,690	3,026
Eligible household members interviewed	302	2,471	2,773
Response rate	90%	92%	92%

interviewed, yielding a household response rate of 91 percent.

In the interviewed households, 6,643 eligible household members were identified for the Multiple Respondent questionnaire. Interviews were completed with 5,128 eligible household members,

yielding a response rate of 77 percent for the Multiple Respondent questionnaire.

Among the 3,206 eligible household members selected for the Single Respondent questionnaire, 2,773 were successfully interviewed, yielding a response rate of 92 percent.