The Busara Center for Behavioral Economics is a research, consulting, and design firm that works with researchers and organizations in the Global South to advance and apply behavioral science in the pursuit of poverty alleviation.

We aim to understand why and how certain populations make decisions, including the decision to adopt a given product or service.

Digital services can make smallholder farmers more productive and resilient. We're studying the adoption of digital services through a behavioral science lens.

1 Past studies have identified the challenges in this space. Leveraging these studies, we're looking at the challenges from the perspective of farmer behavior.

2 Behavioral science research allows us to analyze social norms more explicitly and critically, especially gender norms that can enable or inhibit digital service adoption.

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Busara is partnering with digital service providers across Sub-Saharan Africa and South Asia to design and test solutions to increase the adoption of digital services.

Digital advisory services for extension agents

Peer-to-peer digital advisory services for farmers

Digital record-keeping for extension agents

Digital services for market information and linkages

We are "nudging" farmers and extension workers to adopt digital services. Nudges are small, relatively inexpensive interventions that overcome key barriers.

Examples from past studies in agriculture include:

1 **"Social prestige rewards"** (e.g., certificates) encouraged group leaders to share information on new technologies with fellow farmers in Ethiopia (Balew et al., 2022).

2 Sending timely voice SMS **reminders** increased the uptake of extension advice in Mali (Dzanku & Osei, 2022).

3 Giving farmers the option to buy **fertilizer vouchers immediately after harvest** (i.e., when they had cash on hand) increased fertilizer adoption in Kenya (Duflo et al., 2011).

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Effective nudges are rooted in evidence. We are gathering evidence using methods from Human-Centered Design, which puts users at the heart of the research.

Step 1: Understand the Problem	Step 2: Co-Design Nudges with End-Users
Why aren't farmers adopting the digital service?	*How can we overcome barriers to adoption?*
We are conducting in-depth interviews and focus group discussions to identify barriers to adoption from the end-users' perspective.	We are organizing "co-design workshops" with farmers, extension workers, and stakeholders to brainstorm nudges to overcome barriers.

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Nudges can remove key barriers to digital service adoption.

Human-Centered Design methods generate evidence to inform the design process, ensuring the nudges are grounded in the realities and contexts of the farmers, extension workers, and stakeholders we are targeting.

Nudging Extension Workers to Collect Data Digitally

The Goat Trust is trying to encourage women extension workers in India to switch from a paper-based to a digital data collection model. We uncovered several barriers:

Competing Priorities

The extension workers are busy and forget about digital data collection. They also share the smartphone with their families.

Trust

The extension workers had no way of knowing if the data was saved or if it was sent to the organization.

Double Effort

Collecting data using a paper and clipboard was necessary. Collecting data using a digital platform was double effort.

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We conducted co-design workshops with extension workers and The Goat Trust to **co-design human-centered nudges** to overcome these barriers.

We co-designed posters to remind extension workers to send data digitally while also reminding their families of the importance of smartphones for the workers' jobs.
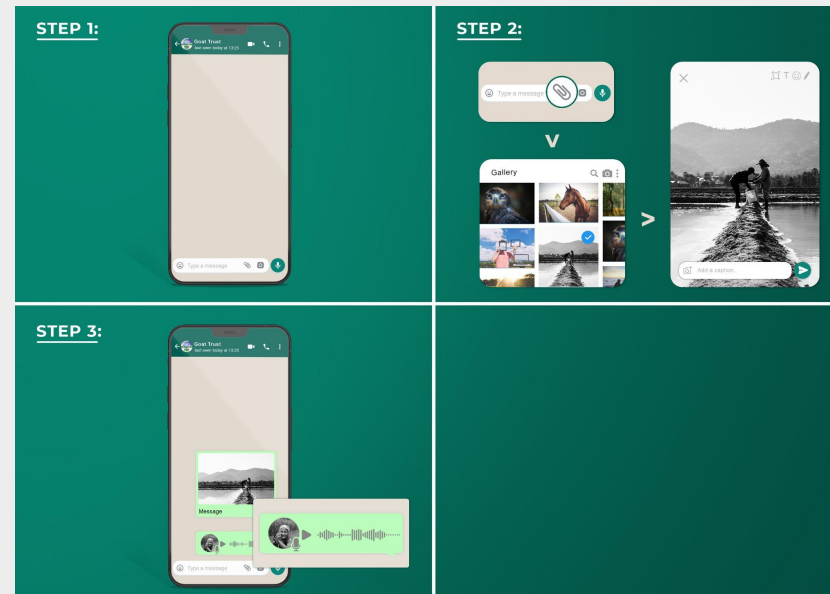
We co-designed confirmation messages. When the extension workers send data on WhatsApp, they receive a message that The Goat Trust received the data.
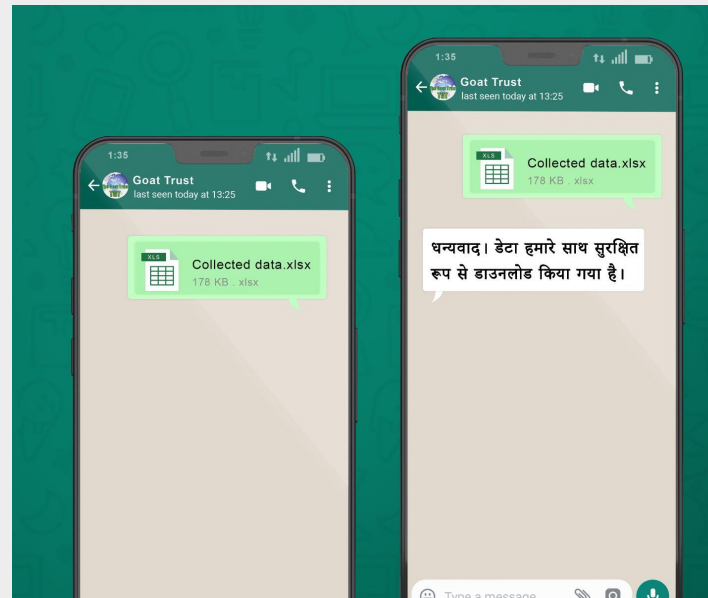
We co-designed **certificates** that the women could earn for being digital extension workers, making the double effort of digital- and paper-based data collection worthwhile.

Redesigning and Optimizing Advisory Delivery

Excellence in Agronomy was exploring ways to optimize advisory for cassava farmers in Nigeria through the Alkilimo toolkit. They offer printed guides for farmers.

STEP 3: Decide the Fertilizer Application Rate

The amount of fertilizer to apply depends on your current cassava yield. Think of how cassava performed in your field in the past, and compare the size of the root stock to the pictures.

LOW	NORMAL	MEDIUM	HIGH	VERY HIGH
<3 tonnes per acre	3 - 6 tonnes per acre	6 - 9 tonnes per acre	9 - 12 tonnes per acre	>12 tonnes per acre

The higher your current yield, the less fertilizer is required. Use the flyer with maps to obtain the fertilizer rate for your LGA. Recommendations are provided in kilograms of urea and NPK fertilizer per acre. Convert these to the rates required for your field using the rule of three.

1 bag (of 50 kg) per acre is about 2 levelled water caps per plant

2X

Area of your field (acre) ✖ Fertilizer needed for 1 acre (kg) = Fertilizer needed for your field (kg)

According to the in-depth interviews and focus group discussions:

■ The guide contained "hassle factors."

■ The guide didn't incorporate or acknowledge traditional practices.

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We conducted co-design workshops with farmers and the partner to **explore ways to optimize the guides,** helping farmers adopt the guides more easily.

We co-designed several versions of the printed guide with farmers and the partner that are **more illustrated**, which we are currently in the process of testing.
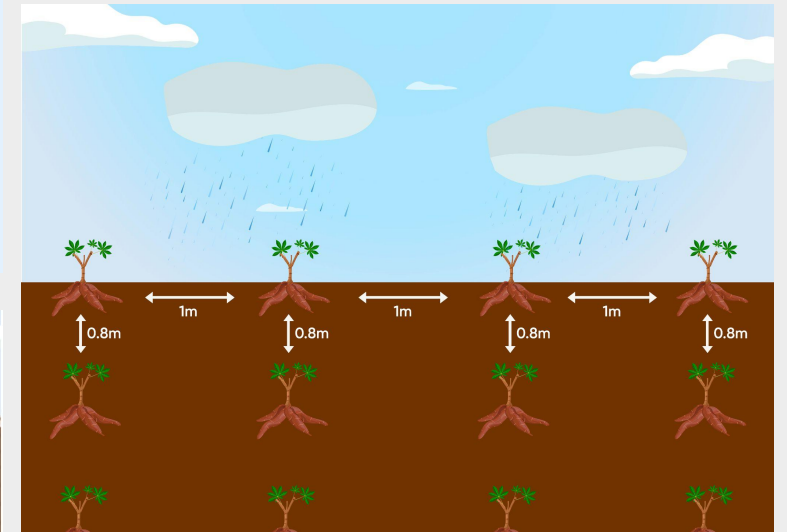
We also co-designed a series of messages that acknowledge traditional practices, which we are currently in the process of testing.

"As you know, times changes. With time, there are new challenges. And thus, practices need to change to tackle these new challenges.

Your forefathers practiced what was relevant for their time. With changing weather patterns, it is important to adapt your farming practices. [Partner] takes into consideration all of this to help you achieve the best yield."

Delivering messages alongside advisory can encourage farmers to shift away from their traditional practices when necessary and adopt the practices in the guide.

Recap and Questions

When and why should you implement nudges?

Nudges can be used to change behavior. They make it easy for farmers, extension workers, and other stakeholders to adopt digital services by removing key barriers.

How do you design an effective nudge?

Nudges are grounded in evidence. They should be designed around the realities and contexts of the target population.

How can you generate this evidence?

Human-centered design methods can be used. For our research, we conducted in-depth interviews, focus group discussions, and co-design workshops.