



# DIGITAL TECHNOLOGY AND AGRICULTURE LED GROWTH

USAID seeks to use digital technology to help people around the world lead more resilient and prosperous lives. In the area of agriculture-led growth, applications of digital tools can help improve the agricultural productivity and overall market inclusion and livelihoods of smallholder farming families and others in the food system. Digital agriculture can lead to data-driven decision making that levels the playing field and reduces asymmetric information throughout the market system. It can also incentivize and encourage the greater involvement of youth in agriculture-led growth by engaging them through digital channels. Programs should account for the potential challenges and limitations as well as solutions and opportunities that digital agriculture services may offer.

## DIGITAL AGRICULTURE CATEGORIES

Below are four primary ways this data is used to support digitally enabled agriculture-led growth.

### ADVISORY AND INFORMATION

These solutions typically target smallholder farmers and digitally deliver information on a variety of topics. These solutions can deliver information on shifting conditions such as weather, pests, disease, or market prices, which help smallholders and other market actors make more informed decisions during key parts of their production cycle. Advisory services can utilize satellite imagery data to provide targeted advice to smallholder farmers; for example, using weather forecasts to advise on planting times. These services can also provide static agronomic advice, typically crop- or livestock-relevant best practice tips. Information and advisory digital agriculture services are often bundled with other solutions. These solutions typically only require the user to have a basic mobile phone to interact with the service. Women often manage different types of crops or livestock, so it is important for digital solutions to enable more customizable information services that provide relevant messaging to women, as well as other marginalized groups.

### MARKET CONNECTIONS

These solutions typically focus on the relationships between buyers and farmer-based organizations, such as cooperatives or farmer groups. These products provide a digital channel that enables more direct lines of interaction between farmer-based organizations (e.g., cooperatives, farmer groups) and input providers and/or off-takers (buyers). These solutions usually have an e-commerce element to them, enabling the remote ordering, buying and selling of inputs or produce/livestock. These services may provide or partner with transportation or logistics businesses that arrange fulfillment services for the items being purchased. Market connection services typically require end

users to have a computer or smartphone/tablet in order to use them effectively.

### SUPPLY CHAIN MANAGEMENT

These solutions typically focus on market actors other than individual farmers themselves and provide platforms that collect supply chain data that helps agribusinesses or more mature farmer-based organizations make data-driven decisions in areas like procurement and inventory management. By using smartphone and tablet applications as well as cloud-based databases, these solutions help clients better manage their smallholder interactions and improve transparency around the yield history and other aspects of a smallholder's productivity, which can lead to more formal interactions between market actors. Enterprise Resource Planning (ERP) solutions that integrate the management of primary business processes are included in this category, as are Farmer Management Information Systems and Traceability functions. Like market linkage solutions, transportation and logistics can also be part of a service provided under this category.

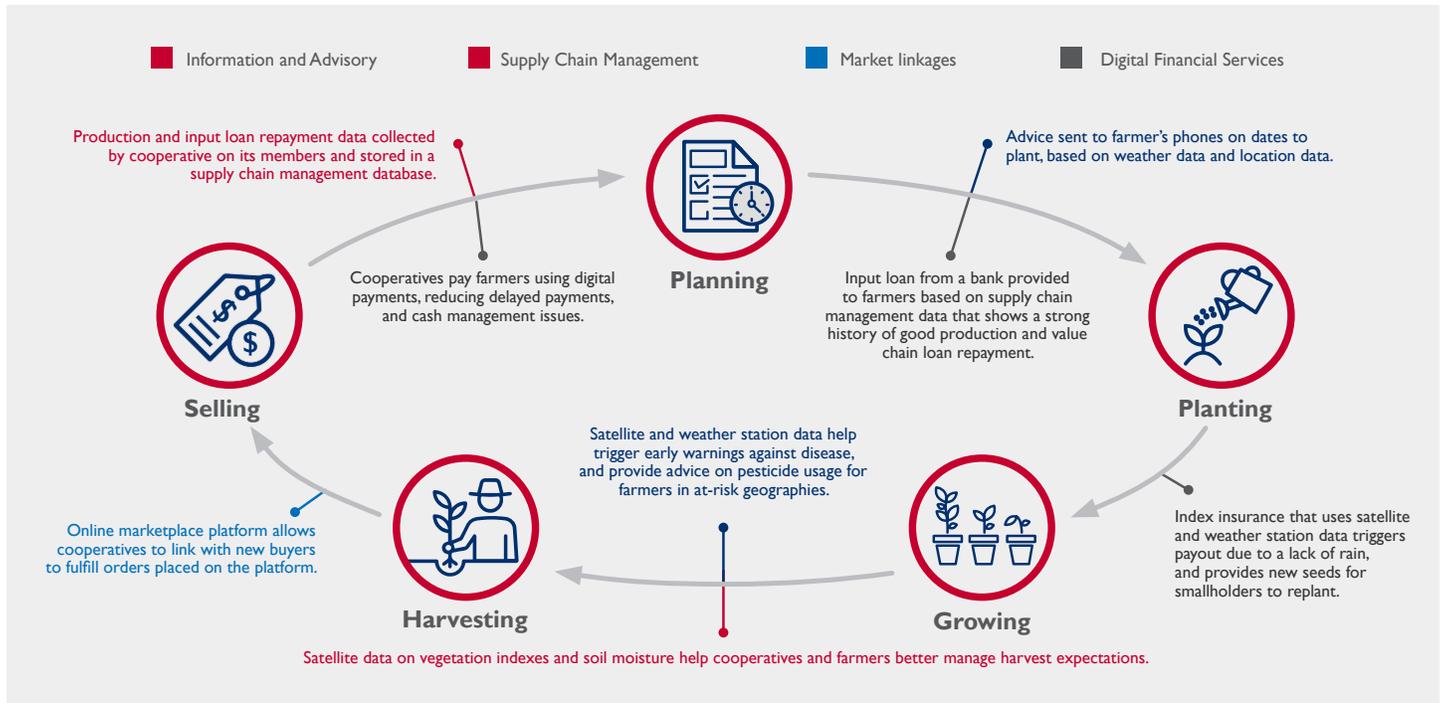
### DIGITAL FINANCIAL SERVICES

Digital financial services can improve smallholder farmer access to credit, savings, insurance, and payment channels. Access to financial services is a crucial problem, particularly for women and youth, faced by smallholders and market actors they work with. A major source of this problem is the lack of information financial service providers have on smallholder households. The data that is generated on smallholder households and market actors in the solutions mentioned above can provide financial service providers with new information that enables

alternative credit scoring that requires no credit history, index-based insurance, and digital savings products. Digital agricultural providers can partner with financial service providers to develop and deploy new financial products that are more relevant and easily accessible to smallholder households. Digitally enabled

financial services have the ability to reduce costs, enable easier savings, provide safer and more private ways to store money, and a variety of other features that can address the specific needs and preferences of women and youth.

## EXAMPLE OF DIGITAL AGRICULTURE'S IMPACT ON A GROWING CYCLE



## CHALLENGES IN USING DIGITAL TECHNOLOGY FOR AGRICULTURE-LED GROWTH:

While there are many exciting and innovative ideas involved in the digital agriculture sector, many of the solutions are still nascent and questions remain regarding their impact and sustainability. There are a number of challenges that can make it difficult for digital agriculture solutions to thrive:

- Many solutions encounter challenges in growing a customer base willing to pay the full licensing fees and other costs associated. Solutions can try to tackle too many issues at once, bundling a wide variety of services under one roof, never defining the most essential products.
- The acquisition costs for bringing on new customers can be very high due to their rural locations.
- Consumer protection and data privacy can become an issue, particularly when farmer data is being used for additional value added services like credit. It's important to understand the underlying consent and data privacy implications of digital agriculture solutions.
- Unclear regulatory environments around data management and sharing can present barriers for nascent digital agriculture solutions, especially in the financial services space.

## DIGITAL DIVIDE CONSIDERATIONS

Mobile network coverage can be poor in some rural areas, creating challenges for users and possibly excluding market actors operating in areas with no signal. It is crucial to understand the digital capacity of the target customers for any digital agriculture service being proposed, and whether end users will be able, interested and willing to access the services through the designated network channels.

As has been discussed throughout this fact sheet, women are less likely to own a mobile phone or access the internet in most of the countries USAID operates in. This can lead to an uneven distribution of potential benefits attained through the use of digital agriculture and exacerbate the existing inequalities between women and men in agriculture. Gender should be an important consideration in solution design. Age is another element that should be considered, as youth are often considered more competent and interested in the use of digital tools, but this is not always true. It's important to consider digital solutions that are designed with the user in mind, taking into consideration preferences of both women and youth during product design.