DIGITAL TECHNOLOGY AND NUTRITION IN THE FOOD SYSTEM

USAID seeks to use digital technology to help people around the world lead more resilient and prosperous lives. Digital solutions have the potential to unlock new opportunities to strengthen the ability of food systems to provide safe and nutritious foods. Sensitive to price margins within the food system, some solutions may emerge first in more developed markets. As the field continues to evolve, it is critical to pursue inclusive approaches and plan around challenges and the risk of exclusion presented by the digital divide – gaps in digital technology access, literacy, and adoption that exist between groups (e.g., urban and rural, male and female).

COMMON PURPOSES OF DIGITAL TECHNOLOGY FOR NUTRITION

Digital technology can serve multiple purposes for strengthening nutrition within the food system. The four categories below describe some of the uses.

CHANGING BEHAVIORS FOR CONSUMPTION

To promote healthy eating patterns, interventions may disseminate short bits of information, produce training courses, or use 'edutainment' formats like dramas. Audio and video recordings continue to be used for such purposes, and are played by outreach staff or broadcast over radio or television. With increasing uptake of mobile phones around the world, programs also send people messages by SMS or outbound dialing, while Interactive Voice Response (IVR) systems enable users to call in and select content to hear on-demand.
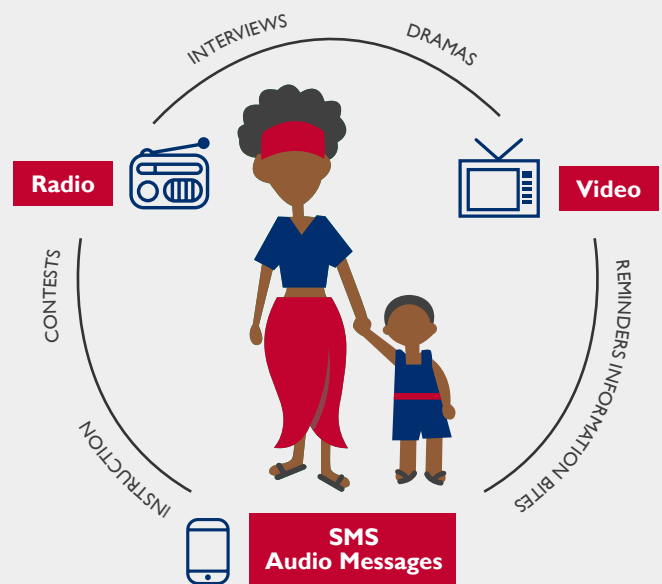
FOOD PRICE MONITORING

Policy makers and development actors seek information about the availability and affordability of food in order to promote healthy diets.[1] Digital tools can support collection of data from dispersed locations. Agents input prices into an app or send them via SMS, and aggregated results are published weekly or monthly. The European Commission's Food Price Crowdsourcing in Africa seeks to motivate individual voluntary data contributors in Nigeria to submit food prices via an app with the benefit of accessing the daily compiled data for their own use in purchasing food.[2]

DIGITAL PAYMENTS AND E-COMMERCE

Not only does e-commerce reduce physical interaction in times of pandemic, but some food platforms are designed to benefit the more economically vulnerable. The Malaicha.com website and app allows South Africans to order food at local prices and be picked up by relatives in Zimbabwe, where the cost of food has soared. Mobile money applications can also support nutrition among vulnerable households; for example, mobile payments can be a more efficient method to distribute cash transfers to households for buying food.

DIGITAL COMMUNICATIONS ECOSYSTEM FOR BUILDING NUTRITION DEMAND

INTERVIEWS   DRAMAS

Radio

Video

CONTESTS

REMINDERS INFORMATION BITS

INSTRUCTION

SMS Audio Messages

[1] Ghana's commitment to monitor the cost of nutritious diets models how food price monitoring can better inform policy and program decisions to promote healthy diets. Nortey, J., "Monitoring the Price of Nutritious Diets in Ghana," November 2017.
[2] https://publications.jrc.ec.europa.eu/repository/bitstream/JRC119475/jrc119475_jrc_conf_workshop_ eudelegation_abuja_sep2019_final_pubsy.pdf

A Feed the Future project in Mozambique uses mobile phones to support food sellers.
Source: CNFA

CHALLENGES IN USING DIGITAL TECHNOLOGY FOR NUTRITION

Barriers can limit the success of digital technology for nutrition in food systems. For example:

- Minimal network coverage in some rural areas may hinder data collection (e.g., prices) or information dissemination;

- Some options, like RFID and traceability systems, can be too expensive, especially for domestic food markets with low margins;

- Similarly, sensing technologies may have little use if food system actors cannot afford the means to address poor measurement (e.g., refrigerated transport).

ENSURING FOOD SAFETY TO REDUCE LOSSES

Because many of the most nutritious foods are also the most perishable, very efficient supply chains are needed to aggregate, transport, process, distribute, and market them. Digital technology offers significant value for improving such efficiencies, from timeliness of collection from farms to rapid distribution to processors and markets with demand. Within the transportation system – and particularly in the cold chain – sensors and tags can track critical variables like temperature, humidity, and levels of ethylene gas and mold in the air that indicate risk of spoilage. Intelligent container solutions can offer a complete system to prevent losses, with cooling storage units, IoT-equipped sensors to measure and report conditions, and a platform for collating and managing conditions across units. Smart labels, using RFID or other types of technology, are used to track containers though the food system. Traceability systems – often managed in an online database – allow food system actors to verify that products have met regulations and to pinpoint safety problems quickly. Blockchain, while it comes with challenges, offers traceability potential for food systems where a centralized database system is unrealistic. Low-cost options may be necessary for inclusion of small food operations.[3]

DIGITAL DIVIDE CONSIDERATIONS

The digital divide can limit the impact of digital solutions around nutrition on the most vulnerable. Nutrition interventions often target women – who not only have important pre- and post-natal nutritional needs, but can be responsible for procuring and preparing food for the household. However, women are less likely to own a mobile phone than men. Targeted women may also have limited literacy, making audio-based messaging most effective. Low-income households are also less likely to own phones but are most likely to need nutrition assistance. It is critical that we, as much as possible, create digital solutions that bring vulnerable populations into the system and consider when digital technology should be used in combination with other strategies to effectively reach target populations.

[3] U.S. Food and Drug Administration, "New Era of Smarter Food Safety: FDA's Blueprint for the Future," July 2020.