

E-book readers: Handy tools for agricultural extension workers in Ethiopia?

Especially in remote rural areas, using information and communication tools in agricultural extension makes sense. The International Livestock Research Institute in Ethiopia has tested e-book readers with regard to their practicality.

Agricultural extension workers in Ethiopia have only limited access to relevant and timely information to give better advisory services to small-holder producers/farmers. Accessing information may require long travels and communication with many colleagues and friends. Mengistu, a livestock expert in Arbogona district office of agriculture in Southern Ethiopia, says he had to travel to a bigger city like Awassa or wait for weeks or months to get a copy of a manual on dairy production or other information materials. Thus staying up-to-date with required information and knowledge can result in high transaction costs for Mengistu and his colleagues.

One way to build knowledge and capacity of extension workers is

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through providing relevant and timely information that is easily accessible from their work locations via Information and Communication Technologies (ICTs).

The Livestock and Irrigation Value Chains for Ethiopian Smallholders (LIVES) Project, which is being implemented by the International Livestock Research Institute (ILRI) in Ethiopia, piloted the use of e-book readers by extension workers in its intervention sites. The project works on the development of market-oriented agriculture through value chain development. As part of the project objective, e-book readers were piloted to test for their suitability to improve access of extension workers to relevant and timely agricultural information supporting their agricultural advisory service delivery in rural Ethiopia.

In light of the merits of the e-book readers, a total of 102 Amazon kindle e-book readers were distributed to selected agricultural extension workers in four regions of Ethiopia in late 2013. Prior to the distribution of the e-book readers, the LIVES project team, together with experts from the Ministry of Agriculture, collected, sorted and uploaded relevant publications on the



80 per cent of the extension workers tried to use the devices to support their extension service delivery to varying degrees.

Photo: ILRI/ Z. Sewunet

e-book reader from the Ethiopian Agriculture portal, a gateway to agricultural resources in the country, as well as other materials from national and international organisations. The team compiled manuals, best practices and guidelines as well as research outputs in crop and livestock commodities that the extension workers use at the initial stage while they start using the e-book readers. The information materials were in English and also in local languages. The LIVES team carried out information material upload on the e-book reader only at the initial stage, and afterwards, extension workers were free to upload contents that were relevant for their work when they visited the district or regional offices of agriculture where there is better access to internet or digitalised information materials.

As the e-book readers were new to all the targeted extension workers, project staff conducted training programmes on how to use the devices and how to transfer files from computer to e-book reader. Extension workers were encouraged to upload as many information materials as they wanted as well as to remove the materials uploaded by the LIVES team if they found it irrelevant. After one year of distribution, the project assessed and evaluated the use of the devices by the recipients.

■ A high rate of approval ...

The assessment showed that 80 per cent of the extension workers tried to use the devices to support their extension service delivery to varying degrees. Most of them reported that they used manuals and guidelines on crop and livestock commodities that were already uploaded on the e-book reader. Few read working papers and research papers on value chains and gender mainstreaming. The extension workers welcomed the long battery life of the e-book readers, their portability and their ease of use at any time and place to get information. These features are compatible with the con-

text in which extension workers do their job, involving frequent travels to rural areas as well as locations with little or no electric power supply. They mentioned additional features making the use of e-book readers attractive such as the built-in dictionary, zooming and text to speech.

Twenty-five per cent of the users managed to put additional information materials on the devices. The sources of the additional materials were personal networks and resources from the internet and from organisations such as research institutes in their vicinity. The majority did not upload information materials because they did not know how to do it, feared viruses or had no additional material to add. The extension workers reported that their reading frequency and time spent on reading had increased significantly because of e-book readers.

■ ... but difficulties, too

Three major technical limitations of the e-book reader were reported by users. The first one is incompatibility with Geez scripts (Geez is a script used as an abugida [syllable alphabet] for several Ethiopian and Eritrean

languages). Many relevant extension information materials for extension workers are written in Amharic, which uses the Geez scripts, while the kindle e-book reader only supports Latin scripts for good readability. Information materials written with Geez scripts were uploaded in a PDF format instead of the kindle format, which decreased ease of reading as it displayed texts too small and complicated going from page to page.

The second challenge was incompatibility with illustrations. E-book readers are made for reading novels and biographies which are full of texts, while many extension guidelines and information materials contain illustrations such as graphs, tables and figures. When these materials are converted to the kindle format, they are displayed in a scattered and fragmented manner. This disturbed the text flow and made it difficult for extension workers to follow and grasp the content easily, reducing the motivation to use the e-book reader for such materials.

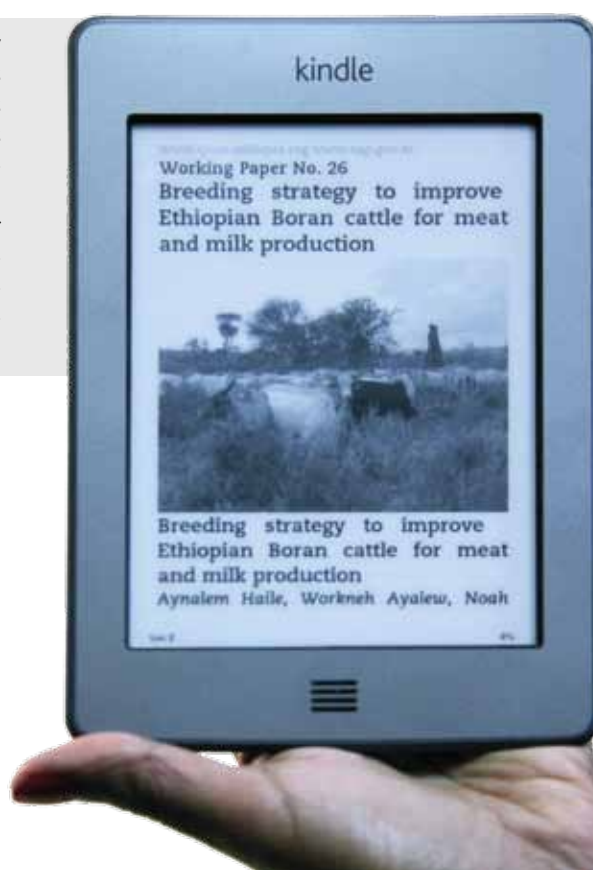
The third challenge concerned computer viruses. From the total number of extension workers who were using the e-book readers, 15 per

An e-book reader is a mobile electronic device that is designed primarily for the purpose of reading digital e-books and other publications. The advantage of an e-book reader is that it can hold the digital equivalent of many printed books without added mass or bulk. What distinguishes the e-book reader from other digital devices such as smartphones, tablets and laptops is that it

provides better readability in bright sunlight and has longer battery life that lasts for weeks or even months with a single charge. Compared to ordinary printed books, the e-book reader has additional features including annotation, a built-in dictionary and book-marking.

“When I provide training to farmers
or when I go for a field visit
I always have the e-book reader with me
so that I refer to some materials easily.”

Amsalu, extension worker in
Dembia district office of agriculture,
Amhara region



cent lost their information materials while trying to add more from their office computers or laptops. Most of the extension organisations did not have the capacity to solve the virus problem, leaving the extension workers frustrated and disinclined to obtain additional information materials.

■ What should one look out for?

The above three issues provided an overview of the technical and contextual factors that need to be in place while considering the use of ICT tools such as e-book readers to improve access of extension workers to information. The following has to be considered while proposing such technologies:

■ **Technical compatibility:** Not all technologies fit in all contexts. The agricultural extension workers in Ethiopia require relevant resources in local languages as well as in English. The kindle touch e-book readers do not support the local language scripts well and create challenges for users. Furthermore these devices, or versions of the kindle, are not compatible with illustrations that are quite common in information materials on agricultural extension. Hence it is important to identify an e-book reader brand or version or another technology that is compatible with Geez script and illustrations while keeping the features that extension workers find attractive in e-book readers.

■ **Access to the additional and relevant information materials:** Without a continuous flow of new information materials, the usability of e-book readers decreases. In the Ethiopian extension service, access to up-to-date and relevant information material for extension workers in rural settings is still a challenge, and thus mechanisms allowing continuous flows of information materials need to be in place. Here, the district office of agriculture could collect relevant resources and facilitate uploading content through wireless internet into the extension worker's e-book reader. Therefore, it is important to invest in an information

management system in the district office of agriculture to facilitate the use of intended information materials in e-book readers.

■ **Personal and organisational capacity to use the devices:** New technologies call for personal and organisational capacity to use them and support mechanisms to cope with new challenges. In the present case, the extension workers were unable to get support from peers/colleagues in time of need. Technical support such as virus-free computers or relevant information materials is also important to make use of information materials on e-book readers. Therefore, capacity building is needed for the users providing repeated trainings and follow up, and the organisation must have the capacity to support the facilities required or other alternative means of acquiring the facilities.

The growth in use of ICTs such as e-book readers in agricultural extension service offers a new opportunity to improve service delivery. These tools facilitate provision of timely and relevant information and knowledge as well as service delivery efficiency and effectiveness. However, issues of relevancy, compatibility as well as sustainability and cost effectiveness are critical factors to consider. Therefore, these aspects need to be studied thoroughly prior to scaling up. We recommend further and rigorous research on feasibility, use and impact of e-book readers in extension service delivery to provide guidance for wider application of the technology in agricultural extension.

The results of the current study showed the challenges that need to be solved and opportunities to consider. Accordingly, the LIVES project together with the regional and district offices of agriculture plans to work further on the utilisation of these tools by extension workers and document their impact in contributing to efficient extension service delivery. Technical support and further training on the use of e-book readers are main elements and are planned to be considered on the next phase.

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