

Digital Tools in the Potato Value Chain in Kenya: A Landscape Analysis

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INFO		ABSTRACT
<i>Submitted</i>	31 December 2023	<p>Potato sector has a substantial role in Kenya's agriculture, contributing to food security, nutrition, and the national economy. While underscoring the sector's vast potential, this Technical Brief identifies the existing gap between current yields and achievable targets, highlighting the necessity for strategic improvements in farming practices. It accentuates the transformative impact of digital tools in the agricultural landscape, notably accelerated by the COVID-19 pandemic and facilitated by the widespread use of mobile technology and internet access in the country. In particular, this brief spotlights the Viazi Soko (VS) digital platform, an initiative specifically designed for the potato value chain, offering a range of services from e-advisory to market linkages. Despite the innovative features and strategic importance of digital platforms, the underlying research reveals a discrepancy in the adoption and utilization of digital tools among farmers, attributed to challenges such as limited awareness of these tools, low internet connectivity in rural areas, and the affordability of digital access. To bridge this digital divide, the report proposes targeted interventions to enhance the adoption of digital tools, focusing on increasing awareness, improving digital literacy, and establishing a potato-specific call center to provide real-time, tailored support to farmers. By advocating for a more integrated approach that combines digital innovation with farmer education and support, the report envisions a future where digital tools are leveraged to unlock the full potential of the potato sector in Kenya, leading to increased productivity, profitability, and a more robust contribution to the nation's food security and economic resilience.</p>
<i>Keywords</i>	Potato Value Chain, Digital Tools, Information System	
<i>Flagship</i>	Co-LAB	
<i>Work Package</i>	Enabling environment	

Importance of potatoes in Kenya

Potatoes hold a significant position in Kenya's agricultural landscape, ranking second only to maize as a pivotal food and cash crop. This crop plays a paramount role in bolstering food security, nutrition, and economic advancement within the nation. Cultivated by an estimated 800,000 smallholder farmers, the potato sector engages approximately 2.7 million individuals across its marketing spectrum, injecting a substantial sum of over 500 million USD (equivalent to Kes 50 billion) into the economy. Nevertheless, the sector's current average yield stands at less than 10 t/ha, notably lagging behind the potential of 40 t/ha achievable with optimal agronomic practices. The potato industry is poised for significant growth, presenting opportunities for enhanced prosperity and fortified food and nutrition security.

To unleash this potential, strategic interventions are imperative: adoption of certified seed, optimization of the use of inputs, effective pest and disease management, and improved storage and marketing can elevate the subsector's competitiveness. This process of transformation calls for farmers' adoption of new ways of doing business, stimulated by supportive measures and initiatives. Key among the necessary supports include improvement of data management to facilitate the flow of relevant information to producers and other actors along the chain. Farmers' and key stakeholders' training is also critical to the transformation. Moreover, fostering awareness and extending support to entities, institutions, and farmers at the county level is pivotal to nurturing the growth and resilience of the potato subsector within the evolving governance framework.

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Enhancing digital services and tools for improved potato productivity and agribusinesses in Kenya

The adoption of digital extension platforms in Kenya has witnessed significant growth, particularly accelerated by the circumstances of the COVID-19 pandemic. E-extension services, bolstered by the prevalent use of mobile phones, are also experiencing an upsurge. According to the Census 2019, a notable 43.5% of Kenyans possess a mobile phone, with a majority actively engaging with Mpesa for mobile money transfers. Additionally, the data revealed that 22.6% of the population accessed the internet, while 10.4% are computer users. Furthermore, Kenya boasts relatively affordable mobile data rates in comparison to many other African countries.

These and many other factors have propelled the adoption of digital platforms in Kenya. In particular, the challenges posed by climate variability and constrained access to traditional extension services have been the major motivational factors for farmers to embrace the use of digital agricultural tools and services. The current ratio of 1:<2000 extension officers to farmers ratio, significantly deviating from the FAO's recommended ratio of 1:400. One of the flagship ICT initiatives in Kenya is the Government e-voucher systems introduced to improve smallholder farmers agricultural productivity and develop agriculture as a business enterprise.

Some of the digital platforms offering agricultural e-services and tools in Kenya include:

- 1) **ViaziSoko Digital App** (<https://npckviazisoko.com>) is an e-advisory/extension and marketing digital platform for potato farmers and actors (input and output market linkage). Currently, over 120,000 potato farmers are registered on the platform (Figure 1).
- 2) **M-Shamba** (<https://m-shamba.net>) is a digital platform that supports digital learning on agronomy, regenerative agriculture, and food safety to the farmers through the Interactive Voice Response (IVR) service, USSD, and interactive SMS. Currently, over 70,000 farmers are registered on the platform
- 3) **Safaricom DigiFarm** (<https://www.safaricom.co.ke/media-center-landing/frequently-asked-questions/digifarm>) is an integrated mobile platform that offers farmers convenient, one-stop access to a variety of services including discounted inputs and advice on input use, financing, and information. Currently, 1.3 million farmers are registered on the platform.
- 4) **Kenya Agricultural Observatory Platform (KAOP)**

(<https://www.kalro.org/2021/08/23/kenya-agricultural-observatory-platform-kaop>) is an integrated online platform that uses geo-data from satellites to generate real-time and location-specific agro-advisories to farmers and other stakeholders.

- 5) **VarScout** (<https://varscout.org>) is an agricultural digital tool used by farmers, agronomists, and extension service providers to record the location of where a particular crop variety is growing. This was introduced by CIP in Kenya in 2022.
- 6) **Mkulima Young** (<https://www.mkulimayoung.com>) is an online marketplace for farmers, developed by a farmer and run by a team of digital entrepreneurship experts.
- 7) **Mbegu Choice** (<https://www.mbeguchoice.com>) is a digital tool that helps farmers arrive at the best variety of seeds to plant in line with their needs. Developed in collaboration with KEPHIS and KALRO and the developers
- 8) **FARMGO** is a digital tool that provides back-up to farming activities. It is an initiative of Yara Fertilizer Ltd.

Many other agricultural digital services tools are in the pipeline including *Sprout* by Sprout digital lab, *GreenEdge* by Digital Africa, a potato-specific digital tool by Agrico E. A Ltd, etc.

Low Access and Utilization of Digital Tools

Despite the notable progress in the development and deployment of digital agricultural services and tools, their uptake and utilization among the intended farming community remain limited. It is imperative, therefore, to intensify efforts to expand the adoption of these digital tools. Doing so will empower farmers with access to pertinent agricultural information, facilitate the acquisition of essential inputs, connect them to markets, and provide real-time weather updates. Such advancements are pivotal in enhancing both productivity and profitability for farmers. Given the significance of potatoes in ensuring food and nutrition security, there is a pressing need for specialized digital tools tailored to offer a range of potato-centric services.

The ViaziSoko Digital Tool

While most of the other digital tools currently used in Kenya deal with many value chains or focuses on weather forecasts, ViaziSoko (VS), is the only digital tool in Kenya developed solely for potato farmers and actors (input and output market linkage). Developed by the National Potato Council of Kenya (NPCK) and its partners notably the International Potato Center

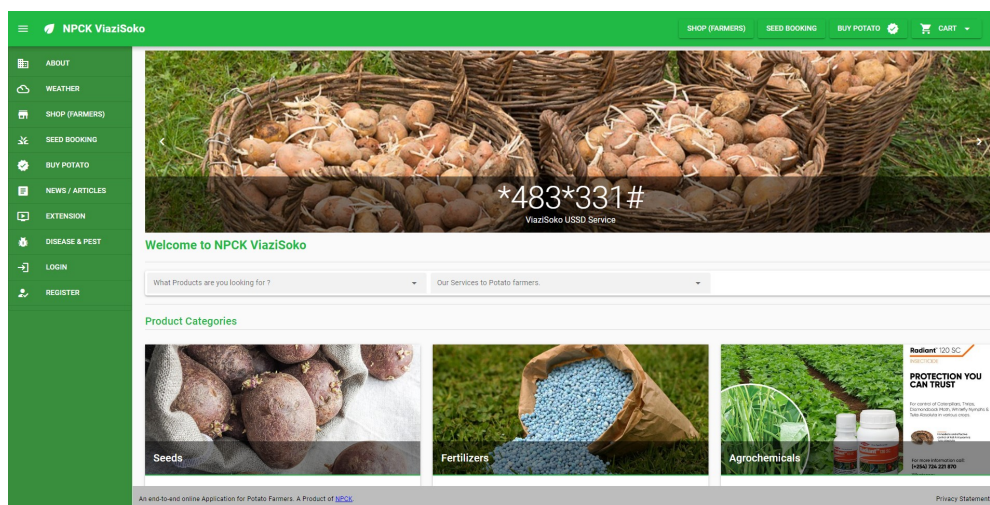


Figure 1. Screenshot of the NPCK ViaziSoko platform (<https://npckviazisoko.com>)

(CIP) and GIZ, VS is an e-advisory/extension and marketing digital platform for potato farmers and actors (input and output market linkages). It can be accessed through a Web-based portal, Mobile App, and USSD platform. It focuses on online marketing of potato-related products and services and information dissemination. Both DigiFarm and M-Shamba digital tools have potato components.

ViaziSoko digital platform is the leading e-forum for potato farmers in Kenya with the potential to serve farmers in neighboring countries. However, only a handful of Kenyan potato farmers are using the digital platform to access e-extension services. The low usage of the VS digital platform is mainly due to low awareness of its functionality and services offered coupled with poor internet connectivity in some areas and the cost of airtime/bundles. Also, many farmers are not ICT literate and some do not have smartphones limiting them to USSD service only.

During the years 2019- 2022, CIP in partnership with NPCK carried out intensive campaigns and training on the ViaziSoko platform. Remarkable progress was recorded in terms of an increased number of potato farmers registered in the platform as

Table 1. Total number of farmers registered in Viazi Soko digital platform as of 31 December 2022 and the quantity of certified seed ordered by registered farmers in 2022 (Source: NPCK)

Total number of farmers registered	Quantity (tonnes) of certified seed ordered by registered farmers in 2022	
	Long-rain season	Short-rain season
121,867	122.2	103.8

well as an increased number of input and service providers registering in the platform. The volumes of transactions including the quantities of certified seed potatoes, fertilizers, and agrochemicals procured through the e-commerce platforms drastically increased and continue to increase. At the close of the year 2022, over 120,000 farmers had registered in the VS database, and over 220 metric tonnes of certified seed were purchased through the platform in 2022, Table 1.

Unfortunately, this constitutes only 15% of the total number of potato farmers in Kenya which stands at about 800,000 potato farmers, the majority being smallholders. To encourage the usage of VS, to reach at least 50% of the potato farmers, NPCK is looking for opportunities to partner with development partners and CGIAR to establish a potato-specific call center for handling potato queries and concerns through toll-free calls. The need for a call center has been voiced by potato stakeholders who requested a more interactive platform where farmers can talk to potato experts free of charge to complement and strengthen the VS. Further, the need for a call center is supported by the large number of farmers registered in the DigiFarm digital platform who are seeking potato specific information. Approximately 310,000 farmers have accessed DigiFarm extension content through free toll calls and more than 50,000 farmers including potato farmers have purchased quality farm inputs through referrals from DigiFarm call center.

Based on the statistics of the farmers' queries, the frequently asked questions (FAQs) revolved around: GAPS, the right inputs to use, approved agrochemicals and certified seed potato availability, soil testing services, new v varieties, and access to markets among others. Establishing a call center at NPCK office will enable all the potato-related issues going through DigiFarm and other call centers to be channeled and handled by potato experts at the NPCK. Supplementing this with the use of the VS Platform, more potato farmers will benefit from real-time information on GAPS, the use of quality seeds and other inputs, pest and disease management practices, robust varieties, and other relevant information. Ultimately, the real-time information will improve yields and farm incomes.