

COMBINING ICT AND AGRICULTURE TO REDUCE YOUTH UNEMPLOYMENT IN SUB-SAHARAN AFRICA

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SYNOPSIS

In sub-Saharan Africa, 223 million people are still undernourished and youth unemployment rate is 11.5 per cent. The region is the fastest-growing with the most youthful population in the world. The youth accounts for 65 per cent of labour in agriculture. Therefore, sub-Saharan African youth is the most reliable resource to transform the region through agriculture, but young people do not consider agriculture as a viable career option. ICTs are already transforming agriculture on the continent through better access to information and knowledge, better interaction with local and international markets, efficient value chains by improving communication and exchange between stakeholders, and innovative jobs for youth. This transformation is a huge opportunity to get sub-Saharan African youth into agriculture. This AfCoP Knowledge Brief examines the ICT enabled transformation undergoing in the agriculture sector in sub-Saharan Africa. It also identifies some emerging opportunities for youth in agriculture through ICTs. Finally, policy recommendations are made to unleash the potential of ICTs in promoting youth employment in agriculture.

Introduction

Food security continues to be a huge challenge for sub-Saharan Africa, where a total of 223 million people are still undernourished. Although the proportion of undernourished has fallen slightly over the past ten years, the total number has actually increased¹. The situation is not likely to improve, because the region is the youngest in the world and therefore will need to feed more than 2.2 billion people in 2050².

To be able to feed this growing population, given the declining resources and constraints such as climate change and food price volatility, the region needs to refocus its young population into agriculture. Unfortunately, agriculture is often seen by the youth as the last resort. This perception may not be far

from the truth because majority of farmers on the continent are often not able to get enough revenue from their farming activities to feed their families and educate their children. Nevertheless, Information and Communication Technologies (ICTs) are reshaping the image and returns from agriculture by transforming it into profitable and attractive sector. The use of ICT infrastructure such as radio, camera, cloud computing, smartphones and web-based applications is contributing significantly to the transformation of agricultural value chain across the continent. It is thus, becoming an important source of employment for the growing youth in Africa. The high attraction of young people to digital materials and technologies has the potential to motivate a reasonable number of the youth into the sector. In addition, the increased access to information such as

¹ FAO, IFAD & WFP. (2013). The State of Food Insecurity in the World 2013. The multiple dimensions of food security. Food and Agriculture Organisation of the United Nations, Rome.

² United Nations Population Division. 2013. World Population Prospects: The 2012 Revision. New York: UN Population Division; United Nations Population Division

weather forecasts, crop prices and advisory services through the mobile phone has helped to reduce transaction cost, increased predictability of returns and the profitability of agricultural investment.

The agriculture-youth nexus in sub-Saharan Africa

→ *Agriculture is the major economic sector in sub-Saharan Africa*

Agriculture is the largest economic sector in Sub-Saharan Africa; it constitutes about 33% of Gross Domestic Product, 40% of exports and provides livelihoods for around 70% of the population³. According to the World Bank, growth in the sector is 2.5 times effective at reducing poverty compared to the other sectors; and more recent research shows that, in sub-Saharan Africa, growth in agriculture is 11 times more effective at poverty reduction than growth in other sectors⁴.

→ *There will be 2x more people to feed in 2050 with declining resources*

The population of sub-Saharan Africa is growing rapidly and the region is expected to reach approximately 2.2 billion by 2050, which is more than the double of the current population⁵. Undoubtedly, a larger population will create more demand for food. The FAO estimates that agricultural production will have to increase by 60 per cent by 2050 to meet the increasing demand for food⁶.

→ *The farming population is ageing*

In Africa, young people do not often consider agriculture as a promising sector. As a result, majority of farmers in the region are relatively old compared to their counterparts in other regions of the world. The average age of a farmer in Africa is 60⁷. This ageing population is a threat to food

security across the continent since demand will outstrip supply.

→ *Youth unemployment is growing*

The 2013 ILO report on youth unemployment trends indicated that as many as 73 million young people (15-24 years) were estimated to be unemployed in 2013 in the world, which is an increase of 3.5 million since 2007 and is expected to increase over the next years⁸. Sub-Saharan Africa has a relatively low but increasing unemployment rate linked to high levels of poverty and underemployment. Indeed, more than 70% of the young population lives on less than US\$2 per day.

The facts presented above calls for strategies to harness the energies and potentials of the youth to respond to the food insecurity and unemployment issues. Optimising ICT capabilities in agriculture can provide incentives and pathways to mitigate the challenge.

ICTs are transforming agriculture

Africa ICT development from 2005-2014

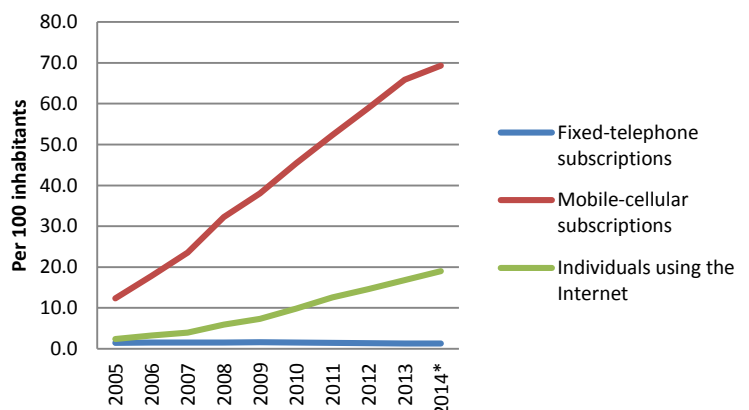


Figure 1 : ICT Development in Africa from 2005-2014

Source: Data from International Telecommunications Union⁹

Note: *Estimate

³ World Bank. 2013. "African Development Indicators"

⁴ The World Bank. 2007. "World Development Report 2008: Agriculture for Development". Washington, DC; L. Christiaensen, L. Demery and J. Kuhl. 2010. "The (evolving) role of agriculture in poverty reduction – an empirical perspective". *Journal of Development Economics*.

⁵ Carl Haub and Toshiko Kaneda. 2013. World Population Data Sheet (Washington, DC: Population Reference Bureau, 2013).

⁶ Alexandratos N, Bruinsma J. 2012. World agriculture towards 2030/2050: the 2012 revision. ESA Working Paper 12-03. Rome:

Food and Agriculture Organization of the United Nations (FAO). (Available from

<http://www.fao.org/docrep/016/ap106e/ap106e.pdf>)

⁷ IFAD. 2014. *Rural Youth, Evaluation synthesis*. Rome: IFAD

⁸ ILO. 2013. *Global employment trends for youth 2013: a generation at risk*. Geneva.

⁹ International Telecommunications Union. 2014. *International Telecommunications Union's World Telecommunication/ICT Indicators database*. <http://www.itu.int/ITU-D/ict/statistics/>, accessed July 5, 2014.

The growing ICT penetration in Africa is changing the way information and communication are managed. An important trend to observe is the increasing rate of mobile cellular subscriptions. Figure 1 indicates rapid growth in the number of mobile-cellular subscriptions. Indeed, it has gone from approximately 87 million in 2005 to 582 million in 2013¹⁰. This rapid mobile penetration has brought several innovations and opportunities for mobile applications.

Farmers can use mobile phones for various activities such as mobile banking, selling products, and to access market data and commodity prices. Mobile communication technology has the potential to transform the rural agricultural landscape in manners that will enhance productivity, data sharing and market access¹¹.

Box 1 : Benefits of mobile communication technology

Access: Mobile wireless networks are expanding as technical and financial innovations widen coverage to more areas.

Affordability: Prepaid connectivity and inexpensive devices, often available second hand, make mobile phones far cheaper than alternatives.

Appliances: Mobile phones are constantly increasing in sophistication and ease of use.

Innovations arrive through traditional trickle-down effects from expensive models, but have also been directed at the less expensive phones.

Applications: Applications and services using mobile phones range from simple text messaging services to increasingly advanced software applications that provide both livelihood improvements and real-time public services. In the agricultural sector these include price information, market links, extension, and distribution, logistics and traceability.

Source: Deloitte (2012)¹²

Advances in internet usage are also helping to develop innovative solutions. Mobile applications connected to web platforms are used to set up agricultural market information services that help to link farmers to markets so they can make better business choices and improve their bargaining power.

Emerging opportunities for youth in agriculture through ICT

As discussed earlier, ICT is transforming the agricultural sector by providing new opportunities for employment creation, increased production and productivity. These opportunities can serve as pathways and incentives for the youth to get involved in the sector. Below are examples of the emerging opportunities that can be leveraged by the youth to create sustainable and profitable business.

Access to information for enhancing agricultural production and incomes

Timely information is very important in agricultural production systems. ICT solutions are providing new ways for managing information in the agriculture sector. It's easier now to provide weather forecast to farmers at shorter interval to guide their activities. Web-based mobile applications have made it possible to send timely and accurate weather information to farmers, so that they can make informed decisions regarding their agricultural operations. Extension services and other technical support to actors along the agricultural value chain are becoming more accessible and timely as a result of the adoption of ICT solutions. For example, the information gap between researchers and farmers is reduced due to the utilisation of web-based technologies to disseminate and share research findings, provide technical advice and to respond to questions as well as provide feedback to farmers.

Market information is also an area where ICT is providing new solutions that can be useful for youth to develop businesses in agriculture. Farmers often

¹⁰ Ibid.

¹¹ Deloitte. 2012. eTransform Africa: Agriculture Sector Study: Sector Assessment and opportunities for ICT

¹² ibid

have little interaction with the buyers of their products. For many years, they have gone to markets with no or little information about pricing. However, as a result of ICT enablers (mainly mobile text messaging), farmers have access to reliable and timely information on market dynamics including prices of products in different markets, transportation cost and other taxes which has increased their ability to make informed decision on market viability and profitability.

Box 2 : Farmerline provides mobile solutions for farmers in Ghana

Farmerline is a mobile and web-based system that furnishes farmers and investors with relevant agro-industry content to improve productivity and increase incomes. Farmerline bridges the information gap between rural farmers and agro-industry sources in two ways:

- **The voice forum:** This feature allows farmers to ask questions by calling a toll free helpline (short code). The extension officers are able to answer the questions via a web interface and answers are sent to farmers as voice SMS.
- **Automated text messages Alerts:** The text messages include advice on how to control pests or diseases, agricultural techniques, optimum times to plant crops, available subsidies, as well as weather forecasts, local fairs and crop prices.

In terms of market access, ICT is also providing new opportunities known as Virtual Trading Floors (VTFs). VTFs are electronic market places where buyers and sellers connect through an electronic network, as opposed to pricing services, that only provides static information. The innovation through VTFs has reduced the distance and lead time for transactions by bringing sellers and buyers together through a virtual market. There is therefore no need for

physical contact during the transaction and physical location is no more a barrier.

Financial inclusion

Mobile technologies are bringing financial services to the unbanked young farmers

Financial inclusion is the delivery of financial services¹³ at affordable costs to disadvantaged and low-income segments of society. One of the main challenges along the agricultural value chain in Africa is the difficulty of accessing sustainable financing. Young people face lot of challenge in securing resources for their agricultural activities primarily because they are not bankable and have limited or no assets that can be used as collateral. Over 90 percent of farm-based investments in Africa are based on farmers own resources (self-financing) or contributions from friends and family. This situation makes it difficult if not impossible for many farmers to scale up their investments. In this regard, access to sustainable source of financing especially from the formal financial intermediaries is crucial for the growth and expansion of the sector. Adequate and reliable financing can also be an important attraction for the youth to engage in agriculture. The rapid spread of mobile financial services across the continent is expanding access to financial services among the poor and marginalised. The services include transfers and payments, credit, savings, insurance and other financial derivatives. Mobile financial services such as M-PESA have made it easier for young people to have access to financial services including receipt and payment for services, payment of school fees and remittance to family. The mobile financial services have also been a great boost for the agricultural sector especially in the rural area by providing a convenient mechanism for farmers to secure credit, save excess income and to pay and receive payment for their products.

¹³ http://en.wikipedia.org/wiki/Financial_services

Integrating global food markets

Mobile phone affordability and social media are making markets accessible to young farmers.

It is very true that globalization is posing new challenges to smallholder farmers in Africa. It has intensified competition and increased the effects of global food prices fluctuation. But it is also true that globalization has brought unique opportunities for farmers in Africa to expand their markets. Young farmers are now exposed to regional and global markets. Agribusiness has expanded beyond local boundaries to reach millions of customers around the globe due to easy access to information and effective and efficient communication mechanisms. In this context access to market information is crucial for one to harness the benefit of the global village. The relatively low price of mobile phones has made it affordable to many people especially the younger generation across the continent thereby increasing their access to data and information via the social media and other functionalities that comes with the mobile telephony. There are also a number of applications that comes with the mobile phones which enable the user to access agricultural value chain information such as prices of inputs, outputs and agricultural services across the national, regional and global markets.

Therefore, documentation, processing and dissemination of information on global food markets dynamics is an area where young people can combine dynamism, innovation and digital skills to create sustainable businesses. This opportunity also implies that young people needs to develop skills and competencies in the rules of the game including knowledge and understanding of international standards, and existing and potential ICT solutions. For example there are international standards for exporting agricultural products and ICT enabled systems that allow traceability, using radio-frequency identification devices (RFIDs) to capture

data on individual items such as cattle from the origin to the destination country. The development of Livestock Trace Back System in Botswana has helped the country to secure certification for export of meat to the EU countries.¹⁴

The App economy

This is an emerging opportunity for the youth to get employed in agriculture.

The app economy refers to the range of economic activity contiguous to mobile applications. The app economy encompasses the development and sale of products and service, ad revenue or public relations generated by free apps, and the hardware devices on which apps are designed to run¹⁵. This is an emerging opportunity for the youth to create products that can be useful for the agricultural sector. The increased interest in mobile applications associated with the growth in mobile telephony across Africa is a fertile ground for the emerging app economy. The sector holds the potential of generating new employment opportunities for young people in the agricultural sector. A number of youth-led ICT applications and businesses are already operating, including Kenya's M-Farm company, which promotes access and transparency in agricultural markets, and the development of agricultural applications in youth-led ICT incubators, such as K-Lab in Rwanda and CTIC in Senegal.

Online opportunities

The worldwide web provides a wide variety of opportunities the youth in the agriculture sector. Some platforms like CTA-ARDYIS¹⁶ or YPARD¹⁷ frequently provide opportunities for youth in agriculture in terms of training, financing or mentoring. The wide spread of social media has made this more accessible and easy for the youth.

Online collaboration tools have also made it easy for the youth to work for online companies on

¹⁴The World Bank. 2011. ICT IN AGRICULTURE: Connecting Smallholders to Knowledge, Networks, and Institutions. Washington DC: The World Bank

¹⁵ www.techopedia.com/definition/28141/app-economy. Accessed 5 July, 2014

¹⁶ Young Professionals for Agricultural Development www.ypard.net

¹⁷ Agriculture, Rural Development and Youth in the Information Society www.ardyis.cta.int

agricultural issues. Through the internet the youth have a better access to home-based job opportunities and can now get contracted by companies and individuals to undertake online work.

Policy recommendations

→ **Enable a conducive environment for youth agricultural entrepreneurship**

Why: ICT is just a driver, agricultural entrepreneurship is the main concern.

What: Youth should be supported in agricultural entrepreneurship. This support needs to address key barriers related to financing, skills and infrastructure. Political leadership is also important to foster a youth-driven agricultural entrepreneurship.

→ **Integrate ICTs in the agricultural value chains**

Why: ICT is yet to be integrated fully in agricultural value chain. Doing this can provide a wide range of opportunities for youth to get involved in agriculture.

What: ICT can be used along all the stages of the agricultural value chain from farm to the market. An eAgriculture national strategy should be designed to determine how to harness the full potential of ICTs in agriculture. This strategy can be led by government institutions in charge of agriculture while partnering with all relevant stakeholders including private sector, funding organizations, civil society, researchers, etc.

→ **Enable legal and regulatory environment**

Why: Many ICT services used in agriculture face legal and regulations barriers that block their proper deployment.

What: Legislation and regulations relating to ICTs must be revisited, to ensure that, the environment facilitates the proper implementation of services. For example, regulatory frameworks should be designed to stimulate the use of ICTs to improve rural financial systems and services.

→ **Create partnerships with all stakeholders**

Why: The lack of synergies is undermining efforts to make full use of ICT in agriculture.

What: Forums need to be set up to encourage dialogue and interaction among stakeholders who are somehow involved or have some interest in ICTs and the agriculture sector. For example, partnerships can enhance the capacities required for ICTs infrastructure development. Synergies should also be established between initiatives dealing with youth entrepreneurship in agriculture in order to harmonize strategies and scale-up investments.

→ **Support youth start-ups combining ICTs and agriculture**

Why: Start-ups exist and very often need support in terms of capital or mentorship.

What: Young people are already initiating innovative solutions to develop youth employment combining ICTs and agriculture. It is important that these initiatives are supported through access to capital, skills, technical assistance and youth sensitive financial regulation.

Conclusion

Information and Communication Technologies are continuously changing how agriculture is practised in Africa. Since agriculture continues to be the main employer on the continent, it can undoubtedly be the main driver for reducing youth unemployment. ICTs are providing new incentives and opportunities to ensure youth are involved in agriculture in a sustainable way. This AfCoP Knowledge Brief reviewed the contribution of ICTs in agriculture and exposed some emerging opportunities for youth. ICTs are nevertheless just a driver that can play a critical role when there is a youth sensitive environment promoting and supporting young people.

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