

## Chapter 4.11

# E–Agriculture Development in South Africa: Opportunities, Challenges and Prospects

**Rachael Tembo**

*Cape Peninsula University of Technology, South Africa*

**Blessing Mukabeta Maumbe**

*Eastern Kentucky University, USA*

### **ABSTRACT**

The global development of information and communication technologies (ICT) has created a new agricultural development paradigm that promises to transform the performance of the agricultural sector and improve rural livelihoods in developing countries. Over the past five years, South Africa has witnessed a swift ICT-led transformation of its public service delivery with major innovations in key development sectors. The growth of e-agriculture is seen as an engine to accelerate agriculture and rural development, promote food security, and reduce rural poverty. This chapter examines e-agriculture initiatives in South Africa.

It describes ICT applications in improving the quality of on-farm management decisions, agricultural market information system, e-packaging, product traceability, and online marketing to access lucrative global wine markets. The chapter also highlights key constraints, and identifies considerations to enhance the future prospects for e-agriculture. Given the strategic importance of agriculture in supporting the livelihoods of the majority rural population in South Africa, the successful deployment and effective utilization of ICT is pivotal for sustainable agriculture development and raising the standards of living of marginalized communities. The results of the paper demonstrate that South Africa has made significant strides in e-agriculture and tangible benefits have accrued to the agricultural communities.

DOI: 10.4018/978-1-60960-472-1.ch411

## **INTRODUCTION**

The global development of information and communication technology (ICT) has created a new agricultural development paradigm that promises to transform the performance of the agricultural sector and improve rural livelihoods in most developing countries. The diffusion and adoption of the modern technologies which started in industrialized countries has now spread to developing countries. Today, technological advancement in agriculture is evidenced in both developed and developing countries (Economic and Social Commission for Asia and the Pacific, 2008). As the use of these ICT becomes widespread, pressure has mounted on identifying not only new users but also newer uses for these modern technologies. Over the past five years, South Africa has witnessed a swift ICT-led transformation of its public service delivery with major innovations in key developments sectors such education, health and agriculture. The growth of e-agriculture is now perceived as both an instrument and a viable option to accelerate agricultural development, promote food security, and help alleviate rural poverty in the New Millennium. Whether these promises will be turned into tangible or perceptible benefits especially for the majority poor agricultural communities in Africa and other developing countries remains to be seen. Nonetheless, understanding early initiatives in the practical use of ICT will help both current and future generations to devise new and better ways to transform agricultural development using these modern technologies.

South African agriculture provides an interesting case study to assess the current use and future potential for ICT utilization to advance socio-economic development. The agricultural sector in South Africa is characterized by extreme dualism and inequality. The dualistic agricultural sector is characterized by a well-developed commercial sub-sector that co-exists with a predominantly large subsistence or communal farming sub-sector.

The later sub-sector is located in the remote and historically disadvantaged rural areas (South Africa, 2005). The former homelands established during apartheid comprise the backbone of what forms the current largely backward rural sub-sector in a relatively advanced South African economy.

Given the great potential and significance of agriculture to most African economies including South Africa on one hand, and the rising population with approximately 70% poor people on the continent, the need to effectively deploy ICT in the agricultural sector in order to increase food production, reduce poverty, improve the people's livelihoods and attain agricultural development cannot be under-estimated. By fully utilizing ICT and taking into consideration people's different needs, ICT can be a powerful tool for economic and agricultural development aimed at eradicating poverty (World Bank, 2003). It cannot be overemphasized that ICT plays a crucial role in facilitating communication and access to information for agriculture and rural development (Kapange, 2006). This makes access to, and exchange of information to be of utmost importance in a country such as South Africa with over 47 million people who need to be fed through agriculture. ICT offers new opportunities that enhance the quality (e.g. timeliness, availability, relevance) of critical information. This has led to the emergence of global agricultural production chains that are interlinked by digital networks, and therefore has important implications for the livelihoods of farmers. ICT are driving agricultural production and supply chain innovations globally, but their full potential is yet to be realized in developing countries' agriculture communities.

More studies on ICT deployment have focused on other sectors such as education, health, banking, e-government and tourism. Fewer studies have focused on ICT deployment in South African agriculture. Yet the use of ICT is now viewed as a basis for a new development paradigm with immense opportunities to provide escape routes from hunger and poverty to marginalized communities.

21 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:  
[www.igi-global.com/chapter/agriculture-development-south-africa/51730](http://www.igi-global.com/chapter/agriculture-development-south-africa/51730)

## Related Content

---

### On the Use of Abduction as an Alternative to Decision Trees in Environmental Decision Support Systems

Franz Wotawa (2012). *New Technologies for Constructing Complex Agricultural and Environmental Systems* (pp. 265-284).

[www.irma-international.org/chapter/use-abduction-alternative-decision-trees/63766](http://www.irma-international.org/chapter/use-abduction-alternative-decision-trees/63766)

### Current Approaches, Challenges, and Perspectives on Spatial OLAP for Agri-Environmental Analysis

Sandro Bimonte (2016). *International Journal of Agricultural and Environmental Information Systems* (pp. 32-49).

[www.irma-international.org/article/current-approaches-challenges-and-perspectives-on-spatial-olap-for-agri-environmental-analysis/168500](http://www.irma-international.org/article/current-approaches-challenges-and-perspectives-on-spatial-olap-for-agri-environmental-analysis/168500)

### Prediction of Soybean Price Trend via a Synthesis Method With Multistage Model

Zhiling Xu, Hualing Deng and Qiufeng Wu (2021). *International Journal of Agricultural and Environmental Information Systems* (pp. 1-13).

[www.irma-international.org/article/prediction-of-soybean-price-trend-via-a-synthesis-method-with-multistage-model/274049](http://www.irma-international.org/article/prediction-of-soybean-price-trend-via-a-synthesis-method-with-multistage-model/274049)

### A Framework for Environmentally Responsible Business Strategies

Bhuvan Unhelkar and Bharti Trivedi (2011). *Handbook of Research on Green ICT: Technology, Business and Social Perspectives* (pp. 214-232).

[www.irma-international.org/chapter/framework-environmentally-responsible-business-strategies/48429](http://www.irma-international.org/chapter/framework-environmentally-responsible-business-strategies/48429)

### One-Dimensional Mathematical Models to Simulate Coniferous Tree Ignition

(2021). *Forest Fire Danger Prediction Using Deterministic-Probabilistic Approach* (pp. 1-12).

[www.irma-international.org/chapter/one-dimensional-mathematical-models-to-simulate-coniferous-tree-ignition/278978](http://www.irma-international.org/chapter/one-dimensional-mathematical-models-to-simulate-coniferous-tree-ignition/278978)