Chapter 5.6

Mobile Agriculture in South Africa:
Implementation Framework, Value-Added Services and Policy Implications

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ABSTRACT

The rapid diffusion of mobile and wireless technologies is transforming agricultural development globally. In South Africa, rural e-government service delivery has been hampered by low Internet penetration. Mobile government offers a promising alternative to deliver public services to remote rural communities. In this regard, the author examines the potential of mobile and wireless technologies to deliver value-added services to rural communities in South Africa. An implementation framework comprising a multi-functional agro-portal and mobile agriculture services is proposed. The benefits and barriers of using mobile and wireless technologies in rural areas are examined, while key considerations and policy implications for mobile agriculture are discussed. The author advocates the development of "value-based" and "demand-driven" mobile agriculture services for the future growth and survival of mobile agriculture, which requires greater competition among service providers, use of multi-lingual e-content, integration of indigenous knowledge, mobile agriculture curriculum, mobile cyber-security, and customized value-added services for rural communities.

INTRODUCTION

The rapid growth in the use of mobile and wireless technologies (MWT) is transforming rural and agricultural development in Sub-Saharan Africa (SSA). With an Internet penetration of only 10.8% (or 4.6 million users), South Africa's e-government program faces major limitations and remains fragmented across provinces (ITU, 2009). The Government of South Africa (GSA) has been using information and communication technologies (ICT) to enhance governance, socio-development, and public service delivery. The GSA has made e-government the centre-pivot for its public service delivery yet it still faces numerous obstacles. South Africa's e-government program suffers from fragmentation across national and provincial departments and low rural penetration. Mobile government (m-government) offers a promising alternative to deliver public information and services to rural areas (Rao, 2006; Ntaliani, Costopoulou, & Karetsos, 2008). Consequently, attention is shifting toward using m-government to modernize public service delivery. M-government in agriculture (i.e., mobile agriculture) is a relatively new strategy for public service delivery to rural communities. Globally, m-government is still unfolding as new applications and user preferences emerge (Kuscu, Kushchu, & Yu, 2007; Germanakos, Samaras, & Christodoulou, 2007; Casalo, Flavian, & Guinaliu, 2007).

South Africa is one of the few countries in SSA with a well developed market information system (MIS). The South African Futures Exchange (SAFEX) that is used for hedging maize, wheat, and sunflower is an example of an MIS established as part of modernizing the country's agricultural marketing services (Tollens, 2006). Given agriculture's strategic importance in providing food security and driving national economic prosperity, it is well positioned as the new frontier for mobile value-added services (VAS). Through extension advisory services, the agricultural community has, for years, relied on numerous traditional information dissemination practices ranging from publications, train and visit systems, radio, and periodic farmer field days among others (Picclotto & Anderson, 1997). Despite such numerous historic attempts, agricultural service delivery to remote rural areas remains problematic. There are growing expectations that MWT could offer renewed hope for agricultural development and service delivery (Torero & von Braun, 2006; Adigun & Lutu, 2006). In addition, many countries around the world have resorted to m-government to boost their capacity to deliver public services to their citizens (Ntaliani et al., 2008). However, rural areas throughout SSA are likely the last to get connected. Those that are connected have unreliable or dilapidated telecommunication infrastructure. Weak ICT infrastructure to support rural Internet has made e-government services ineffective. The most appropriate technology solution for the provision of information to rural areas lies in MWT. Examples of such MWT are Global System for Mobile Communication (GSM), General Packet Radio Service (GPRS), Wi-Fi, WiMax, Mobile Television, and mobile Voice over Internet Protocol (VoIP). The proposed development of a national agricultural portal (i.e., agro-portal) and MWT to deliver information and services aims to extend services to under-served remote agricultural communities in South Africa.

This paper focuses on the potential implementation of mobile agriculture in South Africa. It seeks to accomplish three objectives. First, the paper proposes an implementation framework for e-agriculture comprising a multi-functional national agro-portal and MWT for agriculture service delivery in South Africa. Second, it examines the potential for MWT applications in agriculture and rural development in South Africa. Third, the paper highlights potential benefits suggests key consideration and policy implications for mobile agriculture development in South Africa. This paper is seminal and significant in several ways. First, MWT are the fastest growing technology in developing countries and rural communities stand

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