



mAgriculture: The Application of Mobile Computing to the Business of Farming

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Introduction

The idea of using mobile computing in agriculture (also known as mAgriculture) is very new in North America, while mAgriculture in the developing world has been known and written about for almost a decade. A 2009 report by the firm Nicholson Kovac, “Agriculture New-Media Study,” talks about the use of email and websites without using the word mobile (Johnson, 2009). A 2010 survey of the use of information and communications technologies (ICT) in agriculture in the United States doesn’t even mention mobile technologies. Instead, this study by Kelly Burke at the University of Hawaii lists the Internet, websites, and “social technologies” as examples of ICT in agriculture (Burke, 2010). Although we found a 2009 article in *AgriMarketing* magazine on mobile phones for sending text messages to farmers (Slump, 2009), in preparing this report, we were struck by the fact that most scholarly articles we found on the subject of mAgriculture were published in 2011 and 2012, indicating the relative newness of this field.

There are several reasons why use of mobile technologies among American farmers has only taken off in the last year and a half. First, farmers in the United States are only recently adopting smartphones and tablets for their businesses at a rapid pace. A 2011 study by *Successful Farming* magazine shows that “farmers are adopting mobile phone technologies at a higher rate than the general public.” This study showed that 94% of farmers own a mobile phone or a smartphone. It cited data that showed that smartphone adoption rates among American farmers has jumped from about 10% in 2010 to close to 40% by mid-2011 (Jacobson, 2011).

A second turning point in the use of mobile technologies has been the introduction of tablet computers, such as the iPad in 2010. The publicity surrounding the iPad and its competitors has generated awareness and interest in mobile computing in all sectors of the economy. The use of tablets in agriculture, as opposed to smartphones, is just now starting to take off.

A third factor that led to the more rapid growth of mAgriculture in developing countries is the fact that in these countries, mobile phones may be the only computing and communications technology that is available. In contrast to American agricultural publications, African and Asian newsletters and magazines have lots of stories about the use of mobile phones in agriculture all through the 2000s. This indicates that farmers in developed countries in North America, Australia, and Europe have lots to learn from the mobile computing experiences of farmers in developing countries. Ironically, some of the educational materials available in developing countries are funded by American organizations such as the Bill and Melinda Gates Foun-

dation, and the University of Illinois's Scientific Animations Without Borders (SAWBO) project. SAWBO produces educational videos for farmers in 80 languages that can be played back on ordinary cell phones (VOA, 2011).

Some of the documented benefits of mobile agriculture in developing countries include:

- A potential \$138 billion uplift in emerging market farmers' incomes due to mobile computing and communications services;
- Mobile money transfer systems that provide farmers with the ability to exchange, save and borrow small amounts of capital as well as take out short-term insurance policies;
- Mobile information services providing detailed and localized weather forecasts, crop prices and resource management information; and
- Helpline services giving real-time guidance on issues such as pest control and the challenges linked to climate change, including water scarcity.

(Adapted from Vodafone and Accenture (2011) report, *Connected Agriculture*)

The benefits of mobile phones are not confined developing countries. Farmers in all countries appreciate the affordances of mobile communications. Mobile telephony:

- Delivers timely information that helps understand and analyze market prices, facilitates trade and informs business decisions;
- Reduces transaction time, travel, and costs by bridging distances and allowing for a more effective use of time;
- Strengthens communications which promote social networks and communities' progress in health, safety, employment, recreation, and other areas;
- Increases levels of community participation, facilitating an informed decision-making process, particularly greater participation from rural women. (e-Agriculture.org, 2010)

Like many other businesses, agriculture is becoming an information-intensive enterprise. In order to understand how mobile agriculture should work, it is necessary to analyze the information needs of farmers and distributors of agricultural products.