EDITORIAL PREFACE

The Role of Information and Communication Technology in Agriculture and Rural Development

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The Information and Communication Technology (ICT) revolution has brought about unprecedented new opportunities in agriculture and rural development in developing countries. The use of ICT in agriculture has made significant contributions towards improvements in agricultural production, food security, and better access to input and product markets. It has also improved the performance of rural agribusinesses, income earning opportunities, and agricultural policy development, coordination and implementation. As farmers’ use of ICT increase, additional benefits arise from better and improved access to food and agricultural market information, knowledge networks, expansion of employment opportunities, and more efficient communication channels between farmers, input suppliers, food processing and marketing firms, and rural entrepreneurs in Sub-Saharan Africa (SSA), Asia and Latin America. The widespread use of ICT facilitates and strengthens farmers’ linkages with key stakeholders through backward and vertical integration with input suppliers and food marketing firms respectively. In addition, to promoting better linkages and coordination along the food and agricultural value chain, new communication channels with government policy makers and extension workers enhance on-farm production efficiencies and the profitability of rural farm enterprises and household incomes.

The world is undergoing tremendous changes and agriculture is at the heart of numerous forces that will reshape and reorganize the food production and marketing landscape especially in developing countries. These forces include globalization, climate change, biotechnology, bio-fuels, information communication technology (ICT) and the current global financial crisis among others. Although each of these global trends is reshaping our world today, the use of ICT to promote socio-economic development and uplift the living standards of the poor stands out as one of the most significant changes in the history of mankind. With Africa and Asia leading the world in growth rates of mobile ICT adoption, the use of these modern tools to drive economic growth and alleviate the scourge of hunger and poverty presents immense opportunities whose full potential remains largely untapped in the 21st century.
The ICT momentum has transformed the way governments, agribusinesses, agricultural communities and civil society in general conduct their transactions. The central role of ICT use is set to explode in all economic sectors. Agriculture is one of those key economic sectors likely to benefit from prudent applications of ICT that could result in the transformation of livelihoods of millions of poor people. Specifically, ICT have been deployed in agriculture in numerous ways including input procurement, on-farm production and storage management, enhancing access to local, regional and global markets, and improving rural farmer’s access to key health and financial services among others. The advent of ICT has provided new avenues to resolve the problems of information asymmetry and information poverty that characterize rural areas in Africa, Asia and elsewhere. Today, farmers are able to receive real time information on input and product prices, weather conditions, pest infestation, and related farm management extension advice. According to the United Nations, ICT are being deployed in innovative ways to fight global climate change. Despite the current global financial crisis, one of the key benefits arising from the integration of global financial markets is the fact that poor farmers and rural traders are able to receive financial remittances from family members working in urban areas or in other countries. Social grants destined for disadvantaged members of the community are now being delivered through mobile commerce and other innovative ways. Mobile commerce has exploded in developing countries giving poor farmers and previously neglected people access to “banking” services. Some of the successful mobile money transfer services include M-PESA in Kenya, WIZZIT in South Africa, and Celpay in Zambia among others. In the field of telemedicine, poor countries that do not afford large investments in the health sector are teaming up with medical experts in developed countries such as United States and other European countries to provide long distance diagnosis and healthcare that benefit mostly agricultural communities in remote regions of SSA, Asia and Latin America.

Despite the limited penetration of the Internet in poor countries coupled with the false starts experienced during the dot.com era, new forms of ICT have evolved and their capability and functionality have improved tremendously over time. Consequently, ICT are now considered as critical tools for social and economic empowerment of the majority poor and underserved communities in developing countries. Generally, most farm workers, agricultural producers and rural agribusiness entrepreneurs in SSA can operate multitude of ICT ranging from ordinary mobile phones to the relatively more sophisticated smart phones. Rural agribusiness enterprises, agricultural producer organizations and non-governmental organizations have shown an increasing affinity to use ICT such as mobile phones, lap-tops, email, net-books, video conferencing, webinars, and high definition digital televisions as forms of communication with their employees and clients. The full potential of ICT remains largely untapped, and as more advances are unleashed on the global market, more tangible uses that contribute towards improving living conditions of the poor people in developing countries will arise.

Most governments have seized the opportunities presented by ICT by developing electronic government (e-government) and mobile government (m-government) programs with the aim to transform the delivery of existing public services to better meet increasing citizen demands for new and improved services. In SSA and Asia, rural communities have witnessed the development of high quality e-education, e-health and e-agriculture programs that are designed to use both the Internet and mobile phones as major technology platforms for public service delivery. Therefore, ICT have unleashed a new development paradigm, engendered democratic participation by civil society, expanded communication possibilities, and extended economic opportunities to previously neglected marginalized communities.

As a result of the foregoing developments that revolve around ICT, academic researchers, non-governmental organizations, and govern-
ment policy makers are showing increasing interest in studies that investigate the household, community, and national level impacts of using ICT, and measuring the extent to which the livelihoods of ordinary people have been changed as a result. In some African countries, institutions to support ICT policy development are lagging behind and research studies that focus on ICT development frameworks, policy and strategy issues, and best practices are of vital importance for institutional development. In contrast, in other African countries (e.g., South Africa, Tunisia, Kenya, Mozambique, etc.) governments have made tremendous strides in ICT investments and policy development. In such countries, ample opportunities exist to learn from each other’s successes and failures. This journal is an attempt to systematically document early empirical studies on ICT applications in agriculture and rural development in SSA and other developing countries, highlight the socio-economic benefits of ICT use and key challenges, and provide essential lessons and insights for those governments that are still grappling with ICT policy development issues on the continent and elsewhere.

The papers selected in this inaugural journal edition provide important insights on key developments in ICT applications in agriculture including some of the challenges confronting countries with early ICT adopters. The papers selected in this special edition were initially chosen as part of a mini-symposium entitled “Role of ICT in linking smallholder farmers to markets: What do we know?” that was conducted at the XXVII International Association of Agricultural Economists (IAAE) Conference held 16th-22nd August, 2009, at the Beijing International Convention Conference, held in Beijing, China. The papers were then subjected to an additional blind-peer review process before being finally accepted for publication in this inaugural issue of this journal. The topics covered by this inaugural edition span across two continents Africa and Asia which are at the epicenter of the ICT for development revolution. Specifically, the selected case studies are drawn from South Africa, Kenya, and Sri Lanka. In summary, the first paper describes a framework for the evolution of e-government policy development in South Africa and lessons for other SSA. The second paper develops a framework that can be used to analyze the link between ICT application in smallholder agriculture and household commercialization and food security. The third paper describes an ICT-based intervention (known as the DrumNet project) that has succeeded in integrating smallholder resource poor farmers into higher value agricultural chain. Finally, the fourth paper examines the problem of high transaction costs associated with obtaining market information among poor subsistence farmers in Sri Lanka. The paper argues that the ICT revolution has made the previously costly market information affordable to the farmers. If used appropriately, ICT can help reduce the high transaction costs associated with the acquisition of market information thereby help subsistence farmers move towards some level of commercialization.

Collectively, these papers are trail-blazing and they provide early lessons on the successes, challenges, and pitfalls experienced by those countries in SSA and Asia that have taken a leading role in ICT use in agriculture and rural development. First, those countries that have decided to become “followers” in ICT adoption will benefit from understanding what works in a given socio-economic context. Second, “followers” will be able to benchmark the best practices from the successful experiences of those countries that are “early adopters” of ICT. Third, countries trailing behind in ICT applications in agriculture do not have to experiment with ICT that may have been proven to not work in SSA, Asia or elsewhere. Such countries will be able to save valuable time, money and other scarce resources by not embarking on programs whose outcomes are already known to be unsuccessful.

The successful implementation of ICT in agriculture and rural development will be judged in a number of ways. First, the successful application of ICT in SSA will be measured by tangible socio-economic benefits that will accrue to
various stakeholders along the agriculture value chain. Second the successful implementation will be indicated by and the effectiveness of ICT policy development process in creating an enabling environment for sustainable ICT deployment on the continent. Third, success will be attributed to broad-based economic opportunities that will potentially accrue to various other constituencies and stakeholders such as agricultural colleges and universities (i.e. through increased demand for ICT use in agriculture curriculum), ICT services providers, and the agricultural communities in general. Fourth, and more importantly, ICT initiatives that result in significant poverty alleviation especially among the marginalized communities in SSA and Asia, and the development of “knowledge societies” will calibrate success or failure of the ICT for development revolution in the long-run.

In order to promote a better understanding of ICT uses in agricultural development observed around the world, it is important to balance the early successes with the social and economic problems that still persist in some countries such as low market awareness, poor ICT functional literacy, security violations, unresolved confidentiality and privacy issues, cultural and language barriers, peddling of non-durable and defective grey-market handsets, use of mobile phones while driving, poor connectivity, lack of reform in telecommunication sector, unaffordable tariff rates, and the need to integrate indigenous knowledge in available content among others. Without doubt, the development of more sophisticated and affordable mobile devices is likely to sustain the momentum in subscriber growth rates as the smart-phones become widely available to ordinary people in developing countries. New challenges emerge that require dedicated work by researchers working in collaboration with governments and the private sector to provide practical solutions that ensure the long term success of the ICT for development revolution thereby circumvent the limitations of the previous revolutions such as the green revolution.

Research results reported in this exciting journal help both the public and private sectors develop policy interventions and management strategies that contribute toward making the ICT for development revolution one of the greatest socio-economic transformative tools in the history of mankind. As already highlighted, the potential that ICT offers to expand income earning opportunities, unleash rural entrepreneurship, enhance food security, eradicate poverty, and stimulate broad-based socio-economic development make ICT central to the human development process in the 21st century. The International Journal of Information and Communication Technology in Research and Development in Africa (IJICTRDA) provides a timely platform for academic researchers, government policy makers, industry experts and other esteemed scholars, to share cutting-edge research results, build a new knowledge frontier based on scientific enquiry, and develop the capacity to assess location-specific ICT costs and benefits, including related risks and challenges. Therefore, this publication provides a unique opportunity to; (i) promote informed discussion on the critical importance of ICT in socio-economic development, (ii) identify practical ICT solutions that facilitate the escape from poverty of the majority poor living in developing countries, and (iii) contribute to the debate on ICT policy development in SSA and the developing world.

Finally, I trust that the academic community, government policy makers, development specialists, industry experts, and all other interested global scholars will find this journal informative, stimulating and exciting. I am proud to have laid the foundation for a novelty academic publication that reports empirical research findings that provide vital insights, case studies, analytical frameworks, policy development lessons on ICT research in SSA and developing countries. Given that agriculture is central to the economic vitality of most developing countries, this publication captures cutting edge research on ICT applications in agriculture and rural development in the 21st century. As the ICT revolution continues
to unfold before us, now is the time to conduct research and document systematically the unprecedented socio-economic transformations that have been introduced by these modern technologies. Therefore, the articles in this journal and in subsequent volumes highlight these socio-economic benefits and costs, and the policy issues arising from ICT development and deployment in agriculture and rural development. In addition, the articles provide the readers with an opportunity to reflect on the foregone development opportunities for those countries or governments that decide to adopt a wait and see attitude. This journal publication is quite timely, and will spur global efforts to increase our understanding of the diverse socio-economic gains arising from ICT use in agriculture in Africa, Asia, and other parts of the world.

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