Chapter 9
ICT Adoption in Farm Management, as a Mean of Implementing Agricultural Governance

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ABSTRACT

The rapid development and global spread of modern information and communication technology (ICT) led to the implementation of its applications to agriculture. Information management is becoming an increasingly challenging task for farmers, but also for public bodies since for some years now, governments have entered an era of cogitation regarding the future of public service provision. Provision in agricultural governance can be implemented through ICT focusing on informing, directing, managing, and monitoring agricultural activities toward the achievement of sustainable agriculture. Dissemination of knowledge to extension agencies and then on to farmers via appropriate information models can be fed back to the international agricultural community on research or policy making level.

INTRODUCTION

Agriculture is one of the most promising instruments for reducing poverty and securing local livelihoods. One of the critical conditions required of the agricultural sector is to ensure that good governance structures and related policies are in place at all levels (UNEP, 2008).

For a long time, agronomic research focused on monodisciplinary studies in the field of plant breeding, plant nutrition, physiology of plant growth and development and crop protection

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with pesticides (Kropff et al, 2001). Nowadays agronomic research expands from the development of Precision farming, an emerging technology with substantial promise to aid both farmers and society by improving production efficiency and/or environmental stewardship, to the rapid use of wired and wireless technologies in recent years, and to the development of new terms such as, digital economy and agricultural governance.

The above were achieved with the use of ICT (Information and Communication Technologies). ICT as defined in the Information & Communication Technology Sector Strategy Paper of the World Bank Group (2002) consists of hardware, software, networks, and media for collection, storage, processing, transmission, and presentation of information (voice, data, text, images). The global expansion of ICT and its associated structural changes in information management over the past 25 years is one of the astounding accomplishments of our contemporary world (McLaren et al, 2009).

Information management is becoming an increasingly challenging task for farmers (Gelb et al, 2004), especially in terms of the amount of data, the complexity of processes in precision farming, the demanding function of data acquisition, the choice of information technology, the use of Internet or other wireless technologies such as mobile phones (Steinberger et al, 2009).

While there is a multitude of perspectives and interpretations of the term governance, it implies a focus on systems of governing means for authoritatively allocating resources and existing control and co-ordination (Bulkeley, 2005). Governance refers to the development of governing styles, in which the boundaries between and within the public and private sectors have become blurred. The essence of governance is its focus on governing mechanisms which do not rest in recourse to the authority and sanctions of government (Higgins and Lawrence, 2005). Governance has been reformed in order to achieve transparency, efficiency, accountability and to end with sustainable economic development.

Just as governments seek to achieve public policy outcomes, agricultural organizations have a responsibility for seeing that policy outcomes are achieved. A variety of different factors influence change and innovation at the farm level. Some pertain to the skills, knowledge and personal characteristics of individual farmers, some to the farming enterprise, some to the availability of information, and in relation to adoption of new technology, the nature of the technology itself. Also relevant is the structure of an industry's policy system and how organizations and individuals within the industry interact.

As well as describing their characteristics, policy systems should be defined in terms of both structure and function. Policy systems are linked through institutions, groups, networks, and other continuing relationships that are based on shared understanding, values, common sources of disagreement, and patterned interactions. Definitions based on structure alone ignore the dynamic interactions between participants so critical to the systems way of thinking.

It is argued that policy systems should also be defined in terms of purpose and/or context. Systems defined without purpose ignore outcomes and the purposive nature of policy. Even when the outcomes sought are not clear the issues are usually sufficiently apparent to define the policy context. It is the purpose and/or context that determines the systems boundaries. The participants or stakeholders of one policy system will be different to those of another. Their inclusion in the system will be determined by the extent of their interest in the policy or policy issues, thus defining the community of interest. Taking this definitional approach enables a policy systems framework to have generic application in most situations involving multiple interests and stakeholders. It is a framework of relevance for thinking about public, industry and private sector policy contexts, or policy issues that transcend all three.