Communication and Knowledge Sharing:
Exploring the Potentials of ICTs in Rural Development in Hoa Binh Province, Vietnam

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Abstract

Achieving sustainable rural development should be based on the extent to which development practitioners put focus more on people than the materials such as agricultural inputs needed by rural people. And information and communication activities are a critical element of any rural development concerns. Traditionally, rural communication system focused on supplying information from policy makers to the rural poor. This mainly functions along technical divides and is top down manifested in poor linkage between research, advisory services and farmers. Communication specialist increasingly recognise the enormous potential of information and communication technologies (ICTs) to support and enhance communication across a broad spectrum of actors and activities through the integration of multimedia mechanism into daily process.

In Vietnam, the presence of ICT in rural Vietnam has been very little and the socio economic impacts are very weak. These observations go against a general understanding that, the coverage of ICTs in rural areas of Vietnam is wide spread (such as internet, mobile phone, radio, television and telephone) and could have significantly impacted on development. Base on this the research is proposed to explore the potential of ICTs in rural areas.

The objective of this research is to assess the potential of ICTs in strengthening extension communication and information services to rural farmers in Hoa Binh province of Vietnam.

The research found that farmers have a big desire to use internet service with strong believe the potential of ICT in their life. They want to use the internet for improving their communication, information and education as well. They expected that using the internet might help them to improve their living standard. However, current ICTs in Hoa Binh do not get an enabling factor to develop rural area due to lack of infrastructure, application software and environment policies. At DARD, some computers connected to LAN and Internet, but are out of work. On the other hand, there is lack of human resources on information technologies applications; there is only staff working concurrently with self-taught knowledge from other projects.

Farmers have a big demand for approaching agricultural information, but source and ability of information supply of agricultural management agencies are very limited. The ICTs have not much potential to farmers. Radio and television on agriculture are useful but information is still poor and not specific enough to the different climate and location condition.

Keywords: Communication, Information and communication technologies (ICTs), extension service and rural development

Acknowledgements

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Acronyms

ADB: Asian Development Bank

AKIS: Agricultural Knowledge and Information Systems

CBOs: Community Based Organizations

CPC: Commune People's Committee

DARD: Department of Agriculture and Rural Development

FAO: Food and Agriculture Organization of the United Nations

FA: Farmers Association

GTZ: Deutsch Gesellschaft Fuer Technische Zusammenarbeit

HERP: Hunger Eradication and Poverty Reduction Program

ICTs: Information and Communication Technologies

IT: Information Technology

ICARD: Information Technology and Statistic Centre for Agriculture and Rural Development

IPM: Integrated Pest Management

LAN: Local Area Networks

MARD: Ministry of Agriculture and Rural Development

PPC: Provincial People's Committee

WU: Women Union

VTV: Vietnam Television

VOV: Vietnam's Radio Network Voice of Vietnam

CHAPTER 1: INTRODUCTION
1.1 Background

About 75% (1.3 billion people) of the world's population live in rural areas and are characterised mainly by dependence on agriculture for their livelihood (Santucci, 2005). This group constitute the poor who are marginalized and lack access to basic services such as food and shelters (Wresch, 1996; FAO, 2000 and Adeya, 2002). Tremendous efforts are being made by major development agencies such as World Bank, FAO and others to improve the well-being of these rural poor. These efforts are being made towards improving their productivity especially in agriculture and small scale industries. World-wide a range of technologies and innovations have been developed to help increase agricultural productivity of the rural poor. New technologies such as new varieties, exotic breeds of animals and fish, tillage methods have been generated from research institutions and universities but the subsistence farmers have continued to use their traditional production methods. The benefits of the green revolution have continuously eluded many rural farmers. Lack of access to information has been identified as one of the key challenges affecting the adoption of new production technologies and innovations (Adeya, 2002). It has been argued that the capacity of human resources to handle development issues requires increased knowledge and information sharing as well as appropriate communication between the different partners. According to FAO and GTZ (2006) achieving sustainable rural development would be based on the extent to which development practitioners put focus more on people than the materials such as agricultural inputs needed by rural people. Thus information and communication activities are a critical element of any rural development concerns. Emphasis needs to be put on the user of the information as well as the information itself (Chapman and Slaymaker, 2002). For many years the importance of communication for development has been acknowledged and different communication have been used to get information to the rural poor in the past but not much has been achieved.

Traditionally, rural communication system focused on supplying information from policy markers to the rural poor. This mainly functions along technical divides and is top down, manifested in poor linkage between research, advisory services and farmers (FAO and GTZ, 2006). It is now however, recognized that past systems of communication with the rural people have been ineffective in addressing the needs of rural poor because transmission of message was basically the order of the day. According to Chapman and Slaymaker (2002), the extension of agricultural information in particular is evolving beyond merely transmitting messages and is becoming open and more participatory; demand driven, involving interactivity, negotiation and two way information exchanges. Emphasis is on acquisition of information and enabling rural poor to request for information specific to their particular livelihood needs. Such emphasis is argued, could be achieved through the recent technological advances in the form of information and communication technologies (ICTs) (Chapman and Slaymaker, 2002). ICTs are composed of a range of technological tools and resources used to communicate, create, store, disseminate and manage information. These are flexible, adaptable, robust and far reaching with more opportunities for interactions (Bhavya Lai, 1999; Chapman and Slaymaker, 2002; Singh, 2006; Curtain, 2004).

Communication specialists increasingly recognise the enormous potential of information and communication technologies (ICTs) to support and enhance communication across a broad spectrum of actors and activities through the integration of a multimedia mechanism into daily processes ((Chapman *et al.*, 2002). Bhavya Lai (1999) argued that ICTs can further governance goals ranging from enabling long distance education, telemedicine and environmental management to strengthening of participatory approaches and the creation of new livelihoods. In this way they reasoned ICT can involve more people and can make deeper geographic penetration especially in rural areas compared to the traditional means

and modalities. While ICT is seen as having a positive and important role in achieving development goals, it is also balanced by concerns that it will accentuate existing socio-economic inequalities (UNDP, 2003). Bhavya Lai (1999) provides a two-fold argument that the imbalance may occur in the course of adapting ICT: first is that if ICT applications are not integrated with organizational culture and missions, there is will always be failure. Such failures could be highlighted in light of potential antagonism between various groups for instance the mass organizations extension workers and local leaders. Antagonism could also come between research and extension workers over content and roles of each other. Additionally failure could arise target users inability to access, interpret or manipulate the communication and content of the messages being communicated. The second being that, if not thought through fully, may lead to information being incompletely archived and preserved, or cause breaches of security and privacy. They concluded that, ICT implemented without regard for suitable access to all concerned will create a society of information haves and have-nots that may be irreparable. The UNDP (2003) particularly observes that this situation is likely to affect the rural poor who are already marginalized.

In the case of Vietnam, communication from the government to rural poor is still largely done using the top-down approach which is highly bureaucratic and tedious. However, there is a very rich form of informal communication approaches between members of the community (Felsing and Nguyen, 2003). There is also a wide coverage of networks such as internet, mobile phone, radio, television and telephones that can be exploited for communicating development messages and services to the rural poor. According Felsing and Nguyen (2003) by the year 2000, 88% of households in Vietnam had electricity; over 58% own TV and the radio coverage is over 75% (from the World Bank Vietnam Living Standards Survey 1993-1998, http://www.worldbank.org.vn). This wide coverage can be exploited for ICTs in rural development issues. Print media is largely limited to urban areas. According to Le *et al.*, (2005), the presence of ICT in rural Vietnam has been very little and the socio-economic impacts are very weak. Similarly, the impacts of ICTs on economic sectors are weak. These observations go against a general understanding that, the coverage of ICTs in rural areas of Vietnam is wide spread and could have significantly impacted on development. Based on this background this research is proposed to explore the potential of ICTs in rural areas.

Hoa Binh, one of the provinces located in the North-western part of Vietnam face more challenges in terms of access to communication and information services by rural people. They have mountainous terrain with rivers and swamps intervening in the plains. Even if there is adequate access to network this is least used for providing services such as rural extension. Although there is a plan by the government to establish a communication centre, the problem still remains as to whether it will be accessed and used by local people. Based on the background presented above a research is here being proposed to explore the potentials of the services to the rural people in Hoa Binh province.

1.2 Problem statement

The combined efforts by government and local organizations such as the farmer unions and associations have been working towards linking communication and information services to rural people in Hoa Binh province. Despite the presence of these organizations, in Hoa Binh Province the rural people are inadequately reached with communication and information services. The low level of services is attributed to factors such as land terrain, limited coverage of print and other media and inadequate distribution of extension workers. Given the fact that there has recently been an upsurge in more robust and flexible ICTs, the National government plans to establish centres for using new technologies in Hoa Binh province in an attempt to improve on communication and information flow in rural areas. There are however, promising values in using ICTs in rural development but a

comprehensive exploration of the ICT potential in any location is essential and is thus the rationale for this research.

The objective of this research is to assess the potential of ICTs in strengthening extension communication and information services to rural farmers in Hoa Binh province of Vietnam.

1.3. Outline of the chapters

The first chapter produces the background, the objective and problem of this research.

Theoretical concepts related to this research are presented in Chapter 2.

Chapter 3 concentrates on research strategy. This chapter explains research methodology, conceptual framework, and research area.

Chapter 4 present the result of the research in Hoa Binh province. The current status of ICT and the potential of ICT in rural development in Hoa Binh is expressed and analyzed.

Conclusion and recommendation of the research are showed in Chapter 5

CHAPTER 2:   THEORETICAL CONCEPTS

The chapter presents the theoretical concepts of the research and discusses a set of research questions in order to test the problem, objective and theoretical concept.

2.1 Communication

2.1.1 Communication concept

Communication (including information and education as well) can be defined as diverse, covering a range from the simplest conversation between two people to the most sophisticated mass medium (Wesseler and Brinkman, 2002). In early theoretical models of communication from the 60's simply saw the communication process as an exchange of messages from a sender to a receiver with a lot of importance given to the sender and the channel used for the transmission. Since 70's this model has undergone a 180 degree shift with more emphasis given to the communication process itself, understood primarily as exchange of meanings and of the social relationships that have derived from such exchanges. Currently, communication is considered as a social process designed to bring together actors such as agricultural technicians and farmers in a two-way process. Viewed this way, the parties involved in a communication process are both senders and receivers of information and co-creators of knowledge (FAO and GTZ, 2006). Making a communication there involves bringing the sender and receiver into a consensus through negotiation and dialogue, the result of which is a shared knowledge for the right action (Servaes and Malikhao, 2007). The decision that are taken subsequent to shared knowledge is often taken based on the interests, needs, and strength of the parties concern and is always coordinated and responsive to such interest and situation of either the sender or receiver. According to Richardson (2003), two-way communication has been used in agricultural extension to coordinate farmers' participation in use of available services. The farmers were able to negotiate and arrive at a decision to be communicated further. It is therefore reasonable to point out that the communication looked at as above is essential to support the decentralized systems such as in Vietnam in which case the stakeholders have to communicate, negotiate and arrive at a decision that can be further communicated.

In Agricultural Knowledge and Information System (AKIS), people and institutions are linked together or to promote and enable mutual learning and generate, share and use agriculture-related technology, knowledge, skills and information. The system integrates farmers, agricultural educators, researchers, extension workers and the private sector [support and input services, traders] to harness knowledge and information from various sources for better farming and improved livelihoods (FAO and GTZ, 2006). However, this integration among people and institutions, particularly in the research-extension-farmer relationship, has not been successful in many parts of the developing countries. Extension services are often under-equipped in terms of staff, transport and accommodation as well as inadequately trained for effective communication. Especially in areas where small scale agriculture is predominant and a wide array of crops is grown, there is a need for extensionists with a broad level of technical skills and expertise. There is also a basic difference in the information and extension needs between market-oriented, transitional and subsistence based training. FAO and GTZ (2006) also wrote many linkage problems between major institutional actors are caused by a lack of coordinated planning, poor communication between linkage partners, and absence of follow through with actual linkage resource planning or implementation. In addition, there is no involvement at all of representative farmers or their organizations. A lack of appropriate communication structure, methodologies and tools results in poor identification of farmers' needs and priorities, inappropriate research programmes, poor or irrelevant extension information and technologies and finally, low

farmers' take-up of technology innovations. These need to be addressed again in the light of new developments in media and communication technologies and new support strategies to rural areas.

2.1.2 Communication for development concept

Communication for development refers to the use of communication process, techniques and media to help people create a full awareness of their situation and their option for change and sustainable development (Fraser and Restropo-Estrada, 1998; Ramirez and Quarry, 2004). The process of communication involves a number of activities, which take into account the technical content of the messages and the education level, information needs, channel and communication behaviour of the stakeholders. The World Bank (2003) reported that implementation of communication activities typically involves distributing, broadcasting of radio and television messages, print media including posters, leaflets, handbooks, and conducting community-based group and interpersonal communication sessions. The availability of new information technologies and media such as internet, rural radio, mobile phones and TV open more channels for communication and give the chance for wide access to information. In this view, the focus on the user that is prevalent in communication for development provides a useful basic for broadening the perception of the role of ICTs beyond improving the efficiency of information systems to deliver information from centralised sources and better quality data for centralised analysis (Chapman and Slaymaker, 2002).

Communication for development comes from the recognition that in development there are multiple stakeholders all generating and exchanging information. This is especially true in natural resource management (Ramírez, 1998). Therefore, the need for ways of linking the different viewpoints and the challenge of creating a common language between different stakeholders gains importance. Communication can no longer be relegated to a public relations exercise. The contrasting interpretations of reality between rural folk and policy makers, or between scientists and field staff, are the challenges faced by the field of communication for development. These are the entry points for strategically designed communication efforts aimed at linking different stakeholders. Communication for development is about aiding different types of actors interested in understanding needs and assessing opportunities jointly; it is about providing them with the methods and media to reach common meaning, and about enabling them to negotiate with other actors with contrasting perceptions and interests (Ramírez, 1998; Chapman and Slaymaker, 2002).

Communication as such refers to the two-way exchange of information; a feature which is a key component to effective development (Zijp, 2004). This acknowledgement about the fundamental role of communication is a significant step ahead in the context of development. In many sectors information has been understood as a public relations exercise aimed at raising public awareness or merely as a mechanism to transfer knowledge and technology in a uni-directoral mode. Today, there is growing recognition that the impact of such approaches is limited or short-lived and additional efforts are needed to give voice to the knowledge and perspectives of people at the grassroots, as they are no longer willing to be treated as passive recipients of information (Ramírez, 1998). In this sense, ICTs have been recognised as having a role to play in broad-based, cross-sectoral poverty reduction strategies and universal access policies are being promoted to improve rural access to ICTs (Kenny *et al.,* 2000). Thus, it is necessary to take a closer look at how the specific opportunities presented by the new and converging information and communication technologies can be harnessed to support the processes of rural development.

2.2 Information and communication Technologies (ICTs) for rural development

2.2.1 The concept of ICTs

By definition, ICTs include electronic networks, embodying complex hardware and software, linked by a vast array of technical protocols (Mansell and Silverstone, 1996). ICTs are embedded in networks and services that affect the local and global accumulation and flows of public and private knowledge. ICTs can be defined as a diverse set of technological tools and resources used to communicate, and to create, transfer, store and manage information (Bhavya Lai, 1999; Gerster and Zimmermann, 2005). According to Chapman *et al*., (2002), ICTs refers to those technologies that can be used to interlink information technology devices such as personal computers with communication technologies such as telephones and their telecommunication networks. The personal computer (PC) and laptop with e-mail and Internet provides the best example. Michiels and Van Crowder (2001) asserted that ICTs used to be defined as a range of electronic technologies which when converged in new configurations are flexible, adaptable, enabling and capable of transforming organizations and redefining social relations. The range of technologies is increasing all the time and there is a convergence between the new technologies and conventional media. The rapid and developing convergence means that devices such as digital cameras, digital video cameras and players, personal digital assistants, slide projectors and mobile telephones are also compatible with more traditional media such as radio (digital, satellite), television (cable, digital, satellite). Thus most devices can now be linked to others to share and exchange information and allow it to be used in such a way that they can also be categorised as ICTs. Even books are being incorporated into ICTs either through the potential for informal web publishing or more formal digital book publishing with designated readers or e-books. ICTs, therefore, are an expanding assembly of technologies that can be used to collect, store and sharing information between people using multiple devices and multiple media (Chapman *et al.,* 2002).

In the context of rural development, Information and communication technologies (ICTs) are recognized to support and enhance communication across a broad spectrum of actors and activities through the integration of a multimedia mechanism into daily process (Chapman and Slaymaker, 2002). According to Keri K. Stephens (2007), ICTs become an important component in the process of communication. The role of ICTs in such a scenario is to provide timely information, increase choice, reduce transaction costs, and contribute to improving the efficiency of decision-making to raise rural incomes and improve the quality of life of the rural communities (N.H. Rao, 2006). Rural development is enhanced by the growing availability and accessibility of modern ICTs. This has profound implications on the information products and services required by the various actors, and on the capacities and skills that these actors need in order to bridge the communication gap for information sharing and exchange between the different actors in the agricultural knowledge and information system.

Chowdhury (2000) wrote that ICTs encompass technologies that can process different kinds of information (voice, video, audio, text and data) and facilitate different forms of communications among human agents, among humans and information systems, and among information systems. They are about capturing, storing, processing, sharing, displaying, protecting, and managing information. Duncombe and Heeks (1999) simplify definition ICTs as an electronic means of capturing, processing, storing and disseminating information. In this review, the terms IT and ICTs will be used nearly synonymously and in a somewhat broad sense. The terms designate the information processing interaction between providers and users of information and also the development and application of information processing systems that may not be regarded as part of the development of

telecommunication. It is important to emphasize that these technologies only provide new mechanisms for handling an already existing resource, namely information (Adeya, 2002)

Mansell and Wehn (1998) focus on how ICT can be harnessed for purposes of meeting development goal. They warned that if poor countries implement investment strategies that emulate the "one person – one telephone – one Internet access point" model that is predominant in the West, frustration will be rife. In addition, they advance the view that there is little to be gained from access to global or local resources if the skills to select, interpret and apply the information are absent or poorly developed through the population. Consequently, they suggest it is important for poor countries to develop models for "access and "information content" because the capacity to generate and share information about local resources is as important as access to distant digital information.

2.2.2 ICTs and rural development

The rural people are engaged primarily in agriculture and related activities for their livelihood, agriculture providers the bulk of their income and their main sector of nutrition (IFAD, 2001). Improved systems for the management and communication of agricultural information can help farmers make informed choices about the opportunities and constraints associated with agricultural development strategies (FAO, 1998). O'Farrell (2001) believed that before one can advocate for the development of ICTs among rural farmers, they must understand the existing information systems of rural areas, how they interact with more formal information and the best way to strengthen before intervening with new information sources and means of access sources. Access to information and knowledge are considered key enablers in poverty reduction in rural areas.

In context of changing paradigms in agricultural extension, where linear information flows are being replaced by pluralistic farmers will become more and more able to access any information they need on their own (Engelhard R., 2003). This development is enhanced by the growing availability and accessibility of modern ICTs. The role of the traditional intermediary is vanishing as all actors within the community take on intermediating functions. This has profound implications on the information products and services required by the various actors, and on the capacities and skills that these actors need in order to bridge the communication gaps for information sharing and exchange between the different actors in the agricultural knowledge and between the different actors in the agricultural knowledge and information system.

Meera S. N. *et al.*, (2004) asserted that ICTs can bring new information services to rural areas where farmers, as users, will have much greater control than before over current information system. Access to such new information is a crucial requirement for sustainable development of the farming systems. Recently, agricultural extension systems in most developing countries are under-funded and have had mixed effects. Much of the extension information has been found to be out of date, irrelevant and not applicable to farmers' needs, leaving such farmers with very little information or resources to improve their productivity. In addition to basic technical knowledge, the rural farmers need to be able to operate in increasingly sophisticated input and output markets.

2.2.3 Potential of new ICTs for rural development

By reviewed literatures there are some potential of new ICTs for rural development which are:

According to Chapman and Tom Slaymaker (2002), the potential of ICTs to promote rural development lies partly in increasing market efficiency through addressing information gaps and blockages. These also have potential in informing and strengthening the decision-making capacity of the farmers and institution that represent them. With emphasis on Information and Communication therefore, the importance of context-driven and indigenous approaches such as projects that meet local needs, demand-driven content and local language mediums become obvious. By facilitating a new level of "many-to-many" information, ICTs offer an interactive and decentralized platform that enables people to share knowledge and build networks (Gerster and Zimmermann, 2003).

The potential of ICTs to support the improvement of the currently inadequate extension and education services, and ensure farmers have access to reliable information about agricultural technologies and markets, is the subject of considerable interest (Zijp, 1994; FAO, 1998; Chapman *et al.,* 2002). This is further explained as having access to the "new" ICTs to improve access to education opportunities, increase transparency and efficiency in government services. Generally, the potential of ICTs as a stimulant for rural development is strengthened by recognition of the fact that information and knowledge sharing are fundamental elements of any rural development programme (UNDP, 2003).

Rao (2006) asserted that the role of ICTs in such a scenario is to provide timely information, increase choice, reduce transaction costs, and contribute to improving the efficiency of decision-making to raise rural incomes and improve the quality of life of the rural communities. Thus, rural development is enhanced by the growing availability and accessibility of modern ICTs and certainly the implications on the information products and services required in enormous. Similarly the impacts will be reflected on the actions of the various actors in terms of their capacities and skills and the interactions amongst the actors in the agricultural knowledge and information system (Chapman and Slaymaker, 2002).

Access and use the "new" ICTs provides optional means to help the small entrepreneurs and the rural farmers get access to the information needed (Servaes and Malikhao, 2007). Singh (2006) emphasized that the "new" ICTs can play a significant role in rural development by empowering the rural farmers with new knowledge, up-to-date information about agricultural technologies, best practices, markets, price trends, consumer preferences, sources of finance, weather, soil-moisture condition and the environment. Indeed ICTs are becoming more accessible, and users can obtain information from various sources, and one computer could meet the needs of a large rural community. In agriculture extension, ICT has many potential applications (Zijp, 1994), it can bring new information services to rural areas where farmers, as users, will have much greater control than before over current information channels. ICT can be used to serve agricultural development goals; it takes time to integrate ICTs to address the specific challenges of raising agricultural production.

Munyua (2000) wrote that new ICTs have the potential of getting vast amounts of information to rural populations in a more timely, comprehensive and cost-effective manner, and could be used together with the traditional media. In this paper, Munyua (2000) gave some examples of areas where ICTs could play a catalytic role in developing rural area:

- **Decision making process**: is dependent upon availability of comprehensive, timely and up-to-date information. Food security problems facing developing countries demonstrate the need for informed researchers, planners, policy makers, development workers and farmers. Information is also needed to facilitate the development and implementation workers and farmers. Information is also needed to facilitate the development and implementation of food security policies. Email and the Internet could be used to transmit information to and from rural inaccessible areas.

- **Market outlook**: Farmers could promote their products and handle simple transactions such as orders over the web while payment transactions for the goods can then be handled off-line (O' Farrell *et al.,* 1994). It has been shown to be cheaper and faster to trade online than on paper-based medium, telephone or fax. Electronic-commerce could, therefore, enable entrepreneurs to access global market information and open up new regional and global markets that fetch better prices and increase farmers' earning.

- **Empowering rural communities**: ICT can empower rural communities and give them a voice that permits them to contribute to the development process. With new ICTs, rural communities can acquire the capacity to improve their living standards and become motivated through training and dialogue with others to a level where they make decisions for their own development. Giving rural people a voice means giving them a seat at the table to express their views and opinions and become part of the decision making process. The approach should be participatory and could lead to improved policy formation and execution.

According to Singh (2006), agricultural policies of most countries in the Asia-Pacific region, though indicating use of ICT, lack sufficient clarity on how ICT are to be used in agricultural development. While rural telecommunication can play a vital role in supporting and providing farm and non-farm livelihoods, access to markets, education, health services, governance, etc., the costs of connectivity are still somewhat high and commercially supposed to be unviable at the moment in many part of the region. Chowdhury (2000) noted that many sceptics have not seen the role of ICTs in efforts intended to alleviate poverty and bring food security to developing countries. This contention puts into perspective a major challenge face by policy makers in Vietnam in efforts intended to develop strategies that can bring the information revolution to rural areas.

2.2.4 Conclusion

Communication has become a key feature of development. This comes from the recognition that there are multiple stakeholders all generating and exchanging information. Therefore, the need for ways of linking the different viewpoints and the challenge of creating a common language between different stakeholders gains importance. The emergence of information and communication technologies for rural development is recognised to support and enhance communication. They become more important in the process of communication for rural development. There have much potential of ICTs to rural development such as building networks, knowledge sharing and information exchange. ICTs can play a vital role in supporting and providing farm and non-farm livelihoods, access to markets, education, health services, governance, etc.

Based on this overview the various authors coincide in the following functions:

- **Building network**: ICTs can help empower the poor to take control of their knowledge environment. This can lead to improved sharing information locally resulting in greater choices for livelihood strategies for instance sharing experience between farmers. Local information exchange can help farmers organize as groups, articulate needs, defend interests and increase bargaining power. ICT can help local institutions listen to the poor, engage in more meaningful dialogue and build consensus and mutual understanding around development strategies. ICTs provide practical opportunities for improved information exchange between different groups and new and innovation knowledge partnerships.

- **Access to more information, especially public information**: the context of rural development has changed rapidly in recent years. In order to able to cope with and

adapt to these changes the rural poor require improved access to information regarding market opportunities and information about their rights and the roles and responsibilities of institutions supposedly designed to benefit them. In terms of market opportunities, emerging agricultural technologies are increasingly information intensive and the rural poor must now cope with increasingly sophisticate input and output markets.

- **Managing, storing, and sharing information**: ICTs can facilitate the improvement of existing information management processes by improving ease of access, transparency, accountability, efficiency, speed of delivery and providing new information sharing opportunities through affordability availability and ease of use. ICT can help address good governance concerns of greater administrative efficiency by improving existing formal information systems operated by local government and development agencies. The new ICTs offer the potential for storage and presentation of information formats more appropriate to local contexts and therefore encourage greater integration of different information system.

Base on these potentials I come to the main research question in order to understand the potential of ICTs in rural areas in Hoa Binh province:

How ICTs can contribute to rural development in Hoa Binh of Vietnam?

To answer the main research question, the sub-research questions need to be explored, they are:

1. What issues contribute to the realisation of the potential of ICT in Hoa Binh province of Vietnam?

2. What are pressing communication issues for farmers?

3. What is the potential of ICT in Hoa Binh province?

CHAPTER 3:   RESEARCH STRATEGY

In the previous chapter, the potentials of ICTs for rural development are explored. Inspired by the concepts of communication, communication for development and ICTs (including the concept and the potential of ICTs), this research has been designed to apply those concepts to improve communication and knowledge sharing for rural areas in Vietnam. The main target of this chapter is to develop the research strategy for conducting the research, which includes research methodology, conceptual framework, and research area.

3.1 Research methodology

The research methodology aims to seek a deeper understanding of the existing problems which, having been analysed under the light of the theoretical concepts, it turn can help to realize possible measures for solving the problems. This means that the research aims to gain insight into existing problems, qualitative research.

The research involved both desk study and field work. The desk study involved review of literatures and documents various offices in Vietnam such as Ministry of Agriculture and Rural Development (MARD), Information Technology and Statistic Centre for Agriculture and Rural Development (ICARD) and Hoa Binh People's Committee (PC). During the research the key issues for consideration included appropriateness, timeliness and accessibility of information using various means of communication. The respondents were representatives of information technology specialist at ICARD, extension workers at Hoa Binh province, district and commune level and farmers in Hoa Binh. The leader of Famers Association (FA) and Women Union (WU) also were interviewed. Vietnamese language is used to interview the respondents and this work is done in their own localities. The focus group discussion with mass organizations (Farmers association, Women Union) was also used for collecting data in this research. The source of data collection is represented in table 1.

Table 1 Source of data

Actor	Topic	Source/method
Government	ICT policies documents	Review documents related to ICTs (Ministry of Agriculture and Rural Development and Agriculture and Hoa Binh People's Committee)
ICT specialist	Current and the potential ICT for rural area	ICARD (information technology centre and statistic for agriculture and rural development)
Extension worker	Current provide information for rural people (through what form of ICT) The potential of ICT in rural development	Agriculture and Rural Development Department of Hoa Binh Province
CBOs leader (FA, WU)	Current ICT used by farmers in the area	Hoa Binh province
Farmers	Difficulties of agriculture production, and how are they settling these difficulties? Information farmers need Source of agriculture information approach Desire and purpose of using new ICT Awareness the potential of ICT in their life	Hoa Binh province

3.2   Conceptual framework

In the research, to understand the potential of ICTs for rural development the current status and the potential of ICTs in Vietnam are analyzed. However, the time used for collecting this data is 4 week. The risk in my research is to spend all my time on the current status of ICTs (3 weeks) and I spare a little time (1 week) to explore the potential of ICTs in Vietnam and in Hoa Binh in particular. During the time, the works were done as follows:

- Exploring the current status of ICTs in Hoa Binh province

- Collecting and analyzing knowledge gaps and information problem between government and farmers in Hoa Binh province.

- Discussing the potential of ICTs in rural development

Figure 1 Framework for the current and potential ICTs analysis

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Current status of ICTs
- Current infrastructure, hardware and software in Hoa Binh province
- Current ICT policies
- Current ICT activities
- Other ICT project
- Actual situation of sharing knowledge and information

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Hoa Binh province is se   rovince is representative for areas with the poorest road networks in the country as a result of its terrain. The area is mainly mountainous with rivers and swamps spread throughout the region. As a result of which most communities are rural in nature and access to information is below the national average (ICARD report, unpublished). In an effort to improve communication in remote areas of Vietnam, the government is in the process of establishing communication centres in rural areas. Hoa Binh is one of the provinces selected as a pilot research area for the establishing of rural communication centres. The research aimed at exploring the potential of ICTs in this area would therefore contribute to the overall improvement in the communication in all rural areas of Vietnam.
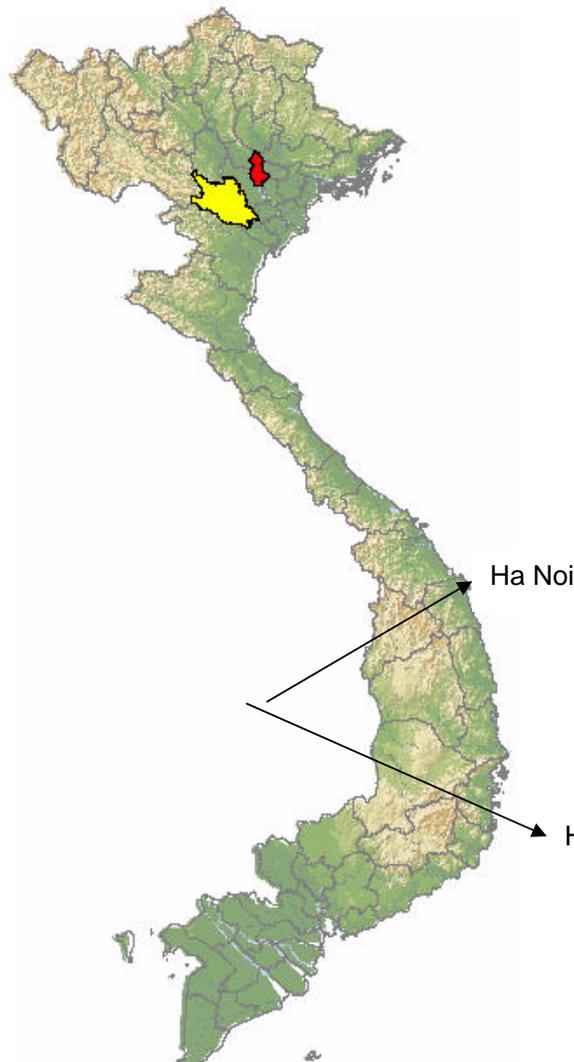
**Map 1: Location   of Hoa Binh
          province in   Vietnam**

Ha Noi

Hoa Binh province

Map 2: Hoa Binh province
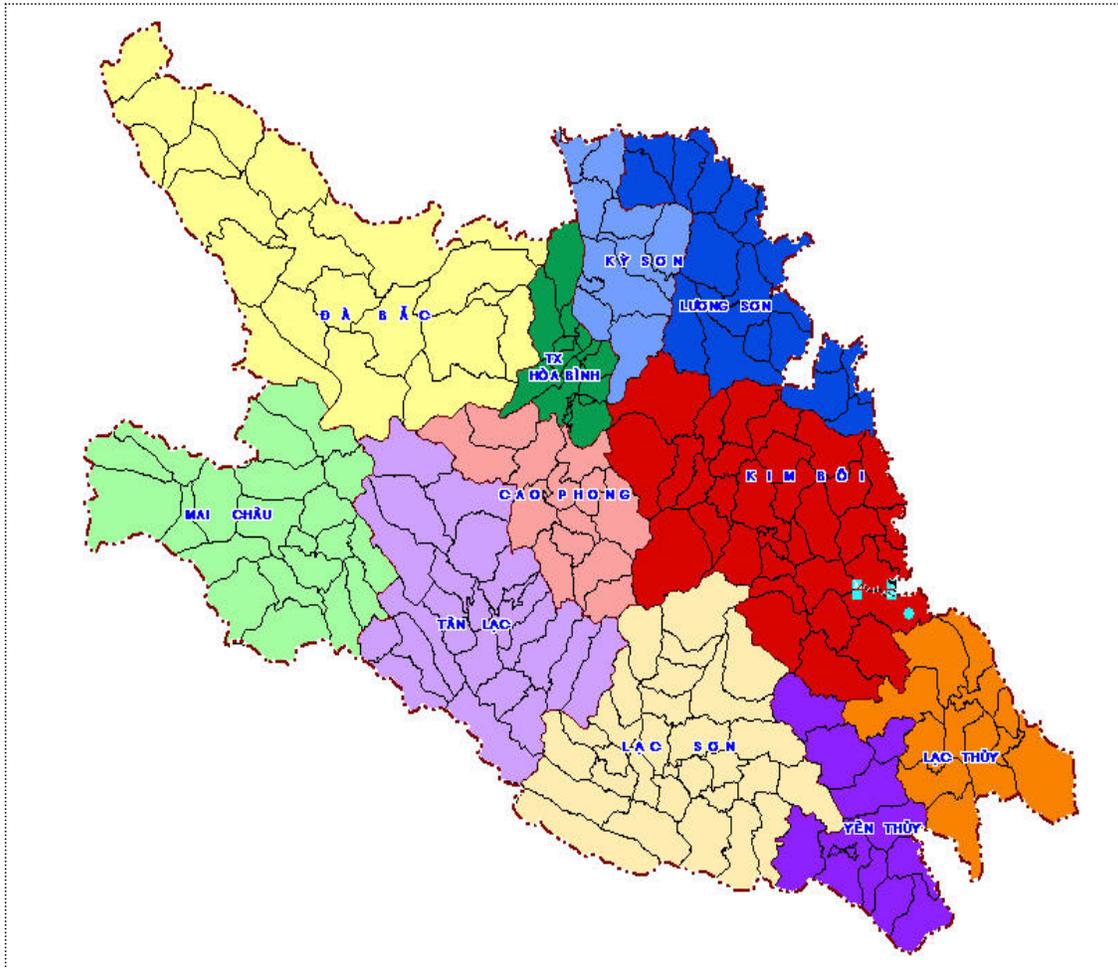
CHAPTER 4: CURRENT AND THE POTENTIAL OF ICTS IN HOA BINH PROVINCE

In this chapter, the results from the fieldwork are presented to describe the current status and the potential of ICT in Hoa Binh Province.

4.1 Introduction Hoa Binh Province

Natural conditions

The area of the research is in Hoa Binh Province, which is one of the mountainous provinces in the North-western of Vietnam. Hoa Binh has around 810,130 residents and an area of 4,662 km^2. Among which the urban population is 123,449 people (occupying for 15.36%) and the rural population is 685,681 (occupying for 84.64%). The density of rural population is high; the density of urban people is much lower than the average density of the whole country (26.3%)

Hoa Binh Province is located in the monsoon tropical climate area of Vietnam. It has many high hills and mountains; as a result, its topography is separated, many sub-areas with subtropical climate influenced by Lao wind from March to May are created.

The terrain of Hoa Binh is complicated, strongly separated and gradually lower towards North-west - Southeast. With regard to the type of terrain, it is divided into three distinct areas:

- The high-mountain terrain is distributed in the North, with the average height of 600-700m above sea level; some tops are over 1000m high; the highest tops are Phu Canh and Phu Yoc (Da Bac), with height of 1373m.
- The low-mountain terrain is complicatedly separated due to faults and subsidence of Red River syncline, distributed in the central area, with the average height of 200-300m.
- The hilly terrain is inserted into fields, located in the Southeast area, 40-100m high on average.

Social and economic conditions

Hoa Binh has seven nations which include Muong (62.9%), Kinh (28.7%), Thai (3.9%), Dao (1.5%), Nung, Tay, Hmong and Hoa (3%). The rate of literacy in the province is 91% of people, however, their level education are still low. Vietnamese language (Kinh language) is used to communicate in the province. Due to difficult conditions of mountainous and hilly region, educational standards of people are quite low because lacking of secondary schools, existing poor infrastructure, poor conditions in exchange and communication.

Regarding to economic development, agriculture production is the main sector. More than eighty four percent (84%) of population and about ninety percent (90%) of labors force are in this sector. Therefore, livings of people strongly depend on the agriculture production.

In Hoa Binh province, there are two main systems of cultivation land as follows: wet land cultivation on terraced fields and swidden fields (shifting cultivation). The terraced fields are near houses and water resources and the swidden fields are in hills or in the forests near on far housing areas. Shifting cultivation is associated with the people's life in many aspects, including materials as well as spiritual life and traditional habits, and it is not entirely easy for

them to discontinue it suddenly. Shifting cultivation often in its relatively sustainable rotational form has been practiced for centuries by indigenous tribal groups in the uplands of Vietnam. Even thought production of swidden cultivation is low, and the recent rapid increase in human population in the uplands is force remaining areas of primary forest, which are felled for new fields.

In recent years, the government has paid much attention to develop mountain areas, including Hoa Binh province such as the program 135 (Government program on Socio-economic development, residence and agricultural settlement and production stabilization). This program based on Decision No. 135/1998/QD/TTg is strongly funded to promote socio-economic development in poor communes/villages for provision of public services and construction of infrastructure from 1999-2005. In 1999-2000, under funded by Project 135, Hoa Binh has built several new primary and secondary school. There was several kilometers of roads has been repaired in the province. This has greatly increased the accessibility of communes/villages. Improved access to markets has greatly increased the intensity of exploitation of agricultural and forest resources as people seek to obtain cash to buy food and consumer goods. The program also invested on building electric cable line from Hoa Binh province hydroelectric plant to remote areas.

Hunger Eradication and Poverty Reduction Program (HERP): This program is focused on development agricultural production, transferring improved and advanced technologies, including fertilizers (both chemical and organic), pesticides and seed varieties; development of livestock production, such as feeding systems and breeding for people. The work of HERP reaches good improvement and results with a yearly average reduction of near 4%; the number of well-off and rich household increases gradually. According to interviewed people in Hoa Binh province showed that some families do business well, leading to improve their life. Some well-off household (10%) can afford to build new concrete houses, by cows, motorbikes, rice-husking machines, radio or and television. Result of interview people at Hoa Binh province showed that despite the government heavily expends for number of programs intended to improve living standard for people, but has little success, because it is unable to provide the farmers with alternative methods of earning livelihoods that are commercially viable, culturally acceptable, and ecologically sustainable.

4.2 Current ICTs in rural development in Hoa Binh province

4.2.1 Current infrastructure of information technology at Hoa Binh Provincial People's Committee (PPC)

The fieldwork at Hoa Binh PPC showed the result of implementing the ICT programme in Hoa Binh province:

As to equipment, 36 Local Area Networks (LAN) were installed (not including central units stationed in the province and self-equipped units using their own capital). Installed application software are general socio-economic database, Archive-search document, complaints and denunciations, administrative accounting program, official correspondence managing program, personnel management program, scientific and technological project managing program. The software running on the LAN system of units was developed. It was test-driven well and put into use officially in departments, committees and branches of province.

The total number of computers in offices and enterprise of province is 1096 (not including central stationed in the province and equipment for teaching in schools, security, and national defense bodies). The province is not short of computers, but they are distributed

unevenly, mainly in Education, Banking, Treasury, Post Office sectors… However, the quality of people able to use information technology means, especially the level of using computer is limited, only stopping at text composing. Only some staffs are capable of programming in the whole province (except for staff of central bodies stationed in the province).

The province's information technology steering committee instructed technical requirements on hardware and software on the basic of being suitable to progressive trend of computing technology and orientations of the National Steering Committee on information technology and Government Office. Facilities were equipped synchronously and satisfied short-term requirements, at least not backward and compatible to 2000.

Opening of computing training classes for staff and specialists of the office bloc of the provincial committee of the Party, Provincial People's Committee, districts, towns, departments, committees, branches made a good impact on developing the information technology program from the province to districts, departments and branches of the province. As to facilities, the project provided province's units with facilities but at minimum level. According to staffs in charge of information technology management in Hoa Binh People's Committee showed that above application programs only used in some departments, committees and branches; they have not been developed widely. As a result, the large-scale network has not brought into play effectively and utilized technical features of the network system and personal computers.

4.2.2 Current infrastructure of information work of Department of Agriculture and Rural Development (DARD) of Hoa Binh province

Department of Agriculture and Rural Development of Hoa Binh province is in charge of state management in terms of agriculture and rural development of the province. According to the organizational structure of Department of Agriculture and Rural Development of Hoa Binh province, there is not a specific unit in charge of propagandizing and disseminating information of agricultural and rural development sector of the province. Each unit has its own information propagandization and dissemination activity, but almost in the form of cooperating with mass media agencies to supply information. Only Centre of Agriculture Extension has information division.

Center of Agriculture Extension: the main function of this Centre is organizing and instructing the implementation of popularizing and transferring production techniques of agriculture, forestry, agriculture; experience on typical good producers to people. The forms of sharing information of the centre are:

- Popularizing information through mass communications: Maintaining the column of agricultural-forestry extension on the provincial television (two issues/month), Hoa Binh Newspaper (two issues/month, two pages/issue), Radio (four times/month). The main content of articles and columns is to propagandize typical good producers, new technical breakthroughs to people in the province.

- Producing and releasing publications of agricultural extension: two issues of Agriculture and Rural Development Bulletin and two issues of Agriculture and Rural Development Major are released, with 1,000 copies per issue, given free to commune level. Besides, the Centre regularly publishes thin books and leaflets on new production techniques. Normally, these kinds of document are distributed in conferences and training courses, so they are not given to a majority of people.

- Progandizing through the system of agricultural extension workers at grassroots level: Agricultural extension workers directly provide people with production method, process and scientific technological dissemination. However, the knowledge of agricultural extension workers is still limited because of not regularly updating new information.

In order to have propaganda information, the information division cooperates with provincial branches. At the same time, it collects, synthesizes and reedits information from secondary source as internet, books, newspapers, and magazines. However, the Center has not built database to store and search information; information is stored mainly in the form of hard copy. Some technical documents are stored in computer before being printed, but unsystematically. Summary reports have only been stored in computer in several recent years.

Brach of Rural Trade Development: The main function of this Branch is carrying out State management in terms of cooperative economic development and agricultural cooperative; farm household economy, adjustment and arrangement of population in agriculture and rural areas, execution of policies, measures of encouraging rural development under the control sphere of Department of Agriculture and Rural Development of Hoa Binh province, the main available information includes:

- List of trades and trade villages: Traditional and new trades
- Actual situation of development of handicraft
- Production models: Address, scale, technical requirements, operational mode…
- Criteria and instructions of process of issuing craftsman and trade village certificates information on addresses of handicraft production and consumption enterprises

The Branch regularly opens training classes to popularize information on processing techniques to people. Besides, the Branch prints manuals and leaflets, provides the Centre of agriculture extension with articles. However, all this information is stored in the form of text, manual and scattered in projects. The Branch has not built any database to store and exploit this information.

Branch of Plant Protection: This Branch undertakes the function of State management in terms of plant protection in the province; investigation, forecast of pestilent insects and transfer of new technical breakthroughs to producers in the province. The main available information being managed and stored by this Branch includes:

- Information on pestilent insect warning:
  Situation of pestilent insect in the province: Density, distribution area, spreading possibility and loss level caused by pestilent insect in each commune and district are popularized through the grassroots collaborator network with a normal frequency of 5 days/time and one day/time in case of epidemic explosion.
  Reporting development stages of pestilent insects, giving out corresponding extermination measures
  Warning spreading possibility, localities to be affected, fields possible to catch disease.

- Information on production techniques:
  Types of pestilent insects: recognition characteristics, pathogenetic reasons, growth time, life cycle, time of causing bad affects...

Methods of checking and detecting pestilent insects, evaluating level of disease and treatment process corresponding to each disease stage
Technical process of general prevention IPM developed in the province
List of poisons and forbidden pesticides
Process of using pesticides and repellents
Techniques of cross-breeding local seeds, typical models of local seed cross-breeding standards and processes of producing safe vegetable

In order to disseminate information, the Branch regularly organizes classes, training classes of new techniques, IPM models with an aim to propagandize insect prevention measures to farmers. At present, the Branch has built one new grassroots collaborator network to communes and villages. This network undertakes checking, monitoring the development of pestilent insects and epidemics and reporting 5 days/time or 01 day/time periodically in case of epidemic diseases occurred. A part from these, the network also gives direct instructions of how to prevent and treat pestilent insects to farmers.

At present, various kinds of information on production techniques, regulations and guidance of using repellents, list of forbidden pesticides... have been edited into instruction documents. Also, the Branch is planning to make an epidemic disease map for the whole province.

Branch of Fisheries: The Branch is established with the main function of State management in terms of aquiculture field such as raising, exploitation, processing, fisheries service; protecting and developing aquatic products, controlling quality and veterinary in the province. The Branch's available information includes:

- Information on production techniques: techniques of breading fishes, frogs...
- Models of fisheries extension: model of breeding fishes in ponds, models of breeding unisexual tilapia, model of breeding frogs in cages...
- Information on popular diseases, way of prevention
- Information on forecast, warning of epidemic diseases in the province: Based on information on the situation of epidemic diseases of localities, the Branch gives warnings and forecasts of progress of epidemic diseases in the area.

These kinds of information are mainly disseminated through training classes, performance models. Information on warning the situation of epidemic diseases is dispatched in the form of official correspondent to management agencies or localities in the province.

Branch of Water Resources: The Function of the Branch is State management in terms of irrigational field in the Province. At the present, the Branch has built a digital map of the dyke system to serve management work in the province. The digital map of irrigational work system is under building and going to be completed. Once this map is completed, districts may update their work by themselves on this map if there is any change.

In flood seasons, the Branch signs the information supply contract with the hydrometeological centre. Daily, the hydrometeological centre will deliver information to the Information Branch by email or fax. Upon receipt of information from hydrometeological centre, the Branch will consider and deliver flooding warning orders by telegrams to management units in the province, and cooperative the provincial television to popularize these telegrams.

Branch of Forestry: The Branch of Forestry has the main function of managing and planning forest development, managing forest exploitation procedures. The main information

is: Plans of afforestation, caring of forest trees planted in years, localization for regenerative breeding, and forest protection of the project of growing newly 5 million hectares; Information on seed production units: quantity, capability of seed supply; Forest protection. With the support of Project 661, the Branch applied the monthly project report software (including information on afforestation, forest protection, forestry seed source...)

As to information dissemination: Recently the Branch did not publish technical manuals. It only published some leaflets for propaganda forest development. This document was delivered in training course of staff at different levels; there has not been any other information dissemination form.

Branch of Forest Protection: Hoa Binh Branch of Forest Protection has the main function of managing and protecting forests in the province. The information being managed and stored by the Branch includes: Information on monthly forest happenings: new planting, exploitation, fire (return of fires and firing area), pestilent insects, natural calamities and enemy-inflicted destruction, forest destruction; listing of fires and forest firing warning.

Information on forest firing warning: At present, the Branch only implements forest firing forecast through data source supplied by the province's hydrometeorological centre. Weekly, the hydrometeorological centre transfers statistics measured by stations in the province, while cooperating with the provincial television to popularize information. In dry seasons, the Branch coordinates with the provincial television to build the column of "forest firing warning" to disseminate information to people in the province.

Branch of Veterinary: The Branch of Veterinary is a professional State management unit under the Department of Agriculture and Rural Development of Hoa Binh province, in charge of organizing and managing breeding and veterinary fields in the whole province, including quarantine, slaughter control, diagnosis, test and technological transfer services. At present, the Branch has a veterinary network to commune level to manage and supply consultancy to people in the area. The information being managed and stored by the Branch includes:

- Information on the situation of breeding development of the province
- Breeding techniques of domestic animals in the province
- Information on development of epidemic diseases in localities: Information is updated regularly supplied by the locality's veterinary network.
- Information on organization of disease prevention
- Inoculation schedule of localities in the province
- Information on warning epidemic diseases

Information propaganda and dissemination of the Branch were carried out mainly through training classes, delivering leaflets, folded sheets. In 2006, with assistance from the centre and international organizations, the Branch issued 47,500 folded sheets, 2,700 thin books to popularize techniques of bird flu epidemic prevention. Information on warning the situation of epidemic diseases was often sent in the form of official document to management agencies and localities. Sometimes, in the period of strong epidemic explosion, the Branch cooperated with the provincial radio and television to disseminate information to people and give them prevention methods.

4.2.3 Current infrastructure of information technology at DARD in Hoa Binh province

The fieldwork at DARD showed the situation of information technology application as follows:

The Department has installed the local area network (LAN). At present, the head office is being repaired, so the number of computers connected to LAN is very few. Some computers connected to Internet, but are now out of work. Only computers of the Technical Division are under operation thanks to connecting the network of the Fruit-tree Development Project (funded by Asian Development Bank (ADB)). There have not been any staffs in charge, so information technology activities are assigned to the Technical Division. The website of the Department and the provincial agricultural sector has not been built yet.

For units under the Department: 15 out of 26 units connect to Internet. At present, the internet of 12 units is able to operate. These units use the internet to search related documents and send/receive emails. Only two units (Branch of Forestry and Branch of Forest Management) use the network to make reports.

The quality of personal computers is few; there is almost no host computer. According to the report of the Department of Agriculture and Rural Development, the Department is equipped and invested according to the content of Project 112 of the Government but with low efficiency. Recently, the Department of Science and Technology of the province developed the project of "applying the information technology into transferring technical breakthroughs to farmers". There are a total of 27 completed communes out of 11 districts and towns, with 1,500 sets of document and 100 technical videos.

To sum up, information equipment for the system of agriculture and rural development of Hoa Binh province will be invested in the project to enable all divisions directly participating in the province's agricultural information communication port.

4.2.4 Situation of agricultural information approach of Hoa Binh people

The research indicated that although agricultural management agencies of Hoa Binh province strive for propaganda and dissemination information to rural people of Hoa Binh province is much limited. There is only 2 or 3 newsletters issued by the province centre of agricultural extension are given to each commune; there are a few programs on the television and radio. Besides, through some support programs of units of the Department, farmers are able to approach advance and understand new production processes. However they only have opportunities to learn in short-term training classes and objects participating in those classes are very limited.

Farmers' information needs and source of agricultural approach

The focus group discussion were conducted with farmers, relevant organizations (Farmers Association and Women Union) showed that farmers receive a variety of incoherent information from many different sources. With respects to the rural livelihood, there are two main type of information consisting of agricultural technical and market information (90-97% of respondents). Others types of information such as government policies, weather, irrigation, and food quality and safety are also concerned by farmers. The technical information such as production techniques (including new seed/crop varieties, animal breeds and new farming practices), veterinary and plant protection, etc., those farmers would like to receive from existing extension system (both public and volunteer/private extension) or other.

Investigation in term of people's ability to receive information show that approach agricultural information is mainly through traditional dissemination. Ninety three percent (93%) of investigators said that they approach information by oral transmission. This is an un-costly form, but its exactness is not guaranteed. Besides, 80-90% of farmers said that they receive

information through mass media such as television and radio. They mainly watch central television programs (VTV2) such as Today's Countryside or programs of agricultural extension of Hoa Binh television. The rate of farmers who exploit agricultural information on the internet is only 3% (see table 2). This is a very small number. A minority of well-off households have computers, but they do not know how to exploit agricultural information or they do not have internet or knowledge of internet.

Table 2: Source of agricultural information approach

Number of respondents: 30

Source	Total	Percentage
Oral transmission	28	93%
On Internet	1	3%
Booking, newspapers	7	23%
Commune's radio-casting (loudspeaker)	24	80%
Television	25	83%
VOV[1]	27	90%
Agriculture extension service	28	93%
Mass organization (FA, WU)	24	80%

Source: Fieldwork, 2008

Diffculties of farmers in agricultural production

A lack of agricultural information causes big difficulties to people. 60-97% of interviewed people said that they meet big difficulties in agricultural production because of being lacking in production techniques, techniques of agricultural product preservation and processing, market information and not updating legal documents (see figure 2).

Figure 2: Difficulties of farmers in agricultural production

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liste
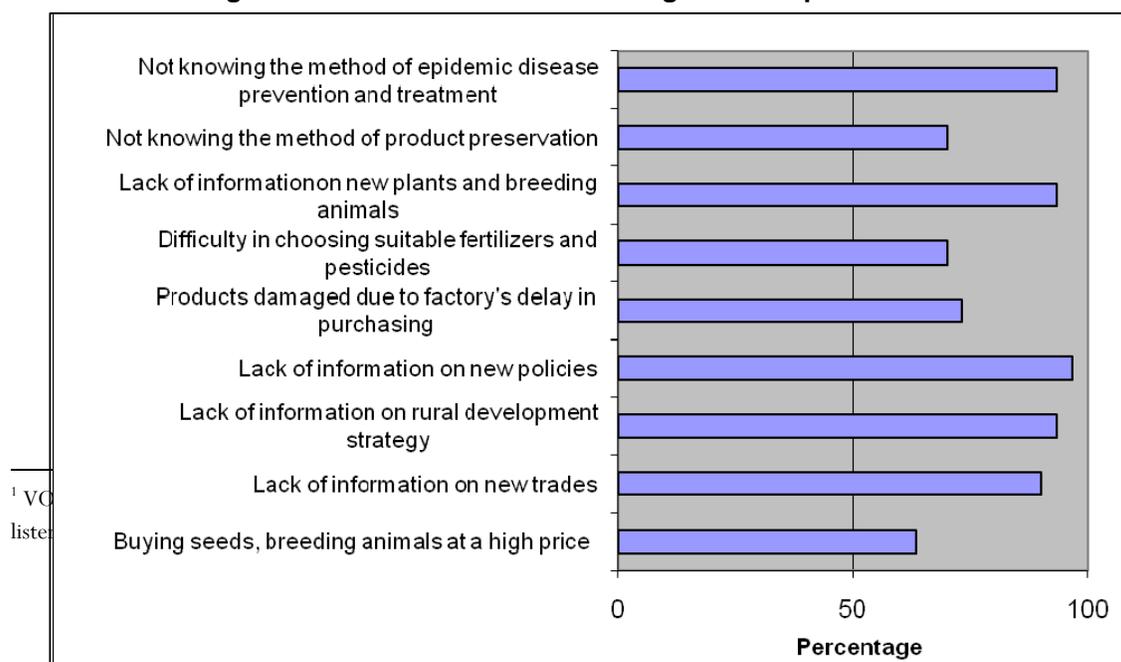
In detail, farmers get confused in treating pestilent insects and epidemic diseases in agricultural production. Apart from this, the phenomenon of products easy to be damaged because of not knowing how to preserve them is also a big difficulty. They only know the traditional method, do not have many opportunities to approach advanced methods in production.

For product consumption, many farmers said that they meet many difficulties in approaching market information. For example, they have little information about product trading places and goods price. Therefore, merchants usually force them to lower price or product price is fixed from oral transmission, spontaneous and impulsive. Therefore, there is a big difference between price at farm and price on the market and farmers are always the most disadvantaged. The result of focus group discussion with Farmers Association (FA) and Women Union (WU) showed that there is a general feeling of confusion among farmers regarding the quality of the variety of products available on the market. Most of farmers are not able to find market opportunities and are dependent on middlemen who dictate the price. On the other hand, farmers feel so dependent on middlemen that they are not able to negotiate the prices even if they are informed about the current prices.

For new policies and documents, 97% of farmers said that they do not update new policies and document as well as information on the regional development strategy. They only know these documents by oral transmission or meetings and conferences of the commune. In addition, if they know any document, they do not understand all regulations of that document because of unclear and un-detailed dissemination.

Particularly, 93% of farmers said that they meet difficulties in learning about administrative procedures and regulation of public services. The get confused with finding about agency in charge of issuing licenses or certificates in their agricultural production activities.

For trading in agricultural material, 90% of farmers meet difficulties in buying material because of not knowing to choose suitable fertilizers and pesticides. The rate of lacking in new plants and breeding animals is 93%. As a result, they easily get backward and do not utilize land sources and natural conditions effectively due to a disability to approach new seed information (plants and domestic animals). 63% of farmers often buy fertilizers, pesticides and new seeds at a high price.

Settling difficulties of farmers through information sources

When meeting those difficulties, normally farmers come to meet neighbours (87%) or agriculture extension workers (93%). The research found that systems of agricultural extension, veterinary and plant protection are the most important sources providing technical information to farmers. However, capacities of commune extension workers in providing farmers with update information are still limited. Every year, commune's extension workers attend 1 to 2 training courses held by district or provincial extension agencies, but they are provided with only some information on new seeds, breeds, farming techniques. They are not equipped with the methodology and skills in working with farmers and thus, they seemingly cannot provide training to farmers. In addition, their capability of collecting and compiling information from different source is also limited.

Beside extension workers, farmers come to get support from community organizations such as Farmers' Association (80%) and Women's Association (63%). 77-90% of interviewed farmers can overcome difficulties through searching information on the radio or television. They said that radio and TV program are useful but still poor and not specific enough to the

different climate and local condition so that they cannot applicable in their field. They would like to have an extension program in a local language in radio and television. Meanwhile, none of interviewed farmers search information on the Internet to deal with difficulties (0%). This shows that this services remains very new to farmers of Hoa Binh province. However, most of farmers can recognize good efficiency of this service in information supply.

Figure 3: Settling difficulties through information sources
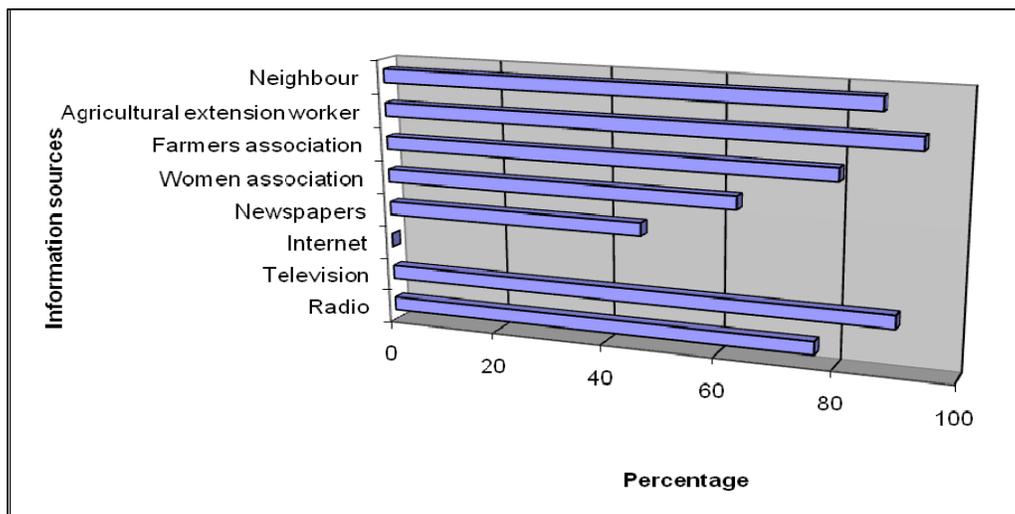
Demands on internet service

As mentioned above, almost investigated people said that they meet big difficulties in producing and consuming products due to not updating information in a timely manner. Although most of Hoa Binh people have not opportunity to use internet service, they all recognize the importance of this service. 86% of interviewed people desire to use internet service; this partly proves that the demand for using the internet is not only of people living in big cities and having high intellectual standards, but also of the whole community. They know information relation to internet through advertising programmes on TV, radio and newspaper. Beside, Commune People's Committee (CPC) cooperated with Farmers association and Women Union play an important role to propagandize information related to the potential of internet using in this province. They expected that the internet will be able to improve their communication, information and education. They hoped that the internet might be help them gained exchange information on new farming methods and on how to market their produce.

However, desires to use internet are different in ages. For interviewed people of 18-20 years old, 93% of investigated people wish to use this service, 80-90% for people of 20-50 years old wish to use this service and the rest do not wish to use Internet (people more than 50 years old), they are at rather high ages, hesitating to learn about and approach new and modern advances. A minority of people acknowledge unilaterally that when mentioning computers or the Internet means mentioning chatting or playing games, thus affecting their children's learning.

In addition, 64% of interviewed people are ready to pay for this service. However, they said that income of farmers is very low, so they are in need of assistance from the Government or

other organizations for this service. Their desire is to pay lower than 500VND/hour for this service (equivalence 0.019 euro/hour).

The people's purposes of using the internet are to search information for production and improvement of living standard. If farmers have opportunities to have access to this modern service, 83% of farmers desire to search information on production techniques and markets to sell products and agricultural input materials. Besides, the demand for using the Internet for questions and answers of policies and product advertising is also big. Direct interviews show that farmers get difficult in studying administrative procedures. Normally, they only get information on people reception days of the commune chairman.

Figure 4: Purpose of farmers in using the Internet service
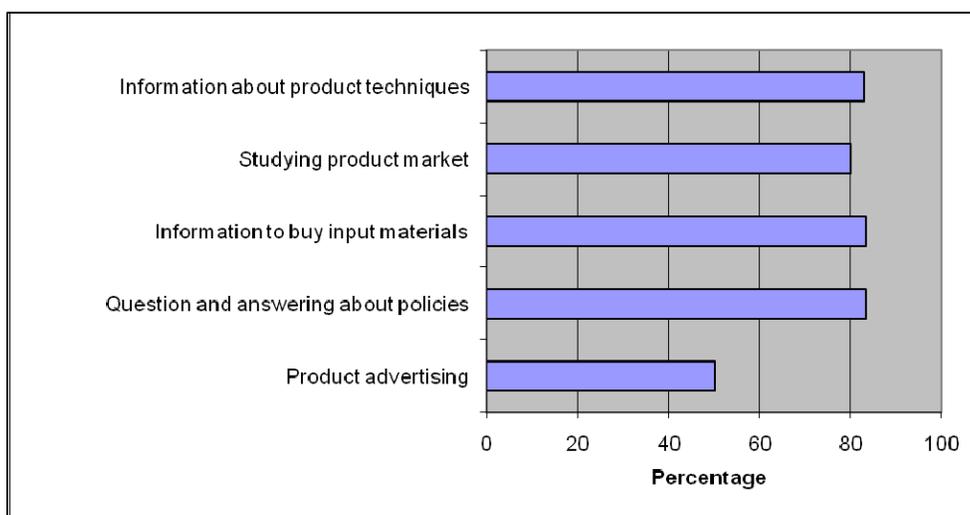
4.3 The potential of ICT for rural development in Hoa Binh province

Access to relevant information has the potential to transform economic opportunities and improve the livelihoods for rural households. Information access can do this by facilitating improved farming techniques, improving crop selection in response to market information, reducing exploitation in pricing, improving efficiency of transportation, improving access to financial services, creating new possibilities for trade and improving delivery of health and educational services (Peter smith *et al.*, 2003. Currently, in Hoa Binh province the two constraints are the lack of ICT content relevant to rural people's live, and the lack of a delivery system to carry (and exchange) content through multiple channels to rural recipients. Figure 5 shows existing and potential information channels that can transform information to (and receive information from) rural areas.

Figure 5: Actual and Potential Information Channels in Rural areas

Source	ICT Channels	Intermediary	User
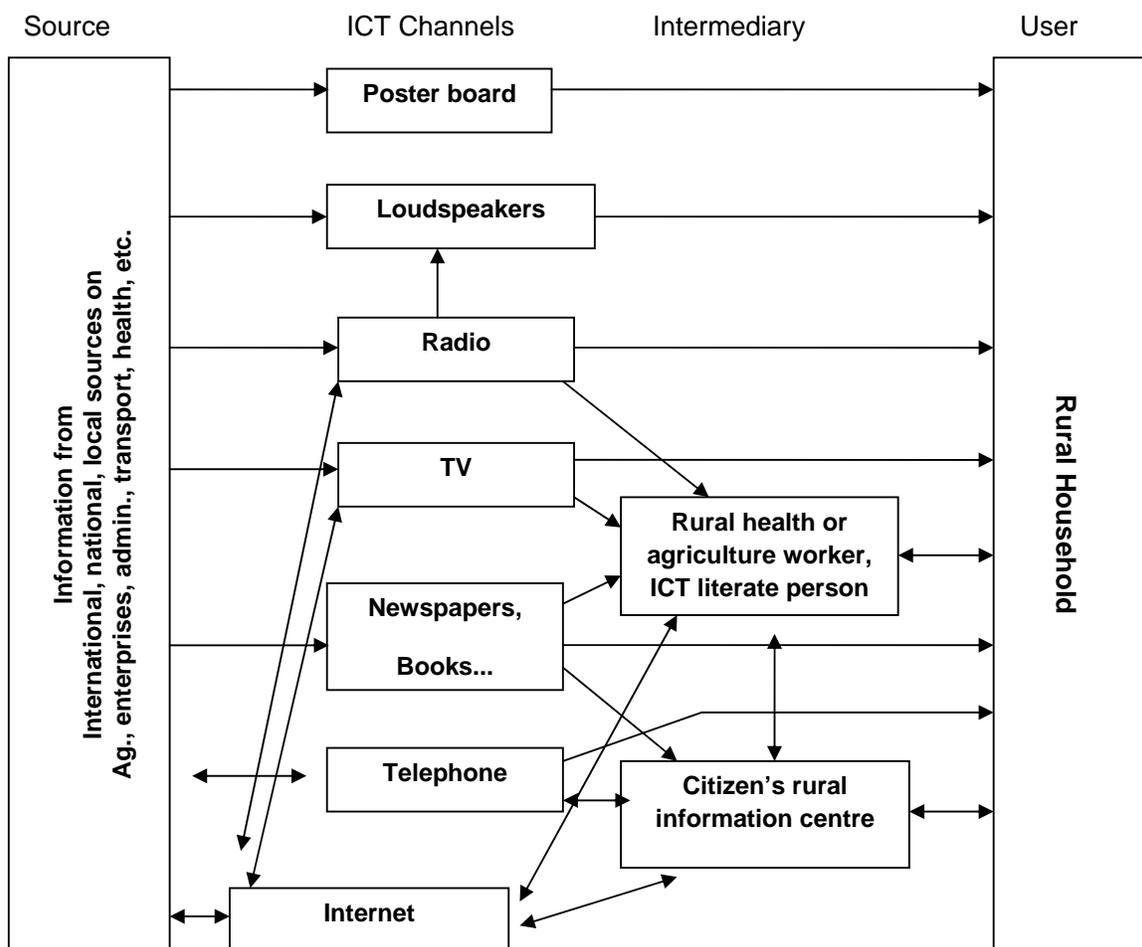
Source: Peter Smith *et al.,* 2003

Although there is inequality in opportunities to access to ICTs between urban and rural areas in Hoa Binh and lots of difficulties in ICT application and deployment in rural areas such as: low level of ICT infrastructure development in rural areas; gaps between ICT demand and supply. Most of people interviewed are aware the potential of ICT in their life when they are using ICT. It can bring more opportunities in improving knowledge and sharing information on agricultural production and market information, save money and time of travelling. People are also able to communicate with friends, partners and other relatives by using ICT such as telephone, mobile or internet. Particularly, 80-83% of respondents said that ICT can help them to gain knowledge and share information. They said that TV programs on cultivation, raising, health and nutrition were very useful. They thought that these kinds of information taught them "reason" of problems.

Discussion with officers from MARD, ICARD, the provincial and district extension agencies showed that although people awareness the important role of new ICT in their life, but there are many factors that will be obstacle application and development of information and communication technologies in rural areas such as fund, infrastructure, competence of extension workers at all level (national, provincial, district and commune) in information technologies; language, etc. In addition, farmers with low level of education could not been

involved in extension activities as they might be busy with their field work all the time, or lack of communication means in order to get access to information sources.

CHAPTER 5: CONCLUSION AND RECOMMENDATION

The results of investigating the current communication work for direction and economic development and rural community of Hoa Binh shows that Farmers have a big desire to use internet service (86% of interviewed) with strong believe the potential of ICT in their life. They want to use the internet for improving their communication, information and education as well. They expected that using the internet might help them to improve their living standard. However, current ICTs in Hoa Binh do not get an enabling factor to develop rural area due to lack of infrastructure, application software and environment policies. At DARD, some computers connected to LAN and Internet, but are out of work. On the other hand, there is lack of human resources on information technologies applications; there is only staff working concurrently with self-taught knowledge from other projects.

Such actual situation of information technology of the province does not an enabling factor for integration and economic development in the age of technology explosion if not saying that it will be hinder the development process. Furthermore, rural people have a big demand for approaching agricultural information, but the source and ability of information supply of agricultural management agencies are very limited

The research also found that system of agricultural extension, veterinary and plan protection are the most important sources providing technical information to farmers. However, capacities of extension workers in providing farmers with updated, collecting and compiling information from different source information are limited.

Radio, television programmes on agricultural technologies are useful but still poor and not specific enough to the different climate and local condition and not applicable in the field. It is proposed more use of the local radio/TV stations for transferring information and techniques to farmers. They want to have an extension program in a local language in radio/TV; they prefer to see realistic positive results before deciding to apply a new technique, new crop variety or animal breed.

Based on the research finding there are some recommendations to improve the potential of ICTs in rural development in Hoa Binh province:

- The environment policies of government should specific, feasible, sufficient and adequate on ICT application, deployment and development in rural areas.

- The government should use this time to consider what to do to develop ICT infrastructures and application software, especially information technology infrastructure and software for rural people. Such as supporting and encouraging the ICTs private companies, NGOs involve in development and deployment ICT projects in rural areas.

- Develop human resources in ICTs in rural areas to improve knowledge and skills: Training programmes in ICTs use and application, especially internet application for staff, extension workers who direct facilitate to farmers; providing technique access computer who receive feedback from farmers.

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Appendix 1: Checklist

Literature and Document Review

The following information will be of interest when reviewing literature and documents

- Benefit of using ICTs.

- Success stories of ICTs use in rural areas.

- Current status of ICTs in Vietnam and Hoa Binh Province in particular (the current role of ICTs in rural development, status of ICTs infrastructure).

- Government programmes and future plans.

- Likely challenges ICTs will face in Vietnam and Hoa Binh Province in particular.

Semi-structured Interview (for ICT specialist, extension workers, CBOs leaders and farmers)

- Current status of ICTs (What is the current status of ICTs used by the farmers in the area? And how do farmers access information?

- How do farmers know ICTs and how much are they using?

- What difficulties/ problems are you meet in agricultural production?

- How do you settle these difficulties?

- What types of information do farmers need and for each type of information which ICT method is suitable?

- What forms of ICT do you usually receive agricultural information?

- Challenges affecting ICTs (What are the challenges farmers face in using ICTs? What are the factors that will positively affect the use of ICTs in this area? What are the factors that will negatively affect the use of ICTs in this area?)

- People attitude towards ICTs (how do farmers aware the potential of ICTs in their life?)

- Do you have desired to use internet?