

Marketing Information System: An overview of agriculture marketing systems in South Asia

May 2005

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*This report has been prepared to serve as a background material and
a basis of discussion on developing an NTFP MIS in Lao PDR*

Acknowledgement

This overview study in South Asia has been undertaken to identify different marketing information system models prevalent in agriculture sector, and offer a broader perspective on marketing information services. The idea to undertake this study was kindly provided by Mr. Sven Walter at Food and Agriculture Organization in Rome. I would like to thank him also for his providing a broader framework for this study, FAO's published resource materials, and comments on the first draft. I am indebted to Dr. Bhishma P. Subedi, Executive Director of ANSAB (Asia Network for Sustainable Agriculture and Bioresources), who advised me on further developing the idea and shared the development process, key achievements, and lessons learned on the part of the NTFP marketing system supported by ANSAB.

I also appreciate the support extended by Mr. Sushil Gyawali, Mr. Navin Subedi, and Ms. Shova Adhikari at ANSAB, and Mr. Dyutiman Choudhari at ICIMOD in collecting information on the marketing information systems. For their comments and suggestions, I am grateful to many colleagues and professionals at FAO, SNV (Laos), and NAFRI (Laos), especially Ms. Sophie Grouwels, Mr. Thibault Ledecq, Mr. Masakazu Kashio, Mr. Joost Foppes, Mr. Vongvilay Vongkhamsoo, and Mr. Khamphone Mounlamai.

The study would not be possible without generous financial and technical support from FAO and ANSAB. I am thankful to these organizations for providing me this opportunity. For their wonderful work on marketing information services, contributions to the farmer communities, and documented information which I have tried to draw upon, I owe more than anything to the communities, organizations, and individuals involved in the studied cases. And they truly own this.

Executive Summary

The main objective of agriculture marketing information system (MIS) is to support marketing decision making of the target users, especially farmers. This overview study looks into the relevant agriculture marketing information systems in Nepal, India, Pakistan, and Bangladesh, and tries to generate ideas and insights for developing and strengthening agriculture and non-timber forest products marketing information systems in the similar conditions. The study has been conducted using published materials, web resources, and for Nepal cases, interactions and interviews with the marketing information system participants.

Structured information systems, often having pre-defined responsibility centers and procedures, have various ways for collecting, analyzing and disseminating the information, which include use of internal records and reports, market research, market intelligence systems, and marketing information models. Roles of informal networking and sharing, though some can be improved with careful design and supportive environment, cannot be underestimated. Many of the organizations, entrepreneurs, and farmers gain marketing knowledge and insight precisely in such ways. Almost all marketing information systems have face-to-face or interactive mode of information collecting, analyzing and sharing, while organizing and using various meetings, training, workshops, trade shows, market visits, and other events. Multi-level MIS can also be seen, where various levels of marketing information systems (local, regional, and centre) are interlinked and reinforce one another.

With variation on the mix of the ingredients (use of technologies and communication media; structure and design components for information collection, analysis, and dissemination; markets and content coverage; types of users), marketing information systems used by different organizations are invariably different. Based on the purpose of the system and organization managing it, the agriculture MIS can be broadly grouped under- a) MIS supported by development projects, b) MIS managed by government, c) MIS services managed by member based organizations or service providers, and d) MIS of agriculture enterprise. Each category has its own strengths and weaknesses.

The MIS supported by development organization is often targeted to farmer communities and finds difficulty to sustain, when not integrated to the appropriate existing institutional system, after the project support is over. The Nepal non-timber forest products (NTFP) marketing information system, developed through multi-stakeholders' interactions and managed by ANSAB, provides marketing information on various non-timber forest products to collectors, local traders and entrepreneurs, and development facilitators through a network of organizations. The district MIS managed by the Ilam Chamber of Commerce provides trade related information on selected cash crops to their members and farmer communities. MIS managed by the Agro Enterprise Center, an arm of Federation of Nepalese Chamber of Commerce and Industries, provides trade information on selected agriculture crops through website, email, and fax to their members, and some information also to other interested organizations. The Rural Urban Partnership Programme of UNDP supports municipalities to develop a comprehensive information system including MIS on agriculture crops to build their capacity on planning and development of their area. It also supports Agro Enterprise Center to extend the scope of their MIS and introduce e-commerce services.

The government managed marketing information systems generate information for developing and monitoring agriculture policies and programs with the aim of promoting production and marketing of agriculture products. The information is also provided to their

extension offices and other development organizations to support agriculture programs and effective delivery of government technical and legal services to farmers and business communities. Spice Board of India provides spice traders in India the information related to national and international price, technologies, and allied services. It also facilitates linkages of India traders with international buyers using web based inquiry system, and promotes international marketing through its effort on branding, quality improvement, and organic farming. The Indian government's agriculture marketing system, AGARMARKNET, heavily uses information and communication technologies (ICT). It links wholesales markets, states, national marketing information center through ICT based network. The information collected from wholesale markets are consolidated, analyzed and disseminated to various agriculture offices and organizations to support their agriculture commodities planning and extension work. The fertilizer MIS of Ministry of Agriculture, Bangladesh monitors demand, supply, and distribution system of select fertilizers. The information comes from farmers, traders, importers, dealers, and big users. The analytical reports are prepared daily, monthly and yearly, and disseminated to the government policy makers, companies, and other organizations.

The MIS services of service providers basically intend to serve their fee based clients who can afford to pay for the information. They mostly provide services on the commodities, which are interest of many users. MIS services include frequent updates on product demand and prices, market news, market research and analysis, and customized services (feasibility study, business planning, marketing research, etc.). National News Service (NNS) and Indian and Agribusiness Systems Private Limited (popularly known Agriwatch) in India collect information from their own sources and others. NSS and Agriwatch provide limited information related to commodity prices, market news, and best practices to all the website users. Their fee based members are provided with the market analysis and research reports. Agriwatch also provides customized services, such as market research, feasibility study, and product positioning. Pakissan in Pakistan is an agriculture commodity portal, and provides market prices, commodity news, and agri-related information to the all website users. It gets information through other organization; and it collects some funds from advertisements.

The marketing information systems of agri-enterprises are designed as part of their business strategies. Controlled information is shared with various layers of decision makers and various departments within the company; and the externals to the company can receive the information that the company believes supports the company's business objectives (supply chain management, product positioning, sales facilitation, and public relation). However, the case of Indian Tobacco Company shows the private company's marketing information system can equally benefit the farmers. Indian Tobacco Company's e-Choupal system aims to streamline the supply chain of the cereal crops the company deals in. It is built on information and communication technologies, and provides online information to villagers through kiosks, which are managed by commission based managers to support information access and direct market linkages of farmers to India Tobacco Company. As being a part of the business strategies of the company and being able to match the farmers' needs, it is making a good success and has reached to over 24,000 villages with 42,000 kiosks.

Clearly identified key target audience(s), their information needs, and available resources are the basis of marketing information system design in every case. Apart from regular updates on market prices and demands for the target products, the information, such as post harvest and processing technologies, new markets and buyers, requirements of the buyers and quality control, and best practices in production, and policy issues, is found critical in contributing to

the enterprise development and improved marketing of agriculture and NTFPs. The study shows that the MISs have helped increase the awareness and capacity of the users in agriculture and NTFP marketing. When the marketing service is combined with the technical assistance, the farmers are found to be able to improve their agriculture practices, product quality, and marketing decision making, and hence their profits.

The key components of marketing information system include information collection, analysis, and dissemination. Most of the marketing information systems have established linkages with other organizations and have subscribed relevant published documents like journal, newspapers, and website to collect information. Most of the marketing information systems have used multiple sources of information, a range of analysis, and various media to deliver useful information to the target clients. The large scale marketing information systems have developed sophisticated database and have heavily used ICT to collect, analyze and disseminate the information. In general, there is a growing trend of using ICT to strengthen the marketing information systems.

The study shows that when it is in line with their business strategies, private companies can also run MIS, which equally benefits poor farmers and can have a high chance of becoming successful and sustainable. If the information to the poor is also considered a public good, then allocating government funds to marketing information systems, no matter who runs, is an appropriate option for sustaining the MIS serving the poor. However, the information quality and its usefulness to the users need to be continuously assessed and improved. Besides, member based organizations are also found most appropriate to manage marketing information systems. They may have to offer marketing information services to their members in exchange of the membership fee and members' support.

The marketing information systems have tried different approaches to fund the costs of the system. The some ways of recovering costs tried by some marketing information systems include membership fee, specialized information access fee, price for market research and customized services, sales of publications, advertisements on publications and websites, sponsorship of events, commission on sales through the system, funds from government, and cost sharing mechanism with development organizations and users.

If a marketing information system can be designed in such a way that the cost of the system is lowest possible, that is just what is required. There can be many avenues, such as integrating the system with the existing system of information flows, selection of the appropriate organizations for managing the system or its various roles, and partnership with other organizations for information dissemination.

Besides funding, there are other challenges, too. Marketing information systems face criticisms for failing to continuously provide value adding information, reach out to grassroots communities, deliver the information timely in the remote locations, and provide more analytical and accurate information in a way that the target groups understand. When information, such as prevalent prices in different markets, is provided to remote poor farmers, it is sometimes opposed by some traders who can otherwise benefit from blocking the information. Nevertheless, while designing a marketing information system, one always has to weigh the costs and benefits, and has to make difficult decisions on what contents to include, what markets to cover, what products to prioritize, how often to collect and disseminate the information, what level of market analysis to executive; and most importantly whom to target and how to timely reach the target groups with useful information to them.

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Abbreviations

AEC	Agro Enterprise Center
AGMARKNET	Agricultural Marketing Information System Network
ANSA	All Nippon Spice Association
ANSAB	Asia Network for Sustainable Agriculture and Bioresources
ASTA	American Spice Trade Association
B2B	Business to Business
BADC	Bangladesh Agricultural Development Corporation
CCI	Chamber of Commerce and Industries
COMSEC	Commonwealth Secretariat
DFO	District Forest Office(r)
DMI	Directorate of Marketing and Inspection
ESA	European Spice Association
FAO	Food and Agriculture Organization
FECOFUN	Federation of Community Forestry Users, Nepal
FNCCI	Federation of Nepalese Chambers of Commerce and Industries
FUG	(Community) Forest User Group
GO	Governmental Organizations
IASL	India Agribusiness Systems Private Limited
ICIMOD	International Centre for Integrated Mountain Development
ICT	Information and Communication Technologies
IGPA	International General Producers Association
INGO	International Non-Governmental Organization
IPC	International Pepper Community
ISG	International Spice Group
ITC	Indian Tobacco Company
IUCN	World Conservation Union
MIS	Marketing Information System
MMIS	Market Monitoring and Information System
NGO	Non-Governmental Organization
NIC	National Informatics Centre
NNN	Nepal NTFP Network
NNS	National News Service
NTFP	Non-Timber Forest Products
RUPP	Rural Urban Partnership Programme
SDC	Swiss Agency for Development and Cooperation
SNV	The Netherlands Development Organisation
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organisation
USAID	United States Agency for International Development
WWF	Worldwide Fund for Nature

Introduction

The main purpose of marketing information system (MIS) is to support in marketing decision making and marketing efforts of entrepreneurs and farmers (FAO 1995). Nevertheless, the information is also useful for various types of organizations, such as government, development organizations, academicians, and researchers. Governments find marketing information useful for developing policies and state's support programs, whereas development organizations use the information for developing community support programs and better tuning their technical assistance to the needs of the farmers.

This paper looks into the different types of agricultural marketing information systems prevalent in South Asia and attempts to provide a broad perspective on marketing information system to the readers. Using a case study approach, it describes relevant agriculture marketing information systems, and analyzes them to generate ideas and insights which may be useful for developing and strengthening MIS in agriculture sector in developing countries. However, this paper does not look into the MIS of individual companies and organizations, which have limited scope in supporting decision making of farmer communities.

Methodology

The information required to prepare this material principally came from various reports and internal documents, web site resources, and interactions with the MIS participants. In addition to the author's own involvement in the non-timber forest product (NTFP) MIS activities, annual reports, workshops notes, marketing information packages of the project, and project internal records were utilized to develop and analyze the case on NTFP marketing information system. The information required for the cases outside Nepal were collected from already published sources and websites of the concerned organizations. Interactions with the involved personnel at ANSAB, Agro Enterprise Center (AEC), and International Centre for Integrated Mountain Development (ICIMOD) were also held. The information has been analyzed to present in a case study forms and to generate lessons, ideas, and insights useful for developing and strengthening agriculture marketing information system in this region. The experience and insights, built over the years from the author's works in marketing information system, enterprise development, community user group formation, and participatory community forestry management planning, have been the core to the analysis and presentation of the information. The study however lacks interactions with the MIS participants except in Nepal, and owns limitations of becoming heavily reliant to the available published materials.

Types of agriculture MIS

Nature of MIS system

Structured marketing information systems have various ways of collecting, analyzing and disseminating information. Some systems heavily use internal records and reports. Others make use of market research. Market intelligence systems and marketing information models are also deliberately designed to provide marketing insights and support the decision makers (Kotler 1988). To support collection, analysis and dissemination, responsibility centres (different individuals, departments/sections, or organizations) are identified and elaborate procedures can also be put in place. Nevertheless, the roles of informal networking and

sharing, though some can be optimized with careful design and creating supportive environment, cannot be underestimated. Many of the organizations, entrepreneurs, and farmers gain marketing knowledge and insights in such ways. Many organizations and communities organize meetings, workshops, visits for various purposes, and marketing information is shared often times. Multi-level marketing information system can also be seen, where various levels of marketing information systems (local, regional, and center) are interlinked and reinforce one another. There is a growing trend of using information and communication technologies (ICT) to strengthen and enrich the formal, structured MIS systems managed by large organizations, such as government and private companies.

With variation on the mix of the ingredients (use of technologies and communication media; structure and design components for information collection, analysis, and dissemination; markets and content coverage; types of users; and their information needs and their locality), marketing information systems used by different organizations are invariably different. However, they have components for collecting, analyzing and disseminating information, and the main purpose is to empower the information users for marketing decision making. The information needs of the target users (on markets and products range, content coverage, data and analyses, timing) and available budget for information system primarily govern the design of marketing information systems.

MIS for NTFPs and agriculture sector in South Asia

Among the various marketing information systems, those relevant to supporting the decision making process and marketing efforts of farmers were studied. Based on the MIS purpose and organization managing it, the marketing information systems can be broadly categorized as follows.

- a) MIS supported by development projects- MIS systems managed under development projects have generally a focus of supporting grassroots communities and entrepreneurs. The direct information users can be other development projects, development organizations, government line agencies, enterprises, and other participants in the product value chain, but the implied assumption is that these users' activities contribute to improve the situation of the target grassroots communities. Such marketing information systems customarily begin with explicitly mentioned objectives, target users, and mechanisms for managing the system. Such systems are found to be introduced at the local to the national levels. Often, having targets of significantly contributing to marketing efforts and income generations of the beneficiaries, these are the type of MIS precisely often questioned for their sustainability. The marketing information systems managed or supported by ANSAB, Agro Enterprise Center, Rural Urban Partnership Programme (RUPP) and Ilam Chamber of Commerce are discussed.
- b) MIS of agri-enterprises- The main users of such an MIS are the internal clients of the organization, and the MIS supports the marketing efforts and marketing decision making of the concerned company and its network. Agri-business houses have their MIS, and can involve their business partners as the users of the MIS. Controlled information is shared with various layers of decision makers and various departments within the company; and the externals to the company can receive the information that the company believes supports the company's business objectives (supply chain management, product positioning in the market, sales facilitation, and public relation). The e-Choupal system of ITC is studied as a case.

- c) MIS services of member based organizations and business service providers- As one of the services to their members, member based organizations like trade association, producers groups, and cooperatives groups provide marketing information services. Most of the time, though partly, the members indirectly or directly contribute funds to managing such information systems and services. Development projects are also found catalytic to the evolution of such marketing information services.

MIS services managed by service providers are often in tune to the needs of their clients who are mostly the business communities and can pay price for the information and services. MIS services include frequent updates on product demand and prices, market research and analysis on specific products and issues, general market news, and customized services for feasibility study, business planning, marketing research, and product positioning. Some information is provided free of costs to all, whereas the other information like marketing analysis, frequent information updates, and customized services are exclusive to the fee based members. However, some information service companies can also provide marketing information free of costs to their audiences. For example, some newspapers and websites of media companies and not-for-profit companies provide marketing information services to broad public or registered users, often times, free of cost. The MIS services of National News Service (NNS), Indian Agribusiness Systems Private Limited (IASL), and Pakissan are discussed.

- d) MIS managed by government. The prime objective of the government managed MIS is to generate information for policy making, developing agriculture support programs, and facilitating the effective delivery of government technical and legal services to business communities, development organizations, and farmers. Macro level agriculture production and trade data, policy information, agriculture best practices, agricultural crops farming technologies, and information about the agriculture sector participants are mostly included in the MIS services. Some marketing information systems of governments can also be like those supported by development projects, and can target particular communities with focused objectives. The marketing information systems of Spice Board of India, agriculture MIS of Indian government, and fertilizer MIS of Ministry of Agriculture, Bangladesh are presented.

Nevertheless, development projects can facilitate initiation of any above types of MIS. Providing marketing information to remote communities and enterprises on a regular basis is, however, challenging. NTFP business being relatively unstructured and underdeveloped, the difficulty of managing NTFP MIS in a cost effective and sustainable manner is high. Nevertheless, the potential contribution of MIS to the development of this sector and thus supporting many dependent communities seems very high. Private business service providers and internal MIS system of private businesses might not be able to provide services to benefit the poor communities. Thus, in such case, projects or governments facilitated MIS can be the only option. However, how the marketing information needs of the target beneficiaries will be efficiently and effectively addressed even after the project period (in case of project) is a question that needs attention from the beginning.

Agriculture MIS Cases

A few marketing information systems in agriculture and NTFPs sector in South Asia that are supporting enterprise development and marketing decision making of entrepreneurs and farmers have been taken as cases for the study. Different types and models of marketing information systems have been presented to provide a broader perspective on MIS and draw on lessons and ideas for further strengthening of any such information systems or supporting development of new ones. The NTFP MIS of ANSAB has been presented in greater detail as it pertains to NTFP subsector development and targets primarily the rural communities, entrepreneurs, and local traders as its prime beneficiaries. In addition, other MIS cases from Nepal (district NTFP MIS, agriculture MIS of Agro Enterprise Center, and marketing information services of Rural Urban Partnership Programme), India (agriculture crops MIS of Indian Tobacco Company (ITC)- e-Choupals, MIS services of National News Service, MIS services of Agribusiness Systems Private Limited, MIS of Spice Board of India, and Agriculture MIS of Indian Government-AGMARKNET), Bangladesh (Fertilizer MIS of Ministry of Agriculture), and Pakistan (MIS services of Pakissan) are reviewed.

MIS supported by development projects

The marketing information systems supported by development projects range from community level to national level. Such systems generally target the farmers and entrepreneurs who otherwise would not get access to the types of information, which is supposed to be very critical in enterprise development and their marketing decision making. Initiated by development projects, such types of MIS, when not integrated to the private sector and member based organizations (formal or informal), generally face challenges in sustaining the system at the scale after the project support is over. The very design of the system often makes (also is meant to be) the information a public good and targets the lowest strata of the society; and sharing the costs of the system by the users becomes difficult. In this study, the marketing information systems operational at center as well as district levels are discussed.

NTFP MIS of Nepal

Context

NTFPs were important source of livelihoods and incomes to the rural poor mountain communities in Nepal. Inadequate access to information and marketing support was undermining their incomes from NTFPs. The communities were receiving very little from the sales of NTFPs, where few regional traders (Terai based) were controlling NTFP trade and enjoying a good margin. Over 90% of NTFPs was sold to India and almost in unprocessed form. With community forestry programs progressing very successfully, development organizations were looking for opportunities to support communities to help increase their incomes. However, development organizations did not know much about the NTFPs and its marketing. The Nepal NTFP Network (NNN) was active network, which was mostly participated by development organizations and government officials. It used to discuss on various issues related to NTFPs; and marketing of NTFPs was identified as one of the important areas.

Multi-stakeholders forum to discuss and conceptualize on MIS system

The Nepal NTFP Network (NNN), which represents over 50 NTFP related organizations and about 300 individual members and organizes various sharing meetings and task forces to promote NTFP sub-sector development in Nepal, discussed about the constraints of NTFP marketing and NTFP based enterprise development in Nepal in 1999. It identified inadequate access to marketing information as one of the major areas that needed immediate attention (ANSAB 1999). Two levels of MIS were identified necessary. Community level MIS was thought primarily useful for improving information access to a particular local community so that they could market their products at profitable terms. On the other hand, central level MIS was identified for helping various levels of participants by providing a wide range and scope of marketing information useful for promoting enterprise development plans, evaluating different marketing options, and developing marketing plans to greater extents (NNN 1999). The NNN meetings concluded that central level MIS would complement the information provided through community level MIS by providing the market information that was needed for its target beneficiaries, who otherwise were not in a position to get such information themselves.

A task force formed in early 1999 discussed on community level MIS for non-timber forest products. In May 1999, another task force was formed to study and suggest on development of a central level MIS, as the NNN meetings pointed out the need of central level MIS for coordination of collection, analysis, and dissemination of marketing information that is required for different stakeholders in NTFP sub-sector. The central level MIS was considered as a means for assisting greater number of NTFP stakeholders with minimum efforts. The central level MIS, which intended to provide marketing information to various types of users mainly through network of development and government organizations, was developed by NNN.

To implement the MIS, ANSAB was nominated. Based on the task force report and the suggestions from the NNN members, ANSAB developed an MIS project proposal which was funded by Swiss Agency for Development and Cooperation (SDC) and The Netherlands Development Organisation (SNV); and various other donors shared the costs as well. The project started its MIS activities from January 2001. The main purpose of the project was to improve marketing information system of NTFPs in Nepal to enable local level collectors and traders of these products to receive fair and equitable benefits. The specific objectives were to: a) improve market information access in Nepal so that local collectors and traders get fair and sustainable benefits from NTFP trade; b) facilitate supply and demand by creating favourable links between producers and markets; and c) generate data on price variations and fluctuations that is useful to primary clients for adapting marketing strategies (ANSAB 2002).

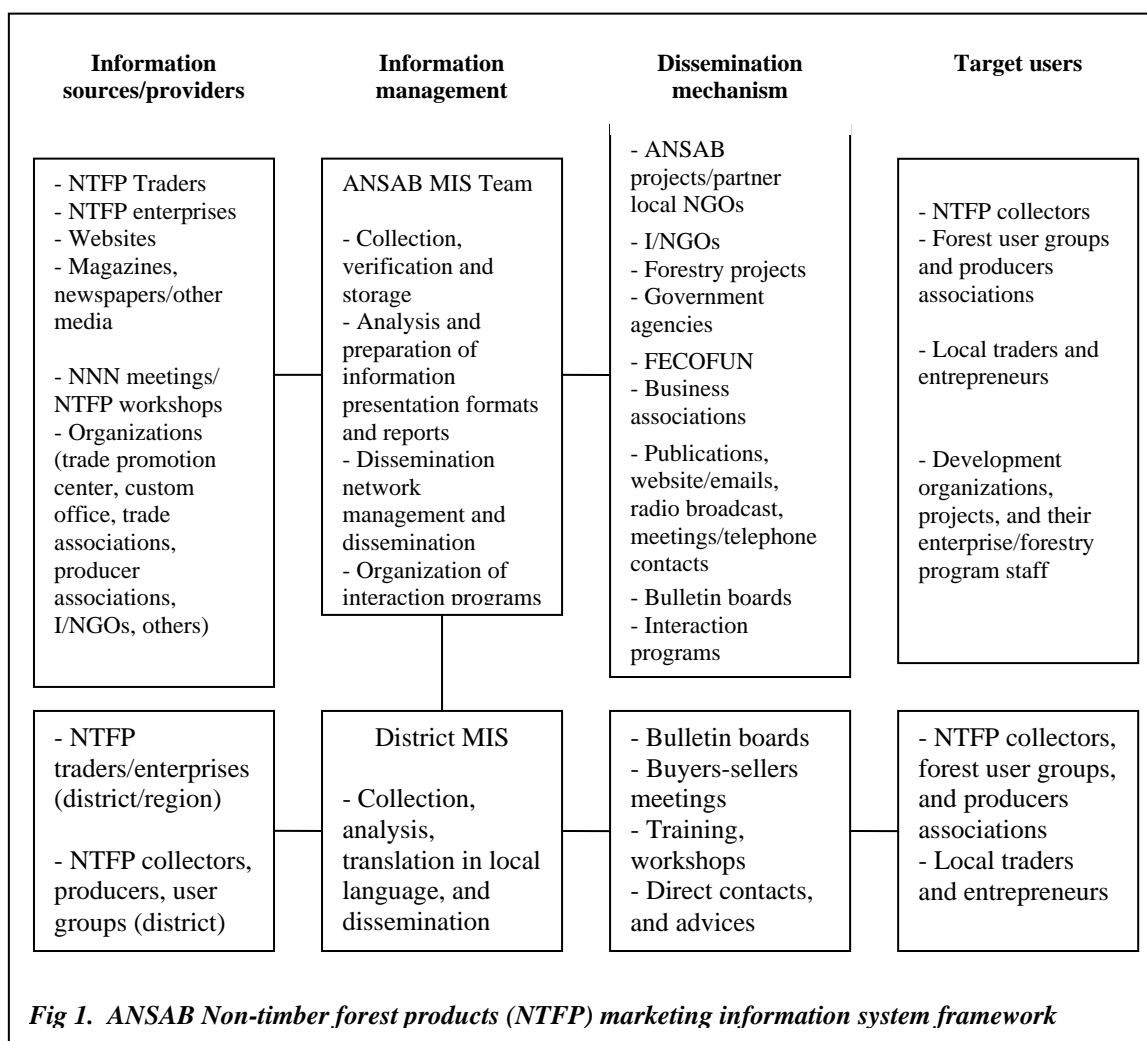
Design and implementation of central level MIS

NTFP MIS Framework

As the figure 1 also shows, the NTFP MIS is envisioned to serve many stakeholders with NTFP marketing information. It uses different information sources to collect information and various development organizations and communication media to disseminate it to the target users. The center MIS collects regular price and NTFP demand information primarily from traders and enterprises. Other information related to trade analysis, major buyers, buyers' requirement, trade policies, best practices on processing and production, etc. is collected from other various sources, such as magazines, newspapers, documents of development and

enterprise related organizations, and trade associations. Through multi-stakeholders workshops and meetings, the information needs of the target users are assessed and the performance of the MIS system is evaluated.

Based on the suggestions from stakeholders' workshops, the MIS produces the types of marketing information formats and reports, and disseminates these via emails to a number of organizations, such as NGOs, projects, government agencies, business associations, and forest user groups' federations, who in turn supply the information to their staff members and ultimate target clients. Analytical and descriptive information (best practices, production and processing techniques, buyers requirements and their contacts, etc) is published in newsletters or as a brochure. Such published materials are disseminated through networks of the development organizations and forest user groups' federation. Representatives of producer groups, traders, entrepreneurs, enterprise facilitators, and program staff of government agencies and development organizations visit and/or inquire through telephone for detailed and some specific information regarding NTFP marketing. The information supplied from MIS is often used by development organizations to develop enterprise development programs and support their target clients (collectors, producer groups, entrepreneurs and local traders) in their program areas. The user groups and collectors use the information to manage their NTFP collection and post harvest activities and negotiate for the prices of their products. Traders and entrepreneurs use for improving their business processes, finding alternative markets and buyers, and improving negotiations at the market places.



As the MIS information was found useful for their enterprise and NTFP management programs, many development organizations, such as CARE, Worldwide Fund for Nature (WWF), and World Conservation Union (IUCN) showed interest in sharing the costs of MIS. The center MIS gradually started to expand and incorporate additional products, new markets, more NTFP management and processing information, services for market linkages and business planning, and district MIS system. District MIS systems with different organizational setting and information content and outreach are being implemented and tested.

MIS in implementation

Users and targets of MIS

The beneficiaries of central level MIS are individual collectors, FUGs, and local entrepreneurs and traders. To reach out to a large number of target beneficiaries, which are primarily the mountain forest communities residing in western Nepal, the MIS works with facilitating organizations such as, NGOs, INGOs, forestry projects, government officials, NNN members, and trade associations as key partners for disseminating of information and providing insightful analysis to the collectors, entrepreneurs, and community groups they are working with.

Information needs and types of information

The NNN members who have worked for several years with communities broadly identify the information needs of the target beneficiaries. Information need assessment exercises are undertaken in the meetings of NNN. Information have been categorized broadly in two types, a) regular type (demand and price of information), b) once-in-a-while type (list of potential buyers, product profile and production practices, harvesting and post harvesting techniques, processing technologies, marketing chain and marketing reports). Initially, 10 products and 5 major markets in Nepal and India were identified for regular market price monitoring and information update services. Gradually, the list of products has grown to include 31 NTFPs (*alainchi, amala, amalbed, atis, barro, bhutkesh, bishjara, bojho, chiraita, dalchini, guchhi chyau, ginger, harro, jatamansi, kakarsinghi, majitho, nirmasi, padamchal, pakhanbed, pipla, rittha, satawari, satuwa, sikakai, silajit, sugandhakokila, sugandwal, suntho, tejpat, and timur*). During the collection and peak trade season, information on Yarshagumba is also collected) and market places for marketing information have been expanded to 8 (Nepalgunj, Kathmandu, Birendra Nagar, Tanakpur, Lucknow, Delhi, Mumbai, and Kolkata). Expansion of products and markets coverage is ongoing with the development of district and regional MISs.

Information collection and analysis

To build rapport and linkages, traders and organizations were visited personally by the MIS staff in Western Nepal and selected metropolis of India (Delhi, Lucknow, Kolkata, and Mumbai) in the beginning of the MIS. With the meetings, the MIS has identified reliable sources (traders and organizations) for regular NTFP price and other market related information. These contacts are consulted for collection of demand, price, quality, and news on 31 select NTFPs on a regular basis. Market visits are made for obtaining information on products availability and marketing channels. Interviews and interactions with the key stakeholders are held to get deeper insights into the marketing of NTFPs. Stakeholders such as District Forest Office (DFO) officials, executive members of District Chamber of Commerce, NTFP collectors and traders are contacted during the visits. MIS center keeps on adding or adjusting market places and NTFPs for regular supply of price information.

Regular information about market and prices are collected through telephone calls, and e-mails from the selected companies/organizations on a monthly basis. Most of the companies are found having preference of direct calls over emails, and many selected do not have e-mails or are not frequently using it. But traders of Kolkata and Mumbai are using e-mails and hence they are contacted by e-mails also. Various websites are visited for the purpose of obtaining information on international markets and prices trends of NTFPs. These include www.herbs.org (Herb Research Foundation); <http://www.herbworld.com> (Herb Net); <http://agroforester.com/overstory/ovbook.html> (The Overstory); www.todaymarket.com (Today's Market Prices); <http://www.trifed.net> (Tribal Cooperative Marketing Development Federation of India Ltd); www.aromaweb.com.htm (Aroma Web); www.wholeherb.com/main.htm (Whole Herb); www.fafai.org (Journal of PAFAI); <http://www.cosmeticworldstore.com> (Cosmetic World); and www.finanicalexpress.com/fe/daily.htm (The Financial Express).

In 2003, a survey was also carried out in different parts of Nepal to get information about major NTFP traders and processors. The survey included 137 traders and processors located in the major road head and town centers in Nepal. The survey identified major NTFP traders, trade volume, profit margin, major suppliers and buyers, and problem related to trade and processing information.

Analysis

The MIS stores price information in database system. Price lists of the products for different markets are generated in Nepali and English languages for circulation to the concerned stakeholders, and for publication in newsletters, such as Lahara, Ukali, and Karnali, and posting on the bulletin boards. Statistical analyses, such as average and range, price trend, seasonal variation, comparative prices and margins for market places and quantity demand for different markets are generated. The information is produced in the following forms for dissemination.

- Price trend analysis for different products in different markets
- Demand analysis of different products in different markets
- Quality requirement of products
- Technological information: production, harvesting, post-harvesting, processing, and manufacturing of products
- Address of major NTFP buyers

A customized database for MIS data processing has been developed. The query based database system can generate reports on species wise trade, location wise trade, year wise trade, etc. Information on traders, their trade volume, and other relevant information can be added every month, and reports on various trade statistics can be generated.

Information sharing and dissemination

The MIS disseminates information in various ways. First, organizing interactions and discussion forums, it brings together buyers, sellers, and other relevant stakeholders. Such interaction programs are organized from the village level to the national level. At the village level, NTFP collectors, commission agents, and village traders are facilitated to come together and discuss on NTFP marketing. In many of such types interactions, which range from traders' visit to the villages to training and workshop activities, forest user groups also participate and play an important role in sharing their community forestry management plans. Similar types of interaction programs are organized at the district, region, and central levels. In addition to the occasional market study visits, training, and workshops, regular meetings of NNN are organized once in every three months. Similarly, marketing related issues and information are shared in the regular meetings of the NTFP promotion alliance, in which national level NTFP enterprises, FECOFUN, NNN, government representatives are present. These types of interaction programs often become critical to collect, analyze, and disseminate marketing information among the participants.

Second, the MIS disseminates marketing information, such as prices for select products at a regular interval through various communication channels. The price information is circulated to above 80 recipients comprising of local NGOs, INGOs, GOs, bilateral organizations, traders, manufacturers, educational institutions, and journalists. An MIS e-group was created in 2001 and it is periodically updated. Both the price lists and marketing information articles are published regularly in community newsletters and periodically in national daily (Kantipur) and other regional newspapers and newsletters. An arrangement was made to broadcast the prices of NTFPs on Radio Nepal's Community Forestry Radio Program managed by Federation of Community Forestry Users, Nepal (FECOFUN) on the last Friday of every month since May 2001. Radio broadcast was effective to reach out to a mass audience throughout the country including the remote areas, where other means of communication are difficult. However, as the funding for the community forestry radio program became difficult and the program discontinued in 2004, MIS information, which used to take just few minutes, also discontinued on the radio program. Recently, local level

marketing information systems are working out mechanisms for broadcasting the information through FM radio stations.

Third, the MIS team collects different analytical reports on NTFP marketing, and manages for the benefit of its users. It participates in trade exhibitions, and undertakes focused marketing survey and research. It also publishes various articles on NTFP harvesting, drying, storage, issues on specific NTFP species. These analytical reports, articles, and documents are shared with the users through various channels, such as working with partner NGOs and organizing or participating sharing meetings and workshops. Up until 2004, it was working with five FECOFUN district offices, six partner NGOs of ANSAB in mid-western development region, and other two local NGOs in eastern development region for sharing MIS information and developing possible linkage of MIS activities. Price information, newsletters, best practices, and technology related information are sent to these organizations regularly, from where they further distribute the information at the village/community level.

Fourth, the MIS provides information to direct visitors and to those who make inquiries through telephone. The visitors can look for the resource books, market research reports and other documents at the MIS office in Kathmandu as well as at the partner NGOs and participating FECOFUN district offices.

Fifth, a separate web site of the MIS (www.ntfpmis.org) was created, but later towards the end of 2001 was merged into ANSAB's home pages www.ansab.org and www.nepalnet.org/ansab in order to increase the searchability of the site. This website provides some information about NTFPs. This website is regularly updated. The website consists of information like the MIS initiatives in Nepal and contact address of buyers. Up until the end of January 2005, it however did not include the price information. Nepali members thought revealing the price, which they supposed too low, could further depress the price as international buyers would make tough negotiation with the Nepali exporters.

Other marketing services

Business match making and business relation- MIS staff help promote marketing linkages among national and community level enterprises, district level traders and FUGs, and national level and international level companies. For example, Himalayan BioTrade, a national NTFP marketing company, was supported to establish and expand its business relation with Deudhunga Multipurpose Cooperative (Dolakha), Humla Oil (P) Ltd. (Humla), and Malika Handmade Paper (P) Ltd (Bajhang) in 2003/2004.

Market promotion and direct marketing- In the past, the MIS also supported different local cooperatives and community based forest enterprises to market their products at reasonable rates. For instance, Humla Oil (P) Ltd was supported to sell its *Jatamansi Oil* stock so that it could gain additional 25% on sale prices. Support was also provided to sell handmade paper from Malika Handmade Paper (P) Ltd. Deudhunga Cooperative was also supported in marketing by which it became able to get 20% price increase in 2003 (ANSAB 2003).

Advisory services and customized business information services- Entrepreneurs and communities from various parts of the country seek for information regarding new enterprise development, installation of processing unit (essential oils and handmade papers), and cultivation of NTFPs in their area. Different NGOs working in the districts also contact the MIS asking support on designing NTFP management and marketing trainings and sourcing seeds and seedlings of NTFPs. The MIS has extended its scope by providing technical information on cultivation of highly demanded NTFPs, planning and installation of processing enterprises, support in enterprise management, NTFP marketing and management training, and distribution of inputs like NTFP seeds.

Moreover, support on establishment and management of localized marketing information systems (district level) is also extended. For example, it supported to establish Doti MIS. IUCN Doti office coordinated with the stakeholders to obtain price information on the NTFPs traded in or from the districts. The information was sent to the central MIS. The central MIS used to send consolidated price and other marketing information to Doti MIS which in turn would translate the information in local language and disseminate to the district stakeholders and target beneficiaries including by posting the information on bulletin boards. However, the MIS did not become fully functional. The center MIS is planning to support about 10 district level marketing information systems, of which 3 are under the process of development.

Organization and funding

Till 2003, an MIS manager with advisory supports from ANSAB director and limited technical support from ANSAB program staff managed the central MIS system and its activities. To identify the users' needs and ideas to improving the MIS effectiveness and efficiency, periodic inputs and suggestions from NNN members were solicited. In addition to the suggestions from NNN sharing meetings, workshops on MIS review and planning were organized.

SDC/Nepal and SNV/Nepal provided the required funds for the first year of the MIS operations. When implemented as a pilot phase, MIS was found useful and effective to generate and disseminate information, other donors, such as Livelihood and Forestry Project (LFP), Action Aid Nepal, the IUCN/Nepal and WWF/Nepal shared the costs of the MIS activities in 2002 and 2003. As since 2004 it has received financial support from ICCO, Netherlands, it has expanded its marketing information services and scope developing regional and district level information systems. Since 2005, SNV/Nepal has contributed funds

to develop and expand district level marketing information systems in four additional districts in Nepal.

Major results and lessons

The performance of the MIS project is reviewed and evaluated in a participatory manner organizing multi-stakeholders workshops and sharing meetings. As also shared by many stakeholders, the MIS activities have contributed to increase the knowledge base of many stakeholders in NTFPs and its marketing. As a result, more NTFP based support programs (NTFP management, harvesting, post harvesting, processing, marketing training, NTFP nursery activities, marketing networks, and new enterprises) have been developed and strengthened. Together with the regular price monitoring system, publications related to NTFPs provided useful information to potential entrepreneurs and facilitating organizations. As per the ANSAB's MIS report 2003, it contributed to increase the interest on NTFP business among potential entrepreneurs, and supported them in planning, management, and marketing of NTFPs. Some entrepreneurs developed new business activities in NTFPs, and some others started cultivation of NTFPs. Inventory of NTFP traders, which included information such as, NTFP traded, trade volume, prices, main suppliers, and main constraints, supplied very useful information to entrepreneurs, policy makers, and development organizations.

Marketing information, though it could not reach to many of the collectors and communities where NTFP related development organizations were not there to disseminate the information further down the chain, increased local people's access to NTFP marketing information and improved their bargaining capacity. And in turn, it contributed to increase the incomes of NTFP collectors. The collectors who were organized were the ones who could use the information for their benefits. The places like Darchula where the NTFP trade was low before saw an increase in trade of NTFPs and realized higher change in NTFP prices, as the information let the collectors and potential traders know about the NTFPs and its markets. However, the MIS was not alone and would be insufficient alone to make those differences. Various development organizations and projects supported the communities and potential entrepreneurs to make use of the marketing information.

The MIS was found most effective to increase the bargaining capacity of local traders, who became aware of the prices at various market places and saw many different alternative markets (ANSAB 2002). In some cases, district and regional level traders opposed and criticised the MIS. The price and market information, which these traders would already know through their business network, would not add value to them, but actually empowered the collectors and local traders from whom they had to source raw materials. Other value adding information (production, harvesting, post harvest, processing, etc.) was not what they were looking for. In fact, this information became very useful for many collectors and entrepreneurs for managing their NTFP activities. Even the commercial banks in mountains were found being benefited from the market information. For example, Banijya Bank in Jumla shared that they evaluated the prospects of NTFP based loan proposals looking the price trend and analytical reports on NTFP markets. The information was also used by government agencies. Dr. Keshab Kanel, Deputy Director General of the Ministry of Forest and Soil Conservation expressed during one of the review workshops that the MIS was extremely helpful in the formulation of policies concerning royalties and taxes on NTFPs (ANSAB 2003).

Though the information disseminated through MIS was instrumental to enhance the bargaining power of the collectors, many rural people were still forced to sell at lower prices for various reasons- they had taken loan from a particular trader and were forced to sell to pay off the debt, high cash need at festival seasons and food shortage times forced them to sell immediately, lack of risk taking capacity causing them to accept lower prices, ignorance of transport processes and regulations favouring only selected traders, etc. There was a limitation of the MIS, as it could not guarantee that the traders would actually pay the prices they themselves mentioned, once the products were supplied to them (ANSAB 2003).

While the use of information was undoubtedly enormous, reaching out to grassroots communities, timely delivery of information in remote locations, and providing more analytical and value adding contents to entrepreneurs were the challenges of the MIS. The proceedings of the review workshops indicate that the MIS focused more on market prices information. The participants of the review workshops suggested to provide a complete package containing all the relevant information from production to marketing of NTFPs. The participants highlighted the need of information on NTFP management and harvesting, post harvest procedures, processing technologies, government policies (rules, royalties, and taxes), and marketing techniques for supporting NTFP based enterprise development process.

In addition, the following are the key suggestions put forward by the participating stakeholders time and again: a) expansion of marketing information services through developing district level MIS and dissemination of information at grassroots level- information be customized for the local needs, and disseminated through local organizations; b) expansion of market information coverage- also including information for additional products and new markets such as, China, Europe, and USA; and c) alternative media for market information dissemination- disseminating price information through radio was noted most effective for the people living in remote areas as other means of communications such as newsletter and price bulletin were inaccessible and suggestion was to promote use of regional and local FM radio channels.

The MIS did not track the local price information (at district and communities) for long time. It caused difficulty to objectively assess the impact of the MIS activities. It also did not provide information about the availability of NTFPs (quantity, quality, and price) in different districts and areas. It is believed that this kind of information is very useful for entrepreneurs to establish new enterprises or develop the existing ones. Information about the supply side might have been useful to attract more traders and entrepreneurs in the districts, and hence it would have contributed to more transparent and healthy market competition benefiting the supplier communities. In addition, the national level enterprises like Himalayan BioTrade, Gorkha Ayurved, and Alternative Industries, have requested to provide them the NTFP availability data so that they can make plans for sourcing NTFPs from the districts and develop production and marketing activities more effectively and efficiently.

Most of the stakeholders suggest that the central level MIS is most useful for capacity building of the users and enterprise development and marketing mix planning. For actual sales facilitation, localized systems (district level, individual group or enterprise level) are deemed necessary.

Issue of sustainability

It was discussed from the beginning to develop a self-sustaining MIS. The experience shows the costs of the MIS activities are primarily shared by the projects and development

organizations, which are supporting NTFP and enterprise development activities in Nepal. Recovering the costs from the ultimate target users (collectors and entrepreneurs) seems still difficult. If a direct charge to the use of the NTFP information is tried out, only the big traders and entrepreneurs, who are situated in accessible places and have relatively good share of NTFP business margins, can partially be ready to contribute to, but not much and maybe on the condition that the information is not further shared down the line without price charge. Since the prime targets of the development projects and government agencies are the grassroots communities and village based entrepreneurs, it is always difficult to fund the MIS activities through the information users. Many believe that the information including marketing information flow to grassroots communities should be the public goods. If it is tried to make private good, exclusive to those who can afford, then it will do more harm than good to the Nepalese society, where the NTFP collectors have been always sidelined. Nevertheless, marketing information system needs to be sustainable to be able to continuously provide its benefits to its uses; and for this, funds are required.

If an MIS can be designed in such a way that the cost of the system is low, that is just what is required. For this purpose, there can be many avenues, such as integrating MIS activities with the existing system of information flow, selection of the appropriate organizations for MIS roles, partnership with relevant organizations for information dissemination (dissemination system is often found most costly if the information has to go to the remote rural communities). In Nepal's case, the development organizations themselves wanted to involve in the information dissemination process. With their support, the cost of the system, especially in dissemination, has become cost effectively (number of people reached against the MIS's dissemination cost). However, both low cost and high capacity MIS may not be achieved. Focusing on most important information and assessing the marginal gains from the MIS information, one can arrive, for the particular situation, near the optimal. Nevertheless, as information can have far reaching impacts, it is always difficult to know before hand what is optimal.

New NTFP MIS initiatives

To address the recommendations provided to the NTFP MIS, a new MIS phase has been put forward. This phase aims at achieving the following targets in the following two years.

- NTFP collector and traders from the five district level centers in various parts of Nepal improved access to market information and gained at least twenty percent increase in sales of their products.
- Market linkages established between and among collectors, traders, processors, and manufacturers both locally and internationally.
- NTFP market information and data gathered, organized, and updated and are disseminated to target clients on time.
- Five regional/district MIS information centers established with functioning systems and procedures and managed by highly skilled staff.
- Central NTFP MIS program strengthened and capability to generate its own resources enhanced after the project

The new phase is trying out different types of district level MIS (based on the organization type, information content and market coverage, information outreach, partnership among others, etc.). It intends to assess their effectiveness and possibility of developing self-sustaining mechanism for MIS activities. Early signs show the linkages between district MIS and center MIS are enriching one another. Efforts of developing area level MIS (serving many district MIS centers) are being made. This phase has already developed 7 district MIS

centers, 3 new centers are being developed in the first quarter of 2004. Two district level MIS centers (one for the west and the next for the east) are being evolved into regional level MIS centers.

District NTFP MIS (Ilam)

District MIS in Ilam is operated by the Ilam Chamber of Commerce. The Chamber, as being the member based organization, was looking for the services that it could provide to its members and could make their members more active in the Chamber's activities. The chamber identified the marketing information services to its members as one of the most important services it could provide to its members, who were contributing to the chamber management costs as membership fees. The chamber was trying various ways to collect and organize information for the benefits of their members as well as the farmer communities in the district.

MIS arrangement- The chamber was active and had some program on business development services. It had got its own building, furniture sets, computer, telephone, fax, and email system. To manage the MIS services, the chamber decided to make a focal team and gave information management responsibilities to one of its staff.

With the advisory support from the chamber executive members, the staff manages information collection, analysis, and dissemination activities. The chamber gets updated price information of 31 NTFP species for various Nepali and Indian markets every month through email from the center MIS. In addition, it gets other analytical and descriptive marketing information on NTFPs from the center MIS in the forms of reports, brochures, newsletters, etc. through email or postal systems. On its part, the district MIS maintains its information library; translates the information in local language; and posts the information on its bulletin boards. It also collects price information for 4 prioritized species (ginger, cardamom, broom grass, and chiraito) every week from 8 market points in the district, region, and Indian boarder markets. It collects price information for different variety of products (example, 2 varieties of cardamom, and 3 different products of ginger). The price information collected every week is tabulated. The information sheet of weekly price list is posted on the marketing information bulletin boards maintained by the chamber in the various market centers in the district. The chamber has identified potential 10 market centers for the marketing information dissemination, and has already established bulletin boards and dissemination system for 5 centers (ANSAB 2004). The information collected by the chamber is also sent to the center MIS, which incorporates the information in its system and disseminates to its users.

The chamber is planning to strengthen its relation with other chambers of commerce around Taplejung, Panchthar, Morang, Jhapa of Nepal and in India (Siliguri). With the linkages, it plans to extend its information services to its members and farmers in the district, and also plans to support the other chambers to manage the marketing information system. The chamber is planning to collaborate with Bhaktapur Chamber of Commerce, which is far ahead in information management, to strengthen its information management system. The chamber is planning to use local FM for disseminating price information. It is trying to collaborate with the district federation of community forestry user groups and district development committee, which have strong network in the district, for dissemination of the marketing information. For the benefits of the district traders and entrepreneurs, the chamber is undertaking a rapid assessment to generate information on existing production, potential

production expansion, and trade of the target products (ginger, cardamom, broom-grass, and chiraito) in the major production sites (Village Development Committees).

Without awareness campaign, the chamber felt that most of the users would not know the information provisions, and would not look at the bulletin boards and contact the chamber for the information. To address this issue and make the target users realize the importance of information, the chamber has already started awareness campaigns in the market centers.

Agriculture MIS of Agro Enterprise Center

Introduction

Agro Enterprise Center (AEC) is a technical wing of the Federation of the Nepalese Chambers of Commerce and Industries (FNCCI), an apex body of private sector in Nepal to provide agricultural information and technical supports to its members. With a United States Agency for International Development (USAID) funded project's support, AEC initiated agricultural marketing information services in Nepal from 1998. AEC has gradually expanded the scope of the market information services, and has set the following objectives: a) establish a nation wide wholesale market network in order to enhance competition among the wholesale markets and to strengthen their networking capability; b) generate database on the performance of the wholesale markets of Nepal and those of concerned international markets; c) provide wholesale market information to different users and stakeholders; d) impart marketing concepts to farmers and local traders; and e) make available the prices of wholesale markets for analyzing the price trend and developing strategies for production and marketing of agricultural products.

Users, information needs, and information coverage

The main target users of the marketing information system are the private sector members (district chambers, agri-entrepreneurs, wholesalers, retailers, and producers). The information is also provided to development organizations and government agencies to support them in development and implementation of agricultural programs and policies. Starting with price information of fruits and vegetables for 4 markets, the AEC's market price information bulletin now covers 18 major markets of Nepal. The information bulletin includes the price information for the following commodities:

- Fruits (domestic and border markets): 22 items
- Herbs (Dharan, Nepalgunj, and Delhi markets): 94 items
- Vegetables (domestic and border markets): 46 items
- Spices (domestic and border markets): 14 items
- Others (domestic markets): cocoon- 9 different grades; coffee- dry and roasted; dairy- 4 items; oilseed- 6 items; pulses- 3 items; oilseed- 6 items; radish seed- Minu early and 40 days; and tea: orthodox and CTC

Information collection

For the practical purpose, AEC mainly collects and compiles wholesale market prices from major market centers. In this system, wholesale market prices as well as retail market prices of Kalimati market come to AEC through email and/or other channel on a daily basis. Information is collected for morning transactions, and it includes minimum and maximum prices of commodities as well as the sources from where the commodities come into the markets. AEC receives the daily market price information from its designated persons for the following market centers as given below.

- Email (Biratnagar, Dhankuta, Kathmandu, Hetauda, Narayangadh, Butwal, Tansen, Byas, Pokhara, Ghorahi, Tulsipur, Nepalgunj, and Birendranagar)
- Fax (Birtamod, Dharan, Janakpur, Mahendranagar and Kailali)

AEC has also established international networking with chambers and private sector entrepreneurs, and it collects prices from Delhi and border markets of Barailley, Pilvit, and Khatima in India. In addition, information on prices of herbs, mustard, rice, sunflower, tea, and coffee from major markets in India is collected and maintained periodically. Occasionally, international market price and information is collected and shared with the target users. The international market information is shared with traders, planners, and development organizations to help promote the international trade on the products.

MIS center management and analysis

Two full time staffs compile the information, and analyze the information in the following forms. The information is available both in Nepali and English languages.

- Daily wholesale market price bulletin (marketwise)
- weekly price bulletin (marketwise detail bulletin)
- monthly and yearly market price bulletin (commodity and market wise)
- price trends, etc. (commodity and market wise)

Information dissemination

In addition to those members visiting the AEC office and library for the detailed and descriptive information, AEC disseminates the information through emails, websites (www.agripricenepal.com and www.b2b.com.np), fax, and bulletin boards. Emails are sent to the affiliated organizations, members, and the district chambers in Biratnagar, Dhankuta, Kathmandu, Hetauda, Narayangadh, Butwal, Tansen, Byas, Pokhara, Ghorahi, Tulsipur, Nepalgunj, and Birendranagar. The information is faxed to district chambers in Birtamod, Dharan, Janakpur, Mahendranagar and Kailali. Bulletin boards are put at district chambers and municipality complexes.

AEC has categorized the information into a) free information and b) fee based information. Fee based information is provided only to the members who pay Rs. 3000 per year as membership fee. These members can access all the information at the AEC website (www.agripricenepal.com). The reports have been categorized as follows

- Daily report-free
- Periodic news-free
- Traders profile-free
- Weekly report-fee based
- Monthly and yearly report-fee based
- Graphical representation of price movements-fee based

Results and lessons

AEC has not done any impact assessment of the marketing information system at the user level. However, it is generally believed that the marketing information has been useful to producers and traders located near by city centers for their marketing decisions making. The examples of floriculture and hybrid tomatoes are quoted as success cases of the MIS intervention, especially paring price information with other pertinent information to the target groups. From the experience of the MIS, AEC believes that the farmers and traders can

generate more benefits if the market price information is provided together with a package of information that empowers them for improving their farming and marketing practices.

Marketing information services of Rural Urban Partnership Programme

Introduction

Rural Urban Partnership programme (RUPP) of United Nations Development Programme (UNDP) is supporting AEC, 12 partner municipalities, and 33 rural market centers to improve their marketing information systems. The program has been supporting the partner municipalities and involved rural market centers in developing database and enhancing their knowledge and skills in using the computerized information systems. It is believed that the database will serve as an important component of urban information centers, will support the decision making of the municipalities and other stakeholders, and will improve public service delivery and partnership with the public. The objective of the information system proposed is to make all stakeholders aware of the opportunities, constraints, and capabilities as part of the attributes of a given market center/area.

Urban information centers and their roles

The computer application package and development of urban information centers, which are being supported by RUPP, assist the decision makers and the stakeholders to implement the various urban and rural development programs. So, it incorporates a breadth of information. RUPP followed a sequential approach to develop the system, which can be identified as a) assessment of information needs and development of data collection format; b) development of software package; c) data collection; d) data verification and coding; e) data entry; and f) queries system development. Once the system is designed and also during the process of design, the stakeholders being targeted are provided opportunities to share their concerns, knowledge, experience, and ideas, and to learn practical aspects of the information management system.

The information system is planned to cover the following areas: a) demographics, indicating potential areas of skilled, unskilled, and occupational labor forces; b) rural and urban production, consumption patterns, and needs; c) origin and destination of raw materials, agricultural products, light manufacturing goods, and financial resources; d) areas of production of various types of agricultural products; e) existing and potential employment opportunities and scope to improve rural-urban production systems; f) location and transactions of traders and middlemen; g) detail information on Tole/Lane organization; h) macro level information of municipalities; and i) other market region information. Information on these areas is believed to be helpful to RUPP to focus on its target groups and areas and to determine the most effective ways of its program implementation. In addition to the municipality and market center levels information, a new domain for compilation of Tole/Lane organization level information has been added in municipal database. To assist finance officers, a Credit & Seed Grant Management software (RUPP Credit) has been developed and strengthened, which supports in monitoring credit and seed grant disbursement, status of credit, repayment, and outstanding balance.

RUPP has also supported to develop information software and systems for a) computerized Integrated Property Tax (IPT) for municipalities (Butwal and Tansen); b) poverty mapping software (Biratnagar municipality); and c) survey and database on Internally Displaced people (IDP) and HIV/AIDs. RUPP has also initiated the idea of implementing e-Governance, which is intended to contribute to improving administration process (e-

administration), connecting citizens (e-citizens, e-services), and strengthening local institutions (e-societies). By this, it is expected that urban service delivery to public will improve, people will have increased access to information; and it will allow direct participation of public in municipal planning and decision-making. These urban information centers have been established under cost and resource sharing arrangements between RUPP and the partner municipalities.

Dissemination of daily AgriPrice Information

RUPP has collaborated with AEC to manage agri-price MIS system (see also AEC MIS). RUPP provided technical and financial support to developing and hosting agri-price website and Business to Business (B2B) web site of AEC. RUPP supports AEC for collection of price information from its program locations and provides assistance to 12 partner municipalities to disseminate agri-market prices information through the use of email, telephone, fax and the use of price bulletin boards in different market places. Besides, Tansen municipality has started disseminating daily agriculture price information through a community radio named Madan Pokhara (around three hundred farmers/traders potentially benefiting). With the market price information, the program believes that the entrepreneurs have been able to expand and diversify their agriculture business.

Initiation of B2B e-Commerce

Encouraged by the success of the AgriPrice web site, RUPP is providing technical support to AEC to establish B2B e-Commerce in all 12-partner municipalities with the objective of supporting business transactions and establishing regional linkages. A website (www.B2B.com.np) is being set up (still under development phase), where sellers can put sales offer on their product whereas buyers can see the site for the products they are willing to buy. Buyers and sellers can also make direct contacts for furthering their business deals. On the web site, farmers, traders and entrepreneurs can also find technology related information. As it is a very new initiative in Nepal, and many potential buyers and sellers are not aware of this, B2B e-Commerce awareness campaign were organized in 5 selected municipalities. Students working as interns were mobilized to run awareness campaigns. Similarly, workshops with local Chamber of Commerce and Industries (CCI) of all 12 partner municipalities, private sectors, AEC/FNCCI were held on B2B e-Commerce. The web site is planned to be hosted in all partner municipalities in collaboration with the local Chamber of Commerce and Industries. As it is still in development phase, it is too early to comment about its effectiveness. It will however take sometime until the infrastructure needed for electronic transactions is developed, and the buyers and sellers feel confident and realize benefits over the traditional communication and business transaction systems.

MIS managed by agri-business enterprise

The MIS of agri-business enterprises is designed to support their marketing decision making and streamline the business processes. As it becomes a part of their business strategies, it is mostly internally funded. The access to the information generated by the MIS is carefully planned.

Agriculture crops MIS of Indian Tobacco Company (e-Choupals)

Context

Over seventy percent of India's population lives in its 640,000 villages, for most of whom agriculture is the main source of livelihoods. The farmers are generally poor, and each of them generally owns just about a hectare of land. As they are situated in the remote places, they do not have updated information that impacts their agriculture practices and sales; they have very little bargaining power when they buy farm inputs or sell their products; and the physical, social, and institutional infrastructure in rural India is generally weak (WB 2004).

Government interventions basically focus on dissemination of best farming practices and open auction system for better price discovery of farm produce. These supports mechanisms are helpful to improve production system and would be quite enough for a supply-driven business model. In the absence of any marketing information and support mechanism, the farmers have to sell their products to middlemen, who often offer them a complete package of solution- credit, inputs, and market access. Thus, the middlemen, who can block the marketing information and create singles in their favor, enjoy a large chunk of profit from the trade of agricultural products (WB 2004). This situation in rural India was seen differently by Indian Tobacco Company (ITC), which is a 94-year-old, for-profit, Indian agribusiness company with annual turnover above US\$ 2.5 billion. It was trying to diversify its business from the shrinking tobacco industry. It decided to establish a new business model by linking the rural communities with its marketing information and support system. Choupals, a meeting place in rural India, were targeted as the point of entry into the rural households for dealing in ITC products.

Design and implementation of ITC MIS

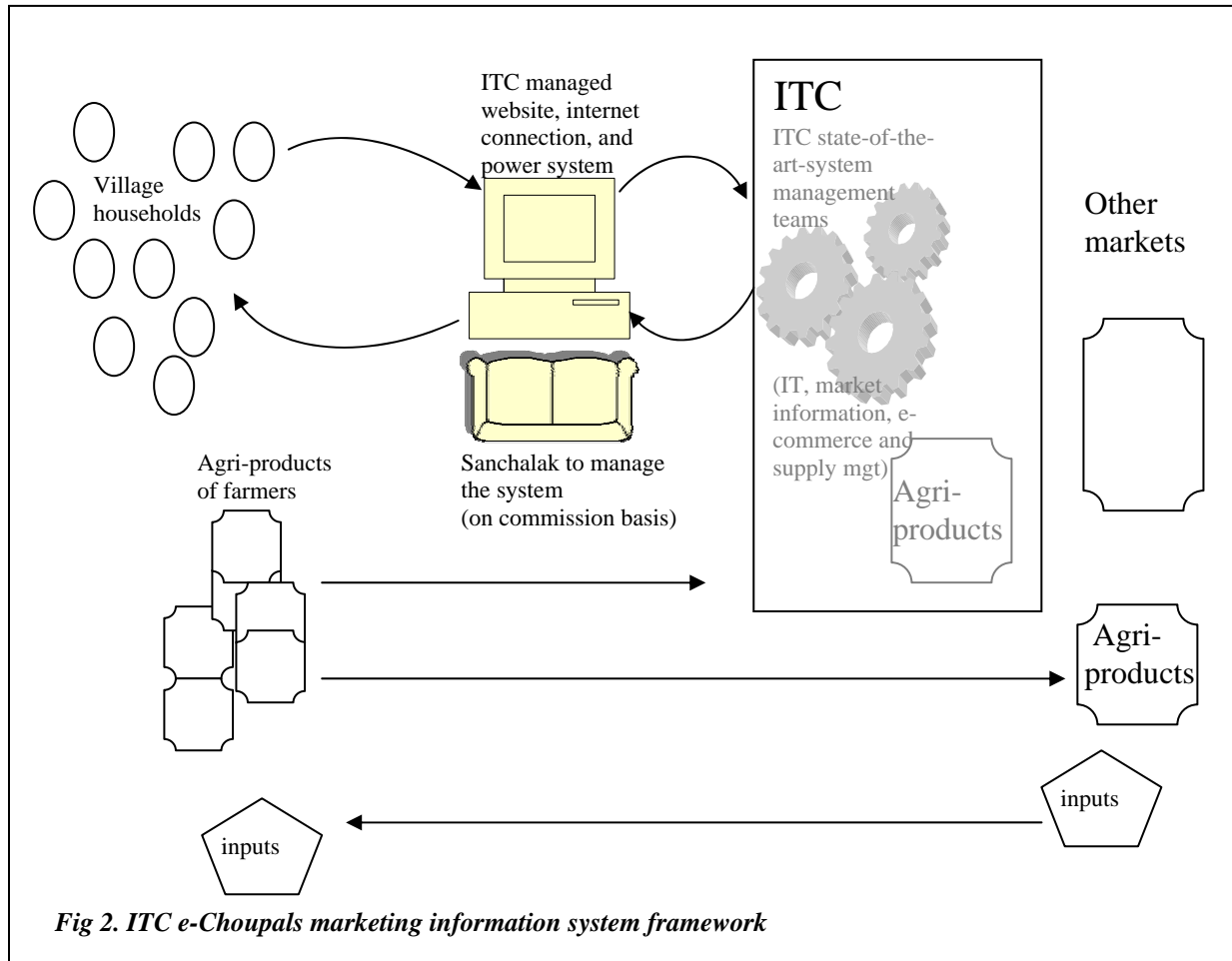
Target users, marketing need, and interventions

ITC targets the areas from where it has already been buying agriculture products for its MIS activities. The villages fairly accessible for market support and with population in between 1,000 to 5,000 are selected (Jain 2004). Farmers, who lacked marketing information about their products, were at disadvantaged situation and often reaped off by the middlemen. They needed not only the marketing information like price, demand, and quality, but also the alternative channel of marketing. Besides, the agricultural marketing system needed to address the problem of long marketing channels sapping the profit margins, fragmented and dispersed rural agriculture market, and weak infrastructure. To address this, e-Choupals system aggregates the supply and demand of the thousands of farmers; offers direct business links to ITC; provides marketing information about the products of farmers; and lets the farmers explore the competitive offers.

MIS/business model

In the selected villages, ITC sets up internet kiosks and transforms them into e-Choupals. For those places, which face shortage of phone lines and electricity, ITC provides VSAT satellite links and solar batteries. Selected farmers are trained on use of the system. Educated, entrepreneur type of local farmer or trader is carefully chosen to be an e-Choupal manger (called sanchalak). The e-Choupal is connected to the websites which ITC cautiously creates in local languages for the farmers targeted. A website for each of the crops, such as soya, wheat, coffee and aquaculture (shrimp) is setup. ITC updates the information and makes sure that the content is relevant. As for the input supply information, at least three input suppliers are enlisted for each category of inputs, such as seed, chemicals, and nutrients. *Sanchalaks* help the farmers access the different agricultural crop-specific websites. For their services,

they earn commissions for the transactions facilitated by them through the system to ITC or the third party affiliated to the system. Kiosk management has been a job for some of the sanchalaks. For example, kiosk management has become almost a full-time business for Mr. Nogadia, the sanchalak of Badamungalaya in Madhya Pradesh (Jain 2004).



With this, the farmers can gain market knowledge about their products as well as they can browse websites to know farming techniques, price trend, weather forecast, etc. For this, they do not have to pay anything, and they are also free to sell their products to any place they choose. The system links the farmers to the agricultural universities, newspapers, meteorological departments, banks, and technical analysts for the information. If they wish they can sell their product online, farmers can also order agricultural inputs online with the help of the *sanchalak*. The system helps achieve virtual aggregation of product supplies from the farmers, reducing costs of procurement to ITC. On the other hand, the farmers can also gain by aggregating their demands for inputs. Farmers even consult an agronomist by e-mail when they find some diseases or problems in crops. They can also seek for other services like sale and hire of tractors and harvesters, soil testing, and insurance (Jain 2004, WB 2004). A panel of specialists answers specific queries of individual farmers through email, and service providers extend their services to the farmers. e-Choupal thus links the Indian farmer with consumers in local and national markets, by leveraging ITC's proven competencies in marketing and distribution of agricultural commodities (WB 2004).

The investment in hardware at each kiosk includes a computer, printer, VSAT (very small aperture terminal), solar panels, and batteries. The hardware costs about US\$ 3,000. An equal amount is spent on back-up services that include web portals, training, and communication costs. ITC estimates a payback period of five years on its total investments in the e-Choupal initiative (WB 2004).

Major results and lessons

Benefits to the community

e-Choupal has empowered the farmers with information and helped improve their decision-making. Farmers do not have to pay for accessing the information, and they are free to decide whether to sell their produce to ITC or other buyers, or sell through the government auction center. Price is known in the villages before farmers incur any cost of transportation. As a result, farmers can choose the right place and time to sell, and they can avoid many overheads, such as multiple transportation, and handling. As it has created transparency in trading and market competition, farmers get benefits from more accurate weighing, faster processing time, and prompt payment. Farmers can earn higher incomes through increased prices, higher yields, better quality, and lower transaction costs. It is claimed that farmers selling directly to ITC through an e-Choupal realize at least 2.5 percent higher price for their crops than they would receive through the government auction system because of lower transaction costs. Farmers also benefit through lower prices for farm inputs. On the other hand, ITC benefits from decreased transportation and commission cost, which is reported to be 2.5 percent lower (WB 2004).

ITC also has more direct control over the quality of what it buys. The information provided directly to the farmers has resulted in improved planning and better relationships of ITC with the communities. ITC also earns by levying service charges to others participating companies, who find e-Choupal cost effective for distribution of their products to the villages. A number of companies market packaged consumer goods, personal care products, household appliances, and fuel through the e-Choupals. *Sanchalaks* also make money as they receive commissions from ITC and participating companies on all the purchase and sale transactions done through e-Choupals. As they have to compete with other marketing channels, entrepreneurial types of *Sanchalaks* try to meet the needs of farmers by customizing the offers.

In addition, villages have got free access to internet, which has opened up a window to the world. People also check local language news and entertainment sites. The possibility for e-Choupals is enormous, for example, government services can go online, micro-credit organizations can offer services in the small villages, and consumer goods firms can extend their networks into villages. As of March 31, 2004, it is reported that e-Choupal services reached to about 24,000 villages with 42,000 kiosks benefiting over 2 million rural farmers and expanding rapidly with seven kiosks added everyday (WB 2004). ITC intends to reach 10 million farmers in 100,000 villages by 2010. Recognizing its impacts, International Chamber of Commerce, United Nations Development Programme, and Prince of Wales's business forum jointly have honored ITC with Prince of Wales's business forum World Business Award.

Lessons

The case shows that MIS system itself can be a core capability of a private enterprise when it supports to streamline the supply and distribution chain. Contrary to the common belief that the MIS system of private company is only tuned to their business strategic needs and

profitability, the agri-enterprise MIS has shown that it is equally beneficial for the farmers. The perfect match between the need of the private company and those of the farmers has created win-win situation for both parties, and has increased the total economic gains in the agriculture business by reducing the inefficiency in the supply chain. However, this success owes much to the resourcefulness of the enterprise and their strategic choice to implement the MIS in a fashion contributing to the both parties and to the overall economy.

Furthermore, the market information system has increased its relevance to the farmers as it has incorporated the information, such as weather, best practices, input supplies, etc., which is relevant for the farmers. The strategic alliance among universities, other companies, and media houses to provide the content to the marketing system has made the system even more robust and cost effective in terms of information collection and management. Though initial invest is high, utilizing the information technologies appropriately, the system has been able to reduce the cost of market system operation per target farmer. And linking this system with e-commerce activities, the company has increased the credibility and usefulness of the system for the rural farmers. As the farmers and other actors are feeding data each time into the system, the capacity of system to generate even more useful analysis and information will certainly increase as the time progresses.

As the ITC's business model powered by e-Choupals increased market transparency and empowered the people with knowledge and information, the case shows that the farmers started to improve their agricultural practices and marketing decision making, and ultimately increased their incomes. On the other hand, it threatened the more traditional types of trading occupations (WB 2004). Traders could not compete with the system or their incomes from the agriculture trade declined. However, as the traders were more entrepreneurs, in some places they took the new role of Sanchalaks. As the changed business environment is creating difficulty for them to unreasonably gain, they are changing.

The private sector investment, strategically alignment with the business model of ITC, and warm welcome from the communities indicate that this marketing information system is a sustainable model. Although its replication in other areas and sectors seems difficult and demands careful planning, this model however shows a good learning points for developing agricultural marketing information system and marketing interventions.

MIS managed by service provider

The MIS systems managed by services provider are generally found to cater to the information needs on economically most important products. They have mechanisms to internally generate funds for the marketing information systems. The information of service providers is generally targeted to a large number of users. When they have especial focus, then they have often chosen those entrepreneurs or users who have willingness and resources to pay the price for the information access. These providers have been found extensively using web-based technologies to reach out to many clients.

MIS services of National News Service, India

NNS (National News Service) began its operations almost 50 years ago as a news agency, and pioneered the concepts of providing commodity news and daily trading prices to print media. The main business of NNS is to provide its marketing information services to newspapers, TV news channels, and other media houses. Through its own publications and

website (<http://www.nnonline.com>), it provides marketing information on agricultural commodities to mass public.

The NNS group publishes Vyapar Kesari (business Hindi daily newspaper), Business Star (business English monthly magazine), and Meri Delhi (social Hindi daily with special eye on Delhi affairs). In addition, it also publishes many business directories, such as agro-products and dairies. NNS has diversified its activities by organizing conferences and exhibitions, which provide the industry participants an important platform to share and discuss on various marketing information and business development activities. NNS has also organized national seminars on products like tea, pickles, spices, and herbs.

NNS facilitates online e-commerce through its website, which also provides interested entrepreneurs information on buy and sell offers on agriculture products. NNS has extensive information on cotton, plastics, jute, iron and steel, fruit and vegetables, oil seeds, oil meals, chemicals, sugar, rubber, vegetable oils, wheat, and cement. A part of the information on these categories is also provided through its website. On the web, it provides information like commodity news, daily market trend for agricultural products (grains and pulses, oilseeds, sugar, spices, and dry fruits), and news on exhibitions at free of cost. For paid subscribers, it provides daily commodity rates and other marketing research information.

MIS services of Indian Agribusiness Systems Private Limited (IASL), India

Indian Agribusiness Systems Private Limited (IASL), which was started in 2000, is an information service provider in agriculture and food processing sector. IASL provides services in commodity research, trading, publishing, consulting, and manpower recruitment. The service provider mission is to support its clients to build sustainable, profitable growth through superior market understanding. It also extends its services to enhance the marketing understanding and capacity of not-for-profit sector in India. The provider maintains its Agriwatch website (<http://www.agriwatch.com>) and allied services. It has professional experts in market research, consulting, and information management, and has placed information officers in key markets, who have close contacts with local traders. Through their own network, they collect the news and information on the major agricultural commodities.

The services of the provider include research reports, Agriwatch portal, SMS services, audio/visual services, publications (Hindi Trade Weekly, Agriwatch Monthly, Hindi Farm Weekly, and yellow pages), business consulting, and trade promotion service.

The provider has extensive information and generates trade research reports on several commodities, such as rice, wheat, maize, pulses, spices, oil seeds, oil meals, vegetable oils, sugar, agro chemicals, seeds, and fertilizers, which are available to its paid subscribers (there are various options for subscription; the annual subscription rate for full website access and all research reports is US \$790). The reports update the users about the latest developments and trends in the national and international markets for the respective commodities. The trade research report for a commodity covers the following information- a) prices at major national and international markets, b) demand supply analysis, c) price trend forecasting, d) export/import trade flows and port statistics, e) crop forecasting, f) news analysis, g) freight market information, h) weather news and its impact, and i) expert opinion.

It also provides reports from major agricultural markets in India, which cover daily details on prices, arrivals, and stocks. The reports are published daily/weekly/fortnightly. Some reports

are available online. The research reports are generally sent to the subscribers on email or fax. Weekly and fortnightly reports can be arranged through courier in major cities in India. The mobile information subscribers can also receive the latest rates, breaking news of international as well domestic market, and live quote updates on their mobile phone through Agriwatch SMS service.

The provider supplies some of the information in the above areas to all web users on its Agriwatch website at free of cost. The yellow pages of Agriwatch provide users a huge database of companies, firms, and agencies in the Indian agribusiness sector at fee of cost. The users of the Agriwatch site can search the database for any product of interest in a specified city and town. In addition, the users can access the website for the information, such as market prices, agricultural news, exchanges, agriculture statistics, shipping updates, policy issues, weather, and buy and sell bulletin.

MIS system of Pakissan

The Pakissan is an agricultural marketing service portal in Pakistan. It provides information services to its clients through its web portal (<http://www.pakissan.com>). The web portal links the users to various related web resources, both national and international, to provide marketing information on select agricultural products. The information includes daily prices, market news, issues and analysis, weather, special reports on agricultural marketing, and agri-events. In-depth information on crops, horticulture, livestock, farm inputs, and machineries is also provided. The web portal also supports discussion forum, and supplies analytical reports, articles, and best practices techniques and cases. It also provides information about agri-consultancies, and features advertisements on related services and products.

On regular marketing information front, it provides daily whole sales prices for agricultural products, such as wheat, rice (basmati) super rice (basmati 385), rice (irri-pak), sugar refined, gram whole (white), gram whole (black), gram (split), moong whole, mash whole, masur whole, red chilies, potato, onion, garlic, ginger, tomato, cauliflower, pease, turnip, radish, carrot, apple, banana, guava, and grapes. The daily price (minimum and maximum) information is provided for the key agriculture market places like Lahore, Faisalabad, Gujranwala, Okara, Sargodha, Rawalpindi, Multan, Bahawalpur, R.Y.Khan, and D.G. Khan.

MIS managed by government

MIS of Spices Board of India

(Based on Spice Board of India's website information- <http://www.indianspices.com>)

Context

Rapidly growing international trade on spices, in which India had an opportunity to position itself as one of the major players, motivated the government of India to establish a board, which could promote the industry with a favorable policy environment and support services to make it more competitive in the global market. With the efforts of the private sector and support from the government, India has been able to capture 46% of the global supply of spices and herbs, which is estimated to be around 500,000 tones with economic value around US \$1500 million every year. The Spices Board India, which is under the Ministry of Commerce, India, supports the Indian spices industry by providing services, such as marketing information, technology, product development, and policy support.

Board services and activities

The board helps Indian exporters establish linkages with importers abroad, and undertakes various activities, such as formulation and implementation of quality improvement systems, research and development programs, marketing information services, education and training to farmers, processors, exporters on post harvest handling and registration and licensing of traders and exporters. It also undertakes promotional activities on Indian spices and acts as a data bank and communication channel for importers and exporters. To help promote international trade on Indian species, the board has introduced Indian Spices Logo and the Spice House Certificate, which assure the buyers on the quality aspects of the spices.

Design and implementation of MIS services

Information collection

For providing marketing information services and allied services, the Board has collaborated with the international agencies like International Trade Centre in Geneva, United Nations Development Programme (UNDP), International Pepper Community (IPC) in Jakarta, American Spice Trade Association (ASTA), European Spice Association (ESA), All Nippon Spice Association (ANSA) in Japan, International Spice Group (ISG), Food and Agricultural Organisation (FAO), Commonwealth Secretariat (COMSEC) in London, International General Producers Association (IGPA), and United Nations Industrial Development Organisation (UNIDO). The Board participates exhibitions and consults published documents, marketing research reports, best practices cases, and websites to collect information. It has set up its web system to capture the information and facilitate trade movement as well. While undertaking other activities, the Board collects the information regarding production, marketing, processing, quality improvement, etc.

Information analysis and dissemination

On the marketing information services front, the Board provides information on various international spices events, supports Indian spices companies to participate, and collects and disseminates the latest development worldwide on the spices. It maintains and provides the prospective buyers the list of various types of spices exporters in India, such as exporters of organic spices, with spice house certificate, located in export promotion zones, with Indian spices logo, with brand names, exporters of cardamom (small), and exporters of cardamom (large). The Board has maintained a spice library, a part of which is also available on the web, where information regarding trade highlights and statistics (export trends, quantity and value of exports in major spices by year for the spices, such as peppers, cardamom, chilies, ginger, turmeric, coriander, cumin, and mint products), recipes to prepare some food items, and trade policies are provided.

To facilitate the trade on spices, the Board has developed a web based online inquiry form by which importers/buyers can inquire about the availability of the requested spices in India. The information about the interested buyers and their interest (species, quantity, quality, mode of packing, shipment schedule) is captured through the web when they make an inquiry on the system. The Board with their network contacts identifies about availability and provides a reply to the buyer with information of the potential suppliers in India. As the international market has high demand on organic certified products, the Board provides information about the process for organic spices certification as well as a list of major producers of organic spices with websites and contact addresses. The Board also provides information about the spices quality specifications for the major spices. In addition, the Board organizes a series of quality up-gradation programs to improve quality of spices at the farmers, traders and exporters levels.

Weekly average prices are provided for black pepper, cardamom (small and large), chilies, ginger, turmeric, coriander, cumin, fennel, fenugreek, garlic, clove, nutmeg, cinnamon, and cassia at its website. The website provides the prices for various domestic markets (Delhi, Cochin, Chennai, Nagarcoil, Mumbai, Guntur, Gangtok, and Vandanmettu) and international markets (New York, Saudi Arabia) for the relevant products. These prices are obtained from local market reports available in India; and the New York prices are based on the report of A. A. Sayia & Co. Inc. Hoboken. While providing the price information, grades and varieties are also specified as far as possible. The prices are provided for the week, last week, last month same week, and last year same week. For certain products, future price is also provided. For example, New York price for ginger was quoted as- future price in May 2005 to be US \$3638/ton, and the current week price (January 7, 2005), US \$3197/ton. For further information, related sites are also linked.

Agriculture MIS of Indian government- AGMARKNET

(Adapted from the AGMARKNET project's web documents- <http://www.agmarknet.nic.in>)

Context and objectives

Realizing the importance of sound agricultural marketing policies for ensuring fair returns to the farmers, government of India tried out a number of measures, such regulation of markets, grading of agricultural produce, cooperative marketing, etc. However, farmers were found not benefiting much owing to the fact that they were unable to make good marketing strategies for their products and were not getting remunerative prices. The most important factor contributing to the situation was identified as the absence of correct and timely market information regarding the agricultural products. The market information provided by the states, union territories, and their concerned offices was not sufficient and timely. To address this void, the government of India started a Central Sector Scheme "Agricultural Marketing Information System Network" with the following objectives. Directorate of Marketing and Inspection (DMI) under Department of Agriculture and Cooperation implements the scheme and manages MIS network.

- Establish a nation-wide information network for speedy collection and dissemination of market information and data for its efficient utilization;
- Facilitate collection and dissemination of information to support to realize better prices of their products, which would cover: a) market related information, such as market fee, market charges, costs, method of sale, payment, handling, market functionaries, development programs, market laws, dispute settlement mechanism, composition of market committees, and income and expenditure; b) price-related information, such as minimum, maximum and model prices of varieties and qualities transacted, total arrivals and dispatches with destination, and marketing costs and margins; c) infrastructure related information comprising facilities and services available to the farmers with regard to storage and warehousing, cold storage, direct markets, grading, and re-handling and repacking; and d) promotion related information covering accepted standards and grades, labeling, sanitary and phytosanitary requirements, pledge finance, marketing credit, and new opportunities available in respect of better marketing;
- Sensitize and orient farmers to respond to new challenges in agricultural marketing by using information and communication technologies (ICT) as a vehicle of extension;

- Improve efficiency in agricultural marketing through regular training and extension for region-specific farmers in their own language;
- Provide assistance for marketing research to generate marketing information for its dissemination to farmers and other marketing functionaries at grassroots level to create an ambience of good marketing practices in the country.

Information system design

Product focus, market coverage, and information

The marketing information system of the government monitors prices and arrivals of the following prioritized commodities in the major wholesale markets.

- Cereals (wheat, maize, paddy, rice, and jowar) - *Group 1*
- Pulses (Bengal gram, red gram, green gram, and black gram) – *Group 2*
- Spices (ginger, garlic, and chilies (red))- *Group 3*
- Fruits (mango, apple, orange, banana, pineapple, and grapes) – *Group 4*
- Vegetables (onion and potato) – *Group 5*
- Fibers (cotton and jute) – *Group 6*
- Oilseeds (groundnut, mustard, soybean, sunflower, and sesame) – *Group 7*

Wholesale Markets, however, can collect other information and use the system software for their own use and analysis. The Directorate of Marketing and Inspection (DMI) has prioritized about 1263 wholesale markets, 48 State Agricultural Marketing Boards and Directorates, and 27 DMI offices to implement AGMARKNET Scheme. Further expansion to additional markets, regional portals, and GIS based systems has been approved and is underway.

Installation of the system

As the figure below shows, the marketing information system scheme is installed at agricultural produce wholesale markets, and State Agricultural Marketing Departments/Boards by Directorate of Marketing and Inspection (DMI). National Informatics Centre (NIC), specialized organization of Indian government for information technologies, has taken the responsibilities to procure, install and maintain the hardware, software, and connectivity, impart training to computer operators, and implement a customized application software in the identified AGMARKNET nodes (wholesale markets) and State Agricultural Marketing Departments/Boards. The system nodes from wholesale markets to DMI headquarters are equipped with required hardware (including VSAT and LAN technologies) and software (operating system, office productivity tools, and application software) at both server and client ends.

The application software, “AGMARK-National Level”, has been developed and installed at DMI headquarters which facilitates the daily downloading of market information on prices and arrivals for generating analytical reports. At each AGMARKNET nodes, application software – “AGMARK”, has been installed to facilitate the daily flow of market information on prices and arrivals. Each identified wholesale market is linked to the network of NIC (NICNET). The comprehensive information on prices and arrivals and other related aspects is being maintained at AGMARKNET central database for generating various analytical reports. Necessary interface, using the local language support, for transmitting the daily data has been developed and customized at AGMARKNET nodes.

All AGMARKNET nodes in wholesale markets enter the data, in the prescribed format, using the customized application software "AGMARK". Wholesale markets provide complete details of the commodities transacted with respect to their varieties, grades, and places of origin. The information is passed on to the respective State Marketing Boards/ Directorates and DMI Headquarters for updating in the AGMARKNET server. The software facilitates transmission of daily prices (minimum, maximum, modal). The daily price information is available by commodity, variety, origin, and grade. In addition, arrivals data are available by commodity. The software also facilitates time series analysis of data at the wholesale market, state and national levels.

Information sharing and dissemination

Since the concerned Agricultural Marketing Departments and Marketing Boards are required to implement the market information system at the state level, while DMI is responsible for at the national level. Market portals at appropriate levels were felt necessary, and portals at 3 levels (center, state, and wholesale market) were developed to facilitate information dissemination (see figure below). A national database on prices and arrivals as well as a portal on market information have been developed and maintained at DMI headquarters in Faridabad. Daily transaction information and analytical reports (*commodity-wise, variety-wise, grade-wise and place of origin-wise*) are generated and disseminated. The national portal has linkages with other portals at the states and wholesale markets to disseminate commodity price and arrival information and other agriculture marketing related resource materials.

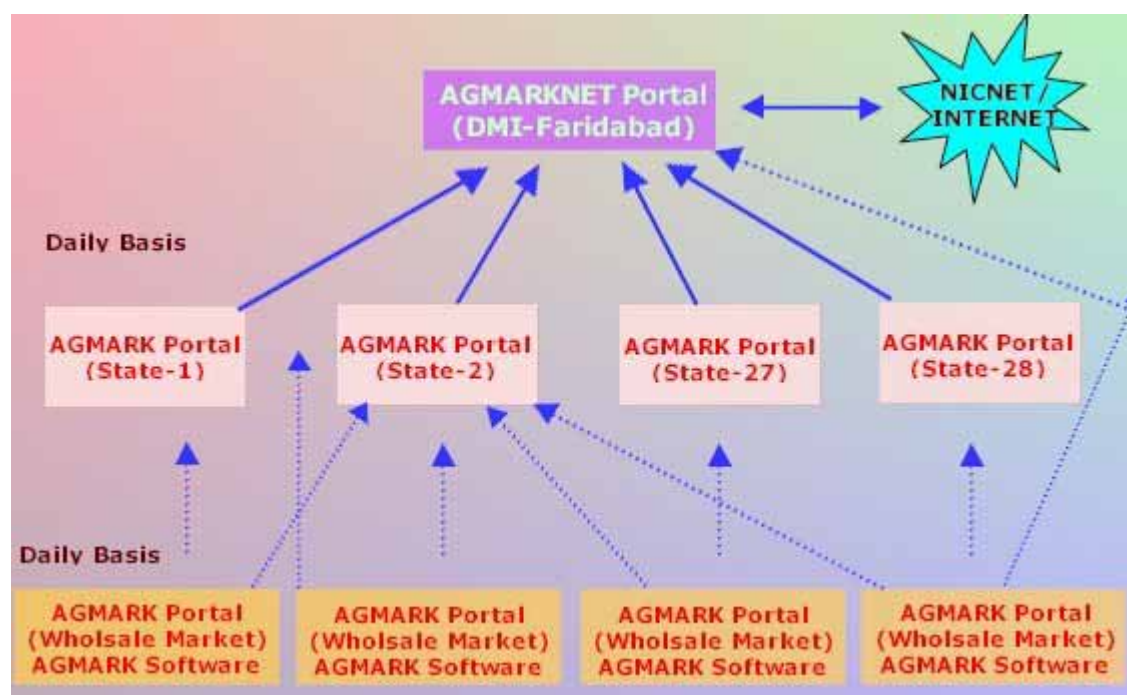


Fig 3. Marketing information flows and information portals on GMARKNET network (sourced from <http://www.agmarknet.nic.in>)

With the linkages of the system with the all levels of responsible agriculture offices (wholesale market to center), it has supported to compile and analyze information at the required level. As the central level database and portal can be accessed through intranet and internet, the organizations involved in agriculture support programs and marketing support

activities can access the required information. At the same time, the system provides required information to State Agricultural Market Boards and Directorates, who ensure proper planning and development of agricultural marketing at the state level. The marketing information as appropriate is also provided to the policy makers at state and center governments. Agriculture offices also disseminate the marketing information through displaying the prices prevailing in the markets on the notice boards and broadcasting through All-India Radio.

DMI maintains a close liaison between the central and state governments through its regional offices and sub-offices spread all over the country. It has a *network of 22 regional Agmark Laboratories* with its *Central Agmark Laboratory at Nagpur*. The laboratories support to a) standardization, grading and quality control of agricultural and allied produce; b) market research and surveys; c) technical support in regulation planning and designing of physical markets; d) training of personnel in agricultural marketing in the country; e) promotion of cold storages; and f) marketing extension, consumer education. The information generated from the laboratories is shared with the various agriculture offices, development organizations, and the government agencies, who further share the information with farmers, entrepreneurs, and concerned organizations.

Results

The availability of prompt and reliable information to the various agriculture offices, policy makers, entrepreneurs, and farmers is one of important achievements. The information related to the agriculture market scenario, product quantity arrivals, and prices quoted for different commodities has empowered the farmers and entrepreneurs, and improved their decision making capability. With this, their bargaining power has increased. It is believed that the other agriculture information, such as production, post harvest, processing, and marketing, has contributed to improve the agriculture practices and strengthened the agricultural sector of India.

The benefit of ICT enabled system is that it has supported to collect, store, and analyze a large amount of data with more accuracy within short period of time. The system is also able to disseminate information to any distance with the help of communication devices for the benefit of farmers, traders, and consumers. It is assumed that the traders and entrepreneurs have also benefited from reduced communication costs in their product procurement process. It is hoped that the modernization of market information system will lead to efficiency in the markets and will contribute to increase participation and incomes of the farmers.

Fertilizer MIS of Ministry of Agriculture, Bangladesh

(Adapted from the web documents of Market Monitoring and Information Systems of Ministry of Agriculture, Bangladesh- <http://www.fadinap.org/Bangladesh/about.htm>)

Before privatization of fertilizer distribution, Bangladesh Agricultural Development Corporation (BADC) was the sole distributor, and the government had all the information related to the fertilizer distribution. To make the agriculture input supply more efficient and market oriented, the fertilizer distribution was prioritized in 1999. After the privatization of the fertilizer distribution, the government felt need of a marketing information system so that it could effectively monitor the distribution system and ensure transparency in fertilizer marketing. A marketing information system was developed through a Distribution

Improvement project to measure the impact of the policy changes and manage fertilizer sector. The report says the MIS project helped ensure transparency in fertilizer marketing, and provided policy makers with better and timely information to support in policy making.

However, after the completion of the project, no information regarding fertilizer distribution was available to the policy makers and entrepreneurs from July 1994 to March 1995. Lack of marketing information system was identified as the main reason behind the fertilizer crisis in 1994 and 1995. Realizing the need of marketing information, the government set up a Market Monitoring and Information System (MMIS) within Ministry of Agriculture in 1995 to collect and provide the marketing information on fertilizer to the policy makers and entrepreneurs. The information needs were prioritized and they included a) demand and availability of fertilizer at the national and local levels; b) fertilizer use at the farm-level; c) competitiveness of the market place at the wholesale and retail levels; d) equity of access to fertilizer, including adequacy of service to remote areas; e) use and repayment of credit; and f) evidence of product adulteration.

In the beginning, the MMIS monitored only fertilizer prices and availability. From 1999, it started producing daily, weekly, monthly reports on fertilizers based on the information collected through other agencies. The fertilizer related information is collected from farmers, importers, wholesalers, distributors, government agencies, and public banks on daily, fortnightly and monthly basis. In addition, information is also collected from large scale users and producers on a regular basis. Detailed information is collected for Urea, Phosphatic fertilizer, and Potash.

The monthly report provides information on the current fertilizer production, consumption, stock situation in Bangladesh, and fertilizer statistics, such as national and international fertilizer prices. Annual report provides information on the demand, production, importation, distribution, and current stock levels of various fertilizers in Bangladesh. The yearly report also provides fertilizer retail prices, availability, and accessibility of farmers. The price information includes current fertilizer prices along with historical price levels, distributor/dealer margins, and supplies and output prices. In addition, fertilizer statistics including international fertilizer prices are also included in the annual report. The reports and other information on the fertilizers are provided to the local and foreign user organizations.

Empowered with the information, the monitoring cell coordinates the fertilizer related activities with the relevant organizations, and assists the government to develop and implement the fertilizer policies.

Lessons and conclusion

Every marketing information system has clearly identified key target audience(s) for the information. The information needs are the basis of marketing information design in every case. As its key objective is to assist the target users to make appropriate marketing decisions and facilitate the marketing activities, the marketing information needs range from regular price and demand information to new markets and product development opportunities. Though most of marketing information systems monitor and disseminate market prices for target products, the roles of other information, such as post harvest and processing technologies, new markets and buyers, requirements of the buyers and quality control, best practices in production, and policy issues, are found immense in contributing to the enterprise development and improved marketing of agriculture products. To address the information needs, the marketing information systems have regular market monitoring mechanisms for price and demand as well as have systems to collect and disseminate more descriptive types of value chain improvement and marketing capacity building information.

The cases show that marketing information systems help increase awareness and capacity of farmer communities in agriculture and NTFP production, harvesting, and marketing. Marketing information systems have been found effective to increase the bargaining capacity of the locals by letting them know the alternative markets and price differences. Thus, they have contributed to the profit margins of the farmers as well.

Though the central level or large scale marketing information systems help increase the marketing capacity of the local people, the role of MIS at local (district or enterprise and marketing group level) can not be overlooked. The central level MIS is useful for providing information on different markets and buyers, market trends, new technologies and best practices, etc., which is very useful for enterprise develop and marketing planning. It, thus, helps improve the production, processing, and quality control, as well as increase the bargaining power of the local farmers and traders. The local level MIS is found important for actually supporting in marketing of the products to the target buyers. As every market participant (trader, processor and collector) is an important player in agriculture marketing system, based on their capacity, each has a kind of own information system and own ways of using the available marketing information.

The study shows that supply side information is generally less covered by the marketing information systems, especially those related to NTFPs. It is however found important to provide information on availability of agriculture products and NTFPs (potential production capacity, quantity available, quality, and price) in different production areas. This type of information is useful for entrepreneurs to establish new enterprises and also to develop the existing ones. The supply side information can attract more entrepreneurs and traders, and can create competitive environment to benefit the farmer communities.

The key components of marketing information system include information collection, analysis, and dissemination. The most of marketing information systems have used multiple sources of information, range of analysis, and various media to disseminate information. Information is found collected directly or indirectly from the value chain participants as well as from internal records of various organizations and published documents. Most of the marketing information systems have established linkages with other organizations and have subscribed journal, newspapers, website, etc. to collect information. Most of the systems have developed database to be able to systematically store and analyze the data to generate

required marketing information. Most of them have prepared tables (for price and quantity in terms of minimum, maximum, mode, average, etc.), charts (histogram, pie, trend line, etc.) directory (profile of buyers and products), cases (best practices and lesson learned), brochure (technology, farming and post harvest techniques), and other statistics to present the information to the users.

Large scale marketing information systems have developed sophisticated database and heavily used information and communication technologies to collect, analyze and disseminate the information. The options chosen are invariably in line with the information needs of the prime users and their information use behaviours and accessibility. The case of e-Choupals shows, with careful planning, the marketing information system can even change the information use behaviour of the farmers. MIS can also help develop different type of marketing channels with increased market transparency. In general, there is a growing trend of using information and communication technologies (ICT) to strengthen the marketing information systems hosted by many organizations, such as government, agriculture companies, and service providers. The email and web based dissemination is found appropriate and cost effective, if communication infrastructure is strong, there are a large number of users distributed in many places, and users are used to internet/emails. The collaboration with the organizations, associations, government agencies working with farmers has been found one of the important strategies of disseminating marketing information to a large number of farmers from a large scale marketing information system.

It is found that responsibility centres and procedures are identified for marketing information systems to support collection, analysis and dissemination. However, the roles of informal networking and information sharing events, though some have opportunities to improve with careful planning and supportive environment, are found important. Many development and business organizations and almost all marketing information systems have face-to-face or interactive mode of collecting, analyzing and sharing information. For this purpose, marketing information systems organize or participate meetings, training, workshops, trade shows, market visits, and other events. This mode is found useful, especially with the farmers, to share variety of marketing issues, generate new ideas, build consensus, and develop capacity of stakeholders for marketing purpose. Many of the organizations, entrepreneurs, and farmers gain marketing knowledge and insight in such ways.

The study shows that when it is a part of their business strategies, private companies can also run marketing information system benefiting poor farmers, which can have high chance of becoming successful and sustainable. If the information to the poor is considered a public good, then government funds to the marketing information system no matter who runs can be an appropriate way to sustain the marketing information system which services the poor farmers. However, the information quality and usefulness to the users needs to be continuously assessed and improved with the changing market conditions. Besides, member based organizations are also found appropriate to operate an MIS because in exchange of membership fee and their support, if they have to be given back something, then the marketing information is amongst the most important. Associations of entrepreneurs and traders generally provide marketing information to their members, often times providing opportunities to interact with each other to share information. However, if it is a farmers' organization, the membership fee can not be raised too high to cover the MIS costs because generally the grassroots users may not be ready to pay high fee for this purpose.

Except for the privately run MIS for their own business purpose, the funding for MIS activities has been always a challenge. Development projects assisted MIS targeting to grassroots communities are mostly supported with the project funds. However, some ways of recovering costs tried by some marketing information systems for a large audience include membership fee, specialized information access fee, price for market research and customized services, sales of publications, advertisements on publications and websites, sponsorship of events, commission on sales through the system, funds from government, and cost sharing among development organizations and users.

Recovering the costs for a large scale MIS from the ultimate target users (farmers and small village based entrepreneurs), seems still difficult. If a direct charge to the use of the information is tried out, only the big traders and entrepreneurs who are situated in accessible places and have relatively good share of agriculture and NTFP business margins can partially be ready to contribute to, but not much and may be on the condition that the information is not further shared down the line without charging the price to the users. Since the prime targets of the development projects and government agencies are the grassroots communities and village based entrepreneurs, it is always difficult to fund it through the information users. Many believe that the information including marketing information flow to the grassroots communities should be the public goods. If it is tried to make private good, exclusive to those who can afford, then it will do more harm than good to the farmer communities, who have been always sidelined and are not able to take much benefit from the development process of the countries. Nevertheless, marketing information system needs to be sustainable to continuously provide its benefits to its users; and for this, funds are required. Ways of reducing the costs of marketing information systems should be explored so that it can be cost effective and sustainable. The cost of MIS can be reduced if the options, such as building the MIS on the existing system of information flow, selection of the appropriate organizations for MIS roles, and partnership with various organizations for information dissemination, can be fully utilized.

Besides the MIS of private companies who disclose prices and other information as an offer to the suppliers, the marketing information provided by MIS projects is just an indicative price for the given time. Often times, farmers, local entrepreneurs, and local traders have raised questions on accuracy and reliability of the information. The time lag between information collection and information reach to the users has also become an important challenge for MIS manager (especially for price and demand data). If information collection and dissemination did not take money, best bait would be to have as frequent as possible and as much information as possible. Except for online and proprietary MIS system of private companies, which often have content and outreach constraints to remote villages, time lag and frequency of information update has always been an issue, particularly for those serving the rural communities. Web-based information sharing has immense role in shorting the time between information collection and reaching the users, this however needs strong communication infrastructure, training and education program, and support services.

When marketing information as well as technical assistance is combined to build the capacity of farmers and entrepreneurs, the farmers have been found benefiting more. The marketing information systems have, one way or the other, linkages with development organizations and government agencies, or the development agencies are given access to the information when the purpose of the marketing information system is to strengthen the marketing decision making of the communities. However, marketing information systems have always faced

challenges of reaching out to grassroots communities, timely delivery of information in remote locations, and providing more analytical and value adding contents. The marketing information system, especially when price information is targeted to remote poor farmers, sometimes also face criticisms from the traders who can otherwise benefit from blocking the information to the farmers. Nevertheless, marketing information system always has to weigh the costs and benefits; and it has to make difficult decisions on what contents to include, what markets to cover, what products to prioritize, how often to collect and disseminate information, what level of market analysis to executive, and most importantly whom to target and how to timely reach the target groups with useful information to them.

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