

INNOVATIVE APPROACHES OF KNOWLEDGE MANAGEMENT IN AGRICULTURE: CASE OF IPMS- ETHIOPIA

Fanos Mekonnen¹, Ermias Sehai² and Dirk Hoekstra¹

ABSTRACT

The delivery of extension services in the contemporary environment of developing countries requires innovative and inter-related approaches of knowledge management, skills development and partner linkages. Improving Productivity and Market Success (IPMS) of Ethiopian farmers project has been testing different tools and processes that give emphasis on market demand, knowledge sharing, capacity development and public-private partnership for improving the extension service delivery in 10 pilot districts of four regional states of the country. This paper explains the IPMS approaches, methods and processes used for effective knowledge management and skills development activities during implementation of commodity value chain based development intervention. The lessons learned provide valuable information for scaling up to other areas with similar potential for market-oriented agricultural development.

The IPMS project followed systematic and step-wise approaches of knowledge management and capacity development by support of various ICT and non ICT tools that facilitated multidirectional knowledge flows, empowerment of practitioners and linkage creation to improve productivity, profitability and sustainability of market oriented agricultural development. Major tools and processes that brought the intervention to fruition include; establishment of agricultural knowledge centers for up to date and relevant information resource delivery, enhancement of program delivery and technical skills through participatory training; establishing partnership with various stakeholders and institutions at all levels; and developing a web based platform, Ethiopian agriculture portal www.eap.gov.et, for availing agricultural resources relevant to Ethiopian agriculture. A lesson from IPMS on implementing the above components include; the need for an overall understanding of knowledge as a critical input to agricultural development being internalized among program implementers at all levels; and importance in building capacity of actors, not only to have implementers but also to have those who forge linkages, identify needs and manage partnership processes.

Key words: Capacity development, Knowledge management, market oriented agriculture, partnership linkage

¹ Fanos Mekonnen F.mekonnen@cgiar.org, International Livestock Research Institute (ILRI), Addis Abeba, Ethiopia

¹Dirk Hoekstra d.hoekstra@cgiar.org , International Livestock Research Institute (ILRI), Addis Abeba, Ethiopia

² Ermias Sehai, e.sehai@gmail.com , Private consultant, Addis Abeba, Ethiopia

BACKGROUND

It is crucial for smallholder farmers and pastoralist to access and use relevant information and knowledge in order to adapt and respond successfully to changing opportunities and challenges in a market oriented development environment. The delivery of extension services in such contemporary environment requires innovative and inter-related approaches of knowledge management and capacity development.

In Ethiopia, knowledge management (KM) happens often person to person. Few past efforts such as the WoredaNet initiative by the Government of Ethiopia to facilitate knowledge sharing was not as successful because IT based KM is still in its infancy stage. Also, in Ethiopia, little or no attention is provided to knowledge generation and sharing mechanisms and approaches. This leads to the importance of having a system for knowledge sharing and learning among all stakeholders involved in the country's agricultural sector. Identifying this gap, IPMS introduced agricultural knowledge management system in areas the project operates to enable institutions, practitioners, farmers and pastoralists to innovate and/or adopt appropriate technologies from research and development institutions for improved efficiency and increased output. Agricultural knowledge management is a rather new concept in Ethiopia with only few projects trying out the approaches and extracting lessons.

Knowledge management closely links with capacity development in that certain sets of skills (technical, managerial) are required to implement interventions in the most fruitful way. Though capacity development is an age old tool for agricultural extension in Ethiopia, the importance of linking it with KM and designing such training in an innovative way that enables two way knowledge flow is a recent experience. Both KM and capacity development takes place in a complex social, political and economical environment. Issues of procedures, structures, participation, power relations, and culture needs to be carefully addressed for successful impact of development interventions in areas of KM, CD or others matter fact. This entails for strategic collaboration and linkage among different stakeholders at different levels.

This paper looks into KM experiences and lessons of a Canadian International Development Aid funded development project in Ethiopia, Improving Productivity and market Success (IPMS) from 2005- 2012. This project was implemented by International Livestock Research Institute in Ethiopia. Process and approaches used in KM and capacity development and KM good practices that support transformation of subsistence agriculture system into market oriented agricultural development are discussed here.

METHODOLOGY: THEOROTICAL APPROACH

Organizational knowledge creation is the process of making available and amplifying knowledge created by individuals as well as crystallizing and connecting it to an organization's knowledge system (Nonaka and Krogh, 2009). In organizational knowledge creation theory, there are two fundamental knowledge management approaches. The 'Tacit knowledge' refers to the kinds of knowledge that individuals in an organization possess. It cannot be transferred by writing or verbalizing. Tacit knowledge is all about unarticulated knowledge tied to beliefs, ideals, values, senses and mental mode of an individual (ibid). By contrast, 'Explicit knowledge' refers to articulated knowledge that could be coded and stored in a certain media in an organization. Knowledge management systems and practices of an organization need to have the combination of both approaches that enables it to realize its KM objectives (Sanchez, 2000). An organization affiliated to any of the worldly disciplines, needs a systematic approach like Knowledge Management to create, synthesizes, shares and apply knowledge in such a way that the organization leverages the ultimate impact of its activity, which is increased capacity and efficiency. This calls for pragmatic knowledge management system to integrate technology, knowledge and activities at every phase (Thamhain 2004). Knowledge Management System (KMS) refers to a class of information systems applied to managing organizational knowledge, both tacit and explicit knowledge. IT-based systems play a major role in supporting and enhancing the organizational processes of knowledge creation, storage/ retrieval, transfer, and application in KMS. However, knowledge management uses other non-IT tools as well (Alavi and Leinder 2001).

Knowledge management is a process that involves various activities and thus needs to have a systematic framework that captures the processes at different levels and convert information into relevant knowledge that enables one achieve a certain objective (Hovland 2003). The most commonly used framework for knowledge management process consists four sets of knowledge processes: i) creation also referred as capturing, ii) storage or retrieval ii) transfer and iv) application (Holzner and Marx 1979; Pentland 1995 in Alavi and Leinder 2001).

Capacity is the ability of people, organizations and society as a whole to manage their affairs successfully (Govent 2005). Very often capacity development programs are holistically considered as training and technical assistance activities (Pradhan 2010). Looking at it more in detail; capacity development is all about supplying additional physical resources, improving organizational and technical capabilities of an organization, setting up clear strategic directions, providing opportunities for learning and experimentation, strengthening bigger organizational learning, shaping an enabling environment and creating better performance incentives (Morgan 1998). Any capacity development activity involves the coming together of individual, group(s), organizational and institutional behaviors at different levels, which calls for better and organized systems.

Challenges and advantages of KM are naturally related to that of organizational learning or capacity development (Hovland 2003). KM applications such as skills development, staff

competencies, learning, teaching, training all overlap with capacity development and follow similar processes although the expected outcomes differ.

Method

Various project documentations on knowledge management, capacity development, and project monitoring and evaluation reports both at headquarters and sites were consulted to compile this paper.

DISCUSSION

Of the objectives of IPMS, managing its organizational knowledge meant availing and amplifying knowledge created by project partners and staff at all levels as well as crystallizing and connecting tacit knowledge with explicit knowledge in such a way that it magnifies the development endeavor.

The KM system of IPMS considered increased awareness and understanding of knowledge requirements for managing the priority commodities of the farming systems; increased access to appropriate technologies by target groups; establishment of a National Agricultural Information Resource Center (NARIC) and deployment of ICT infrastructure to support the KM activities and make them functional. The expected output of the overall KM intervention at startup phase was development of a sustainable knowledge management system that makes use of advanced technologies to capture, synthesize, store and share knowledge.

Tools and means

For someone who wishes to capture, store or share or knowledge, tools are often necessary to enable the process. However, this does not always mean explicit tools but the practical. For explicit knowledge, more and more information and communication tools are available, such as the Internet, search tools, databases, expert locators, workflow systems, etc. IPMS have managed to use some of these for its project management and internal communication as well as to reach wider audiences depending on the context, capacity and efficiency of the tool to reach the targets. The tools, through which data, information, and knowledge were transferred and transformed from one state to another are categorized into three KM processes in IPMS;

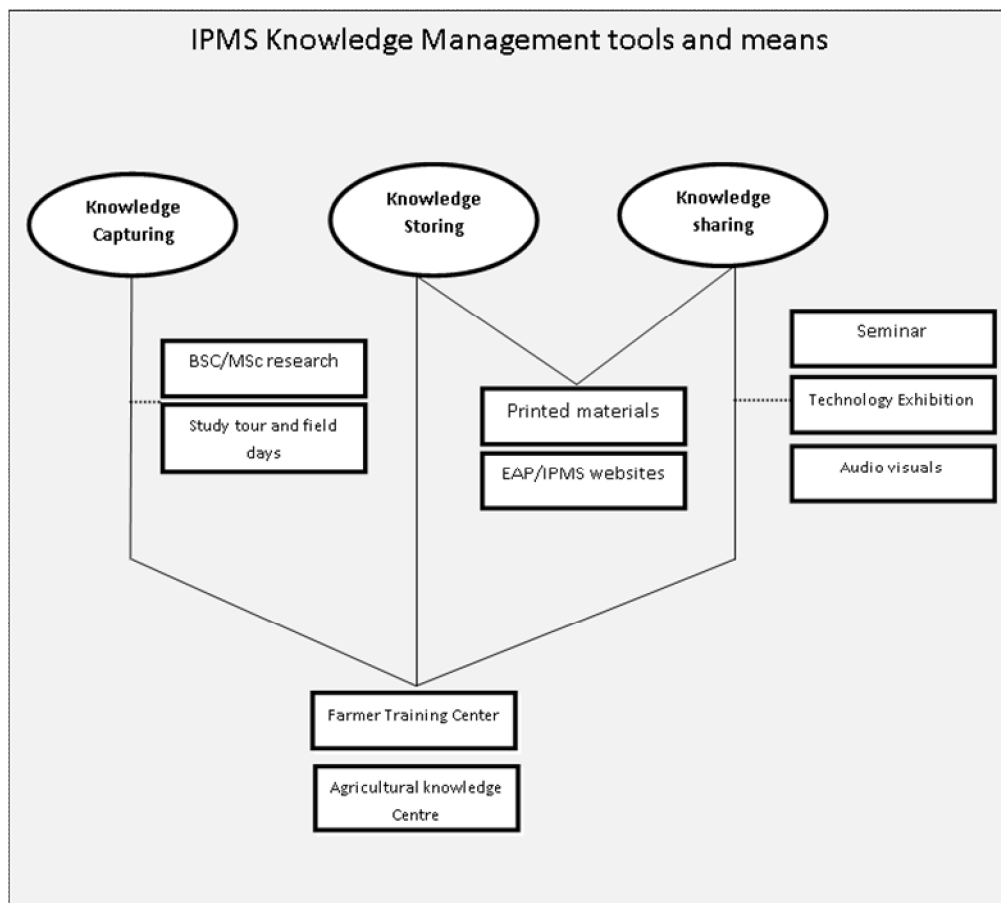


Figure 1- IPMS Knowledge management tools and means

Knowledge Capturing: This comprises activities associated with the entry of new knowledge into a system, and includes knowledge development, discovery and capture (Newman and Conrad, 1999). Tools identified for capturing knowledge by IPMS are: research by Bachelors and Masters Students; field days, technology exhibitions and study tours at different levels; and setting up knowledge centers where experts and development agents acquire knowledge and information in different formats- books, CDs, DVDs, internet and the like.

Research by graduate students proved to be more relevant and practical solutions-oriented in a context especially when institutions, employees and intended research output users are involved in the processors. The importance of designing mechanisms and processes for facilitating research priority setting, implementation, quality supervision and knowledge sharing were found out to be equally important aspects as that of the actual research itself.

Study tours, and field days are age old tools of KM. They are both for knowledge capturing and sharing. These tools enable participants to learn about new technologies, practices, and get inspiration from others experiences by giving them opportunities to evaluate their own journey, challenge their thinking, create new ideas, and benefit from such reflections. It also provides opportunities to network with like-minded individuals who are also engaged in endeavors they

are trying to adapt.

Farmer Training Centers (FTC) and Agricultural Knowledge Centers (AKC) are other means used to capture knowledge and also to store and share knowledge and thus will be addressed in latter sections.

Knowledge Storing: includes all activities that preserve knowledge and allow it to remain in the system once introduced (Newman and Conrad, 1999). The IPMS project followed an approach of plan, implement, learn, modify in doing many of its KM interventions, including the development of the Ethiopian Agriculture Portal (www.eap.gov.et). This approach has been beneficial to get things moving quickly. The Project and the Ministry of Agriculture collaborated in developing the Ethiopian Agriculture Portal after realizing the challenge and impact of not having easier access to up-to-date documents on good practices, research outputs, and capacity development resources for the market oriented agricultural development. The portal avails documents on agricultural commodities important to Ethiopia. Other useful online resources, capacity building materials, good practices repository, and useful links on the Internet are also accessible from the portal. Many documents currently available on the portal were heretofore only available in hard copies and even then in very limited distributions. Links to websites of stakeholders in Ethiopian agriculture, including national & international agricultural research centers, national agricultural universities, and agriculture sector projects currently being implemented in the country and other Ministry of Agriculture affiliated web sites are available on the portal.

In addition to the Ethiopian Agriculture Portal, IPMS also had its own website www.ipms-ethiopia.org where all project documentations are stored and shared. Working papers, training manuals and case studies, wikis are other tools and means of the projects knowledge storing and sharing mechanism

Knowledge Sharing: refers to activities associated with the flow of knowledge from one party to another. This includes communication, translation, conversion, filtering and rendering. Agricultural knowledge centers (AKC) were used as tools for building a culture of informal knowledge sharing among extension staff. They also served as places for knowledge capturing and knowledge storing. Methods used to make the AKC functional include; hosting seminars by experts from the regional agricultural research institution on new technologies/systems in agriculture development; knowledge sharing platform after a certain visit in or outside of the organization; as a place of brainstorming and reflection on the agricultural practices; a place to re-play recorded sessions of seminars, field visits and other activities in the local area. IPMS designed an AKC in such a way that it provides only the basic necessities and not what a full service traditional or digital library normally provides. The intent was to establish a venue that brings tools, approaches, and processes that can help improve agricultural extension service delivery at grass root level and to fill the gap in opportunities for access to information sources.

Participatory Agricultural Radio Series, a six week radio series on value chain development of a certain commodity, is another intervention tool IPMS used. Series of radio programs on value

chain development were prepared in local languages for couple of the project sites in collaboration with Farm Radio International. Results of these radio programs showed significance increase in awareness and knowledge of the content of the program transmitted by those who followed the series as compared to those who did not. The radio programs were also found to be more engaging as compared to others prepared at national level, as the former had farmers who took part in the program content preparation and delivery. This inspired other farmers to try out the value chain approaches that were transmitted on the radio series.

Capacity development

In IPMS, the capacity to innovate by value chain actors was identified as a key factor for a participatory smallholder market oriented agricultural development. The project therefore focused on strengthening innovation capacity of farmers, pastoralists, community-based and private sector organizations, and agriculture and natural resource management public organizations, through technical and entrepreneurial skills development and, facilitating linkages between relevant actors. In the mean time, through the use of the KM tools, the project facilitated the development of skills and capacity of the service providers through formal support for in country Masters and Bachelors degree training.

Farmer Training Center (FTC)-based modular farmer training is an emerging model that has been introduced by the Ethiopian Ministry of Agriculture to enhance the public agriculture extension system. The IPMS project felt that strengthening and enhancing the capacity of FTC-based training and knowledge services is important to leverage and optimize the potential contribution of FTCs to market-led and knowledge-based development of smallholder agriculture. Accordingly, IPMS project selected 40 FTCs in the 10 project sites and carried out targeted interventions in various knowledge management and capacity building areas. To increase access to knowledge, create conducive environment to share knowledge, and to encourage farmers to experiment, test and develop new knowledge in the FTCs, IPMS carried out various KM and capacity building interventions such as; strengthening capacity of development agents through formal in-service training and involving DAs in knowledge sharing and learning events such as study tours, participation in commodity platform, etc; equipped selected FTCs with computers, printers, audio-visual equipment (TV sets and DVD players), training and extension materials (printed publications as well as audio and video based materials), and telephone and Internet connections. FTCs received financial support for irrigation equipment, demonstration materials and utilities. They were provided with technical assistance and linkage facilitation service.

SUMMARY

Major lesson from IPMS is that there is a need for an overall understanding of knowledge as a critical input to agricultural development. This needs to be internalized among program implementers at all levels; importance in building capacity of actors, not only to have implementers but also to have those who forge linkages, identify needs and manage partnership processes.

In addition, judging from the IPMS experience, it is crucial that KM strategies are coupled with capacity development strategies of a program for an efficient and sustainable impact.

REFERENCES

- Alavi, M., Leinder, D.E. 2001. Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues. *MIS Quarterly*, Vol. 25, No. 1. pp. 107-136. <http://links.jstor.org/sici?sici=0276-7783%28200103%2925%3A1%3C107%3ARKMAKM%3E2.0.CO%3B2-H>
- Ermias S. 2011. Selected Good Practices in Agricultural Knowledge Management. IPMS. ILRI.
- Hovland, I. 2003. Knowledge Management and Organisational Learning: An International Development Perspective An Annotated Bibliography. ODI.UK
- Morgan,P.1998. Capacity and capacity development- some strategies. Policy Branch, CIDA.
- Newman,B., Conrad,K.W. 1999. A Framework for Characterizing Knowledge Management Methods, Practices, and Technologies. George Washington University Course EMGT 298.T1, Spring 1999.
- Nonka,I., Krogh, G. 2009. Tacit Knowledge and Knowledge Conversion: Controversy and Advancement in Organizational Knowledge Creation Theory. *Organization Science*. Vol. 20. No. 3. pp 635-652.
- Sanjay, P. 2010. Catalyzing collective capacity for change: Ten points for a new operational approach to capacity development. Capacity development Briefs. World Bank Institute.
- Sanchez, R. 2000. "Tacit Knowledge" versus "Explicit Knowledge" *Approaches to Knowledge Management Practice*.
<http://www.knowledgeboard.com/download/3512/Tacit-vs-Explicit.pdf>
- Tesfaye L., Ermias S, 2011. Knowledge Centers in the Pilot Learning Woredas of Improving Productivity and Market Success Project: Utilization, Relevance and Effectiveness. IPMS. ILRI
- Tsfaye L. 2011. Status and Capacity of Farmer Training Centers (FTCs) in the Improving Productivity and Market Success (IPMS) Pilot Learning Woredas (PLWs). ILRI
- Thamhain, H. J. (2004). Linkages of project environment to performance: Lessons for team leadership. *International Journal of Project Management*, 22(7), 533-544.