

Knowledge Management in Ethiopian Agriculture

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This paper covers the following general topics in and around knowledge management.

1. Knowledge and Knowledge management
2. A rationale for agricultural knowledge management in Ethiopia
3. A suggested approach in knowledge management implementation, and
4. Some notes on IPMS activities in knowledge management area.

Knowledge Management in Ethiopian Agricultural

Agriculture is the dominant sector of Ethiopian economy and the largest source of foreign exchange earner. Therefore, the development of Ethiopian agriculture will have direct impact on the overall development of the country. This paper will attempt to make the case that establishing a conducive and systematic environment for active leveraging of the collective knowledge of agricultural stakeholders in Ethiopia will play a vital role in the country's agricultural development.

Knowledge and knowledge management

Knowledge and the proper application of it have emerged as the differentiating factors among organizations (and indeed among countries) competing in world markets. In the context of this paper, **knowledge** is defined as the combination of data and information, to which is added expert opinion, skills and experience. The result of knowing something is to have an actionable understanding.

Knowledge may be explicit (codifiable) or tacit (intuition, experience, know-how). It can also be possessed individually and/or collectively.

Knowledge management can be defined as a systematic discipline of policies, processes, and activities which empower organizations to apply knowledge to improve effectiveness, innovation, and quality¹.

Obviously, a knowledge management system is not meant to “manage” knowledge in people's heads. It is rather a discipline that creates an enabling environment to foster better knowledge and experience sharing so that organizations can leverage their collective knowledge. It thus focuses on how organizations identify, capture, share, create, and use knowledge.

¹ Footnote 2

The most common misconception about knowledge management is the confusion between information management and knowledge management. Simply put, knowledge management may include information management tasks but information management without explicit and targeted harvesting of the lessons and the accompanied human interaction and knowledge sharing is not knowledge management.

Another common misconception is the inadvertent or intentional labeling of ICT initiatives as knowledge management initiatives. While information and communication technologies (ICT) are important enablers for implementing knowledge management, ICT remains a means to an end and not the end product of a knowledge management initiative. Many knowledge management activities actually involve connections among individuals and/or groups and do not involve ICT tools.

Now returning to the main focus of this paper, what is the relevance of knowledge management in Ethiopian agriculture?

Ethiopian agriculture in the knowledge age

It is safe to say that research outputs and agricultural development models proven effective in Ethiopia and elsewhere often never reach most of the farmers who can benefit from them. Partly as a result of this disconnect; most farmers and pastoralists produce using methods and means of production that haven't changed much in ages.

Access to information on prevailing market conditions is hard to come by for most of our farmers. Even at market days, most producers don't have a good indication of the going rate for their produce at bigger markets not far from them. On top of this, globalization is intensifying competition in all commodities – affecting markets for both domestic and export commodities. The prospect is that this phenomenon will only get more intense, making those unprepared to face it more and more disadvantaged. In short, knowledge on agricultural production and marketing is key to the sustained development of the sector.

On the other hand, Ethiopia has diverse agro-ecological conditions suitable for a broad spectrum of agricultural development endeavors. It has unexploited indigenous knowledge and other indigenous resources with attractive potential returns in domestic and international markets. Often, there is also expertise and knowledge (domestic and international) that can help solve many of the challenges facing the country. However, these potential resources are seldom harnessed effectively and thus meaningful and sustained transformation of the Ethiopian agriculture sector is a dream that is “so close and yet so far”.

Development of such a system will assist Ethiopian institutions, farmers and pastoralists to overcome the challenges and take advantage of opportunities facing the agriculture sector of the economy.

Why KM in agriculture?

Knowledge plays a significant role whenever change, innovation and growth are being pursued in a competitive and complex field. Agriculture today is just such a field. Leveraging knowledge is thus a critical input in the transformation of Ethiopian agriculture from subsistence to market-oriented economic sector. A demand-driven agricultural knowledge management system facilitates access to and adoption of appropriate technologies and processes from research and development institutions based in Ethiopia and elsewhere. The resulting benefits are many including:

- Being adaptive to changes in the agri-food chain
- Learning from organizations with good research output and innovations record.
- Benefiting from indigenous knowledge
- Being responsive to farmers and pastoralists needs and requirements
- Addressing inertia due to lack of information among farmers and pastoralists
- Creating a stable technology infrastructure over a long period of time
- Creating a capable agricultural management regime with a good development

- process supporting them, and
- Developing a loyal and capable workforce

If we agree on the premise that development of a demand-driven knowledge management system will have a positive impact on the development of Ethiopian agriculture, the next logical question will be “how do we develop such a system?”

We believe there are generally six steps that are important to implement a knowledge management system. These are:

1. Developing a knowledge management strategy that is aligned with and supportive of the overall organizational strategy.
2. Defining the sign posts of where an organization is in terms of its ability to leverage knowledge and where it wants to be and thus determine what needs to be done to get there.
3. Selecting appropriate knowledge management framework that is easily understood and realistically applicable.
4. Selecting appropriate knowledge management tools that serve as enablers to implement the bigger concept.
5. Understanding and adopting and/or responding to the role of organizational culture to the success of knowledge management.
6. Appreciation of the value of starting with a pilot implementation.

In the next few pages we will look into each of these points a bit closer.

Developing a KM Strategy

Strategy is basically the fundamental approaches an organization employs to achieve its organizational objectives. A knowledge management strategy is no different. It is the major approaches an organization will follow to achieve the goal or objective of making knowledge management a reality within the organization. One of the fundamental tenets of a KM strategy is that since the whole idea of leveraging knowledge rests on the fact that doing so will help an organization to be better positioned to achieve its overall objective, it also makes sense that the strategy for KM should be developed with a clear insight that it should be aligned with the overall business/organizational strategy.

It is also important that a KM initiative is supported at the highest level in the organization if it is to have any chance for success. This is because a KM implementation will ultimately require an investment in human resources, technological enablers (tools) and most important, a shift in organizational culture and all these cannot happen without a committed and visible support at the highest level of an organization.

It is also better to involve a good cross-section of the organization in order to develop a system that addresses KM needs in a comprehensive manner.

There is one other fundamental decision that needs to be made when considering a KM strategy. That is whether the major thrust of KM efforts will be on codification or personalization.

Codification focuses on the identifying, capturing, sharing, and use of information (in databases, repositories, portals, user guides, and other artifacts. If the KM strategy advocates this approach, then major efforts of the KM implementation will be on how the organization can develop and deploy such systems and make them easily available to potential beneficiaries. Personalization focuses on connecting people-to-people (in person or virtually). It takes the view that most knowledge is in people's heads and that it is difficult to "capture" this tacit knowledge in manuals, books, databases, etc. This view instead advocates that it is best to create conducive environment that promotes interactions among relevant groups and individuals in order to facilitate knowledge sharing.

What works for a given organization will depend a great deal on the specific culture, industry, state of affairs within the given organization. And it is often a matter of degree on which approach an organization will focus. Organizations that invest on codification may also have several initiatives geared toward increasing interaction among their staff while those that invest a lot on personalization and interactions among their staff will also have initiatives on codifying what they believe are important knowledge assets.

The next step in implementing a KM initiative will be to determine the extent work that needs to be done to get a functional system in place. To achieve this, the organization needs to assess the current state – honestly; determine the desired state – realistically and map out activities that will help close the gap between these two states,

How do we go about doing these?

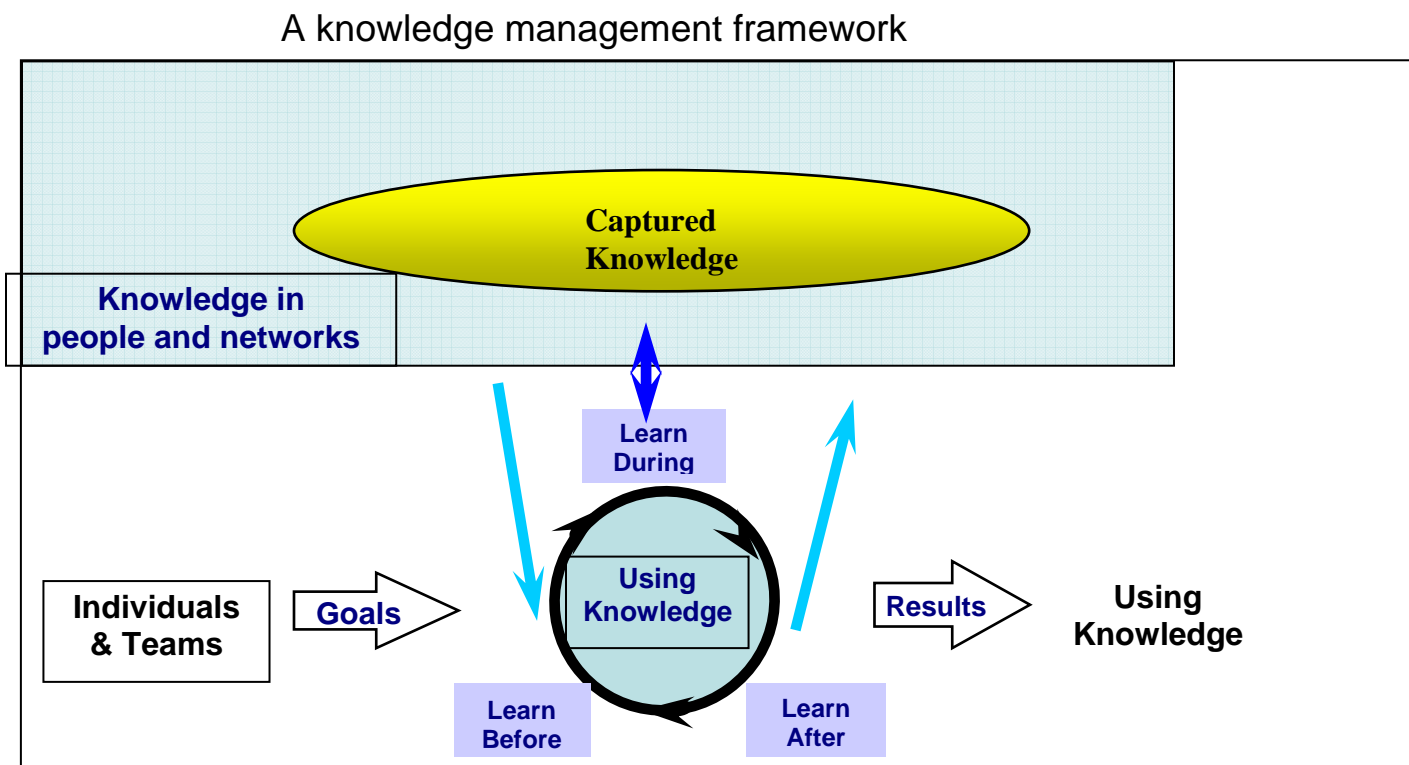
Like any major initiative, a KM implementation will require input in terms of people, process, tools (technology), and will operate in an existing organizational ecosystem. All we need to do is make an honest determination of the organization's readiness in terms of `cultural, technological, and key operational and business issues that may be impacted by a KM initiative. We also need to map current knowledge and collaboration patterns within the organization. This assessment will help us determine our starting point for the KM initiative. For example, a good electronic communications infrastructure may be deemed important to the success of a KM initiative. If the assessment shows that there isn't a functional e-mail system in the organization that points to the potential starting point in the technological aspects of the KM initiative.

Likewise, to determine the desired state after the implementation one needs to realistically outline what can be done given the scope, resources, and time allotted for the initiative.

A quick analysis of the gap between where the organization is at the start of the KM initiative and what can be expected given the resources available to implement the KM initiative will bring out the possible tasks that need to be accomplished to within the KM initiative.

Selecting appropriate KM framework

The challenge in implementing any new initiative is often where to start in process of implementation and then how to keep doing what needs to be done in a consistent manner and in a way that everyone involved understands easily. This is not an easy task. One way to tackle the challenge is to use a common and holistic framework that encompasses the all the major undertakings that need to be done in an easy to follow manner. Following is one such framework proposed by Collison and Parcell in their book “Learning to Fly” – a milestone book on knowledge management.



This framework encompasses all aspect of learning processes within the context of higher level organizational objectives (goals) and expected business results. At its core, the framework puts learning and asking the right questions about learning at every stage of major work processes. That is before embarking on an important task or project, during the execution of the task or project and after the completion of the task or project. Before starting a project, finding out if anyone else (within or outside of the organization) has done a similar project and learning from that experience base may enable the project team to reuse existing and validated approaches and save time to concentrate on activities that

have not been undertaken before. The “learning during” aspect of the framework is an invitation to continually assess and improve ones approaches to executing a task based on continual reviews of what has been done to date and how that is measuring up against established standards. The “learning after” aspect of the framework deals with taking the time and effort needed to document lessons learned in the execution of a project or a task because there may be time when we need to do a similar project. Identifying who could make use of our experience in a given project and making sure the lessons get passed on in one form or another are all addressed in the “learning after” process.

In order to create the necessary link between the learning before/during/after circle and the knowledge itself, in terms of accessing what has already been captured and in capturing new knowledge, we look into networks and communities of practice. Networks and communities of practice are the glue that create and sustain the linkage between those who have the knowledge and those who seek to leverage it – roles that may revolve among the various actors in the network or community of practice, depending on the task at hand.

Selecting appropriate KM tools

Knowledge management is rapidly growing into a mature management discipline with its own set of tools and methods that have been validated at various settings – in both public and private institutes around the world. When undertaking a knowledge management initiative, it is useful to review tools and methods employed by others and see if some of these will be applicable or adoptable to a situation at hand. The following section highlights some of the tools available for each stage of a knowledge process – including identification, creation, storing, sharing, and using of knowledge. Along with the tools, an indication is given as to what will be the critical factors in terms of organization culture readiness in order to apply these tools and where the starting point for each will be in terms of people, technology, or organizational setup. These tools are adopted from a set of tools suggested by a multi-country European project conducted under the auspices of “European Committee for Standardization”.

The following classifications have been used:

| | |
|------|---------------------------|
| XXXX | Indispensable for success |
| XXX | Highly important |
| XX | Very important |

| | |
|---|---------------|
| X | Important |
| | Not important |

| Identify Knowledge | | | | | | | | |
|-----------------------|----------------------------------|----------|--------------------------------------|-------|---------------------|---------------------------|--------------|------------|
| | Cultural factors relevant for KM | | | | | Starting point for change | | |
| Tool | Willingness to learn | Openness | Constructive when dealing with power | Trust | Self-responsibility | People | Organization | Technology |
| After Action Review | | XXX | X | | | X | X | |
| Lessons learned | | XXX | X | | | X | X | |
| Debriefing | | XXX | X | | | X | X | |
| Know-how balances | | X | X | | | X | X | |
| Technology scouts | XXX | | | | | | X | |
| Knowledge portfolio | XX | XXX | | | X | XXXX | X | |
| Knowledge maps | XX | XX | | | | XX | XXX | |
| Knowledge broker | XX | | | XX | XX | XXX | XXX | |
| Balanced scorecard | | X | | | | | XX | |
| Patent evaluation | | X | | | | | xx | |
| Create Knowledge | | | | | | | | |
| | Cultural factors relevant for KM | | | | | Starting point for change | | |
| Tool | Willingness to learn | Openness | Constructive when dealing with power | Trust | Self-responsibility | People | Organization | Technology |
| Best Practices | XXXX | XXX | | XX | | XX | XXX | |
| Brainstorming | X | XX | | | | XX | | |
| Cognitive Mapping | X | X | | | | XX | | |
| External Partners | XX | X | | XXXX | X | XXXX | | |
| External Benchmarking | XXXX | XX | | | | X | XXX | |
| Internal | XXXX | XXX | | | X | X | XXX | |
| Open Space | | | | | X | | X | |
| Success stories | XXX | XXX | | X | (X) | XX | XXX | |
| Think Tanks | X | | | | X | X | XXX | |
| Suggestion | XX | X | X | XX | XX | XX | XXX | |
| Knowledge circles | XX | XXXX | X | | X | XXXX | | |
| Workshops | XX | XXX | X | | XX | XXXX | X | |
| Library | X | | | | | | X | X |

| Store Knowledge | | | | | | | | |
|-----------------------------------|----------------------------------|----------|--------------------------------------|-------|---------------------|---------------------------|--------------|------------|
| | Cultural factors relevant for KM | | | | | Starting point for change | | |
| Tool | Willingness to learn | Openness | Constructive when dealing with power | Trust | Self-responsibility | People | Organization | Technology |
| Databases | X | | | | | | XX | XXXX |
| Document Management System | X | XX | | | | X | X | XXXX |
| Who's Who database | | XXX | | X | | | X | XXXX |
| Experience | XX | XX | | XX | | XXXX | X | XXXX |
| Minutes | | X | | | | XXX | XX | |
| Yellow Pages | X | XXX | | X | X | X | XXX | XXX |
| Data Warehouse | X | | | | | | XXX | XXXX |
| Specialist | XX | | | | X | X | XX | |
| Handbooks | XX | | | | X | X | XX | |
| Share Knowledge and Use Knowledge | | | | | | | | |
| | Cultural factors relevant for KM | | | | | Starting point for change | | |
| Tool | Willingness to learn | Openness | Constructive when dealing with power | Trust | Self-responsibility | People | Organization | Technology |
| Telephone conference | X | XXX | | XX | | XXX | | X |
| Video conference | X | XXX | | XXX | | XXX | XXXX | XX |
| Info Center | XX | XXX | X | XXXX | X | XXXX | XX | |
| "Blackboard" | | X | | | | | XX | |
| Internal knowledge market | XX | XXXX | | | | X | XXX | |
| Hotline | | X | | | | X | XXXX | X |
| Intranet | X | | | | | | | XXXX |
| Employee Journal | | X | | | (X) | X | XXXX | |
| Newsgroups | XX | XXXX | | XX | X | XXXX | X | |
| Circular | | | X | | | | XX | |
| Knowledge Fairs (internal) | X | XXX | | | | | XXXX | |

The tools listed above are meant to be general indicators of the multitude of tools available and are not meant to be exhaustive. Some of the tools will also require good understanding of their use and applicability in order to get the most out of their implementation. However, it suffices to say that in any knowledge management initiative one needs to choose what tools the organization will employ to facilitate each of the knowledge process.

Of the various tools mentioned above, it is probably good to highlight the role of ICT in knowledge management. ICT has emerged an important enabler in facilitating the effectiveness and efficiency almost all business processes today. Knowledge management

is no exception. However, it is important to remember that ICT should be a means to an end and not the end in and of itself. Just like having an automated financial management system does not translate into having a good financial management system, so is true for knowledge management. Having an intranet, an e-mail system, or computerized databases does not automatically translate into having a good knowledge management system – since as stated earlier knowledge management is about knowledge sharing and creating an environment conducive to knowledge sharing. And people are key determinants in this equation. ICT will help but ICT by itself will not make it happen. In order to leverage ICT tools for positive impact, one needs to have a clear ICT strategy in place. Some things to think about in this area include to develop an ICT strategy that:

- address today's needs without ignoring the future
- Adhere to accepted standards to ensure maximum compatibility and sharing
- Ensure a clear upgrade path to make scaling up easier
- Make it easily accessible for the intended users
- Ensure data integrity and security is maintained

Knowledge management and organizational culture

Organizational culture is probably the most important determinant for the success of a knowledge management initiative. What do we mean by organizational culture? In short, Organizational culture can be defined as the learned way of perceiving, thinking and feeling, shared and transmitted among organizational members.” (Schein, 1984). It can be seen as ‘the way we do things around here. It is a social and behavioral manifestation comprising features such as:

- the values and beliefs of staff
- how people are and feel rewarded, organized and controlled
- the work orientation of staff, the way work is organized and experienced
- the degree of formalization, standardization and control through systems
- how authority is exercised and distributed
- the value placed on various functions within the organization
- tolerated scope for individuality and creative expression, risk-taking and initiative
- notions and concepts on the importance and use of time and space
- the organizational rites, rituals and stories
- Organizational ‘language’ (phrases and words that have a special meaning or significance to that organization).

There will also be subcultures (groups which exhibit cultural characteristics, i.e. values, norms and practices that differ from the main organizational culture and from other subcultures). One common manifestation is “departmental differences”, which can lead to the phenomenon of departmentalization or so-called “silo thinking”. All these are strong elements that influence the degree of success of a knowledge management initiative negatively or positively depending on how they are understood and addressed by those implementing such an initiative.

Starting with a pilot

The final point that will be addressed in this paper is the value of starting with a pilot implementation.

KM as a discipline is not an everyday phenomenon – people want to SEE that the concept actually works before committing all the way. Therefore, starting small makes the process more manageable and error correction easier. It also provides a “learn as you go” opportunity. However, what is developed for pilot implementation should be scaleable. If we do miracles in an environment that cannot be duplicated economically outside of the confined environment, then the success will be limited to the pilot project.

IPMS experience in knowledge management\

It has been almost two years since the Improving Productivity & Market Success of Ethiopian Farmers project embarked in a knowledge management initiative. The task the project undertook is to develop a functional knowledge management system interconnected at Federal and Woreda levels with a limited effort at Regional levels. This indeed is an ambitious undertaking in that the challenges, opportunities, and modalities of implementation at each level have turned out to be very distinct. The efforts so far have resulted in some localized successes. To cite a few examples that are currently being practiced at various levels:\

- The project, in collaboration with the Ministry of Agriculture and Rural Development has developed and deployed a web-based portal named Ethiopian Agriculture Portal, which will be used as a gateway to diverse agricultural resources in Ethiopia and elsewhere. To make this a reality, the project has also invested in upgrading the ICT infrastructure of MoARD at the ministry’s headquarters data center.
- Woreda Knowledge Centers have been setup in all project Pilot Learning Woredas (PLW). The effectiveness of the centers in functioning as venues for knowledge sharing varies from Woreda to Woreda. However, the project is learning valuable lessons that will positively impact these and other future endeavors in this area.
- Some of our pilot learning Woredas have established communities of practice groups and are slowly developing a culture of deliberate knowledge sharing.
- National and Regional agricultural technology exhibitions have been held and these events have been found to be excellent opportunities for knowledge sharing among farmers as well as extension practitioners. Some Regions are adopting this concept and employing with very positive results.
- Periodic study-tours and experience sharing exchange visits of both policy makers and farmers are being facilitated by the project as well as partners and stakeholders in our project sites.
- Institutional setups such as Woreda Advisory & Learning Committees that may help make KM a sustainable endeavor are in place in our pilot learning Woredas and the results have been progressively encouraging.
- The project also uses other one-time as well as regular activities that promote knowledge sharing. These include stories and/or articles in print and electronic media to actively share WHAT we have been doing, HOW we are doing what we do and the IMPACT of our activities