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Assessing knowledge management practice at Federal Ministry of Health and its affiliate organizations, Ethiopia

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Acronyms

EHMIS- Electronic Health Management Information System

EPHI - Ethiopian Public Health Institute

EFMoH- Ethiopian Federal Ministry of Health

FHAPCO- Federal HIV/AIDS Prevention and Control Office

FMHACA- Food Medicine and Health Care Administration and Control Authority

HCMIS- Health commodity Management Information System

IT- Information Technology

KM- Knowledge Management

PFSA- Pharmaceuticals Fund and Supply Agency

PLITS- Pharmastical Logistic Information Tracking System

PMS- Personnel Management System

Abstract

Introduction: Knowledge management is the planning, organizing, motivating, and controlling of people, processes and systems in an organization to ensure that organizational knowledge-related assets are improved and effectively employed. The study aims, to assess knowledge management practice, at the Federal Ministry of Health and its affiliate organizations in Ethiopia so as to design a mechanism for effective and efficient management of knowledge.

Methodology: a descriptive cross-sectional study design employed to assess knowledge management practice in purposively selected organizations of Ethiopian Federal Ministry of Health and its affiliate organization by further correlating the existing knowledge management practices with the standard knowledge management practices that one institution need to have through structured self administered questions. The study included technical staffs in the target organization which would be selected randomly using lottery method from the total 99 case teams equivalent to one program staff from each case teams included in the study.

Results: The study reviled that most of participants (78.2%) mentioned the organizations don't have knowledge management strategy and 92.2% of respondents mentioned there is no responsible person who can manage knowledge. Majority of the knowledge was existed in the form of tacit knowledge. The study also showed experiences of information technology in some of the organizations that need to be shared for other organizations where information technology infrastructure is important for knowledge sharing and capturing. Further the study indicated there is no statistical relation between socio-demographic factor and knowledge management practices in the organization which needs to be further studied.

Conclusion: The study indicates the Federal Ministry of Health and its affiliate organizations needs to give emphasis on the importance's of knowledge management system to design and incorporate the strategies with other health sector .

Recommendation: EFMoH and affiliate organization managers should create awareness about knowledge management, develop knowledge management strategy and guidelines and use mechanism for effective management of knowledge and tools which is suggested by this research.

CHAPTER ONE

INTRODUCTION

1.1. Background

Knowledge management (KM) is the planning, organizing, motivating, and controlling of people, processes and systems in the organization to ensure that its knowledge-related assets are improved and effectively employed [1]. In what is widely known as the "information spectrum", knowledge is information applied with experience and judgment. In this so called knowledge age, knowledge is considered as the most critical "means of production", even more critical than the traditional ones like land, labour, and capital. Therefore, knowledge needs to be managed if it is going to yield the required results [2].

In this regard, public health organizations that adopt KM strategies and practices can improve performance of health care workers and programs and contribute to reaching the end goal of improving health outcomes among communities [3]

KM practice in Ethiopia is in infantile stage, there are few studies indicating the mechanism and level of KM practice. With regards, the EFMoH has been the main source of health care knowledge's mainly through designing policies, strategies, initiatives enables to maintain the health of is nation. It has been understood that knowledge driven from the sector needs to be managed where staffs of the EFMoH, stakeholders, partners and the community can benefit.

In general, a KM process required the presence of its core functions such as knowledge capturing, storing and sharing in the manner based on prioritization of core knowledge's and means to utilize by each staffs. The KM function in the organization operates these processes, develops methodologies and systems to support them, and motivates people to participate in them [4]. Considering this the current study assesses existing KM practice in EFMoH and its affiliate organization as well guiding the mechanism to effectively capture, store and share knowledge in the organizations.

1.2.Organizational Overview

EFMoH has subordinate organizations and hospitals namely; Food Medicine and Health Care Administration and Control Authority (FMHACA), Federal HIV/AIDS Prevention and Control Office (FHAPCO), Pharmaceuticals Fund and Supply Agency (PFSA), Ethiopian Public Health Institute (EPHI), All Africa Leprosy Tuberculosis and Rehabilitation Training Center, St Peters TB specialized Hospital, St. Paul's General Specialized Hospital, Amanuel Mental Specialized Hospital and Social Health Insurance Agency.

EFMoH leading the efforts of promotion and prevention of disease at country level by coordinating affiliate organizations, regional health bureaus and federal hospitals.

EFMoH was established with a vision to have healthy, productive, and effective citizens, and provide integrated, quick and satisfactory health service with efficient management, controlling mechanism. EFMoH has three strategic objectives. The first is minimizing maternal mortality rate during pregnancy and delivery. The other is minimizing infant mortality rate. The final is preventing and controlling HIV/AIDS, TB, Malaria and other diseases [5].

In addition, the ministry took a big responsibility on assuring the implementation of national health polices and strategies under health promotion and disease prevention so as to create a community who produce his/her own health. It has also responsibility to monitor the implementation in all regions according to the standards.

Even though, each office has its own staff and structure to function they have horizontal linkage where the minister and each directorate directors meet each month to pass decisions on the implementation process. In addition, during health development plan preparation each agency plan together as well, EFMoH web-site serves as a platform for information sharing mechanism for the organization.

The FMHACA work on a mandate to regulate the 4Ps (Practice, Premises, Professionals and Products); all these regulatory activities are decentralized and functional throughout all regions and woredas of the country. In line with its mandate, it has the following responsibilities. One is to establish and maintain an effective and efficient quality assurance, market authorization, inspection and licensing system. The other is to ensure safety, efficacy and quality of medicines including complimentary and traditional medicines. The third, to ensure that food consumed are safe, quality, sanitary and free of contaminants. The forth, is to standardize health services and protect the public from unqualified and unethical professionals and substandard health institutions. Finally, to ensure an uninterrupted regulatory information provision and promote Rational Medicines use [6].

The PFSA established in September 2007 with the objective to avail quality assured essential pharmaceuticals and medical supplies at affordable price, in a sustainable manner; ensure their proper management and rational use. The Agency plays pivotal role in strengthening and expansion of health service by ensuring enhanced and sustainable supply of pharmaceuticals through utilization of Revolving Drug Fund [7].

The FHAPCO established with a vision ‘To see Ethiopia free of HIV/AIDS’, and mission to prevent and control HIV/AIDS epidemic and mitigate its impacts by creating universal access to HIV prevention, treatment, care and support services through intensified community

mobilization and empowerment, by building capacity and ensuring the active involvement and ownership across sectors, enhancing partnership under the principle of the "three ones (one plan, one budget and one M&E)", and mobilizing and ensuring appropriate use of resources. In addition, it has its own objective to coordinate and direct the implementation of the country's HIV/AIDS policy. It is a national authority charged with coordinating multi-sectoral response in the country. It involves a wider consultation with sector ministries, regional HAPCO's, regional health bureaus, civil society organizations, associations and networks of PLHIV, the private sector, as well as multilateral and bilateral development partners [8].

The EPHI focuses on health of the Ethiopian people by addressing priority public Health and Nutrition problems through problem-solving research, public health emergency management, establishing and maintaining quality laboratory system [9].

1.3. Statement of the problem

Being knowledge driven process, healthcare delivery provides opportunity to incorporate knowledge management practices to improve processes. But it has also been noted that knowledge management is systematically more complex in healthcare and minimal research exist to guide academic and organizational stakeholders [11].

The basic challenge remains the awareness of the importance and the potentials of KM in health care. Once KM is recognized as an organizational and practical asset, a KM strategy is needed. Once the strategy is in place, change management should be planned for in order to establish a KM adoption culture in the workplace and find KM champions among practitioners to facilitate KM adoption.

The growth of knowledge in the EFMOH and affiliate organization has been increasing but it is not similar to the ability to effectively disseminate, translate and apply current health care approaches.

Ethiopian Federal Ministry of Health (EFMoH) and its affiliate organization manage knowledge in an informal and disorganized manner where, there are programmatic reports and documents are being captured stored and shared among directorates. However, there is no organized way of capturing core knowledge, sharing and storing among directorates and actors in the health system using technological approaches.

Besides, the well known time pressure in the health sector, due to a shortage in health professionals, is a particular barrier to the implementation of KM in health care; indeed, the use of IT and KM tools will be perceived as cumbersome unless adequate usability consideration and innovative interfaces are developed for KM systems.

Moreover, the research question will tire to address KM practice and the way core knowledge should be captured, stored and shared within.

It was observed that frequent staff attrition; lose of institutional memory subsequently affects Knowledge Management practices. under all directorate office, staff activities and information is shared on the weekly case team meetings and further performance of activities recorded on monthly, quarterly, semi-annual and annual reports; also directorates have very few information concerning the activities of other directorate except directors and national guide lines not shared among each staff. Moreover core knowledge and relevant information was usually stored on the hands of directors, such as assessment result, guidelines, training materials, and staff data. In addition, individual tacit knowledge is not consumed because of absence of problem- based operational researches, low motivation for sharing knowledge, etc.

In addition, the institution has its own official website including the affiliate organizations but the web site has a limitation to serve staffs and wider stakeholders because of time lines of documents, not updated, and limited online discussion forum and content of publication /guide line used to help as reference is limited.

Even though, efforts have been made to keep the organizational function; there were no formal structures that can manage the organizational knowledge to strong foundation of knowledge management as a core organizational function. The magnitude of the problem on KM is not well known because there are no similar studies conducted in the sector but

Due to lack of studies indicating the level of knowledge management practices among staffs of EFMoH and its affiliates created difficulty of understanding the level of knowledge capturing, storing and sharing. With regards, the ministry facing problem on sharing explicit and tacit knowledge among staffs, affiliates and stakeholders by identifying the core knowledge.

As a result, this study attempts to assess the practice of knowledge management in the Ministry of Health and affiliate organizations.

1.4.Objective of the study

1.4.1. General objective

The general objective of the study was to assess knowledge management practice, at the Federal Ministry of Health and its affiliate organizations in Ethiopia so as to design a mechanism for effective and efficient management of knowledge.

1.4.2. Specific objectives

In order to achieve the above general objective, the study has the following specific objectives

- To assess current practice of health care knowledge management in EFMoH and its affiliates.
- To identify the core knowledge in EFMoH and its affiliate organizations.
- To design mechanism to manage knowledge in EFMoH and its affiliates.

1.5. Scope and limitation of the study

The research focuses on current KM practice in the EFMoH and its affiliates. The assessment would be further help to establish effective KM system able to capture, store and share among staffs, managers and stakeholders.

EFMoH and its affiliate organizations located at head offices of (EFMoH, FMHACA, EHNRIA, FHAPCO and PFSA) included in the assessment based on the similarity of program structure Due to resource and time limitation at branches offices of FMHACA and PFSA, Social Health Insurance Agency, federal hospitals and regional health bureaus are not included.

Target areas and study participants selected to maintain the integrity of the project and benefit of improving future KM system in the organization. Further, the study mainly assessed the KM practice in the organizations so that technical staffs and directors included. Technical staffs had given their knowledge practices, skills for knowledge sharing and linkage among subordinate organizations. However, during data collection time some of directorate directors not participated in the study due to other office priorities.

1.6. Significance of the study

Since, the research project is done in the Federal Ministry of Health and its affiliates; it fills the gap on lack of studies conducted on the topic to indicate the level of KM. The KM practice in the health care delivery system is very crucial to engage its staffs for better decision making. Even

though the organizations have little knowledge capturing mechanism, it requires selection of core knowledge's and their way of management.

EFHoH and affiliate organization working on health reforms and health sector focuses on building and strengthening health development army (HDA) to meet their goals and strategic objectives. Inline with this knowing the existing KM practice in organizations helps to fill the gap regarding KM and also gives insight on what methods would be used for the better management of knowledge.

In addition, the research project suggest better ways to improve KM of the organizations for the effective mechanism to capture, store and share knowledge through the involvement of each staff and further it help to establish strong organizational KM system.

Once KM practice understood, managers might be able to design and implement strategies for improvement of organizational efficiency and effectiveness through KM solutions.

1.6 Organization of the study report

This research project is organized in to five chapters. The first chapter deals with the background of the study, organizational overview which the study was done, the statement of the problem, objective, significance, scope and limitation of the study. The second chapter presents the review of the literature in the area of knowledge management and its practice. The third chapter put the methodology followed for data collection, data analysis and interpretation. On the fourth chapter results and findings with their discussions are presented. Finally, conclusion and recommendations forwarded on the fifth chapter.

CHAPTER TWO

LITERATURE REVIEW

For service rendering enterprises like a healthcare organization, new approaches and methods are the lifeblood of its future, so finding ways to capture and share knowledge of an organization to promote innovation is paramount to continued quality, efficiency and effectiveness [3].

2.1. Overview of knowledge and knowledge management

The concept of knowledge is different in its value than other concepts; Knowledge is not like information; It is the interpretation of information, so that, knowledge is an organized combination of data, assimilated with a set of rules, procedures, and operations learnt through experience and practice [12].

Knowledge is a strategic asset of an organization, and the key to competitive viability and growth of learning organization. Employees will need to acquire knowledge to make decisions and influence others in the organization in order to improve performance [13].

In addition knowledge is a major part of health organization's day to day activities; whether for practitioners or for managers. For management it involves financial management, human resources management, organizational dynamics and governance, strategic planning, information management, risk management, and quality management [14].

KM programs are supported by three key components [3]: people, processes, and technology. **People** generate, store, and share knowledge and can help cultivate an environment that encourages knowledge sharing and use of KM systems. **Processes** are the methods used to capture, create, and share knowledge. These formal and informal processes must be embraced and integrated into an organization's daily work flow to be most successful. Use of **technology** that is appropriate to the context can expedite knowledge storage, retrieval, and exchange.

Knowledge management (KM) is an integrated, systematic approach to identify, manage, and share all of the organization's information assets, including databases, documents, policies and procedures, as well as previously unarticulated expertise and experience resident in individual officers. KM creates a new working environment where knowledge and experience can easily be shared and also enables information and knowledge to emerge and flow to the right people at the right time so they can act more efficiently and effectively [12].

In addition, sharing of information supports life-long learning, as it encourages all employees to learn and may lead to changes in work practices that have a great contribution to improve performance and support continuous improvement efforts [13].

Knowledge management can be a valuable tool for the public health community. Public health is a multi-disciplinary field addressing a broad array of topics pertaining to the health of human populations. Public health professionals rely on research methods to identify causal and contributing health factors, and use a community approach to track, prevent and solve health problems. Public health professionals require accurate data and the ability to access data quickly from disparate sources and transform those data into information and knowledge to do their jobs [15].

2.2. Types of knowledge

Knowledge in organizations is either tacit (knowledge within a person's head) or explicit (codified in some manner) such that it can an easily be accessible by junior experts. Explicit knowledge is made tacit through internalization which is gained through experience [16].

Tacit Knowledge refers to the knowledge that has a personal quality that makes it hard to articulate or communicate. It can be said to be the knowing or the deeply rooted *know-how* that emerges from action in a particular context. The tacit dimension is based on experience, thinking, and feelings in a specific context, and is comprised of both cognitive and technical components. The cognitive component refers to an individual's mental models, maps, beliefs, paradigms, and viewpoints. The technical component refers to concrete know-how and skills that apply to a specific context [17].

Capturing tacit knowledge is a subject to the hearts of many organizations. The reason is that this is the heart of the tribal knowledge which is literally undocumented or at the very least, loosely held by a variety of individuals who share it [16].

Explicit knowledge is that which can generally be written down or documented, and shared. Basically it is what is already known and can be put into words or represented graphically or in some audio-visual format. In addition it is objective, lending itself to definitions, rules, exact limits, and often precise meaning; and easily captured, stored, and transmitted using modern technology (for example, transmitted electronically, stored in a database or computer processed) [18].

In healthcare, one of the most critical knowledge transformations to effect is that of tacit to explicit; i.e., externalization so that the healthcare organization can best leverage its knowledge potential to realize the healthcare value proposition [19].

2.3. Organizational knowledge management

Organizational knowledge is not intended to replace individual knowledge but to complement it by making it stronger, more coherent, and more broadly applied. Knowledge management represents a deliberate and systematic approach to ensure the full utilization of the organization's knowledge base, coupled with the potential of individual skills, competencies, thoughts, innovations, and ideas to create a more efficient and effective organization [4].

Figure 2.1 shows KM processes that directly improve organizational processes, such as innovation, collaborative decision-making, and individual and collective learning. These improved organizational processes produce intermediate outcomes such as better decisions, organizational behaviors, products, services and relationships. These, in turn, lead to improved organizational performance [1].

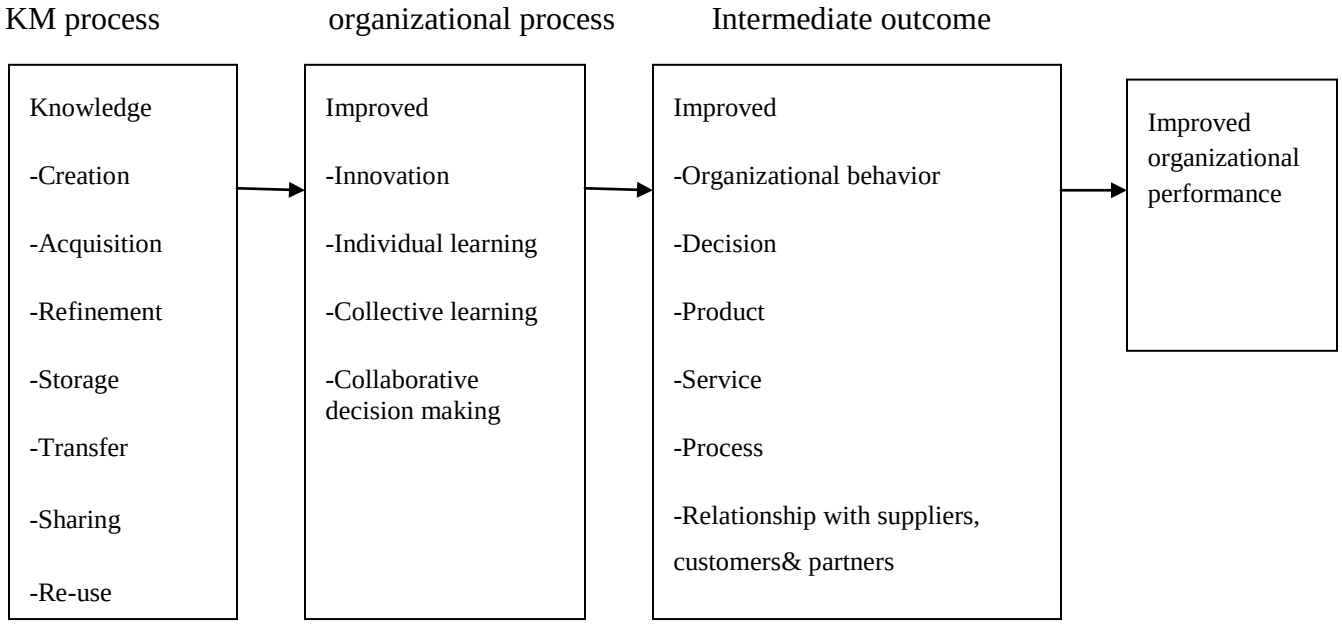

Figure 2.1 Contribution of KM in an organization [1].

Organizations with a quality program that has exceeded expectations have been able to develop a shared vision within the organization. This has been encouraged by a knowledge sharing culture based on trust and openness. The development of shared mental models is encouraged by employees working together in teams and regularly sharing experiences and best practices; and evaluating success and failures. Perhaps this has been possible by the more stable work force which would lead to retention of individual's knowledge within the organization and encourage

employees to share ideas for improvement. It would seem that people not technology is the major source of knowledge transfer as it appears that the active rather than archived memory is used for decision making. Judy [13] argued that such organizations have become a learning community, whereby, as the individuals learn, the organization learns its way forward.

Most executives state that their greatest asset is the knowledge held by their employees [4]. When employees, leave the organization, they take valuable organizational knowledge with them. Managers also invariably add that they have no idea how to manage this knowledge. Using the intellectual capital or asset approach, it is essential to identify knowledge that is of value and is also at risk of being lost by the organization through retirement, turnover, and competition. As a result the best way to retain valuable knowledge is to identify intellectual assets and then ensure legacy materials are produced and subsequently stored in such a way as to make their future retrieval and reuse as easy as possible [4].

2.4.Purpose of knowledge management

The basic aim of knowledge management is to leverage knowledge to the organization's advantage. According to Wolf [4] some of management's motives include: loss of skilled people through turnover, pressure to avoid reinventing the wheel, pressure for organization-wide innovations in processes as well as products, managing risk, and the accelerating rate with which new knowledge is being created. Typical knowledge management objectives are the following: [4]

- Facilitate a smooth transition from those retiring to their successors who are recruited to fill their positions
- Minimize loss of corporate memory due to attrition and retirement
- Identify critical resources and critical areas of knowledge so that the corporation *knows what it knows and does well- and why.*
- Build up a toolkit of methods that can be used with individuals, with groups, and with the organization to stem the potential loss of intellectual capital

In addition to the above mentioned KM objective the critical reasons to adopt a knowledge management approach within public health agencies are to capture knowledge needed to ensure public health preparedness, to manage existing information more effectively, and to enable public health professionals to work collaboratively in a virtual environment [15].

However, KM is not to manage all Knowledge, but to manage the core knowledge which is most essential to the development of organizations. Core knowledge is a basic level of knowledge required by all members of a particular industry. It does not represent a competitive advantage, but is simply the knowledge needed to be able to function in that sector at all [18].

Furthermore, the goals of KM are the leveraging and improvement of the organization's knowledge assets to effectuate better knowledge practices, improved organizational behaviors, better decisions and improved organizational performance [1].

2.5. Importance of knowledge management

The major business drivers behind today's increased interest and application of KM lie in four key areas [4]:

- *Globalization of business:* Organizations today are more global- multisite, multilingual, and multicultural in nature.
- *Leaner organizations:* it is not enough to do more and doing it faster, but there is also a need to work smarter as knowledge workers - increased pace and workload.
- *Corporate amnesia:* We are more mobile as a workforce, which creates problems of knowledge continuity for the organization, and places continuous learning demands on the knowledge worker - we no longer expect to work for the same organization for our entire career.
- *Technological advances* We are more connected - information technology advances have made connectivity not only ubiquitous but has radically changed expectations: we are expected to be *on* at all times and the turnaround time in responding is now measured in minutes, not weeks.

In addition, the above mentioned areas knowledge management benefits individual employees, communities of practice, and the organization itself. This three-tiered view of KM helps emphasize why KM is important today [4].

For the individual, KM:

- Helps people do their jobs and save time through better decision making and problem solving,
- Builds a sense of community bonds within the organization,
- Helps people to keep up to date, and
- Provides challenges and opportunities to contribute for organization

For the community of practice, KM:

- Develops professional skills,
- Promotes peer-to-peer mentoring,
- Facilitates more effective networking and collaboration,
- Develops a professional code of ethics that members can adhere to, and
- Develops a common language

For the organization, KM:

- Helps drive strategy,
- Solves problems quickly,
- Diffuses best practices,
- Improves knowledge embedded in products and services,
- Cross-fertilizes ideas and increases opportunities for innovation,
- Enables organizations to better stay ahead of the competition and
- Builds organizational memory Containers Communities Content

Healthcare globally is facing many challenges including escalating costs and more pressures to deliver high quality, effective and efficient care. By nurturing knowledge management and making their knowledge assets explicit, healthcare organizations will be more suitably equipped to meet these challenges [19]

2.6. Knowledge Management Processes

Knowledge management is the planning, organizing, motivating, and controlling of people, processes and systems in the organization to ensure that its knowledge-related assets are improved and effectively employed. Knowledge-related assets include knowledge in the form of printed documents such as patents and manuals, knowledge stored in electronic repositories such as "best-practices" database, employees' knowledge about the best way to do their jobs, knowledge that is held by teams who have been working on focused problems and knowledge that is embedded in the organization's products, processes and relationships [1].

In line with this KM focuses on knowledge processes:- knowledge creation, acquisition, refinement, storage, transfer, sharing and utilization. These processes support organizational processes involving innovation, individual learning, collective learning and collaborative decision making [1].

Social processes include communities of practice – self-organizing groups of people who share a common interest – and expert networks – networks that are established to allow those with less expertise to contact those with greater expertise. Such social processes are necessary because while knowledge initially exists in the mind of an individual, for KM to be successful, knowledge must usually be transmitted through social groups, teams and networks. Therefore, KM processes are quite people-intensive, and less technology-intensive than most people might believe, although a modern knowledge-enabled enterprise must support KM with appropriate information and communications technology [1].

Information technology facilitates rapid search, access and retrieval of information, and enables collaboration and communication between organizational members. In essence, it plays a variety of roles to support an organization's KM processes [17].

According to Karemente et al [16] knowledge management processes are knowledge creation, knowledge acquisition, knowledge storage, knowledge sharing and usage.

Knowledge creation- Knowledge creation is the transformation of tacit knowledge to explicit knowledge and vice versa.

The conversion of one kind of knowledge to another has been explained using the Spiral of Organizational Knowledge Creation Model proposed by Nonaka and Takeuchi and reviewed by Karemente et al [17] as explained below:

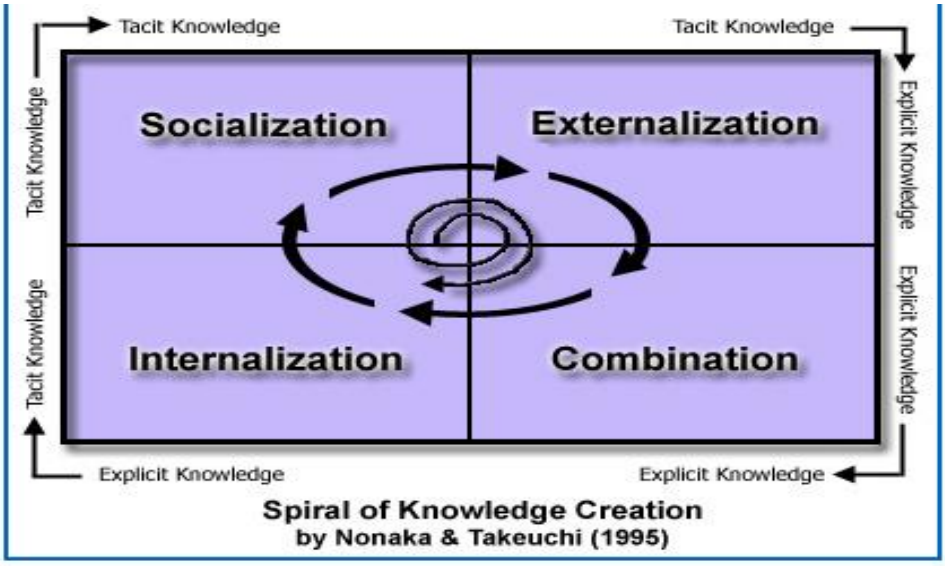

Figure 2.2 Sprial of knowledge creation and sharing [17]

Socialization: This is the creation of tacit knowledge from other tacit knowledge, through experiences shared by many members of the organization. It rests on the transmission of tacit knowledge from one person to another without using formal communication but through observation, conversation, imitation and practice e.g. using teleconferencing technology.

Combination: This is the creation of explicit knowledge from an explicit knowledge source, for example through filtering, categorization or "re contextualizing" of explicit knowledge, brainstorming for instance falls in this category. An example of combination is by using groupware technology.

Externalization: This emphases converting tacit knowledge to explicit knowledge through codification e.g. by using e-mail and broadcasting technology.

Internalization: This involves converting explicit knowledge into tacit knowledge e.g. using visualization technology.

The process of knowledge creation draws extensively from the existing knowledge base, for instance, transformation of explicit, tacit and cultural knowledge to new knowledge. When management tries to resolve an issue by finding a solution, it results in knowledge creation. Once a solution has been found and implemented successfully, the new knowledge can be made available organizationally by the management.

Knowledge acquisition - Knowledge acquisition is the process of acquiring knowledge from both internal and external sources of the organization. It is acquired through various ways for instance, internally through induction program for new employees and externally through educational institutions and previous employers. The knowledge for example, customer service experience, which the new recruits bring to the organization, can be converted for the benefit of the organization. The source of knowledge acquisition has no limits; it could be from superiors, customers, advertisements, magazines, newspapers and television. Information made available through ICT, manuals, memos and e-mails provides the supporting environment to enhance knowledge acquisition process.

Knowledge Storage - Knowledge storage/repository is the ability of providing a centralized repository for knowledge storage, for example a public library and a database of related information about a particular subject.

Knowledge sharing - Knowledge sharing is the means by which organization obtains access to its own and other organizations' knowledge. When knowledge is shared in the organization to achieve an organizational goal, the knowledge is distributed. Sharing of knowledge takes place in two ways for example formal and informal. Formal sharing takes place through official channels like meetings, discussions, e-mail, web-postings and memos, while informal sharing takes place inside or outside the office, for instance, during breaks and time out. Deliberate management attempts can improve the knowledge sharing functions in the organization. These measures could include community of practice, quality circles and buddy training.

Knowledge use - Knowledge use is the process of getting knowledge utilized for a particular purpose; this occurs, when knowledge is put into action for decision making or policy making. Knowledge utilization results in knowledge increase, by gaining expertise and insights. Employees learn through experience on how to deal with a particular type of enquiry efficiently. For instance, frequent use of the information helps employees to locate the information faster

and become aware of the location in which the information resides. Knowledge is useless if it is not utilized.

Knowledge Evaluation - This is the process of appraising the knowledge available to the organization; say, in its repository to assess whether it meets the organization's objectives. It is also a process of determining whether new knowledge was created for improving organizational efficiency and effectiveness.

2.7. Factors Affecting Knowledge Management

A study conducted in Thailand [20] identifies factors that affected the knowledge management in organizations; namely, leadership and strategy, culture, information technology, measurement and infrastructure.

The conversion of information to knowledge and acquiring that knowledge into knowledge management systems are the key processes of a successful implementation. The implementation projects deal with strategy, process, technology and people factors, however, the success of the project is determined mainly by the people factor alone [21].

ICT favors the development of more decentralized and flexible structures that ultimately facilitate the processes of knowledge generation and transformation. The existence of mechanisms that spread information throughout the whole firm helps decentralize decision-making power and initiative. This speeds up the decision making, helps the firm exploit specific knowledge and ensures responsibility and commitment from the employees, who feel they have an important role in the company, as well as involved in its success [22].

In addition to the above factors a study conducted in Felege Hiwot Hospital,Ethiopia [23] also identifies factors which contribute to low knowledge sharing performance based on individual, organizational and technological factors. On individual factors the study found majority of health professionals are willingness to participate in knowledge sharing activity of the hospital, have no fear of of loss of personal competitiveness and they have awareness on the importance of knowledge sharing. However the study also shows gap between health professionals on building trust among them, low motivation, job dissatisfaction.

On organizational factors absence of resources, lack of informal and formal opportunity to share knowledge, lack of openness between employees and leaders.

2.8.Knowledge management Strategies

Most organizations focus primarily on one or the other of two broadly defined KM strategies – "codification" or "personalization" [1].

Codification is primarily implemented in the form of electronic document systems that codify and store knowledge and permit its easy dissemination and re-use. This strategy is based on "re-use economics" – invest once in creating or acquiring a knowledge asset and re-use it many times.

Codification Sub-Strategies

- Systems (creating and refining knowledge repositories and on motivating people to provide content)
- Process (developing and using repeatable processes that are supported with knowledge from previously conducted processes)
- Commercial (the management of intellectual property such as patents, trademarks, etc.)
- Strategic (the development of "knowledge capabilities" that can form the foundation of competitive strategy)

Personalization, on the other hand, focuses on developing networks to facilitate people-to people knowledge transfer and sharing. It is based on "expert economics" – channeling individual expertise to others with less expertise who may employ it to further the organization's goals.

Personalization Sub-Strategies

- Cartographic (creating knowledge "maps" or directories and networks to connect people)
- Organizational (providing groupware and intranets to facilitate communities of practice)
- Social (spatial) (socialization as a means of knowledge creation and exchange; emphasizes the providing of physical "places" to facilitate discussions)

While some organizations focus on only one of these strategies or sub-strategies, many use a combination of strategies that suits their needs [1].

2.9. Knowledge management tools and techniques

Knowledge capture is a variety of techniques used to elicit facets of an individual's technical knowledge such that insights, experiences, social networks and lessons learned can be shared to mitigate organizational knowledge loss. A variety of methods are used and they vary according to each organization's requirements but range from interviews and mind mapping to blogs and wikis. Many organizations recognize that commercial advantage is gained primarily through the knowledge and expertise of their staff. Increasingly, there is an awareness that measures need to be taken to protect and share this valuable asset. This is particularly pertinent for technology-

intensive, expert-based organizations that are at risk when key staff retire or leave the organization [24].

Pedagogical activity is necessary for building collaborative environments and KM can facilitate in accelerating this by integrating tools and knowledge distribution. This integration could also effectively assist in discovering complex and emerging patterns of heterogeneous knowledge sources [25].

Essential KM methods and tools are mentioned by young [26] in its Knowledge Management Tools and Techniques Manual. They are generally classified into Non –IT based and IT-based methods and tools, as presented in the table 2.1.

Table 2.1. Knowledge management methods and tools [26]

Non–IT Methods and Tools	*IT Methods and Tools*
Brainstorming	Document Libraries leading to a Document Management System
Learning and Idea Capture	Knowledge Bases (Wikis, etc.)
Peer Assist	Blogs
Learning Reviews	Social Network Services
After Action Review	Voice and Voice-over-Internet Protocol (VOIP)
Storytelling	Advanced Search Tools
Collaborative Physical Workspace	Building Knowledge Clusters
Asian productivity organization (APO) Knowledge Management Assessment Tool	Expert Locator
Knowledge Café	Collaborative Virtual Workspaces
Community of Practice	
Taxonomy	

Knowledge Management Systems (KMS) are tools to effect the management of knowledge and are manifested in a variety of implementations including document repositories, expertise databases, discussion lists and context -specific retrieval systems incorporating collaborative filtering technologies [27]. Providing an appropriate infrastructure and sufficient resources to facilitate knowledge sharing practices is the basis of a successful knowledge Management program [23].

2.10. Knowledge management in health care organization

Being a knowledge driven process, healthcare delivery provides opportunity to incorporate knowledge management practices to improve processes. But it has also been noted that knowledge management is systematically more complex in healthcare and minimal research exist to guide academic and organizational stakeholders [11].

Public health is traditionally data processing and data analysis oriented, though there is more awareness that a shift is needed in public health from data driven decision making to knowledge driven decision making [14].

It has been widely recognized that active and timely pedagogical approaches is needed in both public health and strategic management of healthcare to support the integration of KM and technologies. However, the actual core of the KM challenge is to blend knowledge across groups for which IT can play a key role [25].

The healthcare industry is facing a looming shortage in healthcare professionals due to high employee turnover, transfers, retirements and lack of available trained employees [13]. The success and the competitive advantages of organizations came from the individual knowledge, so the ability to capture and disseminate it within the organization is a key factor for sustainable success. The association of knowledge management with information and communication technology can leverage provide better systems that can support organizational success and cope with employee turnover [28].

In addition, the study done in Felege Hiwot hospital, Ethiopia shows that the presence of team work increases the possibility that team members would share their knowledge. As professional knowledge tends to be more tacit than explicit, team work is good opportunity for members to share knowledge [23].

Application of KM in health care is facing several major challenges, some of which are proper to the nature of the health care sector and others are common to other fields . The basic challenge remains the *awareness* of the importance and the potentials of KM in health care. Once KM is recognized as an organizational and practical asset, a *KM strategy* is needed. Once the strategy is in place, *change management* should be planned for in order to establish a KM adoption *culture* in the workplace and find KM *champions* among practitioners to facilitate KM adoption [14].

CHAPTER THREE

METHODOLOGY OF THE STUDY

3.1. Study design

A cross-sectional study design used to assess the KM practices based on its process and the way core knowledge can be captured, stored and shared among staffs of EFMoH and its affiliate organizations. The study would try to correlate the standards component of knowledge management practices in an organization with the existing process through quantitatively designed variables. To observe the statistical correlation 95% confidence interval used to verify whether the study organizations have the knowledge management practice where knowledge can be captured, stored and shared among technical staffs and directors.

Dependant variables: knowledge capturing, storing and sharing
Independent variables: Work experience, educational status, motivation, team work and information technologies

3.2. Study Area

Based on the inclusion and exclusion criteria and focus of the study particularly addressed the KM practices in the head office of the Ministry of Health, FMHACA, FHAPCO, PFSA and EPHI. All study subjects are located at Addis Ababa city due to limited resources in terms of time, money and human resources.

3.3.Study population and sampling procedures

Directorate directors, office heads and technical staffs in each directorate from EFMoH and its affiliates (FMHACA, EPHI, PFSA and FHAPCO) participated in the research project. The study employs non-probability purposively selected directorate directors to generate the situation of organizational knowledge management practices according to the health polices and strategies. As a result, directorate directors are included in the study. In addition the study included technical staffs in the target organization which would be selected randomly using lottery method from the total 99 case teams equivalent to one program staff from each case teams included in the study. The sampling frame would be case teams under the 62 directorates in (EFMoH, FMHACA, EPHI, PFSA and FHAPCO). In addition, each staffs with in the case team under the directorates has similar job responsibilities there for selecting one staff from each case team is representative of a team. Total study participants are summarized as follows in table 3.1.

Table 3.1: Number of study participants by organization during the study period on March 2014

Organization	**Directors**	**Technical staffs**	**Total**
EFMoH	16	38	54
EPHI	13	18	31
PFSA	11	15	26
FMHACA	13	16	29
FHAPCO	9	12	21
Total	62	99	161

Therefore, a total of 161 participants included in the project to assess the level of knowledge management practice.

Inclusion criteria: Technical staffs and directors at EFMoH and its affiliates (FMHACA, EPHI, PFSA and FHAPCO) included by assuming productive knowledge which directly related to organizational strategies has found on them.

Exclusion criteria: support staffs were not included in the study by assuming productive knowledge has not found on them.

3.4. Data collection procedures

Structured, self administered questioners that are described in a manner of scale measure (yes, mostly, partially, no, don't know, often etc) was adopted from knowledge sharing study which is done in Felege Hiwot Hospital [23] and it is modified to assess the mechanisms of knowledge management practices among 161 staffs and directors in the organizations. Questions are simple and short written on English. In addition structured observational checklist was used to observe KM practices. To ensure the appropriateness of the questioners pre-test was done in EFMoH staffs that are not included in the study. Orientation was given for the respondents about concept of knowledge and its management.

Data quality assurance: to keep the quality and consistency of data pre-test of questioner done in similar organization to see the validity, and the data further monitored by the collectors to see the completeness and reliability from each respondent. Since the questions are mainly self administered ones the data collector briefly informed the respondents on the objective and expected outcome of the study.

3.5. Data analysis and interpretation

The data were analyzed using statistical package SPSS16 after collected, cleaned and coded based on the variables. The data is further compared and presented using statistical methods such as tables, graphs and charts.

3.6. Method of Result dissemination

The research project finding will be disseminated to Addis Ababa University, as well as to Federal Ministry of Health and its affiliate organization. The report may also be sent to publication for disseminating the result of the study.

3.7. Operational definition

Knowledge: associated with the skills, aptitude, experience and values which enable employee's to perform their work better [13].

Knowledge management: is leveraging knowledge for improving internal processes, for formulation of sound government policies and programs and for efficient public service delivery for increased productivity [4].

Organizational knowledge management: is the process of capturing, developing, sharing, and effectively using organizational knowledge [4].

Knowledge acquisition: is the process of acquiring knowledge from both internal and external sources of the organization [17].

Knowledge creation: is the transformation of tacit knowledge to explicit knowledge and vice versa [17].

Knowledge capturing: is process that involves identification, elicitation, distillation, packaging and publishing [29].

Knowledge sharing: refer to exchange of experience, events, thoughts or understanding of the concept [29].

Knowledge use: is the process of getting knowledge utilized for a particular purpose [17].

Knowledge storage: refers to centralized/personal repository mechanism for knowledge storage [17].

Core Knowledge: is knowledge mainly used to meet organizational goal and objectives [18]

Knowledge management practice: a method, procedure, process, or rule used in knowledge management.

3.8. Ethical considerations

Ethical clearance obtained from the respective School of Information Science, School of Public Health and Addis Ababa University ethical committee. Based on written support letters from AAU informed consent was obtained from the study participants after explaining the purpose of the study. Participation of all respondents in the study was strictly voluntary and they could with draw from the study at any time without explanation and loss of benefit. The autonomy of each participant assured unless they needed assistance in filling out the questioners. In such case, confidentiality is assured and no personal details are recorded.

3.9. Framework for knowledge management practice assessment

This framework adopted from knowledge management mechanism in health care portals by Lee, Goh, and Chua [29]. As stated in the framework health care portal has three Km process (knowledge Access, creation and transfer) with the knowledge flow of users and providers. For the purpose of this study KM process (Knowledge creation, acquisition, sharing, storage, usage) are incorporated as shown in figure 3.1.

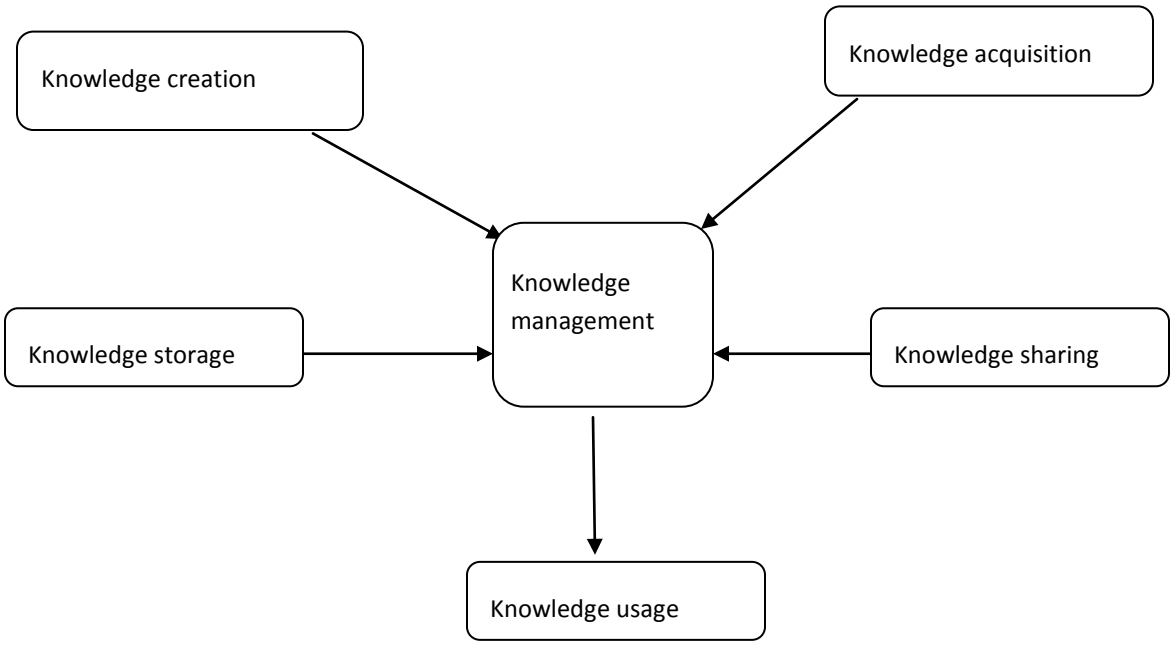

Figure 3.1 Conceptual framework of the study [29]

The above mentioned KM process assessed their practice in EFMoH and affiliate organizations. Generally, the study focuses in each process and their mechanism/ techniques to mange knowledge in the organization.

Knowledge Acquisition:- identifies and describes the existing core knowledge which is used to meet organizational goal and objectives and type of knowledge existed in the organization.

Knowledge Creation:- an organization selects a simple way by the acquisition of knowledge from external sources and adapts it for internal use. Staffs involved in the knowledge management process usually try to organize and transform acquired knowledge into written material.

Knowledge repository/storage:- the ability of providing a centralized repository for knowledge storage, for example a public library and a database of related information about a particular subject.

Knowledge sharing:- is the means by which organization obtains access to its own and other organizations' knowledge.

Knowledge use:- the process of getting knowledge utilized for a particular purpose; this occurs, when knowledge is put into action for decision making or policy making.

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CHAPTER FOUR

RESULT AND DISCUSSION OF FINDINGS

This study attempts to assess knowledge management practices in EFMoH and its affiliate organizations. The results of the study are presented and discussed based on the KM process. Finally, the findings of the study are stated in detail.

4.1. Univariate Analysis

4.1.1. Demographic characteristics

From the total of 161 expected sample 144 of the study participants responded for both study subjects with a return rate of 89 percent.

Table 4.1: Socio demographic characteristics of respondents during the study period on March 2014

Variables	EFMoH (no./%)		EPHI (no./%)		PFSA (no./%)		FMHACA (no./%)		FHAPCO (no./%)		Total (no./%)	
Gender												
Male	38	26%	22	15%	18	13%	20	14%	12	8%	110	76.39%
Female	15	10%	4	3%	5	3%	6	4%	4	3%	34	23.61%
Age												
<30	24	17%	10	7%	7	5%	14	10%	3	2%	58	40.27%
31-40	18	13%	7	5%	9	6%	3	2%	4	3%	41	28.47%
41-50	7	5%	4	3%	5	3%	5	3%	6	4%	27	18.75%
>50	8	6%	4	3%	2	1%	2	1%	2	1%	18	12.50%
Education												
A. diploma	3	2%	0	0%	2	1%	2	1%	1	1%	8	5.50%
1st degree	24	17%	8	6%	13	9%	18	13%	7	5%	70	48.60%
Master	23	16%	14	10%	7	5%	7	5%	6	4%	57	39.60%
MD	4	3%	0	0%	0	0 %	0	0 %	2	1%	6	4.10%
PHD	0	0%	2	1%	0	0%	0	0 %	0	0 %	2	1.40%
Experience												
<2year	4	3%	3	2%	4	3%	6	4%	3	2%	20	13.80%
2-5year	14	10%	3	2%	4	3%	9	6%	4	3%	34	23.60%
5-8year	20	14%	9	6%	5	3%	1	1%	3	2%	38	26.40%
9-15 year	3	2%	3	2%	3	2%	2	1%	1	1%	12	8.30%
>15year	5	3%	29	20%	3	2%	3	2%	0	0%	40	27.70%

Table4.1. Shows that summary of demographic profile of the respondents which indicates 76.4% male and the rest 23.6% female contributed for both study subjects at EFMoH, EPHI, PFSA, FMHACA, and FHAPCO. The study shows, 40.27% of the study participant is below 30 years age and 28.47% of them are between 31-40 ages. An educational status shows 48.6%, 39.6%, 4.1% and 1.4% have 1st degree, master's, MD and PHD respectively. Further, work experiences of both the technical staff and directors indicated 37.4% have below five year experiences and 34.7% have 5-15 years experience in the organization.

4.1.2. General KM Responses

General knowledge management practice questions were raised for directors and technical staffs represented in the study organizations and responded accordingly, only 19%, 22%, 23%, 25% and 20% of EFMoH, PFSA, FMHACA, HAPCO and EPHI respectively responded they have KM strategy yes. Whereas, the rest 81%, 78%, 77%, 75%, and 80% of respondents respectively mentioned the organization either don't have or they don't know KM strategy presences. Concerning the presences of KM responsible body in the organization only 6%, 17%, 8%, 0 and 8% of both technical staff and directors mentioned they have KM responsible person, but the rest 94%, 83%, 92%, 100% and 92% respectively indicated there is no KM responsible person who can manage knowledge. About information recording system 73%, 60%, 57%, 100% and 69% respectively from EFMoH, PFSA, FMHACA, HAPCO and EPHI responded on having record system fully and partially and the rest 27%, 40%, 43%, 0 and 31% mentioned they don't have information recording system.

From those who responded of having information record system in the organization, mentioned data base, Health commodity Management Information System (HCMIS), Pharmastical Logistic Information Tracking System (PLITS), Personnel Management System (PMS) Archive, web site, publications, newsletter, magazine, social media and Electronic Health Management Information System (EHMIS) as means of record system. Most of the respondents 37%, 52%, 32%, 67% and 54% from EFMoH, PFSA, FMHACA, HAPCO and EPHI indicated the training they have taken addressed KM. whereas 38%, 20%, 43%, 33% and 46% subsequently indicated the training they took partially address KM, the rest 25%, 28%, 25% contributed to no responses and don't know respectively for EFMoH, PFSA and FMHACA.

Related to the communication between staffs and among directors showed in EFMOH, PFSA, FMHACA, HAPCO and EPHI 24%, 22%, 31%, 36% and 32% they will communicate and respectively 32%, 30%, 35%, 35% and 16% mentioned partially where as the rest 44%, 48%, 44%, 39% and 52% of them mentioned they will not communicate each other concerning activities in the organization. Understanding the benefit of knowledge management 59%, 43%, 72%, 80% and 46% of EFMOH, PFSA, FMHACA, HAPCO and EPHI respondents they understand the benefit of KM. Also 15%, 35%, 27%, 20% and 35% of them mentioned of

understanding KM partially but 26%, 22%, 1%, 0% and 19 % mentioned no or don't know towards understanding KM. The rest have been showed in table 4.2 below.

Table 4.2 Response of technical staffs and directors on General KM questions during the study period on March 2014

Variables	Organization	Yes		Mostly		Partially		No		Don't know		Total	Mean score	SD
KM Strategy	EFMoH	10	19%	-		-		30	56%	14	26%	54	18	11
	PFSA	5	22%					11	48%	7	30%	23	8	3
	FMHACA	6	23%					15	58%	5	19%	26	9	6
	HAPCO	4	25%					8	50%	4	25%	16	5	2
	EPHI	5	20%					14	56%	6	24%	25	8	5
KM Responsible person	EFMoH	3	6%					36	68%	14	26%	53	18	17
	PFSA	4	17%					15	63%	5	21%	24	8	6
	FMHACA	2	8%					18	69%	6	23%	26	9	8
	HAPCO	0	0%					9	60%	6	40%	15	5	2
	EPHI	2	8%					16	62%	8	31%	26	9	7
Have Information record system	EFMoH	14	27%	8	15%	16	31%	12	23%	2	4%	52	10.4	6
	PFSA	6	24%	2	8%	7	28%	7	28%	3	12%	25	5	2
	FMHACA	4	14%	2	7%	10	36%	8	29%	4	14%	28	5.6	3
	HAPCO	7	54%	2	15%	4	31%	0	0%	0	0%	13	2.6	3
	EPHI	6	23%	4	15%	8	31%	5	19%	3	12%	26	5.2	2
Training to address KM	EFMoH	12	22%	8	15%	21	38%	11	21%	2	4%	54	11	7
	PFSA	8	32%	5	20%	5	20%	7	28%	0	0%	25	5	2
	FMHACA	7	25%	2	7%	12	43%	7	25%	0	0%	28	5.6	4
	HAPCO	5	42%	3	25%	4	33%	0	0%	0	0%	12	2.4	1
	EPHI	7	29%	6	25%	11	46%	0	0%	0	0%	24	4.8	3
Communication with staff	EFMoH	7	13%	6	11%	17	32%	19	36%	4	8%	53	10.6	7
	PFSA	3	13%	2	9%	7	30%	10	43%	1	4%	23	4.6	4
	FMHACA	5	19%	3	12%	9	35%	7	27%	2	8%	26	5.2	3
	HAPCO	2	12%	4	24%	6	35%	3	18%	2	12%	17	3.4	2
	EPHI	6	24%	2	8%	4	16%	10	40%	3	12%	25	5	3
Understand	EFMoH	26	48%	6	11%	8	15%	10	19%	4	7%	54	10.8	9

benefit of KM	PFSA	10	43%		0%	8	35%	3	13%	2	9%	23	4.6	4
	FMHACA	13	50%	3	12%	7	27%	3	12%	0	0%	26	5.2	5
	HAPCO	11	73%	1	7%	3	20%		0%	0	0%	15	3	5
	EPHI	7	27%	5	19%	9	35%	3	12%	2	8%	26	5.2	3
Mechanism to capture/transfer Knowledge	EFMoH	4	7%	7	13%	12	22%	25	46%	6	11%	54	10.8	8
	PFSA	1	5%	2	9%	8	36%	10	45%	1	5%	22	4.4	4
	FMHACA	5	19%	6	22%	5	19%	11	41%	0	0%	27	5.4	3
	HAPCO	4	25%	1	6%	3	19%	6	38%	2	13%	16	3.2	2
	EPHI	1	4%	1	4%	7	28%	12	48%	4	16%	25	5	5

Concerning the existences of organizational core knowledge, 63.3% of directors from 50 interviewed directors from EFMoH, PFSA, HAPCO, EPHI and FMHACA mentioned of having core knowledge but 14.3% and 22.4% of them responded no and don't know. Understanding core knowledge 42% of technical staffs from EFMoH, PFSA, HAPCO, EPHI and FMHACA understands organizational core knowledge but 58% of them don't understand. Out of those directors who responded there is organizational core knowledge 34% mentioned have a tool to manage core knowledge, the rest 22% and 44% responded no and don't know.

Typical organization core knowledge's listed by directors and technical staffs from each institution are:

- **EFMoH**: Support hospitals services, development of organization specific project proposal, annual plan, policy guidelines, manuals, research, planning, M&E, communication, health army development manuals, strategic planning,
- **FMHACA**: lab quality management system, food and drug manufacturing industries, health professional regulation, guidelines, rules and regulations of health care
- **EPHI**: quarantine, researches, disease surveillance and outbreak investigation and other important knowledge that the organization has.
- **PFSA**: Medical supply procurement and forecasting,
- **HAPCO**: planning, analytic skills, communication, knowledge on HIV/AIDS, research, multi-sectoral approach for HIV/AIDS prevention and response are the mentioned one.

4.1.3. Knowledge identification and capturing

This study has also assessed the way knowledge identified and captured in the organizations; accordingly, 47%, 17% and 19% of technical staffs and directors incorporated in the study responded yes, mostly and partially subsequently for the question of identify knowledge

regularly, where as the rest 10% and 7% of respondents mentioned no and don't know where the mean value of 28.8 indicated majority of the responses are closer to yes. Whereas encouraged for knowledge identification 25% responded yes, 13% mostly, 33% partially, 21% no and 8% don't know with mean value of 28.8. Similarly, knowledge captured regularly 8% responded yes, 13% mostly, 23% partially, 40% no and 16% don't know with mean value of 28.8. As shown in table 4.3 below.

Table 4.3 Responses on knowledge identification and capturing by technical staffs during the study period on March 2014

Variables	**N/%**	**Yes**	**Mostly**	**partially**	**No**	**Don't know**	**Mean score**	**SD**
Organization identify Knowledge regularly	No.	67	24	28	15	10		
	%	47%	17%	19%	10%	7%	28.8	22.5
Encourage for knowledge identification	No.	36	19	47	30	12		
	%	25%	13%	33%	21%	8%	28.8	13.8
Regular knowledge capture	No.	11	19	33	58	23		
	%	8%	13%	23%	40%	16%	28.8	18.1

Concerning knowledge capture techniques technical staffs responded 28% yes, 29% no and 44% don't know. Out of those who mentioned of having techniques to capture knowledge, mentioned the techniques they are using for capturing knowledge in the organization: training, reports, staff meetings, publication, seminar, experience sharing, auto sharing e-mail list etc.

4.1.4. Knowledge storage

Directors and technical staffs have also been asked about knowledge storage as shown in the figure 4.1, 87% of directors and technical staffs of responded on knowledge is stored incorporate level and 84% have guidance on what information should be kept, the rest 13% and 16% of each group have mentioned knowledge is not stored in corporate level and there is no guidance on what information should be kept.

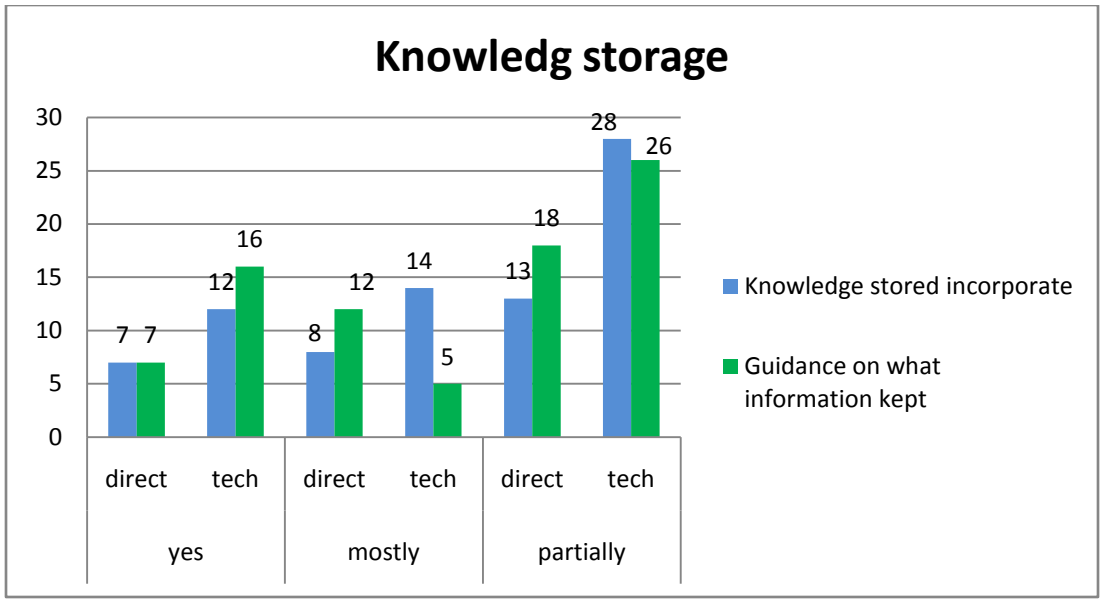


Figure 4.1 Knowledge storage responses of technical staffs and directors

Similarly, 72.3% of technical staff's responded knowledge storage is mainly through documentation and the rest 27.7% don't have documentation practice. Means of documentation are 37% through report writings and the rest 28% and 20% through manuals and data base.

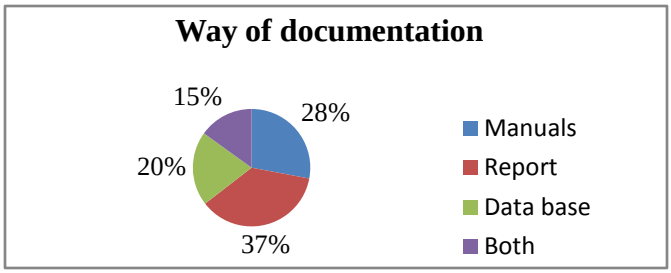
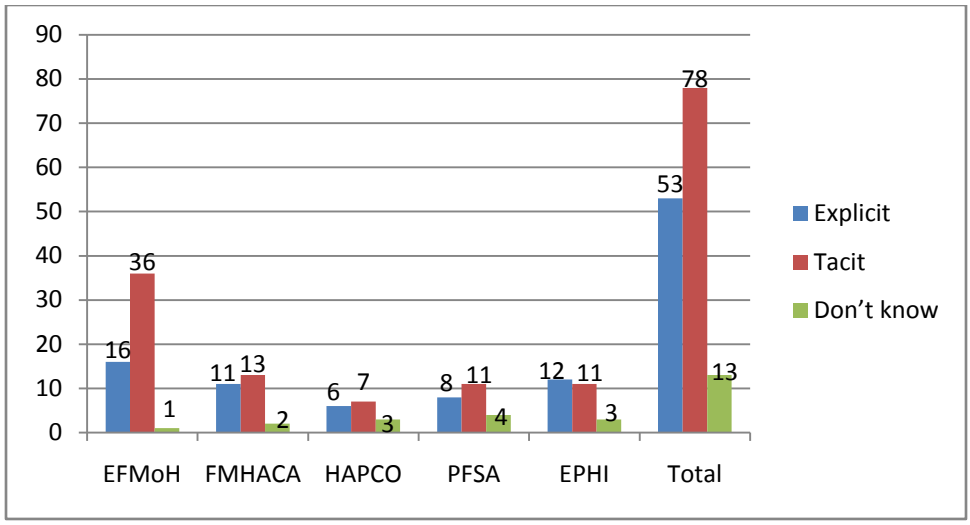


Figure 4.2 knowledge storage mechanisms responded by technical staffs

As depicted in the figure 4.3 below, majority of respondents from EFMoH, FMHACA, HAPCO, PFSA and EPHI indicated type of knowledge as tacit knowledge which is 54% , 37% for explicit knowledge, and 9% don't know the type of knowledge existed in the organization.

Figure 4.3 Response on Types of knowledge which exists in the organization during the study period on March 2014



4.1.5. Knowledge sharing responses

Knowledge sharing practice of the technical staff and directors has been assessed through trainings and frequency of informal knowledge sharing. Their response shows that 11% always, 24% often, 44% sometimes, 16% rarely and 5% never respectively for training as an opportunity to share knowledge. Also the frequency of knowledge sharing informally indicated 35% responded always, 19% often, 33% sometimes, 8% rarely and 3% never. The average mean of the responses 28.8 is between always and often; table 4.4 presents the responses in detail.

Table 4.4 Responses on knowledge sharing practice of the technical staffs during the study period on March 2014

Variables	**Always**	**Often**	**Sometimes**	**Rarely**	**Never**	**Mean Score**	SD
Training opportunity for knowledge sharing	16	35	63	23	7	28.8	
	11%	24%	44%	16%	5%		21.7
Frequency of knowledge sharing informally	51	28	48	12	5	28.8	
	35%	19%	33%	8%	3%		20.7

In addition motivation status of technical staffs to share knowledge indicates 40% highly motivated, 38.3% medium only 21.4% has low motivation. Out of those technical staffs who were motivated to share knowledge, 40.4% share knowledge through face to face interaction, 27.7% are through e-mail, 16% through phone and 8.5% of them mentioned using all methods indicating, majority of the respondents use e-mail to transfer knowledge. Whereas 36% of directors mentioned face to face as a means of knowledge sharing, 28% through e-mail, 18% through phone and 14% through other means.

Perception of gaining new knowledge while sharing knowledge, both technical staffs and directors indicated, about 9% strongly disagreed, 3.5% dis-agreed, 6.3 % neutral, 30.6 % agree, 50.7% strongly agree.

Knowledge Access and Usage

Out of the total of 94 technical staffs who gave response, 43.6% knows what knowledge to be accessed, where as 21.3% mostly, 31% partially, 3.2% no. Concerning accessing critical information, 8.5% mentioned yes, 19% mostly, 39.4% partially, 31% no, 2% don't know. And 32% of staffs said yes and 30% mostly have the right skill to use information, 26.6% partially, 6.4% said no, 5.3% don't. Also, 79.8% of technical staffs have publication schema, 8.5% said partially they have but 10.7% of the respondents don't have publication schema.

Directors also mentioned, 48% yes, 4 mostly, 34 partially, 6 no and 6 don't know to the question of knowing what knowledge to be accessed. In addition they mentioned an employee has the right skill to use information 10% yes, 28% mostly, 40% partially, 14% no and 8% don't know.

Finally, concerning IT infrastructure, 40% of directors involved in the study mentioned there is knowledge security and infrastructure placed in the organization but 38% mentioned knowledge is not secured in the organization. Concerning having control on records 52% said yes and 30% said no where the remaining 18% mention partially. Director's also noted that 72% agreed that the organization has IT infrastructure but 10% said no. The reaming 18% mentioned partially.

4.2. Bi-vitiate analysis of variables

Although it needs further study to assess socio-demographic factors contributing for knowledge management practices, the study showed preliminary association of motivation, team work and information technology factors with knowledge management practices in the study organizations. To see the statistical association between variables a chi-square test and p-value have been used.

Dependent variables: Knowledge management practices (knowledge capturing, sharing and storing).

Independent variables: Educational status, Work experience

The hypothesis was the association of knowledge management practice with Educational status, Work experience. Accept HO when P<0.05 and reject HO when p>0.05.

Table 4.5 Association between knowledge sharing, storage, capture and, work experience and educational status.

Variable	Who shared knowledge	Who store knowledge	Who captured knowledge	Total	chi-square	Df	Ass	CI 95%
Work experiences	54	40	27	121	9.8	2	0.05	5.991
Educational status	76	33	62	171				
Total	130	73	89	292				

As shown in table 4.5 first, the chi-square test to assess the association between knowledge management practices with work experiences and educational status shows no statistical significant association where the chi-square value of 9.8 is greater than the P value of 5.991.

4.3. Observation Result

The finding indicates there is absent of knowledge management strategy/ guideline in all study organizations. Whereas communication tools like computers, internet and phone will be used in all organizations in addition paper based communication was used.

Concerning the presences of IEC materials related to work there are quarterly news, literature and broachers. In addition the study try to check the availability of IT based KM system; in all organization there is no IT based KM system.

4.4. Discussion

The study has managed to assess the current practice of knowledge management and identified the core knowledge in EFMoH, FMHACA, PFSA, HAPCO and EPHI.

The socio demographic data indicated most of the respondents 95% have 1st degree and above of educational level. In addition, both the technical staff and directors have greater than five years work experiences in the organization indicated contributing 62.4% and the rest 37.5% contributes for 1-5 years. For the interest of this study the association of socio-demographic variables with KM processes will be seen latter. It was indicated that KM programs are supported by three key components peoples, process and technology, adequate and effective work forces is required to generate, store, use and share knowledge.

The study reviled that about 63.3% and 42.4% of directors and technical staffs responded they understood their organizational core knowledge. The finding shows awareness of technical staffs needs to be enriched with organizational policies and strategies. Respondents listed the typical organizational core knowledge's as lab quality, management system, food and drug manufacturing's, health professional regulation guidelines, rules and regulation, medical supplies procurement and forecasting, health army development, disease surveillances and etc. It is known that knowledge management in the health care system is not to manage all knowledge but core knowledge essential to development [18].

Knowledge initially exists in the mind of an individual, for KM to be successful; knowledge must usually be transmitted through social groups, teams and networks. Therefore, KM processes are quite people-intensive, and less technology-intensive than most people might believe, although a modern knowledge-enabled enterprise must support KM with appropriate information and communications technology [1]. This study shows that 37% of explicit knowledge existed in the organization and 54 % of tacit knowledge where knowledge usually existed in expertise mined which is hard to articulate or communicate where team work and use of other means of sharing knowledge among colleagues. In healthcare, one of the most critical knowledge transformations to effect is that of tacit to explicit; i.e., externalization so that the healthcare organization can best leverage its knowledge potential [19].

KM strategy is a plan that describes how an organization will manage its knowledge better for the benefit of that organization and its stakeholders. The finding indicates significant number of study participants 78.2% mentioned the organizations don't have knowledge management strategy; the result also conformed based on the observation checklist. As stated in the study conducted in Thailand [20] KM strategy is one of the major factors to establish KM system.

Similarly, the study indicated 92.2% of respondents mentioned there is no responsible person who can manage knowledge. KM programs are supported by three key components [3]: people,

processes, and technology. If the organization fail to manage this components the staffs are not identify, share and use knowledge which exist in the organization.

Knowledge identification and capture in the organization indicates 83% of technical staffs and directors incorporated in the study mentioned they have experience on identifying knowledge with mean value of 28.8, closer between yes and partially but the organization is not encouraged staffs for knowledge identification. In line with this only 44% of knowledge is capture regularly by the organization. 34% of directors and technical staffs mentioned of having the technique to capture knowledge. Out of that most of them mentioned the techniques they are using for capturing knowledge in the organization as: training, reports, staff meetings, publication, and seminar, experience sharing, auto sharing e-mail list. Also, significant number of respondents doesn't know about techniques to be used for capturing knowledge. Knowledge can be acquired through various ways; internally through induction programme for new employees and externally through educational institutions and previous employers. The source of knowledge acquisition has no limits; it could be from superiors, customers, advertisements, magazines, newspapers and television. Information made available through ICT, manuals, memos and e-mails provides the supporting environment to enhance knowledge acquisition process.

Knowledge storage is the ability of providing a centralized repository for knowledge storage, for example a public library and a database of related information about a particular subject. The assessment shows that significant number of directors and technical staffs 87% responded, knowledge is stored incorporate level and 84% they have guidance on what information should be kept; this indicates that knowledge stored in one place of the organization and its difficult to use as the same time by different professionals and means of storage is mainly through documentation. Of those (72%) who mentioned there is document practice 37% are through report writings and the rest 28% and 20% through manuals and data base and listed the following means of record system: data base, HCMIS, PLITS, PMS, Archive, Web site, publications, news letter, magazine, social media and EHMIS. However 27% of technical staffs have no documentation practices this crates gap on effective storage and retrieval mechanism on knowledge management for all staff in the organization.

Knowledge sharing practice in the study areas indicates 35% of technical staffs share knowledge where as 44% of them mentioned they would share sometimes through trainings, staff meetings. Similarly, their motivation level to share knowledge indicated high to medium motivation to share knowledge. But among those who are motivated for knowledge been shared was mainly through internet, e-mail and phone. Perception of technical staffs towards gain of new knowledge while sharing knowledge to others; most of them agreed they will gain new knowledge which indicated 81.3%. When knowledge is shared in the organization to achieve an organizational goal, the knowledge is distributed. Sharing of knowledge takes place in two ways for example formal and informal. Formal sharing takes place through official channels like

meetings, discussions, e-mail, web-postings and memos, while informal sharing takes place inside or outside the office, for instance, during breaks and time out. Deliberate management attempts can improve the knowledge sharing functions in the organization.

Knowledge use is the process of getting knowledge utilized for a particular purpose; this occurs, when knowledge is put into action for decision making or policy making. Knowledge utilization results in knowledge increase, by gaining expertise and insights. Employees learn through experience on how to deal with a particular type of enquiry efficiently. For instance, frequent use of the information helps employees to locate the information faster and become aware of the location in which the information resides. The study shows that most of technical staff knows what knowledge to be accessed but on accessing critical information more than 33% mentioned don't access critical information. Also 80% of the technical staffs have publication schema and 86% of directors knows what knowledge to be share.

Finally, the availability of IT infrastructure in the organizations was assessed and showed 40% of directors mentioned the organizational knowledge is secured and most of the directors have in control of records. ICT has favoring the development of more decentralized and flexible structures that ultimately facilitate the processes of knowledge generation and transformation. The existence of mechanisms that spread information throughout the whole firm helps decentralize decision-making power and initiative. This speeds up the decision making, helps the firm exploit specific knowledge and ensures responsibility and commitment from the employees, who feel they have an important role in the company, as well as involved in its success [22]. The study showed the contribution of IT is huge but still a lot has to be done where there is a limited access of manipulating internet for information and knowledge sharing.

It has been widely recognized that active and timely pedagogical approaches is needed in both public health and strategic management of healthcare to support the integration of KM and technologies. However, the actual core of the KM challenge is to blend knowledge across groups for which IT can play a key role [25].

Bi-variant analysis between dependant and independent variables showed no statistical significances association where chi-square value of 9.8 is greater than the p-value of 5.991. Different studies showed demographic factors and knowledge sharing are one of the factors that affect knowledge sharing and knowledge transfer in public services [30]. However, there were only a few studies that look into the impact of demographic factors on knowledge sharing behavior. Among demographic variables been studied were gender, age, organizational tenure, job position and ethnicity. Educational level can't affect the level of knowledge sharing and usage but not have direct association with knowledge capture and storage. Work experiences have direct effect on knowledge capture, sharing and usage.

The results were verified by observational cheek list where there is no KM strategy but there are communication materials such as computer, internet and phone in addition to paper based communications. Concerning the presences of IEC materials there are newsletters, brochures related to the organization focus area.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Being a knowledge driven process, healthcare delivery provides opportunity to incorporate knowledge management practices to improve the processes. This research assessed the level of knowledge management practice in Federal Ministry of Health and affiliate organization and further advised the mechanism in improving organizational knowledge capturing, knowledge storage and knowledge sharing among staffs and directors by using knowledge management methods and tools both IT and Non IT based.

The study showed, much effort has to be done in strategizing how to plan, implement and monitor KM activities hence all of the organizations don't have KM strategy as part of the health sector development plan and there is no responsible person/ team for coordinating KM. The organization needs to develop a strategy and assign responsible person to ensure KM practice.

Emphasis has to be given on raising awareness of technical staffs on the core organizational knowledge such as policies, strategies and core value. Even though directors explained about the organizational core knowledge including policy guidelines, significant number of technical staffs are unable to understand there organizational core knowledge and tools to manage such as organizational policies and strategies.

Knowledge initially exists in the mind of an individual, for KM to be successful; knowledge must usually be transmitted through each staffs, teams, directorates and organizations. Hence the study indicated the type of knowledge existed in the organizations was tacit knowledge which could not be documented and shared among all staffs. Directors and organizational leaders should work on encouraging and motivating staffs to share knowledge and on strengthening team work for knowledge sharing.

Even though, there are limited practice of information record system and accessing information's ICT has to favor the development of more decentralized and flexible structures that ultimately facilitate the processes of knowledge generation and transformation. The study also indicated there is no statistical association between educational level and work experience with knowledge sharing, storage and capture. Further study has to done to see factors contributing for knowledge management practices.

The study concludes that in EFMoH and affiliate organizations there was limited knowledge management practice. In addition, the study shows mechanism to further designing, implement and monitor KM practices in the study organizations.

5.2. Recommendations

5.2.1. General Recommendation

The following recommendations are given based on the assessment on knowledge management practice with a view to further enhance the management of knowledge on EFMoH and affiliate organizations in particular and in health sector in general.

EFMoH and affiliate organization managers should create awareness in all level of the organizations by giving emphasis on knowledge management advantage and its mechanisms. In addition, there is a need of organizing orientation mechanisms and refreshing new and old staffs on organizational Core knowledge.

Develop knowledge management strategy and guidelines to have clear direction on organizational KM and assign responsible team/ person who can coordinate the implementation of KM activities in the organization. In addition allocate sufficient recourses for KM related activities. Team work also need to be scale up for further knowledge sharing and involving staffs in every steps of KM process should help for the better management of knowledge.

EFMoH and affiliate organizations should promote and encourage staffs identify and share knowledge by designing and implementing appropriate motivational schema.

In addition to the above recommendations EFMoH and affiliate organizations should use mechanism for effective management of knowledge and tools which is suggested by this research.

Further studies need to be done to observe contributing factors for successful knowledge management on the health sector organizations and other sectors.

In general, knowledge has been widely recognized and cost effective intervention that active and timely approaches are needed in both public health and strategic management of healthcare to support the integration of KM and technologies. Indicating the Federal Ministry of Health and its affiliate organizations needs to give emphasis on the importance of knowledge management system design by including tools and techniques; and develop and incorporate the Knowledge management strategy with other health sector strategies and programs. Further creating central based IT infrastructure where staffs and managers can access to fasten the knowledge sharing process and one can share experiences among individual directors or agencies

5.2.2. Knowledge management mechanism of the research project

The goal of knowledge management is to provide the decision maker with appropriate tools, technologies, strategies and processes to turn data and information into valuable knowledge assets [18]. This study tries to put a mechanism for knowledge management based on the major finding of the study. Figure 5.1 explain the way organizations should follow in managing their knowledge.

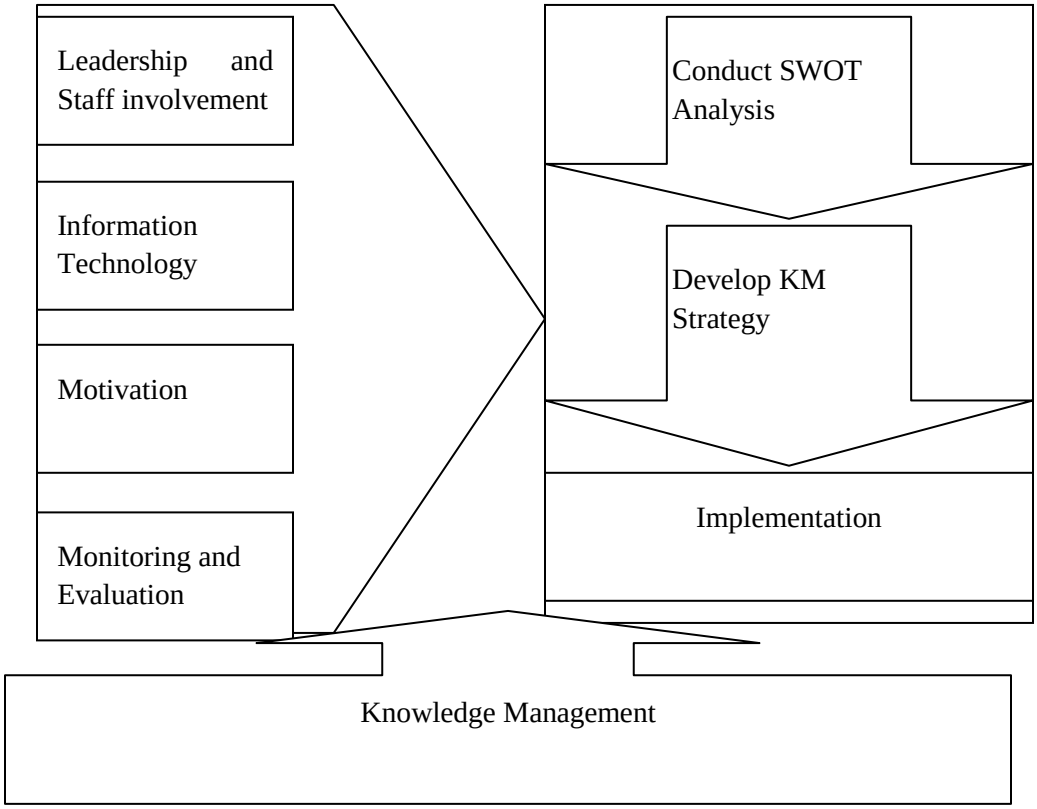


Figure 5.1 The way forward for managing knowledge

As stated in figure 5.1 above there are steps that should be taken in to account in managing knowledge for organizational success.

Step one:- Conduct SWOT(strength, weakness, opportunity and threat) analysis

Before starting on the KM journey, the organization needs to know its strengths, weakness, opportunities and threats. The organization can then focus on its KM programs to address the gaps identified through the analysis. Analysis can be done by using these assessment results and by asking employees.

It gives an idea about what's working and what's not, pinpoint where knowledge flow bottlenecks are occurring, how technology is/is not being used to support knowledge management, Elements of the organizational culture and structure which support and encourage knowledge management and also present barriers to effective knowledge management

Step two:- Develop KM strategy: The assessment results shows that there is no strategy designed to KM in EFMoH and affiliate organization. As a result of these the organization has develop it. The strategy gives direction on managing knowledge in the organization.

The strategy should establish goals and objectives for the future – where we're trying to go – and make the case for KM – why we need to follow this path. The strategy should also build upon knowledge gained through the course of the KM assessment but also focus on new possibilities for the future.

Based on the strategic objective and goals of the organization the intervention areas will be seated and due to lack of recourses the organization has to prioritize intervention areas by looking up on their strategic plan.

Step three:- Implementation

Implementation usually includes several different tactics, initiatives, activities, and other methods which together will help advance the organization in achieving its goals. Staffs are key participants in the process and help to develop, define, adapt, and apply ideas for implementation in ways that will best suit the organization. Since KM is so strongly connected to organizational culture, it is critical that staff help shape tactics to ensure they fit within your culture.

In this step selection of appropriate tools and techniques for each KM process is done based on the advantage of the tools and techniques. I suggested tools and techniques on topic 5.2.3 which I believe EFMoH and its affiliates can use it. After selection application of those tools can be done on each KM process.

In addition to the above steps there are crosscutting issues like motivation, leadership, monitoring and evaluation and IT which are great role for managing knowledge. .

The study show that most of respondents are not motivated as such for knowledge sharing and not all respondents have guidance on what information should be kept it indicates the gap on leadership. Any KM initiatives should take account to both people and technology. A powerful KM tool won't probably thrive if concerned individuals are not committed in its use. And reciprocally, employees highly motivated to adopt KM could lose their motivation if the tools supporting KM have low usability or do not provide relevant features [13]. Motivating staffs and creating team work required attention for creating knowledge management system in the organization

In line, putting clear vision and leadership are also needed to address the coordination and cross-cutting activities that support KM and to sustain the effort over time [14]. As a result the organization has to look at them in every step and they make every effort on fulfilling them

5.2.3. Suggested Tool and Technique for KM

To fulfill step five on the mechanism that knowledge manage in the organization selected tools and techniques of knowledge management for each process was adapted from Knowledge Management Tools and Techniques Manual [26] listed below and the ministry of health and its affiliate organization has to implement to manage their organizational knowledge. For detail description about the tools see annex III.

Table 5.1 suggested KM tools and technique [26]

KM process	**KM tools and techniques to be consider**
Identifying	Knowledge Café, Knowledge Mapping and Expertise Locator
Creating	Brainstorming, Learning Review, Collaborative Physical Workspace, After Action Review (AAR), Knowledge Café and Expertise Locator
Storing	Learning Review, After Action Review (AAR), Knowledge Café, Expertise Locator and Document management system
Sharing	Peer Assist, Learning Review, After Action Review (AAR), Knowledge Café, Expertise Locator, Storytelling and Collaborative Physical Workspace
Applying	Document management system, Collaborative Physical Workspace, Peer Assist, Knowledge Café, Expertise Locator

Brainstorming

Brainstorming is a simple way of helping a group of people to generate new and unusual ideas. It is useful when there is a need to generate a relatively large number of options or ideas.

Peer Assist

It is a technique used by a project team to solicit assistance from peers and subject matter experts regarding a significant issue the team is facing.

Learning Review

It is a technique used by a project team to aid team and individual learning during the work process. The purpose of a Learning Review is for team members to continuously learn while carrying out the project. Team members need to be able to learn quickly, and adapt in order to improve the project

After Action Review (AAR)

It is a technique to evaluate and capture lessons learned upon completion of a project. It allows project team members to discover for themselves what happened, why it happened, and how to sustain strengths and improve on weaknesses The focus of the AAR is on learning, i.e., identifying lessons learned rather than blaming individuals for wrong decisions or performance evaluation. Mistakes or poor decisions can be translated into learning opportunities.

Story telling

It is literally about telling a story: a person who has valuable knowledge tells stories of his/her experience in front of people who want to gain knowledge. Though the method is quite simple, storytelling- when it is appropriately done- is able to share much deeper level of knowledge than just sharing information. Storytelling has a strong power to share one's experience and lessons learned since effective stories can convey rich contexts along with contents.

Collaborative Physical Workspace

Physical workspace, in this context, literally means the settings in which we actually work- or simply the physical aspects of the office which are suitable for employee's interaction.

Knowledge Café

A Knowledge Café is a way to have a group discussion, to reflect, and to develop and share any thoughts and insights that will emerge, in a very non- confrontational way. A Knowledge Café suspends all judgment and normally leads to developing deeper insights and sharing than usual. For best results, a Knowledge Café must be a natural, voluntary, and participatory act of the individuals involved.

Document management system

It is a system which helps to store, retrieve and to use organizational needed documents in effectively and efficiently. It supported through IT

Expertise Locator

Expertise Locator (Expert Locator, Who's Who) is an information technology (IT) tool to enable effective and efficient use and/or share of existing knowledge by connecting people who need particular knowledge and people who own the knowledge.

Knowledge Mapping

Knowledge Mapping is a process by which organizations can identify and categorize knowledge assets within their organization- people, processes, content, and technology. It allows an organization to leverage the existing expertise resident in the organization, as well as identify barriers and constraints to fulfilling strategic goals and objectives. It is constructing a road map to locate the information needed to make the best use of resources, independent of source or form.

In addition to the above mentioned tool and techniques the EFMoH and its affiliates should build IT based KMS which incorporate all needed information and knowledge both tacit and explicit to meet organizational objectives and goals. KMS are tools to effect the management of knowledge and are manifested in a variety of implementations including document repositories, expertise databases, discussion lists and context -specific retrieval systems incorporating collaborative filtering technologies [27].

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Annex I Questionnaires

1. Self Administered Questioner for Directors/office heads

Questioners for the assessment of knowledge management practice in Federal ministry of health, Ethiopia and its Affiliate organizations.

Hello. My name is Eskedar Amenashewa, and I am a student at Addis Ababa university school of Health Informatics. These questions should last no more than 15 minutes. The information that you volunteer will help the Ministry of Health and its affiliate organization to improve Knowledge management practices with in the directorates and staffs and provide guidance on how organizational Core knowledge should be stored. It will be completely confidential and your information will not be shared with anyone else.

Please tick (√) the given boxes or write in the space provide that represent your most appropriate answer.

I. Demographic profile

1. Please indicate your Gender ?

Male ☐ Female ☐

2. Your Age group
Less than 31 ☐ 31-40 ☐ 41-50 ☐ more than 50 ☐

3. Please indicate your highest educational level?
Diploma ☐ Advance diploma ☐ 1st degree ☐ Masters Degree ☐ Medical doctorate degree ☐ Medical specialist ☐ PHD ☐

4. Job duty/Position
Deputy Minister ☐ Agency heads ☐ Director ☐ other specify_____

5. Working experience in the organization
≤5year ☐ 6- 10year ☐ 11-15 ☐ 16-20 ☐ 20 years and above ☐

II. Knowledge management practice Questions

Operational definition

Knowledge: associated with the skills, aptitude, experience and values which enable employees to perform their work better.

Knowledge management: is leveraging knowledge for improving internal processes, for formulation of sound government policies and programmes and for efficient public service delivery for increased productivity.

Organizational knowledge management: is the process of capturing, developing, sharing, and effectively using organizational knowledge.

No.	Question	Grades				
		Yes	Mostly	partially	No	Don't know
General Knowledge management questions						
1	Does your organization have a Knowledge Management (KM) strategy? If not skip to Q3					
2	If there is a strategy, is it integrated within the corporate strategy of your organization?					
3	Do you explain the purpose of the organization policies, objectives, strategies and expectations to workers?					
4	Is there a knowledge management responsible person in each level of the organization?					
5	Does the organization have coherent information and records management systems? Please mention _____					
6	Does the organization training and development of activities encourage the development of better knowledge management capabilities skill sets?					
7	Do you actively communicate the benefit of knowledge management to your staff?					
8	Does the majority of staff understand the benefit of knowledge management?					
9	Does the organization have formal mechanism for ensuring knowledge capture& transfer?					
10	Does the organization encourage team work?					
11	Do you think of your work as involving knowledge management?					

12. Is there Core knowledge in your organization which is strategically important to the organization?

Yes ☐ No ☐ I don't know ☐

If your answer is yes Please mention the core knowledge essential to all staffs and managers in the organization _____

13. Is there tool and technique in the organization to manage knowledge?

Yes ☐ No ☐ I don't know ☐

If your answer is Yes What type of tools and techniques used to manage knowledge?_____

_____

_____

No.	Question	Grades				
		Yes	**Mostly**	**partially**	**No**	**Don't know**
Knowledge identification& capturing question						
14	Does the organization identify what knowledge use for the fulfillment of its need regularly?					
15	Do you encourage experts who identify knowledge					
16	Does the organization capture information/ knowledge regularly?					

17. Is there any technique used to capture knowledge

Yes ☐ No ☐ I don't know ☐

If your answer yes what type of technique used? _____

_____

_____

No.	Question	Grades				
		Yes	**Mostly**	**partially**	**No**	**Don't know**
Knowledge storage						
18	Is information always stored in corporate rather than personal spaces?					
19	Did you give any guidance for your staffs on what information should be kept and where					

20. What type of knowledge in the organization exists mostly? (possible to choose more than one answer)?

Tacit (which will be found in the minds of people) ☐ Explicit (found in the document form) ☐

I don't know ☐

21. Is there any responsible body to store information/knowledge?

Yes ☐ No ☐ I don't know ☐

No.	Question	Grades				
		Always	**Often**	**sometimes**	**Rarely**	**never**
Knowledge sharing question						
22	Are there formal opportunity like training program and workshop within the organization that allow employees to share knowledge?					
23	How frequently did you share your knowledge informally when employees approach you?					

24. How much did you feel motivated to transfer knowledge in your organization?

Very low ☐ Low ☐ Medium ☐ High ☐ Very high ☐

25. In what way did you share your knowledge (possible to choose more than one answer)

Face to face ☐ Internet/intranet ☐ phone ☐ other ☐ I don't share ☐

26. Do you agree that you would gain new ideas , information, skills/techniques as a result of sharing knowledge

Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ strongly agree ☐

No.	Question	Grades				
		Yes	**Mostly**	**Partially**	**No**	**Don't know**
Knowledge Access/usage questions						
27	Does the organization know what knowledge and information its users need to access?					
28	Is key and critical information always easy to find when it is needed					
29	Do employees have the right skills to use information/ knowledge?					
30	Dose the organization have publication schema					
31	Is information with in your organization shared across all areas					
Security and infrastructure						
32	Is the organization's knowledge and information secured?					

33	Does the organization have control over the records?					
34	Is the organization has IT infrastructure for knowledge management?					

If you have any comment, please specify.

_____

_____

_____

Thank you very much for your cooperation

2. Self Administered Questioner for Technical staffs

Questioners for the assessment of knowledge management practice in Federal ministry of health, Ethiopia and its Affiliate organizations.

Hello. My name is Eskedar Amenashewa, and I am a student at Addis Ababa university school of Health Informatics. These questions should last no more than 15 minutes. The information that you volunteer will help the Ministry of Health and its affiliate organization to improve Knowledge management practices with in the directorates and staffs and provide guidance on how organizational Core knowledge should be stored. It will be completely confidential and your information will not be shared with anyone else.

Please tick (√) on the given boxes or write in the space provide that represent your most appropriate answer.

I. Demographic profile

1. Please indicate your Gender?

   Male ☐ Female ☐

2. Your Age

   Less than 30 ☐ 31-40 ☐ 41-50 ☐ more than 50 ☐

3. Please indicate your highest educational level?

   Diploma ☐ Advance diploma ☐ 1st degree ☐ Masters Degree ☐
   Medical doctorate degree ☐ Medical specialist ☐ PHD ☐

4. Job duty/position

   Director ☐ Team leader ☐ ogram officer ☐ her ☐

5. Working experience in the organization

   ≤ 2 ☐ 2-5 ☐ 5-8year ☐ - 15year ☐ 15-20 ☐) years and above ☐

II. Knowledge management practice questions

Operational definition

Knowledge: associated with the skills, aptitude, experience and values which enable employees to perform their work better.

Knowledge management: is leveraging knowledge for improving internal processes, for formulation of sound government policies and programmes and for efficient public service delivery for increased productivity.

Organizational knowledge management: is the process of capturing, developing, sharing, and effectively using organizational knowledge.

No	Question	Grades				
		Yes	Mostly	partially	No	Don't know
General Knowledge management questions						
1	Does your organization have a Knowledge Management (KM) strategy? If not skip to Q3					
2	If there is a strategy, is it integrated within the corporate strategy of your organization?					
3	The organization leaders openly explain the purpose of the company policies, objectives, strategies and expectations to workers.					
4	Is there a knowledge management responsible person in your directorate/team?					
5	Does the organization have coherent information and records management systems?					
6	Does the organization training and development of activities encourage the development of better knowledge management capabilities skill sets					
7	Do managers actively communicate the benefit of knowledge management to staff					
8	Do you understand the benefit of knowledge management					
9	Does the organization have formal mechanism for ensuring knowledge capture& transfer					
10	Is there tool and technique in the organization to manage knowledge?					

11. If your answer is Yes for Q-10

What type of tools and techniques used to manage knowledge?_____

12. Do you understand your organizational basic core knowledge?

Yes ☐ No ☐ I don't know ☐

If your answer is yes Please mention the Core knowledge essential to all staffs _____

No	Question	Grades				
		Yes	Mostly	partially	No	Don't know
Knowledge identification& capturing question						

13	Do you identify what knowledge used for the fulfillment of your work objective?					
14	Does the organization encourage experts who identify knowledge					
15	Does the organization capture information/ knowledge regularly?					

16. Is there any technique used to capture knowledge

Yes ☐ No ☐ I don't know ☐

If your answer yes What type of technique used? _____

No.	**Question**	**Grades**				
		Yes	**Mostly**	**partially**	**No**	**Don't know**
Knowledge storage						
17	Is information always stored in corporate rather than personal spaces?					
18	Do you have guidance on what information should be kept and where					

19. Do you document working practice and procedure?

Yes ☐ No ☐

20. If yes which of the following ways are used for documentation (possible to choose more than one answer)?

Writing manual ☐ Writing report/meeting minutes ☐ Data base/knowledge base ☐ web ☐ portal

21. What type of knowledge in the organization exists mostly? (possible to choose more than one answer)?

Tacit (which will be found in the minds of people) ☐ Explicit(found in the document form) ☐

I don't know ☐

No.	**Question**	**Grades**				
		Always	**Often**	**Sometimes**	**Rarely**	**never**
Knowledge sharing question						
22	Are there formal opportunity like training program and workshop within the organization that allow employees to share knowledge?					

23	How frequently did you share your knowledge informally when other employees approach you?					

24. How much did you feel motivated to transfer knowledge in your organization?

Very low ☐ Low ☐ Medium ☐ High ☐ Very high ☐

25. In what way did you share your knowledge (possible to choose more than one answer)

Face to face ☐ Internet/intranet ☐ phone ☐ other ☐ I don't share ☐

26. Do you agree that you would gain new ideas , information, skills/techniques as a result of sharing knowledge

Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ strongly agree ☐

No.	**Question**	**Grades**				
		Yes	**Mostly**	**partially**	**No**	**Don't know**
Knowledge Access/usage questions						
27	Do you access knowledge and information that you need for your work?					
28	Is key and critical information always easy to find when it is needed					
29	Do you have the right skills to use information/ knowledge?					
30	Dose the organization have publication schema(website, newsletter, etc)					
31	Is information with in your organization shared across all areas					

If you have any comment, please specify.

_____

Thank you very much for your cooperation

Annex II: Observation checklist

Checklist for recording of physical observation on the assessment of knowledge management practice in Federal Ministry of Health and its affiliate organization

1. Organization name_____
2. Directorate /office Name_____
3. Availability of KM strategy/manual

   Yes ☐ No ☐

4. Availability of communication tools

   Computer ☐ Internet/ Intranet ☐ Phone ☐

5. Other specify _____
6. Educational material/work related

   Magazines ☐ Literatures ☐ Brochures ☐

7. Other specify _____
8. Availability of IT based information/knowledge system

   Yes ☐ No ☐

Annex III Description of Knowledge Management Tools and Techniques [26]

I. Brainstorming

What is Brainstorming?

Brainstorming is a simple way of helping a group of people to generate new and unusual ideas. The process is actually split into two phrases: divergence and convergence. During the divergent phase, everyone agrees to delay their judgment. In other words, all ideas will be treated as valid. During the convergent phrase, the participants use their judgment but do so in a 'positive' manner—that is, they look for what they like about the ideas before finding flaws.

Why Use This Tool?

Brainstorming is appropriate whenever you need to generate a range of options that goes beyond the immediately obvious set. Examples might include

- All the places one could gain customer insights from,
- Different ways to learn from competitors,
- New ways to use emerging internet tools to support our customers, and
- Different ways to reward employees for knowledge capture.

Brainstorms can be organized very quickly and require very little in the way of material. The instructions (below) describe one method, but the tool is actually very resilient and the basic principles can be applied in many different ways.

How to Brainstorm

1. Agree who will facilitate the activity.
2. Make sure everyone is aware of the basic guidelines (see Guidelines for Brainstorming).
3. Ideally, give everyone sticky notes and pens so that they can write their ideas down.
4. Write the problem on a flip chart—or piece of paper, if you do not have a flip chart—so that everyone can see it all the time.
5. Ask everyone if they understand the problem, and whether there is anything that needs clarification. Deal with any information needs, if required.
6. Potentially, have a group discussion about the criteria that will be used for idea selection.
7. Ask everyone to start writing down their ideas—one idea per sticky note—and hand them to the facilitator, who then sticks them on the flip chart. If there are no sticky notes, ask people to shout out their ideas—one idea at a time—and the

facilitator can write them down.

8. When the group has finally run out of ideas, take the flip chart page(s) and ask the group to
    - Look for duplicates, and combine them.
    - Vote (by putting dots, tick [check mark], or some other symbol) on their favorite X ideas (the number is determined by the requirements of the situation), based upon the criteria that were identified in the previous step.
    - Pick the highest rated ideas and have the group discuss how the ideas would be implemented—typically this involves identifying the critical next steps.

Guidelines for Brainstorming

Divergent stage

1. Defer judgment
2. Go for quantity
3. Seek wild and unusual ideas
4. Combine and associate
5. Write everything down

Convergent stage

1. Improve ideas as you go
2. Use affirmative judgment
3. Be deliberate
4. Seek novelty
5. Check with your objectives

When to Use Brainstorming (and When Not)

Brainstorming is useful when there is a need to generate a relatively large number of options or ideas. It is not appropriate when a problem is known to have a single correct solution that requires careful analysis to determine. For example, brainstorming about possible solutions to a mathematical problem would probably be a poor use of time.

Where to Use Brainstorming

Brainstorming can be used in almost any situation where a group (consisting of two or more people) can find a space to work together. This can be as simple as a shared desk with some blank pieces of paper.

II. Peer Assist

What is a Peer Assist?

- It is a technique used by a project team to solicit assistance from peers and subject matter experts regarding a significant issue the team is facing.
- Peer Assists are part of a process of what British Petroleum (BP) calls 'learning before doing', i.e., gathering knowledge before embarking on a project or piece of work.
- The Peer Assist meeting usually lasts from half a day to 2 days. Both the project team and the peer discuss the project and potential issues/concerns and provide solutions.
- The team gains project insights from their peers in the meetings. The peers gain as well, learning from the project and from each other.

Why Conduct a Peer Assist?

- The purpose of a Peer Assist is to shorten the learning curve of the project team. Normally, the team members struggle to solve new and complex project issues based on their existing knowledge and resources. This very often leads to suboptimal solutions at best and or failures at worst.
- Peer Assist provides an avenue for project teams to surface project issues with outside expertise. Teams can identify real underlying issues, and new approaches and solutions.
- The ability of the Peer Assist to tap into the experience and knowledge of peers makes it a valuable tool that yields immediate insights and results.

How to Conduct a Peer Assist

The project leader normally initiates the assistance when he or she thinks peers could assist them in their project.

- There is no fixed timetable as to when peers can be called in. Some Peer Assists are called early on in a project while some are called later. It depends on the needs of the project team and the complexity of the project.

- The project leader sets the meeting agenda. It could include some of the following items:
    - Introduction of participants
    - Objectives for the meeting and the schedule
    - Presentation of project details and issues
    - Recommendations and discussion

It is important to provide time for the peer raters to think through the issues and recommendations on their own before reconvening again to discuss the recommendations. It is preferable that the meeting is scheduled as two parts, either on the same day or over 2 days.

- Teams who call for a Peer Assist are not obligated to use the suggestions provided by the peers. However, most find the insights of their peers valuable in their ongoing project work.
- It is not necessary for the project team to decide on the recommendations during the meeting. The project team can discuss the recommendations at a later project meeting.

Who should be Invited as Peer Assists?

- Limit the number of Peer Assists to not more than six. It is difficult to have an in-depth discussion if the group is large.
- Invite only those who have expertise and knowledge regarding the situation the team is facing in the project.
- The project leader can get suggestions from the team members regarding the possible invitees to the meeting.

Guidelines on Conducting a Peer Assist

- The project team needs to think through the objectives of the Peer Assist meeting. The more specific and clear the objectives, the more successful the meeting will be. The project leader is the one who initiates the meeting and, thus, is at liberty to redirect the meeting if the discussion deviates from the objectives.
- The project leader or a skilled facilitator can facilitate the meeting. A leader who has a tendency to dominate the meeting should refrain from facilitating the meeting.
- Providing the peers with background information of the project and the objectives of the meeting will be helpful. This will ensure that the peer raters can contribute effectively in the meeting.
- Have all the project team members (or their representatives, if the team is large) to attend the meeting. This will provide an opportunity for each

participant to ask questions pertaining to their area.

- The leader or facilitator should provide an opportunity for the project team members to respond and participate in the discussion.
- The project team needs to convene a meeting in order to review what team members have learned from the Peer Assist meeting.

III. Learning Reviews

What is a Learning Review?

- It is a technique used by a project team to aid team and individual learning during the work process.
- A Learning Review is different from an Active Action Review (AAR). An AAR is usually conducted at the end of a formal project.
- It can be conducted after any identifiable event. An event can be either an entire small action or a discrete part of a larger action, e.g., a project-planning meeting.

Why Conduct a Learning Review?

- The purpose of a Learning Review is for team members to continuously learn while carrying out the project. Team members need to be able to learn quickly, and adapt in order to improve the project.
- Normally, the team members carry on with a project or an assignment without reflecting until the completion of the project. It is not good enough to wait for the end of the project for the review to draw out the lessons learned.
- Learning while doing enables both the individuals and the teams to learn immediately from both successes and failures, regardless of the duration of the project.

How to Conduct a Learning Review

1. Conduct immediately

- Learning Reviews are carried out immediately after every team meeting while all of the team members are still available and their memories are fresh.
- It is important to build in the Learning Review within the allotted time for the meeting so that it is not seen as an afterthought activity. It should be included in the agenda of the meeting.

2. Appoint a facilitator

- Anyone from the team can be appointed as a facilitator. A project leader who has a tendency to dominate the meeting should refrain from facilitating the meeting.
- The role of the facilitator is to help the team to learn. Team members must be drawn out for their own learning and for the team's learning.
- The facilitator should also set the 'climate' for the meeting in order to ensure that the meeting is open and that there will be no 'finger pointing'.

Learning Review is one of openness and commitment to learning. Learning Reviews are an avenue to facilitate learning rather than a platform for critique. It should not be treated as a performance evaluation process.

The facilitator has to ensure that the learning process is owned by the participants. Everyone on the meeting participates, and all have the right to contribute in the Learning Review.

3. Meeting format

- The Learning Review revolves around the following four simple questions:
  - o What was supposed to happen?
  - o What actually happened?
  - o Why was there a difference?
  - o What have we learned?
- The discussion begins with the first question, 'What was supposed to happen?' A shared common understanding of the objective and plan is crucial. This will ensure that there are no misunderstandings among team members.
- The facilitator needs to focus on how team members actually felt about what happened rather than simply stating what happened.
- The real learning begins when the team members compare the plan to what actually happened in reality. Successes and setbacks are identified and discussed. Action plans are identified in order to sustain success and improve the setbacks.
- The facilitator could ask each team member to identify one key learning that will help the team in the future. It is useful to capture a record of the learning points and agreed actions to remind the team of the lessons that were identified. The lessons captured are highlighted at the start of the next project meeting.

4. Lessons Learned Workshop – Suggested Format

- Introduction and Agenda:- Present the agenda for the day, and remind the team of some of the key events and issues encountered during the project.
- Creation of New Learning:- divide the team into smaller groups and ask them to brainstorm and capture their personal learning, ideas, and insights onto sticky notes. Group all the learning and issues on sticky notes into natural clusters or categories.
- Discussion and Review:- discuss these key clusters, and ask the following questions:
  - What could we do better next time?
  - What else can we capture for the benefit of all future teams?
- Rotate the Groups:-allow other groups to comment and add to each group's findings.
- Final Discussions:- the workshop, as a whole, conducts a final discussion to allow project team members to draw up a summary of findings and agree on future actions.

IV. After Action Review

What is an After Action Review?

- After Action Review (AAR) is a technique to evaluate and capture lessons learned upon completion of a project. It allows project team members to discover for themselves what happened, why it happened, and how to sustain strengths and improve on weaknesses.
- It is structured as an informal discussion with the main team members of the project.
- An AAR can also be conducted upon completion of the project or upon achievement of any key milestones of a long-duration project.
- It is not a critique or a complaint session. AAR maximizes learning by offering a platform for leaders and members to honestly talk about the project. It is not a full-scale evaluation report.

Why Conduct an After Action Review?

- The purpose of an AAR is to review the project outcomes vis-à-vis the intended outcomes of a project.
- The AAR is the basis for learning from project success and failures. It is the starting point for improvements in future projects. Team members can identify strengths and weaknesses and determine how to improve performance in the future by focusing on the desired outcome and describing specific observations.

- The project team can document the lessons learned and make it available to the rest of the organization to improve decision-making.

How to Conduct an After Action Review

- An AAR can be conducted as soon as possible upon completion of project or upon achievement of major project milestones.
- Generally, the following discussion questions are used to build consensus on the lessons learned:
  - What was expected to happen?
  - What actually happened?
  - What went well, and why?
  - What can be improved, and how?
  - What are the lessons that can be used in the future?
- At the start of the AAR, the facilitator should review the purpose and sequence of the AAR to ensure that everyone understands what an AAR is and how it works. The introduction should also include some ground rules for conducting and managing the discussion. The role of the facilitator will be explained during the introduction.
- Some pointers for facilitators:
  - It is permissible to disagree.
  - Encourage members to provide honest opinions.
  - Use open-ended questions to guide the discussion.
  - Paraphrase and summarize key discussion points.

The focus of the AAR is on learning, i.e., identifying lessons learned rather than blaming individuals for wrong decisions or performance evaluation. Mistakes or poor decisions can be translated into learning opportunities.

In order for this to happen, there must be an atmosphere of trust and openness. The discussion should ensure that specific issues—both positive and negative—are revealed. Skillful facilitation will ensure that the AAR does not gloss over mistakes or weaknesses.

In some projects, other stakeholders can provide useful insights and ideas to the review process. Before the review session, the facilitator or designated team member should consult with these outside stakeholders and then summarize the input for the AAR.

The lessons learned are captured on a flip chart or electronically. This depends on who uses the information and how it is used. Flip charts are a convenient tool to make notes visible to all participants, ensuring a common understanding of and agreement to what has been discussed. Electronic capturing in the intranet enables reference later on and dissemination to relevant parties who are involved in similar projects.

Who Should Conduct an After Action Review?

An independent facilitator can be used to conduct the AAR. A trained, independent facilitator may be able to ensure participation from everyone. The facilitator will also be able to draw out insights and issues through probing questions.

While an independent AAR facilitator could maintain objectivity throughout the review, it may be useful to enlist someone who is somewhat knowledgeable about the subject or topic of the review. That would minimize the learning curve and enable technical discussions to be carried out and recorded clearly.

Alternatively, a project team member could facilitate the AAR. The team leader must ensure that all background materials—reports, surveys, planning documents, or other input—are considered. This will ensure a complete, thorough, and appropriate AAR.

V. Storytelling

What is Storytelling?

Readers may wonder why storytelling is categorized as one of Knowledge Management (KM) tools/techniques. Storytelling itself can date back to the origin of our social life; it is not just for KM, indeed. Storytelling is conveying of events in words, images, and sounds often by improvisation or embellishment. Stories or narratives have been shared in every culture and in every land as a means of entertainment, education, preservation of culture, and in order to instill moral values.

In the context of KM, since its inception, storytelling has been used as a powerful way to share and transfer knowledge, especially experiential and tacit knowledge. It is literally about telling a story: a person who has valuable knowledge tells stories of his/her experience in front of people who want to gain knowledge. Though the method is quite simple, storytelling—when it is appropriately done—is able to share much deeper level of knowledge than just sharing information. Storytelling has a strong power to share one's experience and lessons learned since effective stories can convey rich contexts along with contents.

Why Use Storytelling?

If you can share any knowledge through information technology (IT) systems, probably you do not have to consider storytelling. It is more time-consuming for both storytellers and audiences than just using IT systems. Storytelling has strong and unique benefits that most other KM tools/techniques rarely have.

- Storytelling **transfers tacit part of knowledge:** Because it conveys much richer contexts through stories than other means of KM, storytelling by a vastly-experienced person in any field has the power to transfer his or her experiential knowledge.

- Storytelling **nurtures good human relationship:** When someone tells his/her story, the action also conveys significant volume of the storyteller's personal information through the story itself, facial expressions, tone of voice, gesture, etc. This aspect nurtures trust between the storyteller and audiences that often becomes a seedbed for a community of the practice, which enables further sharing and creating of knowledge.

- Storytelling **brings out passion of audiences:** A great part of storytelling is that it is able to address the logical, as well as emotional, part of the brain. As a result, good storytelling can change people's mindset and behavior to share and create more knowledge than before.

When to Use Storytelling

This question has already been partially answered in the preceding description. Many organizations utilize storytelling to transfer experts' knowledge to younger people. Some organizations use storytelling to share lessons learned from project to colleagues who were not participating in the project. Since storytelling session may rouse participants' interest and let audiences find other people with common interest, designing follow-up systems to discuss the topic, such as communities of practices or virtual collaboration spaces, will help sustain and increase the advantage created through the storytelling session.

How to Use Storytelling

Basically, holding a storytelling session is quite simple: find a person with knowledge in a certain area, assemble audiences with common interest, and let the person tell stories in front of those people. Gaining expected results from storytelling, however, is not that easy. Here are the basic steps, including tips, for successful storytelling:

Step 1: Identify key area of knowledge you wish to transfer and share in your organization. Do not choose unimportant knowledge area; it does not only waste your time but will send a wrong message to your organization.

Step 2: Find the right person who has rich experience and ask him/her to tell the story. Eagerness and eloquence of the storyteller are the keys for successful storytelling. Therefore, you may want to prepare the story together with the speaker. The order of Steps 1 and 2 can be reversed.

Step 3: Market the storytelling session to candidate participants.

Step 4: Hold the session. It is may be effective to create a more informal atmosphere than regular meeting environment by changing layouts, serving refreshments, holding icebreaker session, etc. You may want to hold a small social gathering after the session to help networking among the participants and the storyteller.

Step 5: Leverage the output of the storytelling session. This step is critical to maximize the effectiveness of storytelling. Here are some tips to leverage it:

- Capture the session on video and post the video on intranet to share the session among all employees.
- Form a community of the topic among the storyteller and participants who have strong interest. The storyteller often becomes the owner of the community.
- Hold a storytelling session regularly to give employees opportunities to both participate and tell a story.

VI. Collaborative Physical Workspace

Why Use Physical Workspace as KM Tool/Technique?

Readers may wonder why physical workspace is selected as one of top Knowledge Management (KM) tools/techniques. Physical workspace, in this context, literally means the settings in which we actually work—or simply the physical aspects of our office.

When we share or create knowledge, we usually interact with other people through face-to-face communication—we discuss, dialogue, or simply just ask a question. The physical workspace is where such human interactions take place—and it can support knowledge sharing/creation if it is well-designed. You may think, "We have desks for everyone, meeting rooms for internal meetings, and space for business talk. What else do we need?" Actually, physical workspace works much more than that.

How would you describe the atmosphere of the meeting room above? Dynamic or static? Creative or ritual? Do you think you can have creative discussions in the room?

How about this one? Good physical workspace does not mean luxury office that small and medium-sized enterprises rarely afford. Instead, it is about understanding how people interact—or create and share knowledge, and designing physical environment to support such human activities.

Examples of physical workspace settings for KM

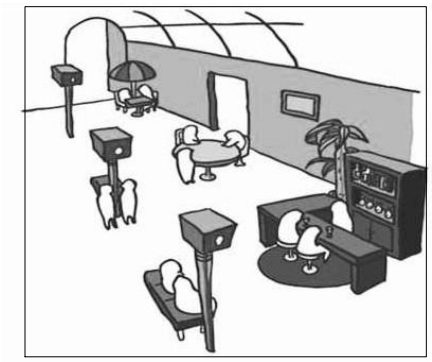
The design of good physical workspaces to support knowledge sharing and creation varies a great deal, depending upon what kind of interactive scenes that an organization needs. Here are some examples of workspace designs to support knowledge-related activities:

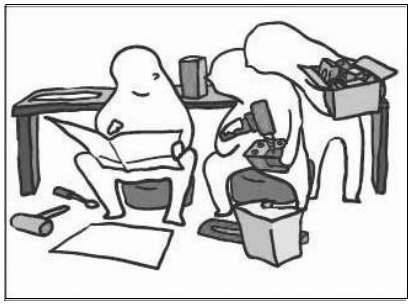
• Open space for ad-hoc/informal interactions

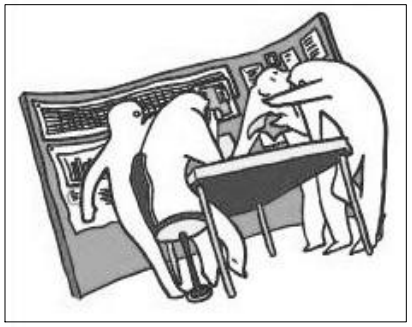
Working people naturally interact when needed; it is quite reasonable. Sometimes, however, unexpected interactions generate unexpected (good) results. Good open space encourages such ad-hoc, informal interactions among employees, or even between staff and customers. The key to encouraging such ad-hoc interactions through physical space is to create reasons for employees to come to commons—could be coffee and snacks, magazines and books, or mailboxes and printers to pick up letters and copies.

• Space for team collaboration

Most companies have meeting rooms; however, a meeting room is not necessarily a good place for team collaboration. Any good collaborative space has a lot of small but well-thought devices. For instance, the walls of a room can support collaboration significantly: information and data can be placed on walls to help visualize contexts of the project. You do not have to invest in IT; simply use papers and magnets to turn walls into collaborative tools.







• Space for proto typing

Ideas can only turn into value when they are put into actions. Does your organization have a physical space for that? Space for prototyping is where people can experiment their ideas. If you are in the manufacturing industry, probably you need some equipment for quick and dirty prototyping in the room.

How to Design

Producing a creative workspace does not always lead to knowledge creation unless members who use the space understand, and become enthusiastic about, the concept of how to work in the environment. Thus, you need to discuss (i) how they want to work, and (ii) how physical space can support the manner of work among members who use the space. One good start: Observe how employees are actually working to find opportunities to support their behaviors that can lead to more knowledge creation and sharing.

VII. Knowledge Café

What is a Knowledge Café?

A Knowledge Café is a way to have a group discussion, to reflect, and to develop and share any thoughts and insights that will emerge, in a very non-confrontational way. A Knowledge Café suspends all judgment and normally leads to developing deeper insights and sharing than usual.

"The knowledge café begins with the participants seated in a circle of chairs (or concentric circles of chairs if the group is large or the room is small). It is led by a facilitator, who begins by explaining the purpose of knowledge cafés and the role of conversation in business life. The facilitator then introduces the café topic and poses one or two key open-ended questions. For example, if the topic is knowledge sharing, the question for the group might be: 'What are the barriers to knowledge sharing in an organization, and how do you overcome them?'

When the introduction session is complete, the group breaks into small groups, with about five people in each group. Each small group discusses the questions for about 45 minutes. The small group discussions are not led by a facilitator, and no summary of the discussion is captured for subsequent feedback to the large group.

Participants then return to the circle, and the facilitator leads the group through the final 45-minute session, in which people reflect on the small group discussions and share any thoughts, insights, and ideas on the topic that may have emerged.

A knowledge café is most effective with between 15 and 50 participants. Thirty is an ideal number of people. If there are more than 50 participants, it is usually necessary to employ microphones for the large group conversation, and this tends to inhibit the flow of the conversation. One to two hours is required for a worthwhile knowledge café. The only hard and fast rule is that the meeting is conducted in such a way that most of the time is spent in conversation. Presentations and feedback sessions have no place in knowledge cafés."

Why Use a Knowledge Café?

In an organization, especially in a hierarchical organization, people are not often given the opportunity to 'reflect' on discussions. People are normally tied to performance pressures. Therefore, much of the value that could be gained from good discussion, dialogue, and reflection is lost.

Periodic Knowledge Cafés provide the opportunity for people to better discuss and reflect. Normally, people leave Knowledge Cafés more motivated and inspired. Often, people find that they have received some valuable insights.

When to Use Knowledge Cafés

There are no hard and fast rules about when to use, and when not to use, Knowledge Cafés. It depends on the culture of the organization or the community. Knowledge Cafés are situational. What is most important to state is that you cannot, and must not, enforce people to attend and participate in a Knowledge Café. For best results, a Knowledge Café must be a natural, voluntary, and participatory act of the individuals involved.

VII. Document Libraries Leading to a Document Management System

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What Do We Mean by 'Document Libraries Leading to Document Management'?

From the Information Management science, and from the Library sciences, we have always been interested in better information and document management. Efficient and effective access to documents is the antidote to 'information overload'. Maintaining a 'document repository' with good categorization and/or taxonomy and metadata (link to these later) is paramount to filing and, subsequently, searching and finding the right information at the right time.

Why Use This Tool?

So what has document libraries leading to document management got to do with Knowledge Management (KM)? And why use this tool in the KM context?

Furthermore, for KM, we are concerned with developing our knowledge assets. Ideally, we should plan to identify what our key knowledge assets are, and then we should identify and develop information assets to support them. A good, well-planned document library, leading to a document management system, will pay dividends as part of any knowledge portal or KM system.

How to Use Document Libraries

The first step is to select the Document Library system that you will use. There are many proprietary systems; some are expensive and very sophisticated while some are low cost and less sophisticated. Increasingly, we are now seeing free and open source (link later) document libraries.

The following are the key ingredients for an effective document library system:

- A library system that can be backed up easily and regularly
- A library system that is automatically indexed and uses a good search engine
- A library system with effective security of access and usage
- A library system that can be accessed in a corporate intranet and/or from mobile laptops, etc.
- The documents can be organized, searched, and listed by several categories
- Documents can be cross-referenced, hyperlinked, and stored in relational databases
- The document history of revisions is maintained and can be reinstalled at any stage, if required
- Each document contains a 'life cycle' period of relevance and is automatically archived at a specified date
- Documents can be

  - managed overall by owners,

  - edited by selected editors,

  - authored by selected author, and

  - viewed by selected groups (or open to all).

- Documents can contain metadata and/or keywords for effective searching
- Documents can be of different types, multimedia embedding, etc.
- Document statistics record the number of views, duration of viewing, etc.

When and Where to Use Document Libraries (and When Not)

It is difficult to imagine instances where and when document libraries are not to be used, apart from small, one-off information activities. Well-organized documents are the first step to effective KM. Document libraries can start simple and use free tools, such as Google Docs, and gradually develop into sophisticated document management systems.

IX. Expertise Locator / Who's Who

Why Need an Expertise Locator?

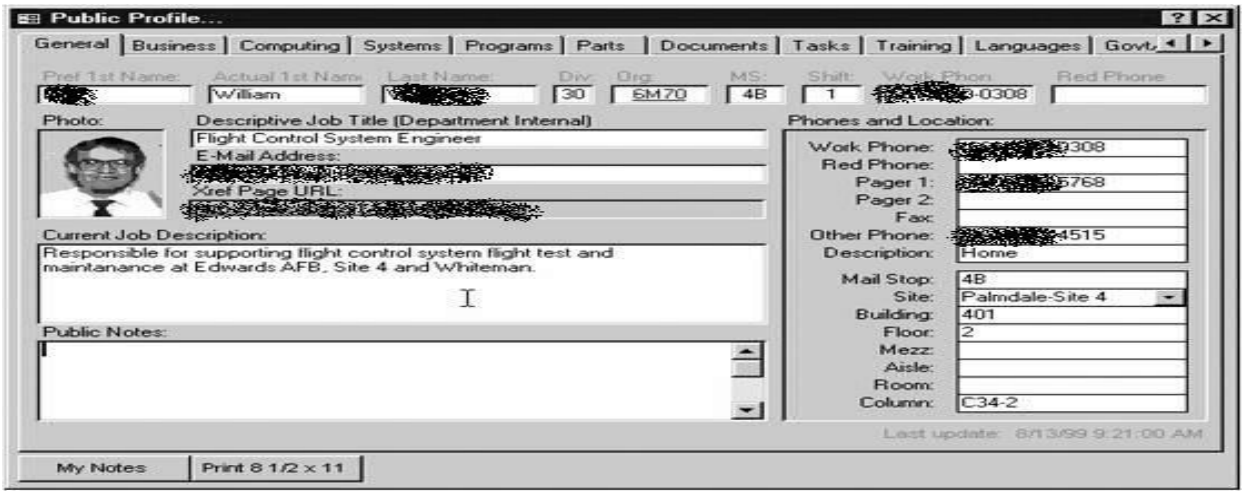
It is often true that knowing who knows what is more valuable than knowing how to do. It is why Expertise Locator has been one of the key tools for Knowledge Management (KM). It has fit typical problems that large corporations with thousands of people have faced: Can't find the right knowledge that should exist somewhere in the organization or somebody's head. It often leads the organization to reinventing the wheel in order to solve the same problem just because they do not know whom to ask what.

It supports finding the right people with the right knowledge at the right time among many organizations to effectively and efficiently do business together.

What is Expertise Locator?

Expertise Locator (Expert Locator, Who's Who) is an information technology (IT) tool to enable effective and efficient use and/or share of existing knowledge by connecting people who need particular knowledge and people who own the knowledge. Sometimes, the system helps building new teams/projects by finding various expertise needed.

Expertise Locator can be simple electronic yellow pages, more sophisticated systems to automatically search expertise, or even a mixture of IT and people (often called Knowledge Brokers) who support finding and connecting the person who wants the knowledge and the person who has the knowledge.



The picture above is an example of Expertise Locator. It usually contains general information of experts, such as name, photo, title, and phone number, etc., and key knowledge, such as project experience, key knowledge domain, and connections with customers, etc. The indices of key knowledge depend upon what kind of people/knowledge users want to find; it can focus on technological, operational, or relational knowledge.

How to Design and Use Expertise Locator

The usage of Expertise Locator is quite simple. When you want to find someone who has certain knowledge or experience, you access the Expertise Locator, and insert key words of the knowledge to find the right person. To make the system work, however, is not that simple.

1. Define Objectives of KM

Expertise Locator is, eventually, just a tool to connect people with knowledge to people who need it. Before building Expertise Locator, you have to define the objectives (or goals) of KM and to position Expertise Locator as one of the tools only when it fits the objectives of KM.

2. Designing User's Interface

Like all other IT tools for KM, Expertise Locator needs an easy and friendly user's interface to let people buy in. Especially, the design of indices of knowledge will be the key for users. To avoid no-way-out situation, you have to keep flexibility to change the indices and other interface based on user's feedback because you cannot build a perfect system from day one.

3. Registering User's Expertise

This would be the most difficult part of building and utilizing Expertise Locator; there are many well-built Expertise Locators that could not attract users well to registering their expertise. You can provide incentives for registering, the best of which are probably the real stories of benefits from registering and using the system. For instance, if one person (or small firm) received a business transaction or get involved to a new project based upon the registered expertise, such a story will spread out over users and let them voluntarily register their expertise and use the system.

4. Maintain the System

Somebody has to watch the usage and reaction of users to improve the system, as well as to increase the effectiveness of the system. Maintaining the system to attract and sustain people who use it is more important than building it.

When to Use Expertise Locator (and When Not)

If you know who knows what, there is no reason to build Expertise Locator. Just ask the right questions to the right people at the right time. When one of the key problems in your organization is that you do not know who knows what or to whom to ask what questions, it may be the opportunity to consider Expertise Locator.

X. Knowledge Mapping

What is Knowledge Mapping?

Knowledge Mapping is a process by which organizations can identify and categorize knowledge assets within their organization—people, processes, content, and technology. It allows an organization to leverage the existing expertise resident in the organization, as well as identify barriers and constraints to fulfilling strategic goals and objectives. It is constructing a road map to locate the information needed to make the best use of resources, independent of source or form.

Thus, the form of knowledge map varies, depending upon the knowledge strategy of the firm. If it focuses on codifying and reusing explicit knowledge, the map will be filled with explicit knowledge, such as core documents, contents on the intranet, and transaction data with customers, etc. On the other hand, if the firm focuses on increasing individuals' capabilities, the map will consists of much tacit knowledge, such as know-how and social network, etc.

Knowledge Mapping includes all the processes and tools to portray a perspective of the players, sources, flows, constraints, and sinks of knowledge within an organization. It is a navigation aid to both explicit and tacit knowledge, showing the importance and the relationships between knowledge stores and the dynamics. The final map can take multiple forms, from a pictorial display to yellow pages directory, to linked topic or concept map, to inventory lists or a matrix of assets against key business processes.

Why Use Knowledge Mapping?

- To find key sources, opportunities, and constraints to knowledge creation and flows
- To encourage reuse and prevent reinvention, saving search time and acquisition costs
- To highlight islands of expertise and suggest ways to build bridges to increase knowledge sharing and exchange
- To reduce the burden on experts by helping staff find critical solutions and information quickly
- To improve customer response, decision-making, and problem solving by providing access to applicable information, and internal and external experts
- To highlight opportunities for learning and leverage of knowledge through distinguishing the unique meaning of 'knowledge' within that organization
- To garner support for new knowledge initiatives designed to improve the knowledge assets.