AGENCY EFFECTIVENESS

Competition Agency Practice Manual

April 2014

CHAPTER 3

KNOWLEDGE MANAGEMENT

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Introduction

The main purpose of this chapter of the Competition Agency Practice Manual is to explore, examine and present the different approaches with which institutional knowledge is handled by competition agencies, especially the existing practices they implement and challenges they face with respect to the management of knowledge.

Implementation of this project occurred in two phases; the first phase of this project was primarily about gathering information from the competition agencies on their knowledge management (KM) systems based on a questionnaire. Twenty-four competition agencies from twenty-three jurisdictions responded to the questionnaire. The questionnaire was crucial because the concept of KM can be vague and it may be very difficult to define a set of best practices for effective KM due to a wide variety of distinctions across jurisdictions. This questionnaire helped the Agency Effectiveness Working Group (AEWG) better understand how KM is perceived and defined by different competition agencies and what are the necessary elements that constitute a strong KM system.

In the second phase of this project the responses to the questionnaire were analyzed in-depth and detailed follow-up interviews were conducted with some of the competition agencies that responded. These interviews led to some of the case studies in this chapter. Other sources for this chapter include academic literature on KM, much of which can be found in the attached Annexes.

The questionnaire (attached as Annex A) had 54 questions covering a range of areas, including general information about the competition agencies, definitions of KM, and details of competition agencies' own KM systems and practices.

Some important elements that should be taken into account regarding the questionnaire responses include:

- the scope of competition agencies' enforcement activities – nearly 60% of competition agencies reported that they solely specialize in competition enforcement, while 25% of competition agencies reported that they also enforce consumer protection laws and/or oversee regulated industries;
- age of agencies – over 80% of the competition agencies responding are 11 years old or older; and
- agency size - most of the competition agencies considered themselves to be medium sized.

The results of the questionnaire showed that 56% of the responding competition agencies do not have a transparent KM strategy within their organization and for the few that did, they tend to have a set of processes and an electronic system rather than a defined strategy. In fact, it was notable that about half of the responding competition agencies stated that they have had, at least to some extent, a KM system in place for less than five years.

Consequently, this chapter provides further details on defining KM, implementing an effective KM system and the benefits of KM in an efficient organization. It also provides information that can be used to enhance existing KM systems.

1 Knowledge and Knowledge Management

1.1 Knowledge

In order to understand what Knowledge Management (KM) is, it is essential to start by defining *"knowledge."*[1]

1.1.1 Tacit versus Explicit Knowledge[2]

Tacit knowledge is "know-how" and relates to the process of learning, understanding and applying information. Tacit knowledge constitutes everything that an individual knows, such as their professional insights, judgments, intuition and the special knowledge known by experts.

One of the challenges of tacit knowledge is that it may be difficult to capture and quantify. When organizations merge, downsize, reorganize, or undergo organizational culture changes, priceless knowledge can be lost or buried amid new information. Tacit knowledge, in particular, can be lost through outsourcing, downsizing, mergers and terminations. Employees who leave may take their valuable knowledge, resources, skills and experiences with them. Those who stay may be assigned new jobs and never use their wealth of accumulated knowledge. Unless competition agencies recognize the knowledge held by staff and the inventive ways in which people undertake their work, individual knowledge, in particular, may be lost.

By contrast, explicit knowledge is "know-what" and is articulated, codified, and communicated information. Explicit knowledge includes documents, such as case decisions, memoranda, speeches, books, manuals, process diagrams, mathematical expressions and specifications. Explicit knowledge is easily captured, transmitted electronically, and may be stored in a database or computer.

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[1] European Committee for Standardization, "European Guide to Good Practice in Knowledge Management, Part 1: Knowledge Management Framework", 2004, p. 6.
[2] For further elaboration, see Christine SOO, Timothy DEVINNEY, David MIDGLEY and Anne DEERING, "Knowledge Management: Philosophy, Processes and Pitfalls", California Management Review, Vol. 44, No. 4, Summer 2002. Ron SANCHEZ, "'Tacit Knowledge' versus 'Explicit Knowledge', Approaches to Knowledge Management Practice," available on line at: http://www.knowledgeboard.com/download/3512/Tacit-vs-Explicit.pdf

Table 1: Use of explicit and tacit knowledge in the workplace[3]

Tacit Knowledge	Explicit Knowledge
Practical, action-oriented knowledge or ''know-how'' based on practice, acquired by personal experience, seldom expressed openly, often resembles intuition.	''Know-what'' that is described in formal language, print or electronic media, often based on established work processes, use people-to-documents approach as well as academic knowledge.

Knowledge can exist in the individual or the collective. The knowledge of an organization (collective) and of an individual can cross-fertilize one another, and they can reciprocally support each other's development.

For effective KM in competition agencies, both tacit and explicit knowledge approaches should be considered. The *tacit knowledge* approach to KM focuses on understanding the kinds of knowledge that individuals have within a competition agency, moving individuals to transfer knowledge within a competition agency, and managing knowledge creators and carriers. This approach builds social networks or communities of practice to facilitate the transfer of knowledge among individuals and groups within the competition agency.

The *explicit knowledge* approach to KM emphasizes processes for articulating knowledge held by employees at the competition agency, approaches for creating new knowledge, and the development of systems (including information systems) to disseminate articulated knowledge within an the competition agency.

2 Knowledge Management

What is KM? How can competition agencies sustain knowledge to improve individuals and groups within the competition agency?

KM, like knowledge itself, cannot be confined to a single definition and it is viewed differently in different fields of endeavor. However, at its essence, KM includes the processes for creating, organizing, transferring and sharing tacit knowledge (know-how) and explicit knowledge (know-what) throughout the competition agency.

Nearly all of the responding competition agencies agreed that KM comprises 'storing, sharing, disseminating and applying knowledge within the agency to achieve its objectives' and a 'set of activities, processes and technologies that support the collection, management and publication of information in any form, but mainly through digital content (e.g. documents, multimedia files or

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[3] Elizabeth SMITH, "The Role of Tacit and Explicit Knowledge in the Workplace", *Journal of Knowledge Management*, Vol. 5, No. 4, 2001, p. 314.

any other file type)'. Normally, KM has two components: a repository and a platform supporting the workflow of a competition agency's staff in charge of feeding information into the repository.

Deciding exactly how and where to begin a KM system can be a daunting task for any competition agency, whether large or small, old or new. Most KM practitioners start by defining the business purpose for implementing a KM system, and then allocating resources to address the issues facing a particular organization

As described in academic literature, there are four general objectives that arise when implementing a KM system:[4]

a) Create knowledge repositories

The first objective involves creating a knowledge repository. The main goal of this objective is to gather knowledge connected to the competition agency such as memos, reports, presentations, and articles and store them in a repository where they can be retrieved and found easily.

Collecting knowledge and creating knowledge repositories is discussed further in Section 4.

b) Improve access to knowledge

The second objective involves improving access to knowledge and facilitating its transfer among staff. By delivering relevant knowledge when needed, a KM system can provide the basis for making good decisions. Improving access to this knowledge is discussed further in Section 4.

c) Enhance knowledge environment

The third objective involves enhancing the knowledge environment, which aims to establish an environment that would encourage more effective knowledge creation, transfer and use.

The knowledge of a competition agency is stored in the minds of its staff. KM seeks to make knowledge visible by developing a knowledge environment that motivates staff to proactively share knowledge and by building a knowledge infrastructure of space, time and tools that encourages staff to interact and collaborate with one another.

Ways in which responding competition agencies have enhanced their knowledge environment is discussed in Section 3, including approaches to connecting staff and information.

d) Manage knowledge as an asset

The fourth objective involves managing knowledge as an asset. In an effective KM system, knowledge should be treated as an asset. The treatment of knowledge as an asset will help make the competition agency focus on how to increase or decrease its effective use of knowledge assets over time. The role of a knowledge manager is discussed in Section 6.

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[4] Thomas DAVENPORT, David DE LONG and Michael BEERS, "Successful Knowledge Management Projects", *Sloan Management Review*, Vol. 39, No. 2.

2.1 Knowledge Management Benefits

KM can lead to many benefits, as acknowledged by most competition agencies that have a KM system in their responses to the questionnaire. Competition agencies identified that it may be difficult to measure, at least in quantifiable terms, the benefits of KM, but that KM has started to lead to higher efficiency in terms of less duplication of work, followed by notably better performance, enhancing new staff's capabilities and better quality decisions. Other benefits include enhanced institutional memory, improved internal communication, and more successful transfer of knowledge.

Table 2: KM system Benefits responses

If a KM system has been in place in your organization for more than one year, what are the major returns on investment you can see?	% of competition agencies reporting particular benefit
Efficiencies (not duplicating work)	25%
Better Performance	20%
Better Quality Decisions	17%
New People Become Self-Sufficient More Quickly	18%
Staff Empowerment	7%
Faster Case Lifecycle	8%
Less Training Cost per Employee	3%

Case example: Mexico's Comisión Federal de Competencia Económica (COFECE) experience in applying electronic information systems guarantee effective project management.

The COFECE's electronic information system (SIIC) is an important contribution to the effective planning and managing of its cases. In a resource-constrained environment in which internal information sharing is vital for enhancing the quality of the staff's work, the SIIC generates the following benefits:

<u>**Enhanced institutional memory.**</u> The SIIC makes case files readily available on the COFECE's internal network, which helps staff to track case histories and compile useful background information and precedents.

<u>**Simplified management and supervision of casework.**</u> The SIIC helps in case prioritization and resource allocation and allows for more effective institutional planning.

<u>**Improved internal communication and efficiency.**</u> The SIIC prompts case handlers when deadlines approach, improving compliance with legal time limits. Case dockets are digitalized in real time and are fully searchable, allowing for efficient and simultaneous access to information for all relevant areas of the COFECE (including sharing of notes, internal opinions, academic references, etc.). The SIIC also acts as the COFECE's internal procedures manual for all staff.

<u>**Improved transparency.**</u> Public versions of all of the COFECE's resolutions are published within 15 days of the decision by linking the COFECE's webpage to the SIIC (compared to an average of six months previously). The database allows anyone to search for COFECE documents by keyword, case number, industry, company, date, and type of decision (opinion, case study, abuse of dominance, cartel, merger, etc.). The search engine received the World Bank-IFAI prize for innovation and transparency in institutional administration in 2011.

<u>**Standardized procedures and templates.**</u> The SIIC merged isolated databases and information systems. Institutional knowledge and standards are now embedded in the SIIC, which reduces problems related to loss of knowledge from staff turnover.

<u>**Source of metrics and statistics.**</u> The SIIC now automatically generates indicators required for internal government reporting and for external accountability saving an enormous amount of time and effort by staff. Freedom of Information requests and all statistical information for the COFECE's annual report are also processed through the SIIC.

<u>**Improved information security.**</u> The SIIC tracks all system usage and information retrieval (whether it be on-screen, printed, saved, shared, etc.), and restricts access according to security clearance levels. Physical documents (including active dockets) are kept separate from offices and in a secure area. All consultations must be either made via SIIC or in the secure area.

Case example: The Korea Fair Trade Commission (KFTC) introduced its knowledge management system called Think Fair in 2003.

The KFTC was troubled by frequent delays in work processes caused by low efficiency and surging workloads. In response to such challenges, the KFTC decided to develop its own work process management system - Think Fair.

Think Fair consists of three parts: case handling, work process and knowledge process systems. The case handling system standardized the KFTC's case handling procedures and removed most paper document use. The work process unit deals with detailed daily transactions such as report submission, supervisor's approval, data transfer between employees and even leave applications. The knowledge process system manages and organizes information collected by the two former systems.

Benefits of Think Fair system are as follows:

Increased Volume of Shared Knowledge. This knowledge process system accumulates vast amounts of internal and external data and allows various types of searches. With Think Fair, KFTC employees' use of shared knowledge data surged by almost 500% in 2004 compared to 2003 when the system was established.

Expedited Work Process. The Think Fair system speeds up working processes considerably. Knowledge data registered by employees are automatically archived in its database so that it can be immediately ready for use in case handling. All of the case-handling phases of the system are structured in standardized formats, which guarantee fast and accurate case management regardless of the skills of individual staff members.

Complainants' Convenience and Satisfaction. Anyone can simply visit the KFTC homepage and file a complaint using Think Fair. After the receipt of complaints, the progress of the complaint is immediately forwarded to the complainant. The system also makes available certain data to the general public such as KFTC decisions, laws and regulations administered by the KFTC, certain information relating to competition issues in other jurisdictions and much more.

Case example: The South African Competition Commission (SACC) has implemented a new Knowledge Management System which enriches its methods of working and training.

The Knowledge Management (KM) System is aligned with the SACC's strategy and therefore supports it. It also enables a KM culture and assists in training and change management.

Gaps from the previous system have been identified, and have been enhanced by the KM System. This in turn ensures an enriched method of working in the SACC.

- Users interact and/or communicate more efficiently with improved collaboration in cross-divisional case teams.
- The KM System has allowed the organization to move away from mere document storage. It enhances project management, whereby tasks can be assigned, calendars updated regularly and other interactive activities can take place.
- An improved tracking system at case and management level has been established. KM aids in assisting in more efficient decision making.
- The learning curve for new staff is accelerated, since they no longer have to go through the process of tedious introduction processes.

A Knowledge Management Forum has been identified to facilitate the promotion and practice of Knowledge Sharing and learning within the SACC. The Forum serves as a platform to share experiences, lessons learned and best practice as part of creating a culture of learning and sharing.

> **Case Example: The European Commission Directorate General for Competition's (DG Comp) experience in improving the way it works.**
>
> DG Comp has put together a KM team, which has launched actions on both the organizational and the HR levels.
>
> **Actions on the organizational level include:**
> - discussions regarding lessons learned
> - regular staff brainstorming and collective input on legal and economic questions
> - revamp of the Manuals of Procedures
> - summaries of important legal notes and past case law
>
> **Actions on the HR level include:**
> - special training for newcomers
> - interviews of departing senior staff to keep the organizational memory and expertise
> - general training on "hot topics" and "top talks" for all staff
>
> DG Comp has experienced that these actions have led to a better quality of decisions.

2.2   Knowledge Management Challenges

Effective KM in competition agencies can present a number of challenges. Common challenges include: how to extract tacit knowledge, time constraints (including the challenge of allocating time to KM alongside other work), as well as difficulties in establishing and embedding a KM culture.

Competition agencies concerned with implementing KM today face these challenges in developing sound methods for this still emerging area of management practice. The challenges may be overcome in different ways and each competition agency will have to find its own path in planning a KM system.[5]

Deciding exactly how and where to begin to implement a KM system can be a daunting task for any competition agency, large or small, old or new. A KM system can be started in many different ways. One way to start a KM system is to define the advantages, in light of the competition agency's core values, vision and individual circumstances, that the competition agency aims to achieve in implementing the system, and then allocate resources to address the issues that arise.

 a) How to Extract Tacit Knowledge

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[5] The responses to the questionnaire show that competition agencies find their own solutions, depending on their own individual circumstances and preferences.

One of the main challenges in managing a competition agency's knowledge is in identifying the specific kinds of knowledge and information that staff holds and transferring this knowledge from its source to where it is needed within the competition agency. A key reason lies in the characteristic of tacit knowledge, which is personal to the individual and can therefore be difficult to extract. Further, staff may not have considered what they have learned from a project and what aspects of their learning could be useful to others. Ways of approaching this challenge is further elaborated in Section 3.1 below.

b) Time Constraints

Developing and maintaining an effective KM system can be resource intensive and time consuming. Staff may contend that they do not have the time to make knowledge available, to share it with others, teach and mentor others, or to use their information and innovate. Competition agency staff are usually project-focused and trying to complete their work within tight deadlines.

c) Difficulties in Establishing and Embedding a Knowledge Management Culture

The questionnaire responses showed another related challenge, which is the lack of a KM culture within the competition agency. Obstacles lying in "cultural" barriers are often held responsible for failures to share and transfer knowledge in competition agencies. The biggest hindrance to managing knowledge is the inability to change staff's behavior and existing work practices.

Attempts to build a knowledge-sharing culture, or "learning organization", may be thwarted by the existing institutional culture where the (often reciprocal) benefits of sharing knowledge are not clearly identified and there are no incentives to share it. The questionnaire results revealed a lack of organizational flexibility, or insufficient openness to change in many competition agencies. Some staff will simply lack the individual desire and motivation to alter their established habits and behavior. It is therefore vital to confront the challenge of KM so as to develop a culture that will embrace learning, sharing, changing and improving to which all staff will contribute and which will increase collective intelligence of the competition agency. For example, staff should ultimately recognize that sharing knowledge learned within a project is as much an aspect of the project as other outputs.

Given the growing perception of the importance of KM, it is not surprising that competition agencies have begun to engage in a wide range of strategies to create, store, integrate, tailor, transfer, and make available the right knowledge to the right people at the right time.

3 Implementing a KM system

An effective KM system consists of knowledge finding and retaining knowledge, creating repositories and databases[6], and knowledge collection. [7]

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[6] There are several examples of KM systems, including: Retrieval engines; Content management; Document and records management; Learning systems; Automatic classification systems, such as neural networks, linguistic, or semantic processing systems; Intelligent technologies including, intelligent agents, regression and correlation, expert systems, case-based reasoning, data and text mining, and rule based systems; Communication systems including,

3.1 Finding and Retaining Knowledge

The purpose of capturing and retaining knowledge for competition agencies is to prevent the loss of useful knowledge and to learn from it in the future. A critical first step is to determine what knowledge should be retained.[8]

Knowledge that has little or no value for future learning or use should not be retained. Attempting to retain all existing knowledge, however, runs into obvious practical difficulties. In addition, the accumulation of too much knowledge can make decisions difficult since finding useful information may be difficult. Competition agencies must also be careful not to duplicate knowledge retention efforts. Where knowledge is already being retained, attempting to define new ways to retain that knowledge is a wasted effort, unless there are existing problems with the way it is already being retained.

Key questions for a competition agency to ask themselves are:

What goals of the competition agency will the knowledge serve? What knowledge exists in the competition agency that can address these goals? Is the knowledge useful? Is the knowledge in a form that can be readily codified?[9] How would someone codify that knowledge?

Capturing knowledge means obtaining knowledge from the staff in a competition agency, coding it, indexing it and storing it in order to facilitate its retrieval. This collection of knowledge is then made readily accessible to future users.

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email and discussion forums; Archiving. Rodger JAMIESON and Meliha HANDZIC, "A framework for Security, Control and Assurance of Knowledge Management Systems", in "Handbook on Knowledge Management, Part 1: Knowledge Matters", Springer Science and Business Media B.V., 2004, p. 479.

[6] Thomas DAVENPORT, David DE LONG and Michael BEERS, "Successful Knowledge Management Projects", *Sloan Management Review*, Vol. 39, No. 2.

[7] There are several risks associated with implementing a KM system in a competition agency. Annex B sets out examples of risks associated with an effective KM environment. As well as identifying risks and putting in place security and control mechanisms to mitigate these risks, KM should also consider audit assurance of its systems and environments. A knowledge audit involves the review of a competition agency to determine where knowledge is located within it and then looks at the best methods to retrieve, extract, capture, store and disseminate the knowledge to others.

[8] A second step in the retention process requires a competition agency to determine how long the knowledge must be retained. If possible, the competition agency should determine at what time the knowledge will no longer be useful. Does the competition agency have reviews written into its protocols so that obsolete knowledge can be removed? Half of the competition agencies that responded to the questionnaire have defined retention periods for most knowledge, types when preserving knowledge, over time for different types of knowledge, and formats; 55% of competition agencies have a mix of preservation practices, depending on whether the knowledge is in electronic or physical format. The same retention rules do not apply across formats for similar resources such as, for instance, a research report in paper or electronic format: for example 20% of competition agencies only have physical knowledge retained based on document type or content, but electronic knowledge is usually retained based on criteria other than document type or content.

[9] Codification deals with the use of technology to store and organize explicit knowledge for retrieval and reuse. Additionally, codification is also the process of translating tacit knowledge into explicit knowledge.

This approach, discussed in Section 4, mainly entails competition agencies "collecting" explicit knowledge (know-what), which can be transcribed and more readily codified than tacit knowledge (know-how), which by its nature is harder to transcribe. Some competition agencies have implemented KM systems primarily using repositories and databases in which the captured knowledge is saved and made available to others within the agency.

Tacit knowledge, however, is most likely to be discovered and exchanged through discussions. Consequently, the "personalization" approaches discussed in Section 4 tend to focus more on establishing the right information sharing culture within the competition agency in order to create opportunities for people to meet, interact, reflect ideas and thoughts and share information and therefore create knowledge. This is mainly about "connecting" the information as opposed to "collecting" it.

According to the responses to the questionnaire, most competition agencies will not use only one approach to capturing and retaining knowledge, but instead will use a variety of methods targeted at capturing both explicit and/or tacit knowledge.

Table 3: Methods for capturing explicit and tacit knowledge

Methods used by competition agencies to capture internal knowledge	Type of Knowledge	% of agencies
Close-out reports, final research reports, internal seminars	Explicit	80%
Capturing achieved as a by-product of our work	Explicit	70%
Staff document experiences and make them accessible	Explicit/Tacit	65%
Communities of practice/expertise groups	Tacit	50%
Best Practices Database/Lessons learned databases	Explicit/Tacit	50%
Staff Expertise Database	Tacit	20%
Knowledge Development teams	Tacit	5%

Case example: Singapore Competition Commission (SCC) has developed a strategy for effective Knowledge Management

The SCC has developed a KM strategy that sets the general framework and context under which it conducts its day-to-day work.

SCC's goal is to provide a KM infrastructure that provides the "right information, in the right place, in the right format, at the right time."

Elements for SCC's KM strategy:
- For a successful implementation of a KM system, the SCC pays particular attention to the executive team. The executive team must have a broad understanding of all processes within the authority, develop well articulated goals and requirements, and ensure financial and human resources to guarantee long-term success of the KM strategy.
- There is a central repository that feeds the KM system, with valuable information from different sources and facilitates the search, extraction and retrieval of knowledge. Existing knowledge throughout the authority is available to staff searching for it.
- KM system is introduced and developed within the workflow. The KM system is part of the staff's day-to-day work processes and understands how the staff performs their specific tasks and how they share explicit and tacit knowledge.
- The SCC has developed feedback mechanisms that ensure the delivery of KM strategic benefits. The authority pays particular attention to encourage and incentivize the staff to use the KM system, to keep it updated, relevant and maintained.
- Information in the KM system is structured so that management and case reporting can be done automatically. This is helpful to monitor performance and analyze results for improving the KM system.
- SCC´s KM system is based on a flexible structure and changes with the needs of the authority.

Case example: German Bundeskartellamt (BKartA): Knowledge Management strategy

Measures on **organizational level** include:
- close cooperation of all relevant units in the BKartA, underlined by regular in person meetings (e.g. short Monday-morning briefings with management and heads of divisions, weekly house meetings with management; heads of divisions and support units to identify cases with similar legal and economic issues; house meetings to discuss specific issues)
- information database on key proceedings for management and heads of divisions (standard sheet for case information, case history, main documents, potential relevance for media, limited access due to confidentiality issues)
- case data base with relevant information of all cases of the BKartA (a new system with particular focus on easy access to key documents will be implemented in 2014)
- intranet with further information: legal and economic issues, procedural questions
- dissemination of key documents in ongoing proceedings with interest to all via intranet, internal newsletters, e-mail etc.
- specialized units to advise case handlers on legal and economic issues, both on a general and case by case basis
- unit for KM in IT to deal with technical side of the topic
- ad hoc working groups to consider further steps to make information more accessible to everyone

Measures on **HR level** include:
- mentor for all new colleagues (with a particular focus of bringing together economic and legal expertise)
- in-house training for staff, both new and more experienced staff, but willing to advance (talks, discussions, role plays)
- rotation principle to make staff familiar with different areas of competition enforcement in the authority: 2-3 different posts in the first 5 years, then 5-7 years as case handler in one decision division, which helps staff develop a deep understanding of how "their" industry/sector works and develops; little staff fluctuation helps to keep knowledge in the authority
- active role of the authority and its experts in national and international competition law and economics fora
- participation in twinning projects

3.2   Creating Repositories and Databases

The purpose of creating repositories and databases is to store knowledge and facilitate its retrieval and reuse.

All the competition agencies that responded stated that resources, such as evidence and memos, whether physical (paper) or digital, are stored in organization-level repository archives. Of the competition agencies that responded, 80% said that resources are stored in a central repository (e.g., cloud storage, Intranet, document management systems/applications, shared folders) and 10% stated that they capture most resources on personal computers, but do not have an organized way or central repository to store resources long-term.

As for the tools used by competition agencies for storing knowledge:

- 90% use intranet portals providing an interface to a competition agency's knowledge resources;
- 85% use reasonably up-to-date personal computer systems and office software and databases that are reasonably easy to maintain and search;
- 65% use templates, outlines, document models or format guidelines;
- 55% use specialized software tools (statistical, econometrics, etc.);
- 45% use document management software; virtual data room and web-building tools or team websites (such as may be used by communities of practice, webinars, cross functional terms, internal-external teams, etc.);
- Only 35% use project management software with capability to capture important documents; and
- Very few competition agencies use meeting management software and blog software.

Whatever repository or database is used, competition agencies have to be able to find and retrieve the knowledge that has been stored. This can be done through, for example, search tools, intranet portals tying resources together, and agency-wide databases. Of the competition agencies responding to the questionnaire:

- 48% said that they use several search tools, depending on who is managing the resource (e.g. library, records management, archives, IT, etc.);
- 39% said that their intranet portal ties resources together and provides links or keyword-type index data to help find most resources, in electronic or physical form;
- 30% stated they have an agency-wide database(s), populated with metadata, to find most resources that have been captured, stored and preserved; and
- 26% stated that they mostly rely on knowledgeable individuals to help them find resources.

Case example: Australian Competition and Consumer Commission (ACCC) has created a central repository to capture knowledge from its offices dispersed around Australia.

The competition Australian authority has offices throughout the country, representing opportunities and challenges for retrieving and sharing knowledge. In this regard the ACCC has undertaken an IT transformation towards knowledge identification and capture.

Creating a central repository. ACCC's first step was to capture information in a central repository with data across the agency being collected from all core software applications so it is generally available to all staff.

The primary record keeping system in the ACCC is DORIS. With DORIS, the agency moved from multiple personal, branch and location based document repositories to a single document depository.

Key features and benefits:
- Effective search capability: DORIS provides a platform for a search across all corporate documents.
- Strong security and auditing: Access control down to the individual document level meaning documents can be restricted to individuals or groups where necessary. A full audit trail tracks all interaction with documents.
- Compliance with discovery, FOI, subpoena etc.: DORIS' 'one search' function allows responses to FOI, subpoena, discovery and similar processes to become are significantly more efficient.
- Reduced duplication through a 'master document' approach: A single repository enables the ACCC to reduce duplication of documents, by providing access to the single 'master' document.

3.2.1 Computer Based Technology

There is a major distinction between the database and the KM system.[10] Databases are important vehicles for capturing codified knowledge, but in order for these to be used effectively, they have to be supported by a process to create and capture the knowledge and place it into the database.[11]

Responding competition agencies identified the following technical features as being the most important components in a KM system:
- Custom made IT system according to the organizational goals and objectives
- User friendliness, easy access
- Subscription systems
- Versioning (the process of assigning unique version names to a document), codification and searchability
- Syndication (the process of sharing information for reuse and integration with other material)
- Data lifecycle management (removing old knowledge on a routine basis)
- Tagging (used to facilitate retrieval of knowledge by web browsers or databases)
- Establishing security levels
- Intranet

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[10] For more information on electronic databases, see Annex D.
[11] Christine SOO, Timothy DEVINNEY, David MIDGLEY and Anne DEERING, "Knowledge Management: Philosophy, Processes and Pitfalls", *California Management Review*, Vol. 44, No. 4, Summer 2002, pp.138-139.

Figure 1: Does your agency have a network that is designed to support sharing knowledge between employees?
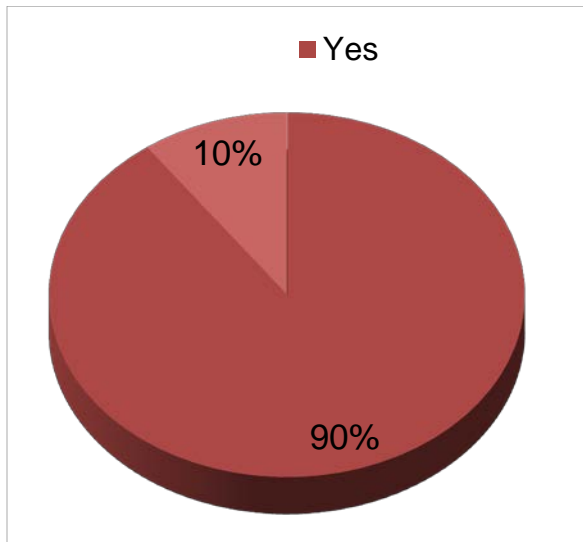
The majority of competition agencies that responded to the questionnaire have a network that is designed to support sharing knowledge between employees. The following are examples of such networks:

- Intranets
- Electronic document management and Document flow system (where all the case documents are entered and registered)
- Installing applications (such as I-Base, an investigative application based on MS SQL database, where the employees store, retrieve and share large volumes of disparate data within an investigation and for merger control, IBM Lotus Notes integrated with the agency's email system)
- Shared folders

Case Study: European Commission DG Comp COMPwiki

Within the context of its reflection on a better management of knowledge DG Comp set up COMPwiki in 2012 to promote the sharing of relevant know-how among case-handlers. The objective of COMPwiki is to capture, share and easily search relevant substantive and procedural information to help case-handlers pursue their enforcement and policy work.

The idea is that the sharing of this information, as well as best practices and lessons learned from past cases, will not only have an effect on staff efficiency and productivity, but will also lead to better quality decisions, particularly in times of high staff turnover and staff cuts.

A team of experienced case-handlers is dedicated to COMPwiki on a rotating basis.

COMPwiki not only fosters an intelligent sharing of best/past practices to produce better and faster decisions, it also leads to improvements in the way staff works. COMPwiki helps to identify people or networks within DG COMP that have expert knowledge on specific topics and it creates a sense of community in a large organization, which can sometimes work along functional divisions.

3.2.2 Knowledge Maps

A knowledge map allows a competition agency to fully leverage the existing expertise resident within the competition agency, as well as to identify barriers and constraints to fulfilling strategic goals and objectives. Constructing a knowledge map to locate the information needed enables a competition agency to make the best use of resources, independent of source or form.

Fundamentally, a knowledge map contains information about the competition agency's knowledge. It describes who has what knowledge, where the knowledge resides, and how the knowledge is transferred or disseminated. It is the basis for determining knowledge commonality, or areas where similar knowledge is used across multiple processes.

The intellectual environment that is mapped through a knowledge map is mostly made up of referenced expertise, documented experiences, and extracted and formalized processes or procedures. It contains knowledge (know-how) in the form of people (experts), processes (e.g., complex workflows), and applications; rationales or experiences (know-why) in the form of lessons learned or project debriefings; and factual knowledge (know-what) in the form of documents or database entries, which in turn can be linked to authors who can be asked for advice, assistance, or a clarification of their documented findings[12].

The technology that enables a knowledge map is often intranet-based. Technological implementation, however, is only half the challenge of developing and using knowledge maps in

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[12] Martin EPPLER, "Making Knowledge Visible through Knowledge Maps: Concepts, Elements, Cases", *in* "Handbook on Knowledge Management, Part 1: Knowledge Matters", Springer Science and Business Media B.V., 2004, p. 190.

a competition agency. The other even more challenging task consists of gathering the right reference information and combining it in a framework (i.e. knowledge map) to which everybody in a competition agency can relate. For more information on knowledge maps, see Annex C.

4   Knowledge Collection

In order to manage knowledge, competition agencies need to ensure that all information, data and ideas created by their staff – whether new entrants into the organization, existing or departing staff – is collected and kept as it is considered an important asset belonging to the competition agency.

There are various approaches used by different competition agencies aimed at collecting knowledge in all its forms.

4.1   Collecting from and Sharing Knowledge with New Staff

Upon the arrival of new staff in a competition agency, it is vital that an effective KM system ensures that the knowledge, ideas and insights of new staff are transferred into the agency. Competition agencies will want to know the information and ideas that the new staff has and in what subject matter the new staff excels.

When new staff join a competition agency, there may be obstacles to knowledge sharing. In some cases, the existing staff may want to protect their own position by not sharing their knowledge. Therefore, a good KM system, with a well-established culture, should ensure a supportive attitude exists between new and existing staff, thereby ensuring a good flow of knowledge between them.

Most of the responding competition agencies (80%) have methods of organizing work that facilitate knowledge sharing, such as project teams mixing junior and senior staff or newly recruited staff with experienced staff. Of the competition agencies responding, 70% have a regular training course (induction course) for new staff; 75% have a training course that includes training on how to use the competition agency's KM system; 56% have materials regarding how to use the competition agency's KM stored on its KM system that new staff can access easily; and 77% carry out informal training-on-the job or mentoring.

Some competition agencies indicated in their responses that they try to implement a system for knowledge transfer to new staff. Such competition agencies introduced in-depth training, a coaching system and assigned experienced staff to mentor and tutor new staff.

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> **Case example: Tutoring program in FAS Russia**
>
> **Objective:** Improve the FAS Russia's efficiency through a comprehensive training program for new staff. The training is delivered through the "First steps in the FAS Russia" program, which consists of a tutoring system and informational material.
>
> **The Tutoring program:** Tutoring is a tool to incorporate new staff into the team. Tutoring is considered the most effective tool for incorporating and training new staff into the FAS Russia.
>
> A tutor is officially appointed for the first two months of the evaluation period of the new staff. The main task of a tutor is to share his experience and knowledge, to help new staff join the team, as well as to undertake all organizational and staff activities, which are required by every new staff. Active assistance of the tutor ends after the first two months of the evaluation period.
>
> **Who can be a tutor?** Any senior or experienced staff member in the FAS Russia can be a tutor. Appointing senior or experienced staff as a tutor is important because it motivates them with the opportunity to be appointed.
>
> **Encouragement system for tutors:** To be appointed a tutor is a form of motivation for the senior or experienced staff of the FAS Russia, and emphasizes their importance in the team. Furthermore, to become a tutor is considered to be the fulfillment of an important task and gives the tutor a one-time material reward.

4.2   Knowledge Collection from Departing Staff

The less a competition agency collects knowledge on a regular basis, the more likely it will need to collect knowledge when staff leaves the agency. However, the mechanisms to collect knowledge may not exist or the departing staff's willingness to cooperate may not be forthcoming.

Two methods used by competition agencies to collect knowledge include: (1) exit interviews and (2) transition periods. At negligible cost, the benefits are[13]:

- Help retain vital knowledge in the organization;

- Shorten the learning curve of new staff or successors to the departing staff;

- Identify specific mistakes and improvement opportunities;

- Enhance the understanding and experience that managers have of managing staff;

- Inform management succession planning;

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[13] Olivier SERRAT, "Conducting Exit Interviews", *Asian Development Bank*, October 2008.

- Support a competition agency's human resource practices;

- Provide direct indications on how to improve staff retention; and

- Generate useful information for training needs.

Such practices can result in the departing staff having a more positive view of the competition agency and its culture (which may, for example, encourage future recruitment).

4.2.1 Exit Interviews

Exit interviews are interviews conducted with departing staff just before they leave a competition agency. From the competition agency's perspective, the primary aim of the exit interview is for the competition agency to enable the transfer of knowledge and experience from the departing staff to a successor, or even to brief a team on current projects, issues and contacts.[14]

The practice of exit interviews is a KM tool to capture and store knowledge from departing staff in an effort to minimize loss through staff turnover. This is especially relevant in roles where the staff embodies significant human capital that may be passed to appropriate staff remaining in the competition agency. Most departing staff are pleased to share knowledge, help a successor, or brief management, and in doing so yield information that may be used to enhance all aspects of a competition agency's working environment, including culture, management, business processes, and intra - as well as inter - organizational relationships.

Regarding the preparation of exit interviews[15], face-to-face interactions are essential. The management of the exit interview process must be initiated as early as possible after it is known that the employee is leaving. In preparation for an exit interview, it is important to:

- Consider who currently accesses the departing employee's knowledge and what they need to know from the replacement staff. It is useful to think about documented explicit knowledge (in files, documents, and e-mails) as well as tacit knowledge (know-how) that needs to be explained.

- Develop a plan in a collaborative way to ensure that knowledge can be captured and stored during the departing employee's notice period. For explicit knowledge (i.e. files, documents and e-mails), the departing employee should move relevant files into shared folders or a document library. Ideally, they should organize all files and draw up a related set of notes for the successor. For important tacit knowledge (know-how), activity-based knowledge mapping (where knowledge is linked to competition agency activities) could prove useful, providing a framework for conversations about how key activities are undertaken, what inputs and outputs are involved, or what obstacles and bottlenecks might exist.

For tacit knowledge (know-how), it is important that the competition agency set up a face-to-face interview with the departing employee. Preparation for the interview should include reviewing

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[14] Exit interviews are also an opportunity to learn reasons for the staff's departure, on the basis that criticism is a helpful driver for organizational improvement.
[15] *Ibid.*

the key tasks the employee does based on a job description or an annual performance plan. The competition agency can then use that information as the basis for discussing how staff goes about those tasks, what knowledge and skills they need to accomplish those tasks, any problems or pitfalls to be aware of, etc. The interviewer should also find out about the departing employee's network of contacts and sources of knowledge.

4.2.2 Transition Period

Another way of ensuring an effective knowledge transfer between a departing staff and his/her successor is to make sure that they work together during a transition period so that a 'live' handover can be done.

For example, in Ireland, competition agency management would expect any departing staff to do proper write-ups on work and a hand over to another staff member taking over responsibilities.

In Russia, hands-on teaching of successors is very common practice. For example, FAS senior staff share experiences and teach junior colleagues working with staff who are about to retire. Directors of departments and unit managers also work closely with their deputies who are likely to take over their positions upon their retirement. Some retired employees prefer to work as advisors to the FAS after retirement.

4.3 Knowledge Collection from Existing Staff

Some competition agencies implement KM systems that will encourage staff working in the agency to explicitly place their knowledge into a shared knowledge repository, such as a database, as well as to retrieve the knowledge they need that other staff have put into the repository.

There are other strategies, which involve communities of practice, where staff can gather formally or informally and exchange information with one another. Strategies and instruments that competition agencies use to facilitate efforts to collect knowledge from their existing staff, include:

- Storytelling (by using narrative techniques to communicate the information);

- Cross-project learning (capturing, sharing and using prior project knowledge);

- After action reviews (such as debriefing interviews);

- Expert directories (helps staff identify the experts in a given area);

- Best practice transfer (through templates, model documents and handbooks);

- Knowledge fairs (social events during which groups of people share their experiences);

- Competence management (a systematic evaluation and planning of the staff's competences);

- Proximity and architecture (related to the physical situation of the staff which can be favorable or obstructive to their knowledge sharing);

- Master-apprentice relationship;

- Collaborative technologies (such as groupware, which is a collaborative software that can be used by staff working on a common task to share information);

- Knowledge brokers, which exist in some competition agencies, as the staff responsible for a particular matter and act as the specialist of such topic;

- Social software (such as blogs, social bookmarking); and

- Inter-project knowledge transfer.

Regarding the methods used by competition agencies to collect knowledge from existing staff, 80% use the method of close-out reports at the end of a case or project, final research reports or internal seminars. Of the competition agencies responding to the questionnaire, 70% stated that capturing knowledge is essentially achieved as a by-product of their work and it is part of the normal routine (such as plans, write-ups roundtable sessions, internal notes, reports, etc.) and 65% stated that management teams expect staff to document experiences and lessons learned and to make these items accessible to the rest of the competition agency. In addition, 50% of competition agencies reported the use of methods that enhance communication practices (e.g. up-to-date e-mails system, electronic bulletin boards, team rooms, verbal sharing of expertise among staff) and 45% of competition agencies stated that staff spend time and effort to contribute to the competition agency's store of knowledge in an ongoing and structured manner.

Case example: Croatian Competition Agency experience with internal education –Inter Educa – as an instrument of effective knowledge management

The Objective is for staff of the Croatian Competition Agency to educate each other on different relevant topics in competition (and State Aid).

Goal of the internal education is to raise awareness about the significance of continuous trainings, to enhance expert knowledge about competition and state aid and to ensure timely information about the latest competition and state aid legislation.

A formalized approach is applied by introducing a specific obligation for continuous education in the Internal Regulation on education and expert improvement and by further detailed internal education in the Program adopted by the Competition Council in May 2010.

The scope and content of Inter-Educa consists of internal seminars/education held every second Friday with one official/staff preparing and giving a 30-45 minute presentation followed by time for discussion. Participation is obligatory for officials including Council members. Topics of education are determined two months in advance between the official, his/her superior and the president of the Council and cover different aspects of competition (legislation, general competition topics, EU and national case law, competition economics, international cooperation etc.). After each Inter Educa, the presentations are kept in a public shared folder for internal use by the Croatian Competition Agency's staff.

Significance of internal education are the following:

- It is important for educating new staff by presentations given by more senior and experienced officials/staff;

- It is a good exercise for junior staff or officials who do not give many presentations in their daily work;

- It bears particular significance for learning about topics which are not in an official's/staff's scope of work, for instance, staff from the State Aid Department are learning about antitrust issues, staff from the Merger Department are learning about cartels, or all officials/staff are learning about EU or other international issues from the International Cooperation Department.

Lessons learned

- Positive side: it is useful tool for the transfer of knowledge among staff on different topics, broadening individual and collective knowledge, gaining new skills and ideas in dealing with cases, improving efficiency at work, and creating a positive atmosphere with open discussion and the exchange of views.

- Negative side: it requires additional work besides regular work on cases and sometimes it can be time-consuming.There are also different qualities of presentations and different levels of interest.

5 Creating a Knowledge Culture

Since tacit knowledge (know-how) is most likely to be discovered and exchanged through discussion, competition agencies tend to work more on establishing the right information sharing culture within the agency in order to create opportunities for staff to meet, interact, reflect ideas and thoughts and create and share knowledge.

Attempts to build a knowledge-sharing culture may be blocked by negative attitudes within the competition agency. For instance, there may be a lack of organizational flexibility, or insufficient openness to change. Some staff will simply lack the individual desire and motivation to alter established habits and behaviors.

A major cultural change may be required to change staff's attitudes and behavior so that they willingly and consistently share their knowledge. It is therefore vital to confront the real challenge of KM, which is the development of a culture that will embrace learning, sharing, changing and improving; all attained by the knowledge of staff and the collective intelligence within a competition agency.

Some of the methods cited in the literature and others used by competition agencies responding to the questionnaire to help create a knowledge culture include:

- Open spaces, which give space and time for the staff to explore events, ideas and information and create ways in which to proceed.

The main purpose of "open space" is to provide a place for staff to be creative and exchange information, such as online chat rooms, threaded e-mail discussions, weekly in-person discussion forums, communities, discussion groups, and coffee rooms and water cooler encounters. Such open spaces will eventually help staff create and share knowledge, thereby improving their decision-making capabilities.

- T-shaped management

Some organizations have started to use a new approach to KM systems pertinent to managing tacit knowledge called T-shaped management. This requires managers to share knowledge freely across their organization (the horizontal part of the "T"), while being fiercely committed to their business unit's performance (the vertical part of the "T").[16] The initial vision of this approach is to overcome knowledge silos found within a competition agency by encouraging competition agency managers to share knowledge freely throughout an agency.

- Rewards

In order to encourage a KM culture, some competition agencies grant rewards to their staff who share their knowledge:

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[16] Morten HANSEN and Bolko VON OETINGER, "Introducing T-Shaped Managers: Knowledge Management's Next Generation", *Harvard Business School Publishing*, March 2001, p. 106.

- o Acknowledgement of employees on the intranet who share the proceedings minutes (Ireland);
- o Informal system of internal publicity, moral appraisal (Netherlands, Russia and UK);
- o KM is taken into consideration in performance appraisal (Netherlands, South Africa and UK);
- o Workshops, study visits, courses in-house or abroad, and conferences (Romania);
- o Possibility of bonuses (Russia and South Africa); and
- o Awards (honors and small financial awards) (FTC).

Case example: Korean Fair Trade Commission (KFTC) and its 'Knowledge Mileage Program'

The KFTC introduced 'Knowledge Mileage Program' to give staff incentives based on their numbers of registered sets of knowledge, reference, evaluation and comments and provides monetary or other types of reward at the end of the year in accordance with their performance. In addition, the KFTC regularly holds a Knowledge Contest and a Knowledge Search Contest. For the Knowledge Contest, every staff submits at least one set of knowledge or know-how to be examined during a designated period. Excellent submissions are awarded. In the Knowledge Search Contest, participating staff searches for some designated sets of information within the Think Fair system and the staff that provides the fastest answer is awarded.

Case example: Creation of a Knowledge Culture at the German Bundeskartellamt (BKartA)

Creating such an environment is crucial for the BKartA. Close formal and informal cooperation of staff on all levels, in-house training and many discussion meetings, rotation of staff in the authority and long retention periods have had a positive impact on creating a culture of creating and sharing knowledge.

Case example: the Swedish Competition Authority's (SCA) learning culture and routines for knowledge sharing

In the SCA, the Director General is of the opinion that KM is a crucial factor in achieving the most efficient authority possible. There is a strong culture of learning and sharing, stemming from the core values of the authority and a positive lessons-learned environment. Contributing to knowledge sharing is mandatory and encouraged.

Knowledge Officers sometimes work with reference groups, who give their input as regards knowledge and knowledge tools developed within the SCA. Everyone at the SCA can influence and contribute to the knowledge sharing.

Employees are encouraged to submit suggestions for improvement. Every initiative gets a response.

The SCA has monthly meetings led by the Director General, where staff members share their knowledge with the rest of the staff. The knowledge may consist of, for example, legal or economic analysis, case law presentation, lessons learned or project management. Each presentation is commented on by the Director General and the speaker is publicly acknowledged. Presentations are posted on the intranet after the meeting. The meetings are planned by the management, which is aware of all major and minor projects to be discussed.

Case handlers have bi-weekly meetings in small groups for knowledge sharing purposes and case-related brainstorming sessions.

Each department has weekly meetings where knowledge sharing may be part of the agenda.

The communications department reads all the official case decisions that are made by the SCA and approaches the project managers for interviews and articles to be published on the intranet or in a newsletter.

After important meetings and training sessions participants are expected to publish a report on the intranet.

6   Knowledge Managers

According to the responses to the questionnaire, a limited number of competition agencies (such as Ireland, Mexico, Singapore, and South Africa) recruit employees who are dedicated to KM. The European Commission's DG Comp is planning to appoint two KM Managers. Other competition agencies depend on other employees who are dedicated to or participating in only one aspect of KM, usually gathering explicit knowledge.

6.1 The knowledge manager distinguished from other KM staff in the competition agency

A Knowledge Manager, whether working full time or half-time, is responsible for the harmonization between the different phases of KM, i.e. the information flow throughout the organization. He or she is responsible for the implementation of the KM strategy and its development, the KM design, and the dissemination of KM culture and training. Knowledge Managers need to try to capture all tacit information (know-how) held by their staff. [17]

A Knowledge Manager may be assisted by other staff who contribute to the retention of knowledge, including:

- Professional librarians: Conference materials, articles, access to external resources, management of the physical and electronic library, and management of published knowledge.

- IT professionals: Technical support and management of the KM software (e.g. IT infrastructure, intranet, database, shared hard drives).

- Record managers: Case files, specifically inserting and updating the organizational memory with all the technical information.

- Clerical support: Competition agency support staff.

Other staff who assist with knowledge acquisition:

- Specialist human resources: Training, coaching and mentoring, managing policies and procedures.

- Paraprofessional or technical specialists: Train staff.

This division of responsibility is reflected in the questionnaire responses – see Figure 2:

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[17] For more information on knowledge managers, see Annex F.

Figure 2: Is there dedicated staff responsible for KM practices? (For instance, is there a centralized team that coordinates capture and sharing? If so, where is it located, etc.?) Please, indicate all that apply, specifying briefly their functions and measured by full-time equivalencies (FTEs)[18]
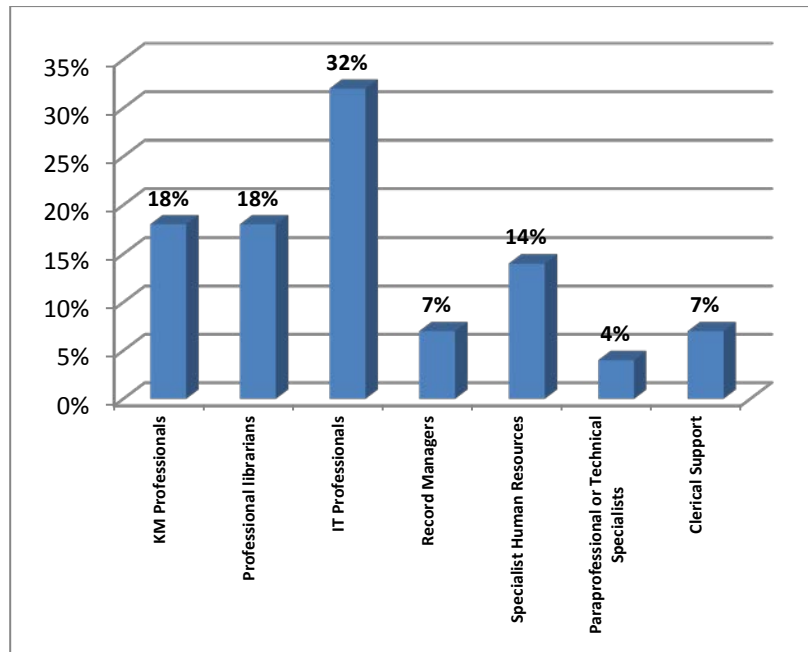
(The sum taken into consideration is the number of answers (choices), and not the number of responding competition agencies).

6.2 Roles of Knowledge Managers

The essential functions of a knowledge manager involve the ability to direct and establish a good KM culture. They must establish a KM culture that will model the needed behavior among staff, communicate the competition agency's vision and strategy for KM and ensure its successful implementation.

The primary goal of knowledge managers is to guide their competition agency towards a clear understanding of knowledge, which should be treated as an important asset ready to be managed for maximum benefit to the competition agency. Their challenge is changing the staff's behavior with little direct authority over them so their way of undertaking such cultural changes is through negotiations and good communication.

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[18]Full-time equivalent (FTE) is a unit that indicates the workload of an employed person (or student) in a way that makes workloads comparable across various contexts. FTE is often used to measure a worker's involvement in a project, or to track cost reductions in an organization. An FTE of 1.0 means that the person is equivalent to a full-time worker; while an FTE of 0.5 signals that the worker is only half-time.

Common roles of Knowledge Managers[19] are (for more details, see Annex D):

- Implementing Systems-Thinking in Finding Solutions (i.e. understanding how knowledge influences a competition agency as a whole).

- Designing, developing and sustaining knowledge transfer in competition agencies by linking communities of interest and place.

- Creating, developing and sustaining the flow of knowledge.

- Entering information into the KM system.

- Establishing a supportive culture for sharing knowledge.

The role of a knowledge manager in a competition agency includes, for example:

- Setting strategic KM priorities for the agency (what knowledge within the agency is most important to capture/share limited resources).

- Establishing best practices in KM (e.g. encourage staff to share lessons learned at the end of a project, share key documents precedents with the knowledge manager, etc.).

- Gaining commitment from senior management (e.g. encourage their staff to share their knowledge, attend relevant training, etc.).

Case study: Singapore Competition Commission's (SCC) KM strategy

1) Assessing user requirements
2) Determine design specification for new improved system
3) Obtain senior management support
4) Development of new improved system
5) Migration of legacy repository
6) Consolidation of systems, if necessary
7) Obtain user acceptance and conduct training
8) Codification of policies
9) Review and repeat step 1-8 for KM improvement

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[19] Alternatives to Knowledge Managers found in competition agencies may be Chief Knowledge Officers (CKO) or Chief Information Officers (CIO). The role of a CKO differs from a CIO in the public sector in in that a CIO's role relates to physical computers and networks, whereas a CKO's role addresses organizational behavior, processes and technology, knowledge sharing culture, etc.

Case example: UK Office of Fair Trading's Know-How Team

In response to the questionnaire, it is apparent that competition agencies have a wide range of methods to ensure effective KM. For example, the UK Office of Fair Trading (OFT) has combined both codification and personalization methods for an effective KM system. A Know-How team was set up in 2007 for the purpose of gathering useful know-how (both tacit and explicit knowledge) from across the OFT in relation to its competition, consumer and markets functions and in order to make knowledge more easily accessible. The main tools it uses are the following:

> **Know-how intranet pages** divided into thematic categories that are sub-divided by particular topics. Key internal written know-how documents (e.g. procedures, manuals, guidance, speeches, presentations) are stored under these topics. The pages are updated regularly by the Know-How team. The pages can be searched securely via a Google-based search engine.

> **Electronic know-how float** is circulated monthly and covers new know-how for office wide circulation and includes legal and policy advice, information on the progress of projects, slides from know-how presentations, updates on relevant developments, etc. The Know-How team then adds the new material to the relevant know-how intranet pages. With some tacit knowledge (know-how), it may be sufficient to include an item in the float identifying that knowledge exists and to whom staff should speak to discuss the topic further.

> **Cross-Office know-how presentations**. The Know-How team arranges a program of presentations that cover a mixture of topics of relevance to competition, consumer, markets and cross-cutting work, including lessons learned presentations, delivered by internal and external speakers. Talks take place at least once every two weeks and often more frequently. External (other UK government) attendees are sometimes invited where the subject matter is suitable. The Know-How team also coordinates a range of "Enforcement Academy" Basic Training and Skills Training events to increase the enforcement capability of OFT staff.

> **Know-how Liaison Officer (KLO) network**. The Know-How team has established a KLO network of case officers across the OFT to facilitate knowledge capture. The KLOs help to gather know-how from their teams/groups and forward it for inclusion in the electronic float/know-how intranet pages.

> **Horizontal knowledge sharing fora**. There is a range of horizontal knowledge sharing meetings including regular competition and consumer enforcement meetings that allow staff to come together and share their knowledge and experience.

Conclusion

In conclusion, there are three main elements for effective KM in an organization like a competition agency. First, where such a system does not exist or is not working effectively, there should be a commitment to change throughout the competition agency as these practices will have a bearing on many staff and their work. Second, KM should require a system for recognizing the importance of information storage, ready and appropriate retrieval of information, and removal of information when it becomes obsolete. Third, is the appointment of a knowledge manager with responsibility for implementing the KM system and maintaining it. All three elements contribute to effective KM with the aim of improving the effectiveness and efficiency of the competition agency.

Annex

Annex A: Questionnaire

ICN – Agency Effectiveness Working Group

Questionnaire to ICN Members
Needs Assessment Questionnaire for Effective Knowledge Management

1. **Introduction**

Purpose of Questionnaire

The "Knowledge Management Project" (Project) focuses on the development of a new chapter for the "Competition Agency Practice Manual" (Manual). The third chapter of the Manual is allocated to "Effective Knowledge Management".

The aim of the Project is "*to focus on how agencies should invest in knowledge, what kind of research activity they should undertake, and how to ensure that knowledge is retained*"[20]. Based on this, from an organizational perspective "Knowledge Management" (KM) comprises a range of practices used by competition agencies to identify, create, retain, distribute and represent knowledge and preserve and share organizational memory for the purposes of this Project. KM uses equipment, software, communication channels, and stored information to enable communication among people working in a competition agency.

The Agency Effectiveness Working Group (AEWG) has designed this questionnaire with the purpose of gathering information from ICN members regarding their understanding and implementation of KM. This information, among others, will help the AEWG (and thus all ICN members) to understand how KM is addressed by different competition agencies and prepare a chapter outlining competition agency approaches to KM and elements of effective KM systems that may serve the needs of competition agencies to the extent possible.

Each participant agency is requested to complete the questionnaire and submit it to the email addresses responses@fne.gob.cl; olavo.chinaglia@cade.gov.br; ytekdemir@rekabet.gov.tr   **by March 11, 2011** so as to allow time for the compilation and analysis of data for the ICN Annual Conference to be held in 17-20 May, 2011.

Please provide responses by ticking the appropriate option and providing a brief explanation where applicable. Respondents may tick more than one box in any given question where applicable.

Use of Questionnaire Responses
The AEWG plans to report on the questionnaire responses received primarily on an aggregate

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[20] See AEWG 2010-2011 Work Plan, downloadable here.

form. However, in some cases, the AEWG may wish to report individual responses or report results in such a way that it may be possible to identify the responding agency or jurisdiction.

If there are any responses that you wish to be reported only in an aggregate or non-attributable manner, please indicate the relevant question numbers in the space below:

SECTION I - ABOUT YOUR AGENCY

1. Identity of the Agency and Jurisdiction
    a) Name of the Agency :
    b) Jurisdiction:

2. Contact person(s) at your agency regarding this questionnaire
    a) Name(s):
    b) E-mail:
    c) Telephone:

3. Age of your agency. Where applicable, you may wish to aggregate time before your agency has been renamed/reconstituted, etc.
    ☐ (a) 0–5 years
    ☐ (b) 6–10 years
    ☐ (c) 11–20 years
    ☐ (d) More than 20 years

    Comment if desired:

4. Regarding your agency, please indicate:

4.a) Total number of employees

    ☐ (a) 50 employees and less
    ☐ (b) Between 51 and 120 employees
    ☐ (c) Between 121 and 250 employees
    ☐ (d) Between 251 and 400 employees
    ☐ (e) More than 400 employees

4.b) What is the scope of your agency's enforcement activities? Select all that apply.
    ☐ (a) Competition issues. ➜ **SKIP TO 4.d)**
    ☐ (b) Consumer protection
    ☐ (c) Regulated industries
    ☐ (d) Others

4.c) If your agency deals with policies other than competition, please report the number of employees working *exclusively* on competition policy. In order to estimate a common system of measurement for all the agencies, if there are employees working in more than one area, please adjust the number using the following rule:

Adjusted employees number

[Shared employees x 0.5] if your agency deals with two policies (e.g. consumer protection and competition policy)

[Shared staff x 0.33] if your agency deals with 3 policies (e.g. consumer protection, competition policy and utilities regulator)

Etc.

Therefore, the <u>total adjusted staff working on competition policy</u> should be the sum of people working only in the competition area and the adjusted number of staff resulting from the abovementioned calculation.

Total adjusted staff working on competition policy:

☐ (a) 50 employees and less
☐ (b) Between 51 and 120 employees
☐ (c) Between 121 and 250 employees
☐ (d) Between 251 and 400 employees
☐ (e) More than 400 employees

4.d) Classification of the agency in terms of number of staff.
Please indicate how your agency classifies itself in terms of size (based on number of staff).

☐ (a) Small size agency
☐ (b) Medium size agency
☐ (c) Large size agency

SECTION II – SUPPORTING CONCEPTS

5. **Knowledge management (KM)** may mean different things to different people. Moreover, it may be defined in a different manner than provided under "Purpose of the Questionnaire" above. It can also include a variety of functions.
   Which of the following terms do you think are included in your understanding of KM? Select all that apply.

   ☐ (a) Content management
   Set of activities, processes and technologies that support the collection, management and publication of information in any form but mainly through digital content (e.g. documents, multimedia files or any other file type). Normally, it has two components: a repository and a platform supporting the workflow of organisation's staff in charge of feeding information into the repository

   ☐ (b) Knowledge sharing
   Set of activities, processes and technologies to exchange knowledge (i.e. information, skills, or expertise) within an organisation

   ☐ (c) Knowledge retrieval
   Set of activities, processes and technologies aimed at finding knowledge from organisation's information visualising it in a structured way, so that users can get contextual and related knowledge

   ☐ (d) Disseminating knowledge within the agency
   Set of activities, processes and technologies aimed at the disclosure of knowledge internally, to transfer knowledge from one part of the organisation to another (or all other) part(s) of the organization

   ☐ (e) Sharing and disseminating knowledge outside the agency
   Set of activities, processes and technologies aimed at the disclosure of knowledge by any appropriate means, in order to make it accessible to a broad public audience

   ☐ (f) Storing, sharing, disseminating and applying knowledge with the agency to achieve its objectives
   Set of activities, processes and technologies aimed at capture, organize, create and/or distribute knowledge to ensure its availability for future users.

   ☐ (g) Other. Please explain

6. With the aim to learn what your agency understands for KM and in order to build an ICN collective definition, please briefly describe your agency's understanding of what comprises **"effective KM".**

7. Identify and list 3 criteria which, in your opinion, would accurately describe an effective KM System

   a.

   b.

   c.

SECTION III – DESCRIPTIVE SITUATION

8. Describe any experience your agency had identifying knowledge shortcomings; how these shortcomings were identified (e.g. from stakeholders' feedback, internal staff surveys, analysis of negative Court decisions, etc.); and what steps were undertaken in order to fill the knowledge gaps.

Considering the following definitions:

An ***institutional /organisational memory*** *is the collective body of knowledge, consisting in a set of facts, data, information, concepts, experiences and know-how, held formally as well as informally, by a group of people in an organisation. These memories are created in the course of the organization's existence and, as it transcends the individuals, it requires its transmission among the organisation's members. Institutional memory is essential to the continuous and effective functioning of the agency at all levels.*

Knowledge Management (KM) *is the trans-disciplinary approach considering all the practices (activities and processes) and technologies for managing institutional memory within an organization.*

For the following questions, we will use the term KM to refer to these types of practices overall. These practices involve:

- ***Creating or developing knowledge;***
- ***Transferring it*** *from one human mind to another in a "non-tangible" form (often known as 'tacit knowledge') through face to face discussions, interviews, roundtable sessions, attendance to seminars, among others;*
- ***Capturing it*** *in explicit form (known as 'explicit knowledge'), by mean of documents, media files, graphics or presentations;*
- ***Storing it*** *for future use, as in databases or physical repositories;*
- ***Providing findings and identification tools*** *such as indexes, codification systems; tags, or search-engine software;*
- ***Using it*** *by applying prior knowledge to current work; and*
- ***Destroying it*** *when knowledge becomes obsolete or is found to be erroneous.*

Your agency may use a different terminology for essentially the same practices. Please respond regardless of these terminology differences.

We will understand for ***internally generated knowledge resources*** *(or internal resources) to all of those sources of knowledge which come directly from the agency activity, that is, on those materials, knowledge and resources that are in unique possession of the agency, such as:*

- ***Internal documents and information:*** *E.g., planning documents, project reports, investigation's records, databases, market analysis reports, notes on case law reviews, Court decision analysis, and case study reports, among others.*

- *Administrative records and documentation:* E.g., correspondence, memos, policies and procedures, budget documentation, financial statements, management analysis reports, audit reports, among others
- *Published information:* E.g. agency's research reports, market studies, guidelines, annual reports, newsletters, etc.
- *Knowledge and expertise of staff members* E.g. technical and administrative expertise, knowledge developed through on-the-job experience, training, presentations or papers by staff members published formally in journal articles, or informally in presentations, networking, etc..

Accordingly, we will understand for **external knowledge resource** (or external resources) to all those materials which come from the outer world (for instance from stakeholders, other agencies or organizations).

The internal and external resources can adopt:
- *Hardcopy* or physical format, such as instance, paper, videos, photographs, maps, and other hardcopy media
- *Digital resources* or electronic formats, such as e-mails, databases, CDs, digital images, Internet, intranets, among others.
- *Human activities*, such as seminars, communities of practice or formal roundtable discussions.

Specifically, this section is focused on practices currently developed by the agencies for preserving, storing, disseminating, transferring and enabling use of **internally generated knowledge resources, and external knowledge resource,** both in any format.

A **KM System** is a system, generally IT based, for managing knowledge in organizations for supporting creation, capture, storage and dissemination of information. A KM system's aim is to enable employees to have ready access to the organization's documented base of information.

9. Does your agency have a transparent strategy for KM within the organisation?

☐ (a) Yes
☐ (b) No ➜ **SKIP TO Q12**

Comment if desired:

10. a) If "Yes", could you please explain how this strategy is documented?

b) Does your agency have any non-confidential documents regarding this strategy that it could provide to the working group?
☐ (a) Yes.
☐ (b) No

Comment if desired:

c) In case you may not be willing to submit a full text, could your agency provide a non-confidential summary of this KM strategy on request?
☐ (a) Yes
☐ (b) No

11. Does your agency have an *organisational-wide* active, ongoing KM system or elements of such a system, to preserve institutional memory for future use?

*Note: Throughout this survey "**organisational-wide**" refers to the entire organisation; that is, the entire agency including all divisions, departments and work units.*

☐ (a) Yes.
☐ (b) Yes. We are working on an organisation-wide system, but at this moment is still in an early phase and is not accessible from the agency's divisions. We are actively in the process of extending the KMS throughout the organisation. ➜ **SKIP TO Q17**
☐ (c) No but there are plans to introduce a KM system in a near future. ➜ **SKIP TO Q18**
☐ (d) No and there are currently NO plans to introduce a KM system ➜ **Go to Section VII**

Comment if desired:

12. How long has your agency had a KM system?

☐ (a) For two years or less
☐ (b) For two to five years
☐ (c) For more than five years

13. If KM system has been in place in your organisation for more than one year, what are the major returns on investment you can see? Please mention three aspects from the list below, by order of importance, being 1 the most important

☐ (a) Efficiencies (less double work)
☐ (b) Less training cost per employee
☐ (c) Better performance
☐ (d) Better quality of decisions
☐ (e) New people become self-sufficient more quickly
☐ (f) Staff empowerment
☐ (g) Faster case lifecycle
☐ (h) Decreased employee turnover
☐ (i) Other.
   Describe

14. Do you consider that your agency has an effective KM system?
   ☐ (a) Yes
   ☐ (b) To some extent ➜ **SKIP TO Q16**
   ☐ (c) No ➜ **SKIP TO Q16**

15. Identify 3 elements which best describe why you consider your agency has reached an effective KM system
 a.

 b.

 c.

   ➜ **Go to SECTION IV**

16. List the 3 main challenges for your agency adopting an effective KM system:
 a.

 b.

 c.

   ➜ **Go to SECTION IV**

17. If KM is still not in place in your organisation, what would be the main argument to set up such a strategy/system in your agency? Please mention three aspects from the list below, by order of importance, being 1 the most important

- ☐ (a) Efficiencies (less double work)
- ☐ (b) Less training cost per employee
- ☐ (c) Better performance
- ☐ (d) Better quality of decisions
- ☐ (e) New people become self-sufficient more quickly
- ☐ (f) Staff empowerment
- ☐ (g) Faster case lifecycle
- ☐ (h) Decreased employee turnover
- ☐ (i) Other.
  Describe

18. Does your agency have an active, ongoing pilot/prototype for this "roll-out"/"start-up" KMS, or elements of a system, not necessarily organisational-wide but at some level within the agency?
    - ☐ (a) Yes, and it's robust enough to it probably will be extended during this year widely throughout the organisation. [Please consider a possible follow-up interview during the second phase of this EKM project.]
    - ☐ (b) Yes, but it's not likely to be extended beyond its current scope during this year ➜ **Go to SECTION VII**
    - ☐ (c) No ➜ **Go to SECTION VII**

   Comment if desired:

SECTION IV – KM SYSTEM

19. Please explain briefly how your KM system works

20. Who is the institutional memory **point of contact** (and where is located); that is, who is the person to contact in case there is a need for <u>historical materials, files, or documents.?</u>

- ☐ (a) Centralised functional unit at agency level (such as library, archives, KM department, IT department, etc.).
  Please specify
- ☐ (b) Division level work unit or individuals who have KM-type responsibilities for that division only
- ☐ (c) There are different working units, depending on the type of knowledge resource needed

☐ (d) On an informal basis, knowledgeable individuals or supervisors can be contacted

☐ (e) We spend a lot of time trying to find out where to find information or if it exists. There's no organised way to find information.

☐ (f) Other.
Please explain or comment

21. Does your staff know who to contact internally in relation to competition policy's specific topics?
☐ (a) Yes. Explain briefly
☐ (b) No

22. a) Does your agency have a single **point-of- contact** where individuals from outside the agency can obtain published information or not-confidential documents, such as research reports, opinions, and guidelines, among others?
☐ (a) Yes
☐ (b) No

b) Does your agency have a library that deals mostly with external publications (hardcopy) and provides formal or informal links and access to externally published references, literature/reference databases (digital resources), other libraries, etc.?
☐ (a) Yes. If yes, what is the annual budget?
☐ (b) No

Comment if desired:

23. Overall, how would you rate your agency's **cultural receptivity** to KM practices?
Is knowledge sharing more common than knowledge hoarding?
Are KM encouraged and supported by management, and entered into willingly by staff – practices such as documenting work, sharing lessons learned in after-action sessions, internal seminars, saving documentation for future reference, building effective information repositories or accessing information from internal/external sources?
Please answer on a scale of 1-5, with 1 being overall negative receptivity and 5 being very high receptivity. Ground your answer in the following aspects:

Grade   Click here.

Comment if desired:

24. Does your agency have a system of recognition for staff who shares their knowledge (for example rewards, competition, and internal publicity)?
☐ (a) Yes.
Please describe

☐ (b) No

Comment if desired:

25. Has your agency found any specific initiatives to be specially effective in creating acceptance of and participation in ("buy-in") of KM practices within your agency?
☐ (a) Yes.
  Please describe

☐ (b) No

Comment if desired:

26. Before beginning a new investigation, report, project, market study, research, among others, do the agency's supervisors (management positions / team leaders) expect that employees consult prior organisational experience as evidenced in documents, databases, knowledgeable people, and other internal generated knowledge resources?
☐ (a) Yes. How is this verified by supervisors?

☐ (b) No

27. How your agency (agency's supervisors, management positions/team leaders) verifies that employees consult the updated external knowledge resources in carrying out their work?

28. a) Who exercises **overall authority** over KM system / practices in your agency?

b) Who exercises **strongest leadership** for KM practices in your agency?

c) Who has overall, day-to-day, organisation-wide **responsibility** for KM system / practices?

29. a) Does your agency have written policies/procedures for KM system / practices?
☐ (a) Yes
☐ (b) No ➜ **SKIP TO Q30**

b) Are these written policies/ procedures for KM practices non-confidential thus you could provide a copy to the working group?

☐ (a) Yes. Please, describe the types of documents available

☐ (b) No

c) In case you may not be willing to submit a full text, could your agency provide a non-confidential summary of its policies/procedures for KM on request?

☐ (a) Yes
☐ (b) No

d) Are KM responsibilities on the written policies/procedures for KM practices clearly defined?

☐ (a) Yes

☐ (b) No, there are some lacks, overlaps or confusion about who is supposed to do what.

Comment if desired:

e) Is there any staff dedicated to responsibility for KM practices? (For instance, is there a centralized team that coordinates capture and sharing? If so, where is it located, etc?) Please, indicate all that apply, specifying briefly their functions and measured by full-time equivalencies (FTEs)

Staffing	FTEs	Functions
KM professionals		
Professional librarians		
IT professionals		
Record managers		
Specialist Human resources		
Paraprofessional or technical specialists		
Clerical support		
Other*		

* Please, specify title, skill or professional training and FTE.

30. How does your agency draw the balance between transparency and confidentiality in the KM System?

SECTION V – KNOWLEDGE CODIFICATION

31. Does your agency have a map of existing knowledge or KM data base?

☐ (a) Yes. Can you please explain how it works?

☐ (b) No

32. From your experience, what are the technical features that are the most important in a KM system? (e.g. syndication, subscription systems, versioning, tracking, tagging, etc.)

33. Does your agency have a network that is designed to support sharing knowledge between employees?
☐ (a) Yes. Can you please explain how it works?

☐ (b) No

34. Critical knowledge assets must be protected from external and internal threats. What kind of security measures your agency has implemented in order to protect KMS against danger, damage, loss, and criminal activity? Has been effectives?

SECTION VI – KM PRACTICES

35. Refer briefly how does your agency accumulate the knowledge, information and experience created in the curse of its existence to preserve its organisational/institutional memory?

36. Are there specific efforts made to **capture knowledge of experienced retiring or exiting employees**? Select all that applies
☐ (a) We require interviews for retiring or exiting staff, and we document the results
☐ (b) When we know someone is close to retirement, we assign the individual to document his/her area of expertise
☐ (c) We have a succession plan which provides for transfer of knowledge and training of replacement staff
☐ (d) We have a process whereby we assign on an ongoing basis, knowledge-capturing tasks to senior staff (for instance, leading ex post assessment sessions/also known as 'post mortem')
☐ (e) Other. Please describe what methods are used

Comment if desired:

37. Do you have a system to hand-over information or files when an officer departs the agency?

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☐ (a) Yes. Explain briefly

☐ (b) No

38. How do you ensure that an officer departing from a case team leaves behind his or her expertise on specific topics, markets or conducts analysis?

☐ (a) Yes. Explain briefly

☐ (b) No

39. What kind of resources is included in your KM system? Select all that may apply

☐ (a) Books on antitrust law and economics

☐ (b) Digital documental database and electronic subscription

☐ (c) Collection of quantitative data

☐ (d) Legal database (legal framework and regulations)

☐ (e) Legal advice (e.g. given internally or provided by external advisers)

☐ (f) Internal guidelines

☐ (g) Internal procedures

☐ (h) Market monitoring

☐ (i) Market studies or sectoral reports

☐ (j) Case files (ongoing and past cases)

☐ (k) Case reports and antitrust decisions

☐ (l) Speeches and slides from seminars/presentations

☐ (m) Contact details database (Networking: sectoral authorities, relevant players in the market, international relationship)

☐ (n) Others (please specify)

40. a) Please identify the methods used by your agency to **capture internal knowledge resource**? Select all that may apply

☐ (a) We have explicit strategies for knowledge development and capture

☐ (b) Management teams expect staff to document experiences and lessons learned and make these accessible to the rest of the agency

☐ (c) Employees spend time and effort to contribute to the organisation's store of knowledge in an ongoing and structured manner

☐ (d) Capturing is essentially achieved as a by- product of our work and it is part of the normal routine (such as plans, write-ups roundtable sessions, internal notes, reports, etc.)

☐ (e) More experienced staff members are given knowledge-capturing assignments, such as documenting important procedures

☐ (f) Lessons learned system/database

☐ (g) Best practices database

☐ (h) Staff expertise database

☐ (i) Communities of practice /expertise groups

☐ (j) Knowledge development teams (specifically formed to develop new knowledge

assets for the organisation)
☐　(k) Close-out reports, final research reports, internal seminars
☐　(l) Enhances communication practices (e.g. up-to-date email system, electronic bulletin boards, team rooms, verbal sharing of expertise among employees is encouraged)
☐　　(m) Other. Please list

　　b) Please describe briefly the method that, according to your agency's experience, has been more effective to capture internal knowledge resource

41. What **tools** are available for knowledge capturing? Select all that may apply
☐　(a) Reasonably up-to-date personal computer systems and office software
☐　(b) Meeting rooms well-equipped for group interaction (whiteboards, markers, web access, computer projection, video communication, etc.)
☐　(c) Project management software with capability to capture important documents
☐　(d) Specialised software tools (statistical, econometrics, etc.)
☐　(e) Databases that are reasonably easy to maintain and search
☐　(f) Content-management software; virtual data room
☐　(g) Intranet portals providing an interface to organisation's knowledge resources
☐　(h) Templates, outlines or other specific content/format guidelines
☐　(i) Web-building tools or team websites (such as may be used by communities of practice, webinars. cross-functional terms, internal-external teams, etc.)
☐　(j) Meeting management software
☐　(k) Blog software
☐　(l) Phone systems equipped for conference calling
　　(m) Other. Please list

42. Are practices for **storing** KM resources in place? Select all that apply
☐　(a) We have a clear strategy for storing our knowledge assets
☐　(b) Employees generally understand what needs to be stored and how to get resources from their possession into storage (repositories). This process is well-defined for most resource types
☐　(c) Storage practices are well-defined for some critical resources, but not for all
☐　(d) Storage practices are well-defined for physical resources but not for digital resources

　　Comment if desired:

43. Where are captured the resources? Select all that apply
☐　(a) Physical resources are stored in an organisation-level repository archives
☐　(b) Digital resources are stored in an enterprise-level repository (e.g., cloud storage)
☐　(c) We capture a lot on personal computers, but we don't have an organised way or central repository to store electronic resources long-term
☐　(d) Other (specify – provide details if possible)

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Comment if desired:

44. How are **resources preserved** over time, for different types of resources and formats? Select all that apply
   - ☐ (a) We have defined retention periods for most resource types
   - ☐ (b) We have a mix of preservation practices, depending on whether the resource is electronic or physical format. The same retention rules don't apply across formats for similar resources such as, for instance, a research report in paper or electronic format
   - ☐ (c) Physical resources are retained based on document type or content, but electronic resources are usually retained based on criteria other than document type or content

   Comment if desired:

45. How does a user **identify, find and retrieve knowledge stored** on the KM system?
   - ☐ (a) We searching an agency-wide database(s), populated with metadata, to find most resources that have been captured, stored and preserved
   - ☐ (b) Our intranet portal ties resources together and provides links or keyword-type index data to help find most resources, electronic or physical
   - ☐ (c) We have several databases and portal-type web pages, depending on the division/work group or some other criteria. There is no central access point, one has to access each of them individually
   - ☐ (d) We have several finding tools, depending on who is managing the resource (e.g., library, records management, knowledge managements, archives, IT, etc.)
   - ☐ (e) We have a mixture of databases and manual indexes for hardcopy.
   - ☐ (f) We mostly rely on knowledgeable individuals to help us to find resources.

   Explain briefly if desired:

46. Do you have methods of organising work that facilitates **knowledge sharing**, for example, project teams mixing junior and senior staff or new recruited staff with experienced staff?
   - ☐ (a) Yes. Explain briefly
   - ☐ (b) No

47. Do you use social media internally as part of your KM initiative?
   - ☐ (a) Yes. Explain briefly
   - ☐ (b) No

48. Does your agency use any metrics to **assess value-added and/or effectiveness of the KM system** and KM practices, or to justify its costs?
   - ☐ (a) Yes

☐ (b) No

Comment if desired:

SECTION VII – RECRUITMENT PROCESS AND NEW STAFF

49. a) Does the agency have a regular training course (induction course) for new staff?
    ☐ (a) Yes
    ☐ (b) No ➜ **SKIP TO Q49.d)**

    b) Does this training/induction course includes training on how to use your agency's KM system?
    ☐ (a) Yes
    ☐ (b) No

    c) Are there materials regarding how to use your agency's KM stored on the KM system, that staff can access individually?
    ☐ (a) Yes
    ☐ (b) No

    d) Do you carry out informal trainings such as training-on-the job or mentoring?
    ☐ (a) Yes. Explain briefly
    ☐ (b) No

SECTION VIII – INCREASE ORGANIZATIONAL KNOWLEDGE

50. a) Does your agency have an explicit and transparent training policy (e.g. periodic or random seminars, training courses, workshops, and/or events with an aim to further the current knowledge level)?
    ☐ (a) Yes
    ☐ (b) No

    b) If "Yes", please provide brief details of this policy?

    c) Is there an internal policy to approve who attend seminars, training courses, workshops or events? (For example, who/how many can attend an event):
    ☐ (a) Yes
    ☐ (b) No

    d) Please explain briefly how the process for approving participants to these activities is related to the increase of organizational knowledge.

51. Is there an internal policy regarding the [preparation and/or dissemination of] materials prepared for participating in seminars externally or internally?
    ☐ (a) Yes
        Explain briefly
    ☐ (b) No

52. a) Does your agency' staff participates in any training activities –such as international seminars/workshops, national seminars/workshops, internships, taught courses and others - aimed to increase specific knowledge in competition policy within the organisation?
    ☐ (a) Yes
    ☐ (b) No

    b) Is there an internal policy regarding the materials obtained in training activities (such as described above) prepared for participating in seminars externally or internally?
    ☐ (a) Yes
        Explain briefly
    ☐ (b) No

53. a)Does your agency have a clear policy regarding a **"return mechanism"** for those members of the staff that participate in or attend seminars, training courses,

workshops, and events (i.e. to ensure that the knowledge acquired is shared appropriately within the agency)?

☐ (a) Yes

Explain briefly

☐ (b) No

b) Please indicate the main mechanisms used by your agency to **ensure the dissemination of new knowledge** within the organization

(a)

(b)

(c)

(d)

(e)

54. Does your agency uses centres of excellence or centres of expertise?

☐ (a) Yes. How does it operate?

☐ (b) No

Annex B: Risk Management and Privacy Issues

Risk management is a broad process which identifies risks, security and controls for KM infrastructure and systems. In order to achieve the objectives of KM relating to integrity, accuracy, availability, and control, competition agencies should consider the risks, security and controls over the knowledge repositories and environment.

A KM risk management team, which may be comprised of a Chief Knowledge Office or his/her equivalent and an IT internal auditor and/or security managers, should first identify the KM assets (including personnel, systems, infrastructure and networks, locations) and then identify risks associated with these assets. The next phase involves identifying existing controls and security measures over these assets and then analyzing the risks by determining the likelihood, consequence, and level of the risks. The risks are then evaluated and prioritized, and an action plan drawn up to implement the recommendations for additional KM security and control measures to counter or mitigate the identified KM risks. [21]

There are several functional requirements for electronic records management. The requirements discussed below directly relate to integrity and the controls necessary for continuity of evidence[22]:

-   Safeguarding the legality of the electronic record, that is, it should retain its unequivocal connection to the related relevant action;

-   Security, privacy, confidentiality, and freedom of information should be addressed; and

-   Need to evaluate hardware, software, storage media, and documentation techniques to ensure usable preservation of the record over time[23].

There are several risks associated with implementing a KM system in a competition agency. These risks should be identified and security and control mechanisms put in place to mitigate the risks. Hereafter is an example of how these risks can be identified /selected[24] by the competition agency:

Strategic / Planning	- Mismatch of KM strategy to IT strategies
	- Unidentified/excessive costs, especially maintenance and support
	- Overlooked essential KM functionality

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[21] *Ibid.*, p. 480.
[22] *Ibid.*, p. 482.
[23] David BEARMAN, "Electronic Evidence: Strategies for Managing Records in Contemporary Organizations", *Pittsburgh: Archives & Museum Informatics*, 1994.
[24] *Ibid.*, p. 484.

Accidental or Intentional	- Damage - Loss - Modification - Destruction - Use To/of specialized KM or traditional IT hardware used to run KM systems, KM software, knowledge repositories, as well as associated databases. Loss or incapacitation of key KM experts, knowledge engineers, programmers, or knowledge maintenance personnel is also of concern.
Fraud and abuse	- Substitution/deletion of knowledge repositories - Unauthorized access to KM systems or knowledge management/audit trails - Modification, deletion or insertion of KM information when passing through a network, communications or other layers of operating or support software such as data warehousing. This includes other application software when linked or integrated with KM systems.
Other Exposures	- Inability of imbedded KM software to recover/restart - KM hardware, infrastructure or software failure – especially real-time monitoring or imbedded systems - Lack of knowledge use histories (audit trails) in hardcopy and/or magnetic/optical form - Inadequate trace facilities in KM software for debugging and KM testing - KM systems knowledge not based on best expert's knowledge, reasoning, and explanations - Inadequate control of and access to KM repositories - Poor quantity or quality of KM personnel - Poor management, supervision, and control of the KM application and repositories if held elsewhere to IT department (e.g., under Research & Development) - Inadequate training and supervision of KM personnel - Inadequate KM hardware/software maintenance

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	- Legal liability for reliance on KM opinion when that opinion caused loss of life, damage, or monetary loss - Inadequate KM documentation of tools, environment, and applications

Hereafter is an example of how security and controls measures can be selected by a competition agency[25]:

KM Hardware	Sensitive knowledge access: -Key locked equipment -Restricted / controlled boot up procedures - Up-to date documentation - Regular audits of KM equipment - KM back-up: strategy / equipment - KM maintenance: diagnostic aids/ documentation - Security infrastructure
KM Software	- Automated procedures for KM access control - Valid software license agreement - Appropriate KM maintenance strategy - Help facilities - Cross reference listings
KM Systems Development	- KM systems development methodology followed - Appropriate design documentation - Quality assurance/control review - Validation and testing of KM systems
KM Applications	- Systems access security & strong authentication - Smart cards - Hardcopy or magnetic/optical collection of case histories - Good application documentation - Back-up and recover
KM Network Controls	- Internet, extranet or intranet access controls - Public Key Infrastructure (PKI) (A framework for creating a secure method for exchanging information based on public key cryptography) - Dedicated connections - Firewalls

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[25] *Ibid*., p. 486-487.

KM Human Resources	- Management commitment to KM strategy
	
	Assign responsibility for:
	
	    o KM systems development
	
	    o KM production operations
	
	    o KM disaster planning
	
	- Supervision and management of KM personnel
	
	- KM information center

Besides identifying risks and putting in place security and control mechanisms to mitigate these risks, KM should also consider audit assurance of its systems and environments. Knowledge audit has involved the review of a competition agency to determine where knowledge is located within an agency and then look at the best methods of being able to retrieve, extract, capture, store and disseminate the knowledge to others.

Knowledge assurance refers to a review of the KM systems and infrastructure to ensure that these systems are adequately secured, controllable and auditable so that those who use the systems can rely on the results produced by those systems. This will involve having qualified knowledge auditors to perform quality assurance checks on the KM systems.

These moves ensure the competition agency is better grounded in the facts of the situation, more responsive to changes, and better able to focus and harness the imagination of its staff and measure the effects of its actions.

Privacy Concerns for Knowledge Management

There is privacy legislation for both public and private sectors. Staff at competition agencies primarily need to be informed of what information or knowledge is being captured and then informed as to how that information or knowledge will be applied in the future. It is the competition agency's responsibility to monitor who has access to that knowledge, who maintains the knowledge, and how that knowledge is used within the competition agency. If there is open access to knowledge documents within the knowledge repository, this may seriously compromise the competition agency in meeting the set criteria from privacy legislation. Breaches of privacy in KM systems may cause lack of trust by staff and may even leave the competition agency open to legal liability[26].

Regarding the balance between transparency and confidentiality in applying a KM system, the competition agencies responding to the questionnaire provided the following techniques and methods:

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[26] *Ibid.*, p. 494.

- Identifying confidential and non-confidential documents based on the national legislations.

- Classifying confidential and non-confidential documents in the KM system.

- All the documents and information available in the competition agency's system are deemed confidential, while only the documents published on the competition agency's website are public.

- The intranet is separated technically from the Internet.

- Firewalls between different departments (if it is necessary according to national legislation).

- Profiling and hierarchy in the competition agency to determine who accesses what information.

Annex C: Knowledge Maps[27]

A knowledge map generally consists of two parts: a ground layer that represents the context for the mapping, and the individual elements that are mapped within this context. There are various types of knowledge maps that can be used in the competition agency context.

Types of Knowledge Maps[28]

- *Knowledge Source Maps* – These maps structure a population of organization experts along relevant search criteria, such as their domains of expertise, proximity or seniority.

- *Knowledge Development Maps* - These maps can be used to depict the necessary stages to develop a certain competence, either individually, as a team, or as an organizational entity. These maps can serve as visualized learning that provides a common vision for organizational learning.

- *Knowledge Structure Maps* - These maps outline the global architecture of a knowledge domain and how its parts relate to one another. This type of knowledge map assists the manager in comprehending and interpreting an expert domain.

- *Knowledge Application Maps* - These maps show which type of knowledge has to be applied at a certain process stage or in a specific business situation. Usually, these maps also provide pointers to locate that specific knowledge (documents, databases).

Purpose of Knowledge Maps[29]

- They increase the visibility of knowledge sources and facilitate and accelerate the process of locating relevant expertise or experience.

- They improve the evaluation of intellectual assets (and liabilities) in an organization.

- They assist employees in interpreting and evaluating knowledge domains.

- They connect processes with knowledge sources (and thus go beyond the mere documentation of a process as found in most quality manuals).

- They sketch the necessary steps for knowledge development in a certain area.

Advantages of Knowledge Maps

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[27] Martin EPPLER, "Making Knowledge Visible through Knowledge Maps: Concepts, Elements, Cases", *in* "Handbook on Knowledge Management, Part 1: Knowledge Matters", Springer Science and Business Media B.V., 2004, p. 190.
[28] *Ibid* at pp. 192-193.
[29] *Ibid*, p. 199.

- Organizational knowledge assets become visible for all employees that have access to the Intranet and provide a systematic context for the retrieval of reference information.

- They can connect experts with each other, or help novices identify experts quickly.

- They can speed up information seeking process and facilitate systematic knowledge development since they connect insights with tasks and problems.

- Potential to make implicit knowledge explicit through the use of visual metaphors and symbols.

- Leads to better decision-making and problem solving.

Disadvantages of Knowledge Maps[30]

Disadvantages for Map Users	Disadvantages for Map Designers
- The potential harmful effects if the map is seen by illegitimate users (such as head hunters or competitors) - The danger of misinterpretation - The fixation or 'reification' of one frame of reference (i.e., the layout of the knowledge map) - The danger of information overload if the map represents too many elements or dimensions of a knowledge area - The danger of using an outdated map	- The commitment to one scheme of order and neglect of other perspectives - The difficult depiction of dynamic processes - The relatively high costs for production and updating - The missing quantification of inter-dependencies - The reduction of complex structures to graphic symbols - The difficult and time-consuming task of ergonomic visualization

Quality dimensions of Knowledge maps

There are a few quality dimensions that a knowledge map should follow:

- Functional map quality – does the map fulfill its purpose?

- Cognitive map quality – is the map clear and not overloaded?

- Technical map quality – is the access time sufficient / securely protected?

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[30] *Ibid*, p. 201.

- Aesthetic map quality – is the map pleasing to the eye?

Annex D: Knowledge Manager's Profile

There is an assumption that the management of knowledge assets differs from the management of an organization's more traditional tangible assets, in particular those recorded in a competition agency's budget[31].

According to the famous book *Working Knowledge: How Organizations Manage What They Know*, Davenport and Prusak view organizations as knowledge markets that have buyers who need knowledge carrying solutions to their issues, *sellers* who have an internal market reputation for possessing substantial knowledge about a certain project or process, and brokers who make connections between those seeking the knowledge and those who possess it such as gatekeepers, boundary spanners and corporate librarians.

With the emergence of KM, it was usually employees associated with information technology that used to be in charge of applying it in the organization. Nowadays, as KM becomes vital in the development of organizational strategies, organizations give more importance to those who should implement their KM system. This whole evolution in the importance of KM has led to a shift of responsibility for knowledge initiatives from those who are specialists in information technology to executives.

KM is a newly emerged management function and with its development organizations and organizers have witnessed the creation of positions, such as "knowledge manager".

Profile of Knowledge Managers

It is hard to find existing studies of the characteristics of a knowledge manager, but there are existing studies of the closest position to the knowledge manager, which is Chief Knowledge Officer (CKO), which is a relatively new position for most organizations. According to some studies[32], a CKO needs to be an expert in KM initiatives and be able to energize the organization with a good vision and high communication skills.

There are seven challenges that CKOs usually face[33]:

- Set KM strategic priorities.

- Establish a knowledge database of best practices.

- Gain commitment of senior executives to support a learning environment.

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[31] John-Christopher SPENDER, "Knowledge Fields: Some Post-9/11 Thoughts about the Knowledge-Based Theory of the Firm", *in* "Handbook on Knowledge Management, Part 1: Knowledge Matters", Springer Science and Business Media B.V., 2004, p. 63.

[32] Daintry DUFFY, "Knowledge Champions: What Does It Take To Be a Successful CKO?", *CIO. Enterprise*, Vol. 12, 1998.

[33] James MCKEEN and Sandy STAPLES, "Knowledge Managers: Who They Are And What They Do", *in* "Handbook on Knowledge Management, Part 1: Knowledge Matters", Springer Science and Business Media B.V., 2004, pp. 21-40.

- Teach information seekers how to ask better and smarter questions of their intelligent resources.

- Put in place a process for managing intellectual assets.

- Obtain customer satisfaction information in a near real-time.

- Globalize KM.

CKOs can be identified as technologists and environmentalists. As environmentalists, they know their role in creating a social environment that will facilitate and help individuals communicate and have fruitful conversation and share knowledge. CKOs are also able to have a consulting role with their new ideas and listen to people's new ideas.

The role of a CKO differs from a CIO (Chief Information Officer) in the public sector since the role of a CIO is mainly about the activities that relate to physical computers and network assets, while the role of a CKO mainly addresses organizational behaviors, processes and technologies which fall in the fields of leadership and strategy, knowledge sharing culture, taxonomy and resources.

When it comes to identifying the essential functions of a knowledge manager it is essential to address his ability to direct and establish a good organization's culture and policies to efficiently fulfill its objectives. They must establish the culture that will model the needed behavior among staff, communicate the organization's vision and strategy and make sure of its successful implementation. Knowledge managers have the responsibility of developing the right organizational culture that includes all the beliefs, ideologies, values and norms.

Knowledge managers can be characterized as follows[34]:

- Highly educated

- A seasoned organizational performer

- A researcher who likes to learn more and looks for knowledge

- Likes new things

- Mostly motivated by challenges

- Likes to help others

- A risk-taker

- Sees the importance of KM for an organization to be successful.

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[34] *Ibid.*

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The primary goal of knowledge managers is to guide their organization towards a clear understanding of knowledge, which should be treated as an important organizational asset ready to be managed for maximal benefit to the organization. Their challenge is changing the staff's behavior with little direct authority over them so their way of undertaking such cultural changes is through negotiations and good communication.

Roles of Knowledge Managers

Some common roles of knowledge managers include:

- *Implementing Systems-Thinking in Finding Solutions.* Knowledge managers establish powerful activities in the organization offering certain cultures that will introduce sound systems-thinking in the minds of staff. Systems-thinking suggests that almost everything is a system with connecting elements, it stresses the importance of relationships and structure within an organization and makes the staff know the effects of their exerted efforts on others enabling them to perform their roles more effectively.

- *Designing, developing and sustaining communities of interest and place.* Communities of practice include a domain of practice crossing organizational boundaries defining themselves by knowledge fields and not tasks. The main core of communities of practice includes collaboration, innovation, learning and information sharing. Communities are used to increase the transfer and flow of information within an organization in order to create as much knowledge as possible.

- *Creating, developing and sustaining the flow of knowledge.* Data, information and knowledge circulate in the networks of systems and individuals. It is transferred through team interaction, communities and events. With the development of ways to communicate, it is easier to connect further across organizations. It is important to work more on informal organization, which is the network of relationships that the staff forms across functions and departments in order to rapidly undertake and accomplish their tasks.

- *Entering information into the system.* Managers who are always busy rarely take the time to enter information and practices into a database unless it is part of their job. Companies may appoint people specialized in entering practices. Knowledge managers identify and enter the practice and information into the database system.

- *Establishing a supportive culture for sharing.* Reward systems are one way to encourage the staff to share information and keep it.