10-Knowledge Managment

What is knowledge?

Knowledge that is used within an organization
A state of the mind

- “...a justified belief that increases an entity’s capacity for effective action...” (Nonaka 1994)
- Knowing: “...understanding gained through experience and study; the sum or range of what has been perceived, discovered, or learned..” (Schubert 1998)
  An object
- A thing to be stored and manipulated (Carlsson et al. 1996)
  A process
- Knowledge is the process of applying expertise
  A capability
- Knowledge is the potential to define and influence actions and to take decisions
  Data $\rightarrow$ **Information** $\rightarrow$ **Knowledge**
- Information is raw data endowed with meaning
- Information becomes knowledge when it helps in facing organizational issues
  Knowledge $\rightarrow$ **Information** $\rightarrow$ **Data (Tuomi 1998)**
- Data may be forged only when people have knowledge to investigate facts in the environment
  A general underlying agreement
- Knowledge may come from the possession of information, data, but it is not restricted to them
- Knowledge is strictly tied to creativeness and the ability to contextualize general advice, expertise, best practices in a given situation
- Knowledge is strictly tied to “action” (making choices, learning about the environment, innovating,...)
  A lot of duality between action and decision. You need some creativity to contextualize the information, usually you have a context that will help to filter information to make the correct decision.
  Changing context requires different mechanism to give the best answers.

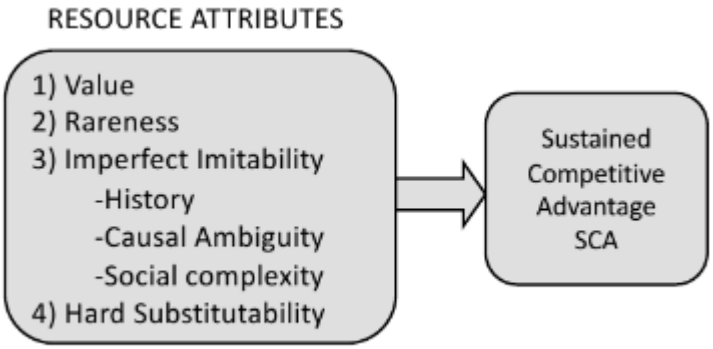
Organizational Knowledge: A Taxonomy

Internal K

- Resides within the firm boundaries
- E.g., expertise, personal competencies, market and customers knowledge, technical skills
  External K
- Resides outside the firm boundaries
- Organizations take specific actions to get this knowledge (e.g., hiring a consultant)
- E.g., Public agencies, Consulting firms, Internet, ...: they are all sources of external knowledge
  Personal (individual) K
- Resides within the mind and the action of individuals
  Organizational (collective) K
- Is specific of the organization and its culture, and internalized by its employees
- E.g., routines, best practices, methodologies for strategy and project management
  Tacit K
- Knowledge that cannot be codified and which resides in the expertise/competences of people and groups of people
  Explicit K
- Knowledge that can be codified in some sort of artifact (sw program, rules, document, ...)
  Knowledge can either stay in a person mind or be shared in the organization. Shared knowledge is used when the team share their own knowledge, usually each person of the team has a different type of knowledge(multidisciplinary knowledge). Act as a team and let the correct people handle the correct situation, know what each person can do well and cannot do well.
  Not all the knowledge in an organisation is written up. So you need to integrate new employee to have some common knowledge and let them take their position in the company(also why retirement/quitting is critical for the company as the person take away their tacit knowledge).

Why is knowledge important for a company?

The Resource-Based View of the firm: RBV
The organization is a set of resources
Some resources have the potential to become a source of sustained competitive advantage

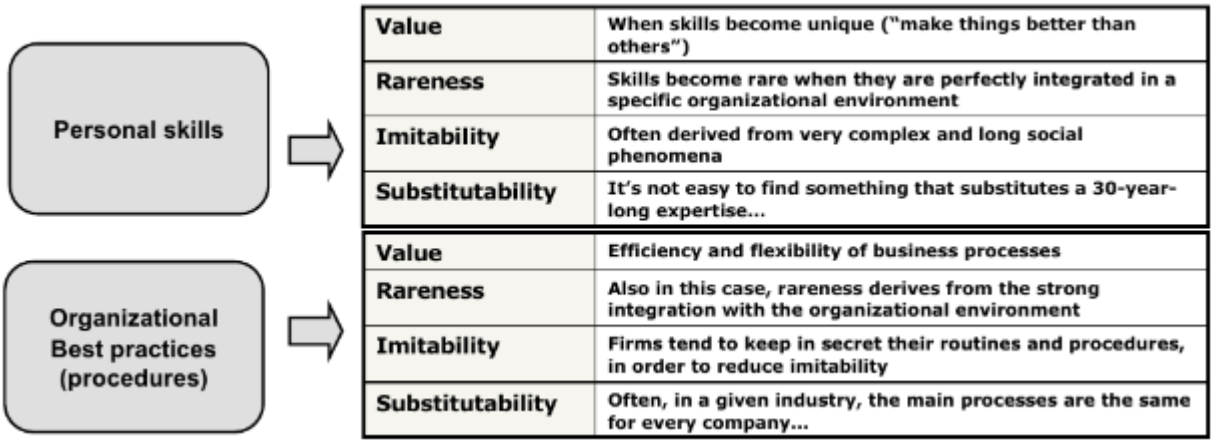


Companies likes money machines and things that are written and not in the mind of people. This cannot be done specially in innovation
SO we use the resource view of an organization to deal with knowledge as it tells us the few resources that are really important for the company. These factors are what make the company stands outs, it is why the customer come to the company. The competitive advantage is demonstrated to be key to the company successful.
Value of knowledge: can associate a monetary value to knowledge
Rareness: estimate how rare is the knowledge you are searching for
imperfect Imitability: is it easy to replicate what the knowledge do? If it is difficult you have a sustainable advantage on competitor
Hard Substituability: can I substitute my knowledge with something similar?

Knowledge and RBV

Most of the knowledge owned by a firm clearly shows the potential to adhere to the principles of the RBV theory
in order to become a source of SCA

- Value
- Rareness
- Low imitability
- Low substitutability



Value	When skills become unique ("make things better than others")
Rareness	Skills become rare when they are perfectly integrated in a specific organizational environment
Imitability	Often derived from very complex and long social phenomena
Substitutability	It's not easy to find something that substitutes a 30-year-long expertise...

Value	Efficiency and flexibility of business processes
Rareness	Also in this case, rareness derives from the strong integration with the organizational environment
Imitability	Firms tend to keep in secret their routines and procedures, in order to reduce imitability
Substitutability	Often, in a given industry, the main processes are the same for every company...

Usually managers do not understand how technology works so they try to understand complexity through time needed by competitors to catch up, but this is not easy to estimate by engineers as something complex to make could be easy to think about.

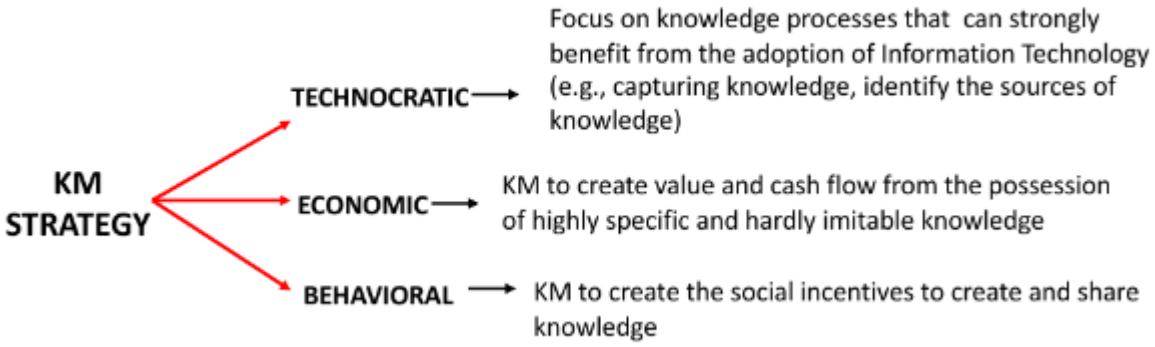
Managing knowledge: how

Knowledge Management (KM) is a very complex issue

- It's cross-divisional, enterprise-wide
- It's primarily a management issue
  Identify relevant forms of knowledge
  - Identify and cultivate virtuous cycles (and not vicious cycles of knowledge)
    Create social incentives for sharing knowledge
    Enable the knowledge sharing environment
- It's boosted by IT tools: Knowledge Management Systems (KMS)
- Costs / Benefits are not easy to be evaluated (see open issues)
  Make sure that the knowledge never leave the company, if someone is going to retire soon try to assign them juniors that tries to learn their knowledge(Soft Managerial Levers).

Managing knowledge within organizations

- Different (theoretical) strategies [Earl 2001]
- Each KM initiative may be classified as a combination of strategies



These methodologies are not exclusive, you should use them at the same time.

KM Technocratic Strategies: capturing knowledge

Strong reliance on the adoption of information and management technology
Capturing knowledge and make it available to other people in the firm

- E.g., knowledge networks (post-reply mechanisms for problem solving)
- Insurance companies: formalize techniques and algorithms for risk assessment and make them available to others (e.g., new employees)

- Generally: project documentation sharing
  CSFs
- Connecting people
- Incentives for providing content to systems
- Content validation (cultivate good content and discard useless contributions)
  Focuses on making knowledge known through technological means. An example is knowledge networks(portals, forums,...)
  There is a knowledge portal with different characteristics, contains all the information about the employee(only the one that they want to share about their projects). People will share their working knowledge only to an extent(outside the organization, as inside you should cooperate to make profit).
  Sometimes sharing information/my work outside the company is good to let other people know how good you are and it is a way to make more connections and find better jobs. Core CRM should be enhanced by this technology.

KM economic strategy

Protecting and exploiting the knowledge assets of the firm to generate cash flow and revenue streams
The perspective of managing knowledge as an asset

- Patents
- Copyrights
- Non-disclosure agreements
- Intellectual property management
- Trade secrets
- ...
  CSFs
- Create specialized teams/division for managing knowledge assets
- Identify the relevant knowledge that may generate revenue
  Try to exploit assets to make money, try to protect knowledge with patents(disclosing information to protect it). So this knowledge needs agreements to be used by someone else. If other companies are not asking you to use your patented knowledge the patent is useless, it is only a pubblication.
  NDAs are a contract that both sides sign and the part that receive the information is bound to not share it to the public, this can also be bilateral. The NDAs can be mild(get back what you received) or more aggressive one(ask absurd money back if there is a breach).
  One of the issues of Trade Secrets is that when employees leave the company they could disclose your information to your competitors, so you make them sign NDAs but this is not 100% secure proof so you do not tell an employee more that they need to know and make each employee know only a part of the information they need, if the information is core information you share only with the owner or the heads of the company. This also applied to

trust and value of an employee: if an employee stayed with the company for 10 years they will be valued more than one that can do the same thing but is in for only 3 years.

KM behavioral strategies: communities of practice

Communities of Practice (CoP): loosely knit teams of people that work on common issues and problems
Give tools (organizational and IT-based) to CoP to support knowledge sharing and transfer

- Large corporations: Create strong links between people with the same qualification within the organization (e.g., lawyers, sw developers, HR managers of different divisions)
- Product development: create support to different people in the development of a new product (e.g., technical design, graphical design, marketing,...)
  CSFs
- Identify relevant CoPs
- Connecting people

Creating a knowledge sharing culture

Exploit the design of the company's space and structures to create the antecedents of knowledge sharing (knowledge sharing culture)

- Shared spaces: water cooler, coffee makers, vending machines...
- Open office spaces: remove the barriers among individuals
  CSFs
- Design of useful knowledge spaces
- Encourage and legitimize people in sharing knowledge
  There are shared space that can be another way of working(can work there) and these are the places where shared knowledge is built. Not everything can be shared, but this is also coherent with the hierarchical structure of the company. You can also use open spaces offices to increase the possibility of sharing knowledge.

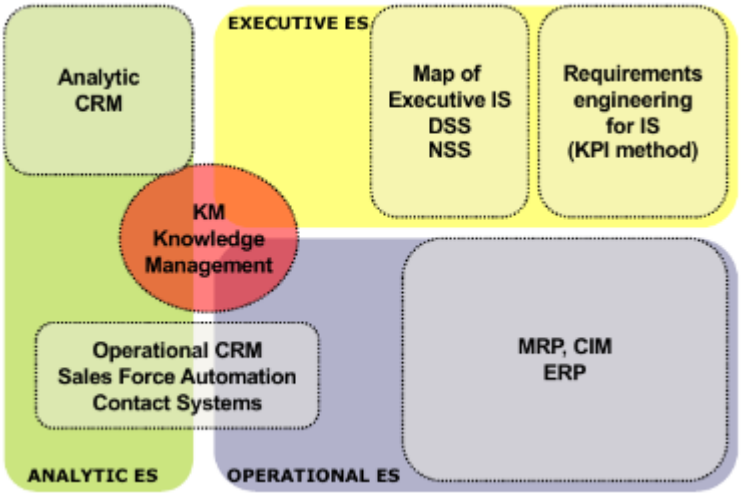
Knowledge management systems

IT and Knowledge Management: KMS

Knowledge Management Systems (KMS)

> “...a class of information systems applied to manage organizational knowledge..., that is, IT-based systems to support and enhance the organizational processes of knowledge creation, storage/retrieval, transfer, and application” [Alavi and Leidner 2001]

Every organizational IT-based system may adhere to the definition...



You need to focus on decision, need to give automatically information about the context, user based philosophy. Everything can be a KMS as long as it can give information that are related to the context the user is.

How to assess the success of KM initiatives

1. Project-oriented evaluation

- Growth of the resources attached to KM problems (people, money,...)
- Reach of KM initiatives (number of offices, divisions,...)
- KM project survival
- Surveying people

2. KMS-oriented evaluation (IT-intensive KM)

- Usage of KMS (number of accesses, retrieved documents, KB extension,...)
- Reach of the electronic community (e.g., number of people)

3. Efficiency and financial evaluation

- Reduced cycle time, number of claims, ...
- Improved customer satisfaction, satisfied phone calls,...

- Evidence of financial benefits
  Generally, correlation between indicators in class 1 and 2
  Financial indicators (when available!) often remain uncorrelated with the others...

Open issue in IT & KM: the case of incentives

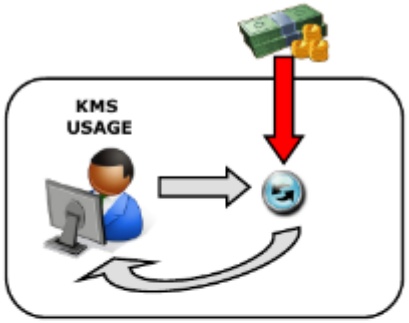
IT-intensive KM often tends to fail, why?

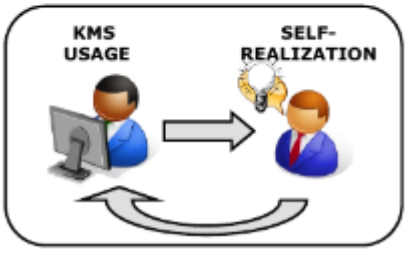
- Complex inter-organizational processes: Governance problems
  Who is going to be accounted for costs of the KM initiative?
  How to assess the benefits of the KM initiative?
  Who is going to be accounted for the benefits?
- Tendency to overestimate the power of IT tools for KM
- ...
- KMS often remain unused by intended users

Incentives for KMS usage

External (extrinsic)

- Prizes
- Monetary rewards
- Increased visibility
- ...
  Internal (intrinsic)
- Make System usage personally meaningful
- Support self-realization of users (territoriality)





Build the technology and then tell people to use this new functionality. To overcome the distrust in changing habits you can use incentives.
There can be the problem that the incentives only bring in low quality content, people just publish and finding the good contributions is difficult. Lot of inputs and no outputs. For these systems to be successful people need to come download good knowledge, repeat this routine some times and then publish something that they think is useful. You should need to exploit the people's internal motivation to have something good and positive benefits from the platform. A theory called territoriality that was applied to knowledge where people wants to be recognized as experts so we are willing to share some knowledge to be recognized as experts in the topic as this can be useful for my career.

The failure of external incentives

The typical consequence of external incentives:

- Increase the number of contributions
- Decrease the quality of contributions
  Need for continuous adaptation of incentive schema
- “Incentive alignment”
  Many examples
- Siemens ShareNet
- InfoSys KShop
- Nasa
- ...
  TO transfer tacit knowledge in someone else head it is required some time so the company need to create this time.