Study on Knowledge Maturing in Europe

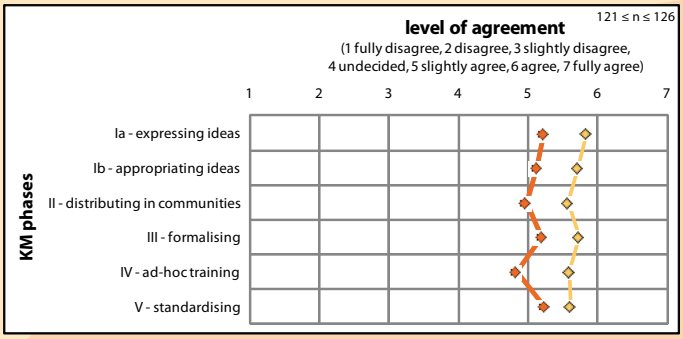
The MATURE Integrating Project is based on the concept of knowledge maturing (KM): goal-oriented learning on a collective level. The project investigates how KM takes place within and across organisations, what barriers are encountered and how socio-technical solutions overcome those barriers. In the second year of the project, we have conducted a Europe-wide study focusing on different aspects of KM. We are excited to present here some selected results.

Altogether, 139 interviews were conducted, out of which 126 met the criteria for the quantitative analysis. Although we concentrated on organisations within the knowledge-intensive service sector, the study included a broad spectrum of organisations with respect to size, sector and knowledge intensity. The rich data collected was analysed with a mixed-method approach using quantitative and qualitative methods.

KNOWLEDGE MATURING PHASES

Success is perceived lower than support

Both, fostering and successful performance of KM are independent from organisational demographics (i.e. size, sector and knowledge-intensity). The following figure depicts KM phases and contrasts agreement to fostering and successful performance.



As the high mean values indicate, knowledge maturing has been perceived as highly important in all types of organisations. However, the success is perceived lower than the support.

BARRIERS TO KNOWLEDGE MATURING

Organizational culture matters

The most prominent barrier (in the pre-defined six categories) mentioned by the interviewees was "lack of time" with 39.4% of the mentions, which is not surprising and usually can be translated as "other things have higher priority". The second and third most frequently mentioned barriers were "low awareness of the value and benefit" and "lack of usability". Interestingly the barrier "fear of embarassment" was more prominent in the earlier phases of the maturing process.

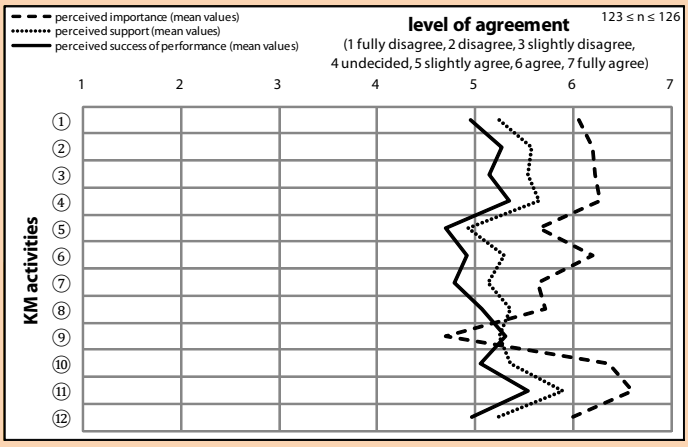
In the additional 473 comments, we could identify 35 distinct barriers to KM. Among those, the most important was related to "organizational culture" (20%), which refers to patterns of shared basic assumptions and beliefs in an organization. This barrier subsumes aspects like "lack of individual autonomy", "lack of formalization and guidance", and "lack of collaboration". This also relates to the previously mentioned barriers "lack of time" and "fear of embarassment", which further increases the importance of the cultural dimension.

KNOWLEDGE MATURING ACTIVITIES

Only *restrict and protect* is controversial

KM activities are understood as individual or group activities that contribute to the development of knowledge within the organisation. The interviewees were asked to reflect on their importance for increasing knowledge maturity, and supporting the successful performance of each KM activity in their organisation.

All twelve KM activities are deemed to be important for increasing maturity of knowledge. Eleven activities were found to be less well supported, which may be a consequence that they are performed less successfully. In case of the KM activity *"restrict access and protect digital resources" (9)* it is actually the other way around. Controversially, this depends on whether and why organisations restrict access and the perceived influence on KM.



Knowledge Maturing Activities

1 Find relevant digital resources
2 Embed information at individual or organisational level
3 Keep up-to-date with organisation-related knowledge
4 Familiarise oneself with new information
5 Reorganise information at individual or organisational level
6 Reflect on and refine work practices or processes
7 Create and co-develop digital resources
8 Share and release digital resources
9 Restrict access and protect digital resources
10 Find people with particular knowledge or expertise
11 Communicate with people
12 Assess, verify and rate information

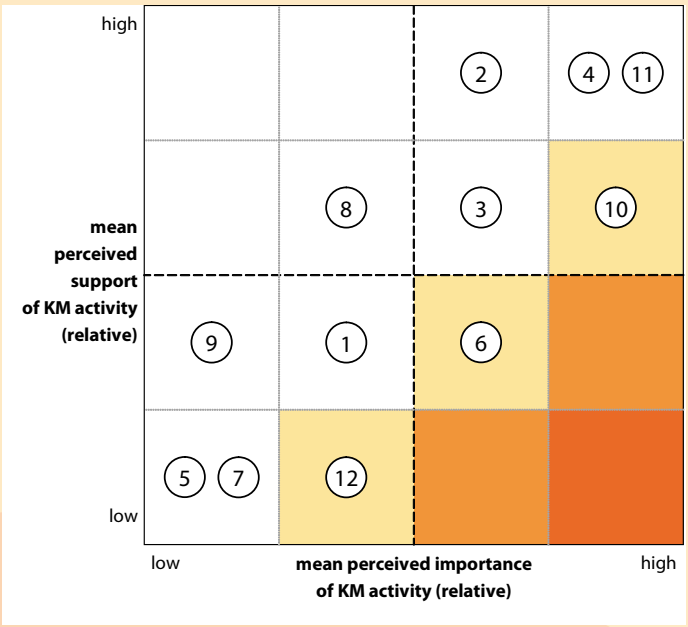
A deeper analysis revealed a mixed picture, both at the individual and the organizational level. Some organizations have very few restrictions (related to an open organisational culture), whilst others give high priority to restricting access to digital resouces. In some cases, this is due to the fact that organisations are required to protect their information (e.g. data related to their customers), for others this is part of protecting their own competitive advantage. On the personal side, three reasons why individuals considered restricting access as important emerged from the data:

- **Trust as a prerequisite for knowledge sharing and collaboration.** *"There are people who will share only in a limited way if they can trust that not everyone can see it."* The alternative would be that knowledge is kept private.
- **Information channelling and avoidance of information overload.** The underlying assumption is that shared knowledge and information leads to a counterproductive overload situation: "*Knowledge is not something that always has to be distributed. With this activity knowledge is channelled to the right users.*"
- **Data security and fear of competition.** While in many cases, data security and fear of losing competitive advantage was seen as a given necessity, in some cases the interviewees also shared the organization's position that this is essential. In other cases, there were more critical statements that this practice obstructs knowledge maturing: *"It does not help knowledge maturing, I would clearly say. Has also reasons of data protection that not everyone has access to everything. Having to restrict it: would rather disagree"*.

Furthermore, interviewees also gave reasons against restricted access to resources (from the perspective of knowledge maturing). Overall, 14 comments suggest that restrictions mean obstructing people's access to knowledge which they view as a prerequisite for knowledge maturing to happen. Answers range from *"nonsense"* to critical reflection on their organisation's practice: *"We are destroying knowledge in this area"*.

Activities to focus on

Considering the design of software and services to support KM, the most interesting KM activities are those which are viewed as important for increasing knowledge maturity, but for which interviewees have the impression that they are not well supported. According to the portfolio, the following activities are most interesting to KM by interviewees:



- reflect on and refine work practices or processes
- find people with particular knowledge or expertise
- assess, verify and rate information

This has confirmed the project's developments in the first two years: the current demonstrators focus on these activities.

KNOWLEDGE MATURING INDICATORS

Measuring Knowledge Maturing is context dependent

The knowledge maturing indicators, which intend to make knowledge maturing measurable and observable were, in general, confirmed. However, there were indicators with more contentious answers, which helped to analyze contextual factors of the organizational environment.

For the category **digital resource**, the most heterogeneous indicator was *"a digital resource has not been changed for a long period after intensive editing"*. One can interpret this as: (a) the resource is no longer relevant, or used, or considered useful, and (b) the content of the document has become stable, the knowledge has settled. It emerged that there are different organisational cultures with respect to the "stability" of a resource. Most interviewees reflected on the stability more critically, e.g., *"Best practice in the description of real life doesn't last very long"* or *"Every two years there is a revision; time-limited validity. After two years, it has to be reapproved if it is still up-to-date."*

In the category **person**, the KM indicator *"a person has been a member of the organisation for a significant period"* was the most controversial. Several respondents differentiated between the accumulation of knowledge and experience and the contribution to knowledge maturing; most were ambivalent: *"Clearly, special know-how, routine knowledge, but... maturing only under certain conditions. At some point, it stops."* The recruitment of candidates external to the organization was seen as an important alternative: *"a new member of staff may bring different ideas and new methods of working and if accepted would be a good indicator of knowledge maturing, someone who has been in the organisation for a significant period may need to refresh her ideas."*

In the **process** category, *"a process was certified or standardised according to external standards"* had the most heterogeneous answers. The main arguments were:

- *Certification as paper production.* It is not uncommon that certification is mainly about documenting, and formalizing, less about actually doing something in a better way: *"If you have not generated it exclusively for ISO, then I agree".*
- *Significance of certification.* The other objection is that you actually get certified for describing things appropriately, but not for doing something that makes sense, as the example shows: *"If you describe a process properly, you get ISO approval. But the result does not make sense. [...] Like the lifesaver made out of concrete, technically possible, you get ISO certification if you tell how to produce concrete and everything, but it does not make sense."*

CLUSTER ANALYSIS

Types of Organisations

With the help of a cluster analysis, we have identified three types of organizations:

I. Best performing organizations, perceive themselves as highly successful with respect to support and success of KM in all phases and all activities.

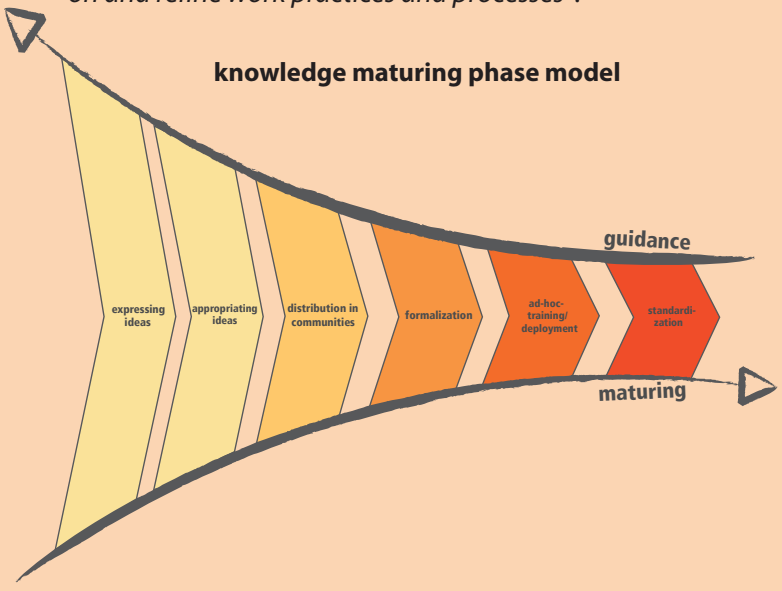
II. People- and awareness-oriented organizations lie in the middle between best performers and hesitant formalists.

- They are closer to the *Best performing organizations* with respect to the individual-oriented maturing phases *"expressing ideas"*, *"appropriating ideas"* and *"ad-hoc training"* as well as with respect to awareness-oriented activities, such as *"keep-up-to-date with organisation-related knowledge"* and *"assess, verify and rate information"*, and people-oriented activities such as *"find people with particular knowledge or expertise"* and *"communicate with people"*.
- They are closer to the *hesistant formalists* with respect to the phases *"distributing in communities"*, and *"formalising"*, as well as with respect to the activity *"find relevant digital resources"* oriented towards the handling of digital resources.

III. Hesitant formalists perceive themselves perform worst with respect to all activities, phases and overall success, although this group has the largest variance.

- They perceive themselves as comparably supportive and successful with respect to the phase *"formalising"* and the activity *"restrict access and protect digital resources"*.
- They perceive themselves as particularly badly performing compared to interviewees' perceptions in the other two clusters with respect to the phases *"ad-hoc-training"* and *"distributing in communities"* as well as the activities *"find relevant digital resources"*, *"share and release digital resources"* and *"reflect on and refine work practices and processes"*.

knowledge maturing phase model



MATURE

KNOWLEDGE MATURING STORIES

Case Studies for knowledge maturing

The project team consciously sought to generate some narratives which could help everyone share some contextualised stories about knowledge maturing, with the focus mainly upon those organisations who are interested in improvement of their knowledge maturing processes. The lessons for the project generated from the stories included:

- organisations have **political and socio-cultural dimensions** which may mean that the extent to which people are open to ideas for improvement in knowledge maturation processes may be circumscribed.
- organisational culture and the '**sedimentation**' of knowledge may have created barriers to change without there being active opposition to ideas for improvement in knowledge maturation processes as such.
- organisations' product market strategies, human resources utilisation strategies (including use of consultants, contractors, sub-contractors and off-shore labour), regulatory environments (e.g., medical product developers could not change production processes and quality assurance regimes used to produce products) may produce an environment in which people are **open to ideas** for improvement in knowledge maturation processes **to a limited degree**.
- This contingent approach to knowledge maturation is similar to how these companies may react to high performance working, seeing these as a 'bundle' of practices some of which they may adopt.
- Additionally, some companies may simply be so bound up with doing their current activities well that they display what Argyris called '**skilled incompetence**', where the focus on doing current activities well can result in neglect of professional growth and longer-term development.
- Where organisations had **top management support** for explicit policies and practices for one or all of the following: innovation management, performance improvement and knowledge management, then conditions for support of collaborative knowledge maturation processes were favourable.
- On the other hand, where innovation and improvement practices either did not have full top management support or were treated as (a series of) one-off events then collaborative knowledge maturation processes were also likely to be viewed in a similar fashion.
- Many organisations also saw movement towards more collaborative knowledge maturation processes as part of a 'bundle' of practices inevitably bound up with the '**management of change**' and significant shifts in the organisational culture.

Overall, it is clear that the stories told to us from a wide variety of organisations align with the view that the **knowledge maturing phase model** is one of a number of possible perspectives for **engaging people in discussions about organisational change, learning and development**. Further, that some participants could see how collaborative knowledge maturation processes could be a key part of achieving a more fundamental transformation where the quality of choice, information and commitment are improved in a move towards double-loop learning where broader questions about organisational goals are also addressed. Inter-organisational learning and knowledge development can be a particular challenge in this respect.

It is also clear that innovation and learning within and across organisations are essentially social processes and both personal networks and cross-company networks need to pay attention to building relationships to support development as well as focusing upon substantive issues. There is also a need to consider the interaction between formal and informal approaches to learning, skill development and knowledge creation as a particularly effective way forward not only for enhancing personal professional development but also as a means to improve organisational effectiveness. Our stories reinforced these points in what we hope are compelling ways.

A more extended version of the study results is available from http://mature-ip.eu/results/representative-study.

Contact:

Ronald Maier
Innsbruck University, School of Management
ronald.maier@uibk.ac.at

Alan Brown
Warwick University, Institute for Employment Research
alan.brown@warwick.ac.uk

Andreas Schmidt
FZI Research Center for Information Technologies
andreas.schmidt@fzi.de