KNOWLEDGE MANAGEMENT PROCESS: A SOCIO-TECHNICAL APPROACH—(RESEARCH IN PROGRESS)

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ABSTRACT

Knowledge management and intellectual capital have become one of the most valuable resources for organizations today. An organization's competitive advantage depends upon how well an organization acquires, manages and leverages their intellectual capital and knowledge management to stay ahead of what their competitors are doing; knowing and delivering what their consumers want and/or educating them on what they may need; and attracting, motivating and retaining their human talent to create and sustain a high performance organization. We became interested in learning more about what organizations are doing and could be doing better to establish and implement an effective knowledge management process in today's highly competitive, complex and changing environment. Organizations today have numerous technological tools to establish a knowledge management process but to have an effective knowledge management process; an organization may also need a socio (OD) intervention(s). A socio-technical approach may be necessary for an effective knowledge management process. We feel this research is important for organizational leaders, academia, and consultants to understand and learn what is knowledge management, why is a knowledge management process important, and why a socio-technical approach may be necessary if an organization wants to create an effective knowledge management process. We have reviewed differing socio-technical approaches from our early research along with technological tools that are available for organizations to use for their knowledge management process. Our research will use a mixed methodology approach of meta-analysis, and a qualitative approach using interviews and surveys.

Keywords: *knowledge management, socio-technical, change management, intellectual capital, knowledge transfer, OD interventions*.

Sociological and Organizational Implications

Knowledge management process is critical where innovation and creativity is essential for an organization's success. Global competition, the advancement of technology and communication tools and systems, more effective, efficient processes, demanding customers, and the drive for improving financial performance has created a shorter shelf-life for products and services and the need to improve and differentiate what an organization delivers to its customers in the shortest time possible from idea creation to market. An effective knowledge management process can excel an organization's effectiveness and growth as well as drive more learning in order for them to be even more effective. It has become apparent to us that an organization's sustainability maybe linked to how effective is its knowledge management process.

Our research on the establishment and sustaining a knowledge management process (KMP) for today's organizations revealed how complex this process is. An organization needs to understand what knowledge it has and what knowledge it needs to achieve its objectives. It must decide how to acquire the knowledge it doesn't have as well as how to capture, transfer, store, and make accessible the knowledge it possesses. It must decide what knowledge is assessable to whom and for the employees, what knowledge it needs and how to assess it when they need it.

The organization development issue concerning the complexity of a KMP is to look at the definition of what is knowledge to understand why a socio intervention approach is important. Knowledge is the understanding gained through the experiences, studies or access to information. Knowledge for an individual can be tacit and explicit. Tacit knowledge is understandable for the individual but may be difficult to explain to others. When an organization is establishing its KMP, it needs to be able to have employees share what knowledge they have and to transfer their knowledge for others in the organization. If an employee has difficulties on how to explicitly share one's knowledge, this creates a barrier to the process. An employee's difficulty may range from their inability to put in words or demonstrate what one's has become so accustom to perform and use to strong resistance to share their knowledge due to mistrust. Transforming tacit knowledge to explicit knowledge will need a socio (OD) approach to assist employees with this transfer process along with a techno approach to capture, store, and make this knowledge accessible to others.

Our research has also revealed that due to the recognition of the importance of a KMP, organizations have been creating Chief Knowledge Officers (CKO) to lead this process. We have found that the type of individuals assuming a CKO position have primarily come from the areas of Information Technology (IT) and Marketing. A CKO with an IT background has the professional background to understand what technology and systems are available for a KMP. A marketing professional who is appointed to a CKO understands better what knowledge it needs to be successful. What we have found that may have been overlooked, is the competency of a CKO to understand the importance of the socio approach to a KMP. Investments have been made in IT systems and technology, studies have been completed on the types of knowledge needed for customer,

competitor, and market intelligence, and plans have been developed on how an organization can compete more effectively utilizing their knowledge data base and creation of new knowledge. What we see as missing is how an organization is going to develop a climate and culture in which employees are encouraged and recognized for transferring their current knowledge and new knowledge with the organization. A successful KMP, in our opinion, is more then collection of knowledge, but includes relationships, deeply rooted beliefs and values within the organization. Without the later, the probability of success for a KMP, to us would be much lower. This is why we have undertaken this research to learn more about the importance of a socio-technical approach for a KMP.

In are early research, we have looked at different KMP approaches and we came up with a design, utilizing what we believed were the best approaches from the ones we've reviewed. We realize it still needs further analysis, but provides the ground work for establishing the base for a KMP. We feel that a socio approach needs to precede a technical approach, or at least done simultaneously, if a KMP is to be successful. We feel that the concept of having a CKO is important but it should be an individual who understands the importance of a socio-technical approach to establish a KMP. "Skyrne (1997) defines a CKO as a senior executive who is responsible for ensuring that an organization maximizes the value it achieves through one its most important assets --- knowledge" (Dalkir, 2005, p. 98). The CKO focus on integrating knowledge management into the daily operations of the organization, perfecting the design of the knowledge management system, removing organizational barriers, enabling the inherent learning process, supporting the information technology staff that is involved, and finally, create real and sustainable financial and competitive value via the given KM project (Tiwana, 2002, p. 292.)

An organization will need to assess the climate and culture of the organization in support of a KMP. Some internal factors that need to be assessed are leadership, trust, structures, policies, recognition, need and experiences with change, morale, job satisfaction, learning and development, and communications. Based on this assessment, an organization will have a better understanding on the current state of the climate and culture that will be supporting a KMP. It will also help identify what specific internal areas will need to revised to increase the probability of success for the launch and sustainability of a KMP.

We feel that since the KMP is a major planned change process, we recommend that based on the assessment described above, will dictate how slow or fast a KMP is developed in stages. If the assessment reveals substantial internal barriers, a slower KMP development process may be warranted. We strongly believe there is a mutual relationship between the socio and technical approaches towards a successful KMP.

We have identified, early in our research, nine stages to a successful KMP. The first stage we identified as Assess. This stage helps to identify what knowledge resources an organization will need to meet it s objectives. The second stage is Explore. This stage identifies what knowledge it internally has, where is the knowledge, and how much of the knowledge is tacit or explicit? This stage also identifies how much of this knowledge is

accessible, available, attainable, relevant, accurate, reliable, and timely. If a significant portion of this knowledge is tacit, what OD interventions will be necessary to help transfer it to explicit knowledge? We feel this is the most critical, and probably the most difficult stage in a KMP. This stage could very well be what will make or prevent a successful KMP. This stage also exemplifies the need of both a socio and technical approach. O'Dell and Grayson suggest that "the more valuable the knowledge, the less sophisticated the technology that supports it" needs to be in order to succeed (1998).

The remaining stages are third, Decide which is to determine what additional knowledge resources are needed. The fourth stage is Capture, which is the methodology and technology of acquiring knowledge resources. The fifth stage is Store which is creating a data repository and establishes coding for stored knowledge. The sixth stage is Access which is the technological means of having the knowledge resources available for users. The seventh stage is Distribute which is providing the right types of knowledge in a timely fashion for its users. The eighth stage is Create which is taking existing knowledge and through the process of tacit to explicit knowledge sharing, creates new knowledge. The ninth stage is Recycle—which is to have the new knowledge deposited to the knowledge resource data base.

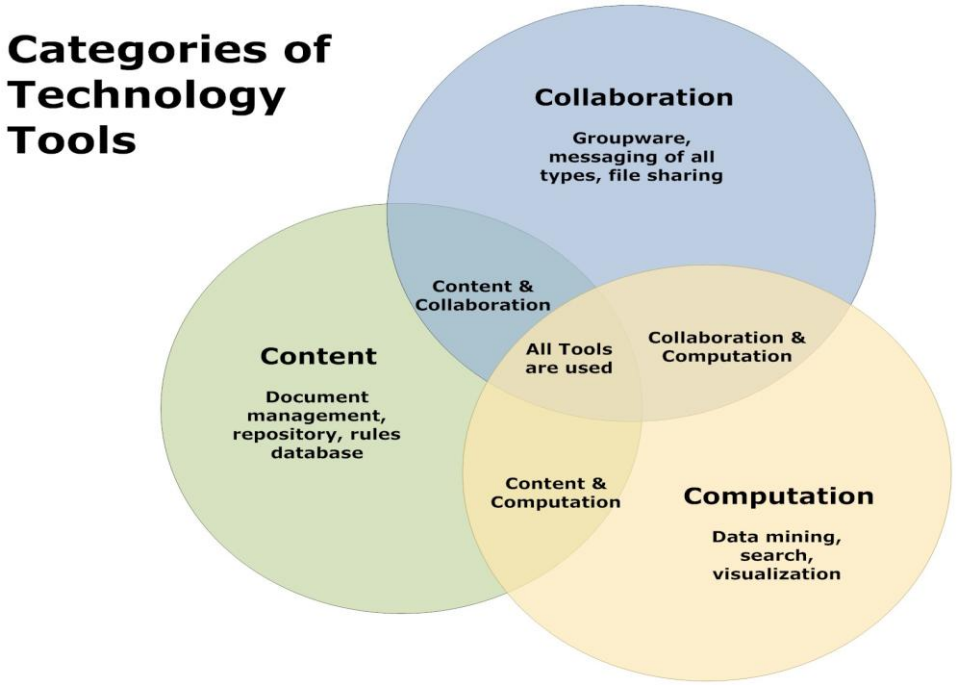
Technological Implications

We have identified that technology tools and related decisions an organization must undertake based on the needs and requirements for their KMP. An underlying theme found in much of the KM literature is that "Tacit knowledge is best shared through people; explicit knowledge can be shared through machines" (O'Dell & Grayson, 1998, p. 88). However as Davenport suggests, the existence of information technology is probably the biggest reason KM efforts are succeeding at both the organizational and individual levels (Davenport as cited in Ichio & Nonanka, 2000, p 97).

Our research indicates that few organizations are leading the way in knowledge management but the ones that are, not surprisingly, are in the businesses of technology, pharmaceuticals, and financial services. Ichijo and Nonanko describe these companies as "already there" (2000, p. 110). These types of companies use technology beyond the expected use of explicit knowledge and integrate into almost all of their tactical and operational management. Many organizations are "on the road" (2000, p. 110) to addresses KM issues, but use technology as the primary way to address knowledge management. Some of this technology will be briefly descried in our ensuing research. A minority of organizations is not aware of the KM issues, do not use technology in this area, or have limited support of KM initiatives (p. 111).

Tiwana suggests that all KM systems have three technology subcomponents. These include collaborative platforms, knowledge repositories, and networks. (Tiwanan, 2002, p 220). These technology tools can also be re-classified as collaboration tools software tools, content managers, and computational tools. These can be used in almost any combinations as shown by the diagram below.

Integrated KM systems often include all of these tools into one application. While these packages can be invaluable from a KM perspective, they can be costly and result in knowledge workers thinking of KM as an after-the-fact process. They can also be costly to buy and maintain, difficult to implement, and often need a great deal of customization in order to provide meaningful results. Our research indicates that while large organizations may use integrated KM packages, most do not. As a result, they are beyond the initial scope of our research and will be left for further research.

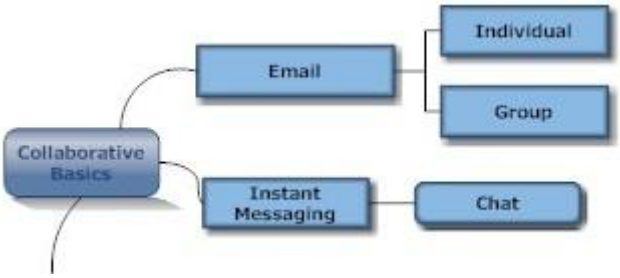


An organization must decide what Synchronous tools which are used at the same or real time, or Asynchronous tools which can be used at different times, they will need. Examples of Synchronous tools are electronic meeting systems (video and web conferencing, electronic whiteboards) and instant messaging sites. Examples of Asynchronous tools include but are not limited to, intranets, extranets, wikis, and blogs, shared files, email messages, both individual and group, and integrated software systems.

Collaboration Tools

Does the organization need Collaboration tools like groupware, messaging of all types and file sharing of documents and multi-media files? Sources of knowledge sharing using these tools include telephone conversations, faxes, videoconferencing files, instant messaging transcripts, discussion board forums, and even ubiquitous email messages. Networks can include intranets, extranets, and other portals that may contain any combination of these sources (Dalkir, 2005). The primary difficulty in gleaning

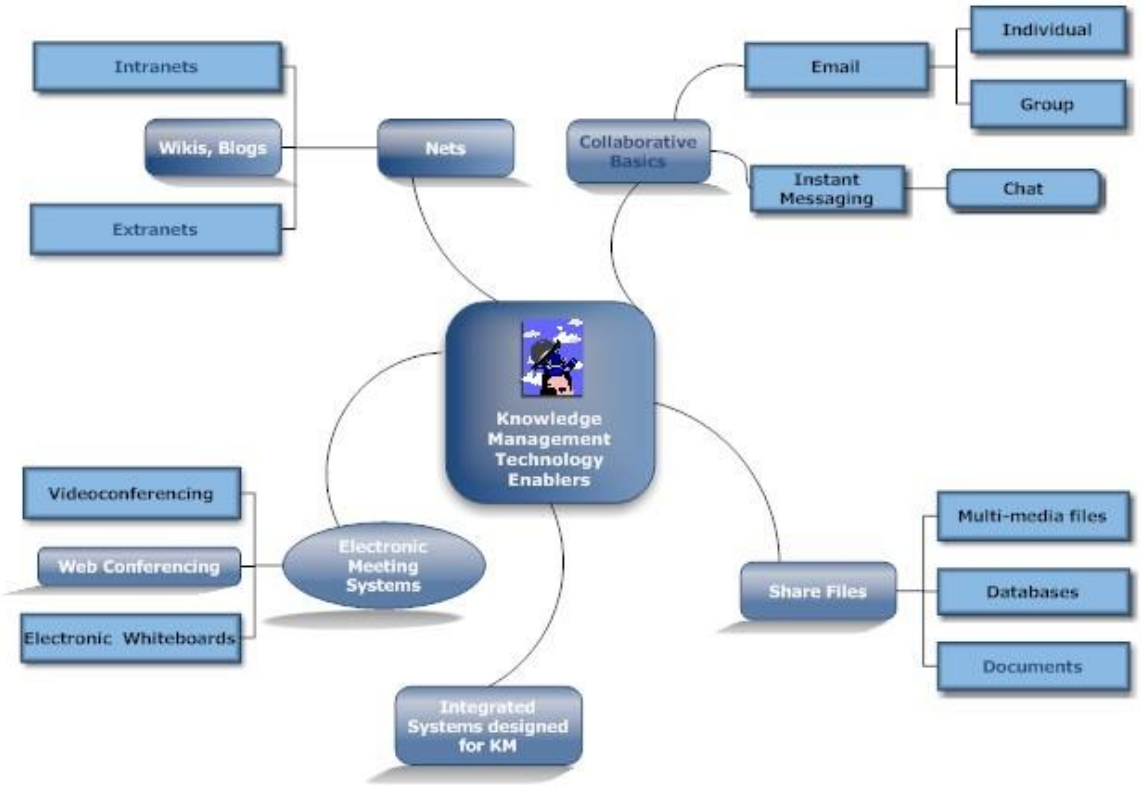
knowledge from these sources is that they are generally so voluminous. Also, it takes a skilled knowledge worker too able to sort through all of knowledge and extraneous conversations.



One of the most prolific and beneficial KM collaboration tools in use today is the existence of an intranet, according to O'Dell and Grayson (1998, p. 91). This is due to several factors. Intranets can be rapidly setup and implemented with relatively low hardware and software costs. Intranets lower communication costs since most of it is done through an existing internal network. O'Dell and Grayson further suggest that higher team productivity results from the organizational information being quickly and easily accessed (p. 91). Intranets can be accessed by anyone with proper network access and a web browser. They can be controlled by network permissions and authorizations and updated easily. Most intranets can be updated using any of the typical suite of software tools including word processors, spreadsheet programs, and presentation software.

Content Tools

What Content tools are to be used like document management, repository and rules database software? While the lines between content tools and collaboration tools can blur, content capture, creation, and management can be difficult. Even a skilled and experienced CKO might have difficulty deciding how to tag and classify a given set of knowledge. Assumptions and decision methodologies used in this process should be documented as part of the use of content tools. Content tools are often used to create knowledge created from the use of collaboration tools.



As Tiwana suggests, knowledge repositories can include declarative knowledge, procedural knowledge, and causal knowledge. Declarative knowledge includes primary and substantive concepts and ideas, including basic assumptions and possibly definitions. Procedural knowledge is commonly found in knowledge repositories and typically includes mandated actions and steps to follow in any given situation or activity. In our research, we found this to be the most common use of KM repositories and are usually found in settings where quality management is paramount. Causal knowledge includes more supportive information than the previous and typically includes analysis, purpose, and even rationale for the declarative and procedural knowledge. (2002, p. 222). Some KM systems integrate these three areas, but most break them out separately for ease-of-use.

Computational Tools

Do organizations need Computational tools like data mining, search, and visualization technology? These tools also blend and overlap with the previous tools. Some tools automatically pull out knowledge from large databases and other knowledge repositories using statistical analysis. While these tools can be easily found in the form of statistical software, modeling software, and database report packages, they can be problematic. Will the computational technology capture enough of the data to be meaningful? Will the

technology provide consistent results? Will the computation tool provide the quality that is necessary and more importantly, useful? (Tiwana, 2002, p. 228.)

In addition, computational tools can be expensive to learn and use. The knowledge worker must be skilled and experienced in order to get best results and meet the criteria mentioned above. Use and interpretation of the results of using these tools can be complex.

Overall Technology Considerations

A Separate CKO is Necessary.
Most of the literature that was researched indicated that IT departments need to be involved, but should not be the focal point of the KM system. Many authors (Tiwana, 2002 & Dalkir, 2005) suggest that the CIO should not be the CKO or connected with that position on a reporting basis. Given the scope and purpose of the CKO, this would seem to be problematic at first, but the given the socio-technical perspectives of KM, the literature is much less focused on technical issues and much more on the social and organizational issues.

A Mix of Tools is Best.
All of the authors used in our research indicate that a mix of tools is necessary and even beneficial in developing, maintaining, and even optimizing a KM system. Various types of groupware might be used to create and initial capture the knowledge. Computational tools would be used to analyze and decide what knowledge is important and meaningful. Content creation tools can be used to create knowledge repositories and allow the authors to make it easy to use and digest.

Conclusion

We have found this to be an interesting research project which is applicable for today's organizations. Although we recognize are research to date is limited, we hope to be able to create new knowledge and add to the value of those who have or will be researching this topic in the future. There are certainly other factors that relate to the complexity and importance of KMP like the effect of baby-boomers retiring and leaving their organizations, the commitment of knowledge workers, virtual organizations, global multinational organizations, need for more and better information for high performance organization, information overload and deficiencies, good will value (asset valuation) of knowledge resources, constant evolution of knowledge management software, and the complexity of large organizations (Goliath metaphor) being more vulnerable against smaller, more flexible organizations (David metaphor), based on their efficient and effective KMP (slingshot systems).

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