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Knowledge Management: Enablers and Barriers to Knowledge Sharing in Organizations

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"The most important contribution management needs to make in the 21st century is to increase the productivity of knowledge work and knowledge workers. It is on their productivity, above all, that the future prosperity-and indeed the future survival-of the developed economies will increasingly depend."

> – *Peter Drucker, Knowledge Worker Productivity: The Biggest Challenge, California Management Review, pps. 79-94, V41 N2, Winter 1999.*

In tackling the issue of the factors that can lead to either a barrier or an enabler in knowledge sharing, we came to view these from three perspectives; informational, cultural and technological, and these factors can then be seen in either view by their interpretation. This piece aims to firstly introduce explain the concept of Knowledge Management and explore the barriers and enablers from each of these views. In the case of technological, through the use of an insightful and relevant case study. This will then be concluded with enabling recommendations that have been discovered and drawn throughout the course of this area of study.

In order to properly understand Knowledge Management as it will be used, it can be seen as the process through which organizations generate value from their intellectual and knowledge-based assets. Most often, generating value from such assets involves sharing them among employees, departments and even with other companies in an effort to

devise best practices. From this we can see goals that appear - what are the actual aims of the systems, and the purposes for which it is being created:

- Connect people with other knowledge people
- Connect people with information
- Enable the conversion of information to knowledge
- Encapsulate knowledge, making it easier to transfer
- Disseminate knowledge around the organization

This shows the reason why such systems are increasingly becoming popular in most all sectors of professional business and why they are creating so many benefits for such companies.

As briefly mentioned earlier, Knowledge Management can be viewed from three perspectives- informational, cultural and technological, however the effort that is put into the system from each is not divided equally. The general breakdown of effort that is commonly viewed in regards to each of the three perspectives can be seen in chart 1. This shows that Culture makes up majority of effort with 70%, followed behind at a great length by information at 20% and finally technology at 10%.
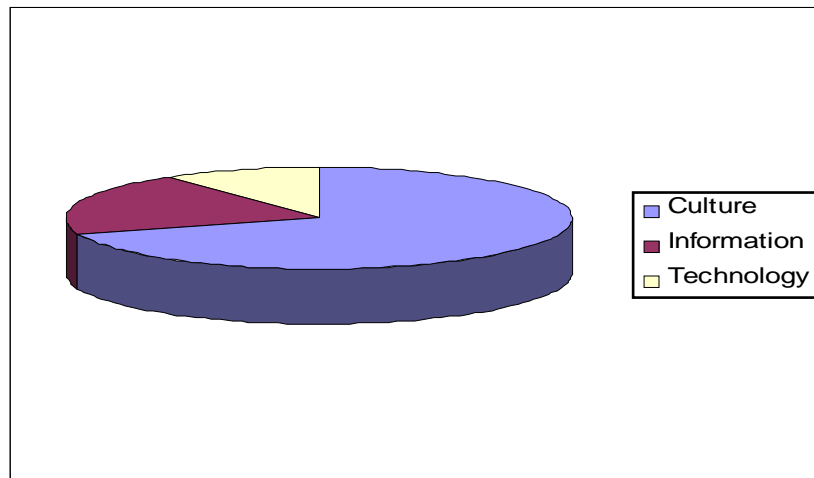

Chart 1

The factors which can lead to barriers and enablers in regards to each of these views, will now be discussed, to show what is needed in order to create a successful Knowledge Management system, and in comparison what will also hinder the creation and implementation.

Information Perspective

The information perspective firstly needs to answer the question of who will benefit from the system and following on, who will it be accessible to. Although this may vary with the company and the industry, in general the employees who will be involved with the

knowledge sharing are the prime accessors with the gained knowledge then to be transferred to customers and clients, along with competitor and market information also available.

The data therefore needs to be categorized in an easily understood and clear manner, so that the information that is to be retrieved can be done so in a simple and efficient manner. This leads to the point of information filtration- that is 'filtering the gems from the rocks.' Basically this statement refers to the fact that the knowledge being entered into the system needs to be monitored in such a manner to prevent irrelevant material being entered, therefore clogging the system with information that is not useful and wasting time, space and money.

What Factors will influence the success of the system?

The first and most obvious factor is the budget. The general rule is that if there is initially not enough invested in the project *and* targeted to ongoing development and maintenance then the success of the system will greatly reduce. A recent Study by the American Productivity and Quality Centre (APQC) discovered that initial investment by the top five accounting firms in Knowledge Management systems all began with an initial budget of at least $1million, and designated at least this amount in the following years to development and maintenance. For these companies, this is a positive factor, however if the necessary budget had not been designated, then this would have been a large barrier in the way of success.

Another major factor that influences the success or failure of the system is that as with many physical assets, the value of knowledge can erode over time. Since knowledge can get stale fast, the content in a KM program should be constantly updated, amended and deleted. This also leads to the fact that the creation of a KM is a continual process. Knowledge managers may feel that if they could only get their organization's knowledge under control, their work would be done. However, the tasks of knowledge management are never-ending. Like human resource management or financial management, there is never a time when knowledge has been fully managed. One reason that knowledge management never ends is that the categories of required knowledge are always changing. New technologies, management approaches, regulatory issues, and customer concerns are always emerging. Companies change their strategies, organizational structures, and product and service emphases. New managers and professionals have new needs for knowledge. Therefore by not allowing for this addition and updating of the knowledge, this again bars the success of the system.

Finally this leads back to the point that not all information is knowledge, and that companies diligently need to be on the lookout for information overload. As mentioned before, if this filtration phase does not occur, then the system can become 'overloaded' and system will be clogged with information that is not useful and unwanted while at the same time wasting time, space and money.

Organisational Culture Perspective

Organizational Culture supporting Knowledge Management Technologies

Time and time again, organizational culture has been identified as the 'make or break' factor of a successful implantation of knowledge management systems. The 'effort factor' of creating a knowledge management system. Results from an Earnst & Young KM International Survey in1996 which measured 431 senior executive responses in relation to 'barriers to Knowledge Management Success', defined organizational culture as being 80%. (Oh, Wonseok 2004)

1. Organizational structure

The 'solo' nature of the traditional workforce does not support knowledge management systems. With a focus on individual work, organized by function, region or business unit there is a lack of information flow within an organization. Moving towards a more 'permeable' culture, supporting a 'flat' as opposed to 'vertical' company hierarchy helps to foster the free flow of information. It is especially important to allow this flow regardless of employee role, job function or other traditional boundaries.

Another notion that emerged from the readings and case studies was the idea of a 'learning organization'. This is defined as an organization that looks for meaningful solutions and then internalizes those solutions so that they continue to grow, develop, and remain successful. Learning organizations incorporate ideas from many sources and involve a variety of people in problem solving, information sharing, and celebrating success. Knowledge Management systems provide the sources of information for this type of environment to foster, encouraging learning through knowledge sharing.

Apart from the encouragement of teamwork and work groups the formation of a 'community of practice' was deemed as one of the most successful and useful methods to foster the creation and sharing of knowledge, as well as problem solving. In contrast to teams and work groups, which formed collaborative work structures on a project-by-project basis, communities of practice formed informal groups that interacted and collaborated regularly around work-related issues and challenges. The beauty of communities of practice is that it allows for individuals from different departments, job backgrounds and so forth to come together and share a common goal. Learning is often associated with being a social function, and the ability to contribute to a community creates the potential for learning. While it is tempting to place performance measures, goals and evaluation criteria upon communities of practice, especially to justify resources allocation, communities of practice are often most successful if allowed to evolve and develop at their own pace. It is however, important to recognize them, and provide the members with time and resources to those involved. Obviously, knowledge management systems have the opportunity to perform a key role to enable these communities of practice to exist and foster. This is achieved by providing a forum for communication and

collaboration. Alternatively, knowledge management systems can be allow members to post their findings or interesting links and so forth. The case study of the World Bank is testimony to the success of integration of communities of practice and knowledge management systems. The World Bank believed that people interacted to share and create knowledge, and effective knowledge sharing was facilitated through effective interaction. These communities of practice shared knowledge and learning that was synthesized to create even more knowledge. And as this knowledge was shared, new communities formed and older ones evolved.

The result of this infrastructure was that people found out who knew what and where the best expertise could be drawn upon, both inside and outside the agency. This structure was further supported with a self-authoring Web-based tool that expanded the communities to virtual ones. Overall, the organizational structure plays a key role in the acceptance and use of knowledge management systems.

2. Business Processes

The most important challenge with upkeep and usage of knowledge management systems is that they add to the already demanding workload. It is paramount to integrate knowledge management systems with the day to day process of individuals. If the knowledge management system becomes the part of the process, then individuals will dispel with using the traditional means. It is important to standardized information systems to capture best practices, lessons learned, process maps, and other codified information for use and reuse. Defining processes to facilitate knowledge management, therefore, required evaluation of the knowledge *generated* from work activities (e.g., project oversight, plan development, recovery planning) as well as the evaluation of the processes that *managed* that knowledge (e.g., creating, capturing, refining, distributing, using, and monitoring knowledge) (Lee, 2000). In this way, knowledge management systems will no longer be an addition to the workload. Conversely, it will lead to productivity improvements.

3. Rewards

The purpose of reward systems is to recognize and encourage the contribution to the knowledge management system. Rewards are especially important in fostering a knowledge sharing culture, and removing the notion that 'individual knowledge is power' and the common link between knowledge and the ego.

Most studies realize that rewards are linked to traditional financial measures, which ignore the contributions of knowledge management systems. Already there is great difficulty in quantifying the value of knowledge management systems financially. Yet, it is important for knowledge management systems to be integrated within the standing performance measurement system. The difficulty with integrating rewards and

knowledge management systems is to find a balance between their intrinsic and extrinsic nature to encourage employee behavior. Studies conducted by the American Productivity & Quality Center have demonstrated that there is an interaction between intrinsic and extrinsic motivators (APQC, 2002). APQC, in its 30 years of research, has discovered that as organizations increased extrinsic motivation, they ran the risk of driving out or diminishing intrinsic reward. And as intrinsic motivation declined, organizations were required to increase the extrinsic rewards to maintain or motivate the desired behavior. Quality input as opposed to quantity of input is what counts in a knowledge management system.

Finally, it is important to give employees clearly specified and achievable criteria – so they have a goal to work towards. Criteria may include:

(1) Acquiring new skills and knowledge; (2) undertaking new projects or responsibilities; (3) contributing to a community or team; and (4) contributing to the development of another employee (Brelade and Harman, 2000). Whatever the system that is in place, rewards should not be seen as trivial.

4. Leadership

It is undisputable that for the success of any system, top-level management must be behind the system – giving it their support. A leadership model that proved to be successful was the creation of a 'champion' at the top, or close to the top to provide strong and dedicated leadership, and to lead by example. This person must provide a clear vision, mission objectives and establish an ethics code within the organization. Essentially the leadership should endorse and sustain knowledge transfer.

Employees need to be managed at all levels, and most importantly convinced of the value associated with knowledge management. Furthermore, a case study centering on Buckman Laboratories and their deployment of a knowledge management system demonstrated the importance of including all levels of management.

Initially, little emphasis was given to the buy-in at the middle management levels. But Buckman realized that middle management had the most impact on the day-to-day work environment of its employees, and therefore, buy-in from these managers became critical (Ellis and Rumizen, 2002).

5. People

Because an organization cannot create knowledge without people, the relationship between people and knowledge management was a core theme in all studies. The issues of employee competence, teamwork and motivation arose from the case studies and research. However, the outstanding factor was in relation to 'people' was trust. Time and time again, it was noted that employees needed reassurance that they were still valued after they gave up their knowledge (Williams, 2002; De Long and Fahey, 2000; Martin,

2000; Davenport and De Long, 1998). In light of decreasing costs, and job cutting – employees need to know that their job will not be at stake when sharing their 'asset' of knowledge. "Persuading people to share their knowledge required not only new processes, but also a new covenant between employers and employees, as well as between employees and employees. The level of trust that existed within an organization greatly influenced the amount of knowledge that was shared both between individuals and from individuals into an organization's knowledge management initiative. And in instances where trust was low, organizations needed to first rebuild trust levels, before they could expect individuals to share expertise freely without worrying about the impact of this sharing on their value to the company" (De Long and Fahey, 2000).

A successful approach to creating a 'people centered' culture was seen in the case of Premier Healthcare. Premier focused upon processes, tool and behaviors. This was achieved by four steps: (1) engaged Human Resources to integrate knowledge management into organizational development initiatives; (2) ensured that employees understood the philosophy, goals, and benefits of knowledge management; (3) made sure special interest individuals and groups were identified and engaged; and (4) promoted executive team buy-in so that they became champions of knowledge management. "As a result of its efforts, Premier boasted a work environment where all business information was accessible from one central location. This helped employees do their jobs better by aggregating useful information and making it available to those who needed it when they needed it." (Holowetzki, 2002) As demonstrated, the successful management of people will create an environment that supports knowledge management systems.

Technological Perspective

Concerning the technology involved in knowledge management, I have chosen to use the paper "Integrating Knowledge Management Technologies in Organizational Business Processes : Getting Real Time Enteprises to Deliver Real Business Performance" by Yogesh Malhotra, as a support of my analysis. The reading of this paper rised certain question that I will try to answer here :

The Big question : Why ?

Why should we manage knowledge ? Why with technology ? What are the purpose of managing the knowledge ? Indeed, why should we manage knowledge in a company ? Does it mean that people can do it by themselves ? Companies which cares about managing knowledge are mainly multinational companies, driven by the idea that the wheel should not be reinvented. But this should not be the main purpose of managing knowledge, we will see later what is the real objective of managing knowledge.

You may have heard, like me before working on this report, that knowledge management is just aimed to provide "the right information to the right person at the right time" and that's why technology is involved in KM : What do we mean by right information when companies are gathering tons of data ? How can we define relevancy and how can we find the "right information" from terabytes of data ? The "right" person involves a huge architecture when talking about big companies operating with thousand of employees spread all over the world. If you think in terms of set, you can imagine your set of data and a set of person. The technology should then be in charge of linking them. If you think in terms of all possible combinations, you can easily understand the complexity of this approach and even if the technology was able to provide those connections, it will be outdated the week, day or hour after. Indeed this connecting system is relevant for a certain period of time, so the system should be able to make the link in a real-time environment. I think this statement is not realistic in terms of possible solutions, but I think it is a possible answer and goal for KM system editors.

To me, we should manage knowledge if it brings a real value and if the business performance is increased. I think a KM system is not good if it doesn't change anything to the general performance of the company. That is why KM should be driven by the real value of knowledge. By knowledge, I mean the know-how that you have accumulated doing certain tasks to achieve a goal. To acquire this know-how, you have tried many technics to finally use the best one in terms of time, performance, best-fit to the problem, etc... A knowledge management system should enable you to turn your knowledge into information, put it available to others for improvement in terms of business performance and why not generate a new knowledge. That is why I recommend to make some pilot projects and test different technologies, in order to measure your indicators of business performance. We should not forget that maybe a technology can succeed for a community, but completely failed with another one. I don't think we can speak of one big system to manage the whole knowledge of a company, but a set of tools that fits each community of persons who have the same tasks.

Why manage knowledge with technology ? I think we already do it with technology : phone is maybe the first technology that served knowledge sharing, but unfortunately it is a one-to-one communication. That is why communication are now moving to the n-to-n : from anyone to anyone, with the Internet. Even with the Internet, we have kept our one-to-one communication with e-mails. What i am trying to show you is that technology is still here as an improvement of what we are doing. Even with all the power of internet, e-mailing is the one of the first online activities. What did technology bring ? Ease, speed, automatically processed, free of charge and the technology is in charge of doing the most painful job : bringing the information. Now you can understand why mailing-list archive websites are popular in project documentation : people who doesn't have the knowledge can access the information and get the knowledge. The real value of this knowledge sharing system is that you can spend your time on something else than focusing on the things you did'nt know. That is the real goal of KM : saving time, by applying the best sequence of actions, obtained after many trials, done by people with skills and backgrounds that you may not have.

Paradigms and Models

There exists 3 paradigms in KM system :

- inputs-driven : use your data to finally get knowledge
- processing-driven : rely on the statement "getting the right information to the right person at the right time"
- outputs-driven : find technologies to improve your business performance

and 2 models :

- Technology-Push uses the first 2 paradigms.
- Strategy-Pull use the last paradigm.

Let me first explain the Technology-Push model. As I said earlier, companies are gathering tons of data and sometimes, they don't know what for. When they think KM, they see a bunch of IT applications that will use their data. So they tried them and wait for any result. It is like launching a die to see what it will give. I guess you can imagine that the chance to fit the objective is less than one sixth. Anyway, their goal was to use data or even worse, they had no goal.

As for the Strategy-Pull model, the approach is different. In a company C, at time T, you have a certain process P, using ressources R. The model is based on the question "given ressources R, how can company C improve his process P at time T+1 ?". The question is pretty large, but in KM, we should only be concerned with human ressources. It is not data, finance or machine that have the knowledge of the company, but humans. Maybe you are now thinking of affecting the best person to the same tasks, but think about it : Are you willing to do the same tasks everyday ? And will you do it as good as you can ? With knowledge sharing, you avoid too much specialization and dependence. When you are good at performing a task and start to get bored doing it, what do you naturally think ? I should find someone to do it for me, right ? I bet you are also willing to help this person at the beginning so that the person will perform as good as you and maybe better. The strategy-pull model is based on this exchange to ensure the business performance.

IT and Business Performance

Many companies experienced many technologies and they report a gap between IT and business performance. I think people expect too much from IT and so they are disappointed by the result. IT won't make money or make your company more performant. IT will enable your employees to be more performant. IT is a tool to better perform but to do. Any application performs the tasks it has been designed to. If this task is not useful for you, there is not point using the application, because you won't be able to make more money using it.

That is why I am not surprised when I read that "top-performing companies spent less on IT" or that there is a "negative correlation between tech investments and business performance". There is no point in buying the last huge application if it doesn't suit your company and doesn't result in any improvement. Moreover, if you have bought this new application just for pride, I bet your staff won't use it. KM is concerned about people, so technology should benefit to people and their performance. On top of that, I definitely think that application is like wine : it gets better and better with time. Why should you take such a big risk ?

If we consider this gap as a distance of what people wants from IT and what IT can bring to people, we can understand that a large-scaled system will try to minimize the total distance. If we consider each community of practice, each group of person performing the same tasks, we can find an application that will match their specific needs and helps them . By dealing with KM case by case, community by community, group by group, service by service, I am sure you will reduce the total distance between IT and business performance.

To define a best KM system, I would say that it is a set of communication tools, centralizing methods, know-hows and exchanges between persons from the same community of practice, and his goal is to help people from wasting time.

Enabling Recommendations

For System Quality

- Use a common network structure, such as the Internet, because access is easy and the Internet is not likely to become obsolete.
- With a qualified tech support, users will get better and quicker responses to their questions.
- Use the latest technologies because they are faster, more reliable and offer better security than previous ones
- Standardize hardware and software across the organization: this avoids the extra conversion of data. With standardized software, like with ERPs, there is no need to implement special interfaces between incompatible systems.

For Information Quality

- Maintenance resources should be allocated. The users should be trained on the use and content of the systems.
- A KM strategy must be created and implemented for identifying and maintaining the knowledge base.

- When data capture is automated, personnel costs are saved and loss of information avoided.
- Security is a very important issue. For confidential data, encryption and passwords should be used.

For Users

They should on a regular basis evaluate the system with some measurement techniques such as metrics.
Organizational culture concerns should be identified, because they could inhibit the system usage.

Challenging factors

Technological change

"wicked environments": characterized by radical and discontinuous change. As business needs and technology architectures change, the business and competitive environment tend to become less and less predictable. As a result, the KM system becomes obsolete.

Usability and costs

High real and perceived search costs associated with obtaining knowledge are due to users who are not comfortable using an IT interface or because the system is too complicated. As a result, employees generally prefer to use their own social networks to obtain information. And eventually, if they didn't found information from colleagues through direct or indirect contact, only then they will search in the system.

Recommendations

- The systems must be designed for non IT people so that information can be accessed easily without investing too much in training.

- The system should track the history of questions asked and track the user's progress on the associated task.

- Managers must encourage the system's use and educate all employees on the system's benefits.

- Developing an extranet with access to pertinent information so that suppliers will possibly be able to take part in product development.

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