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ABSTRACT

Building a knowledge management (KM) solution based on a business process oriented methodology requires a transition from the traditional whole company approach to an approach focusing on a certain knowledge intensive business process, which is the core importance for a company. We chose a process dependent method as it provides practically relevant advice for managers who are striving to inject knowledge-leveraging activities inside everyday work activities of their employees. Knowledge only has organizational value when applied in better decision making or improved behavior of employees, thus, KM-related interventions need to have impact directly in value-adding business process. We present how KM projects can be more successful if they are treated as business process oriented organizational change projects. The goal of this article is: 1) to provide a six step method for design of knowledge management solutions, and 2) to show its practical application in the case of Samsung Electronics Anycall Gumi.

Keywords

Knowledge management solution design, knowledge management systems, organizational design, organizational change, Samsung

INTRODUCTION

Driven by the realization that people and organizational know-how represents a strategic asset that can be leveraged for competitive advantage, practice of knowledge management (KM) has become pervasive and ubiquitous across business environments. Organizations that continuously learn to coordinate and combine their traditional resources and capabilities in new and distinctive ways provide more value for their customers and, in general, stakeholders, than their competitors can (Teece Pisano and Shuen 1997). Results of successfully utilizing and creating new knowledge are tempting: good knowledge-oriented practices improve decision-making, accelerate learning, improve innovation assimilation, increase productivity and minimize reinvention and duplication (see e.g. Wing and Chua 2005). Davenport and Prusak report that managing knowledge successfully leverages core business competencies accelerates innovation and time-to-market, improves cycle-times, improves decision-making, strengthens organizational commitment, and builds sustainable competitive advantage (Davenport and Prusak 1998). CEOs recognize the importance of KM, too. In example, senior executives, analysts and policymakers from Economist 2006 survey feel that improving the productivity of knowledge workers through technology, training and organizational change will be the major boardroom challenge of the next 15 years (Economist Intelligence Unit 2006). Similarly, 30% of CEOs have stated that KM is the most important investment for the year 2007, second to marketing and sales improvement investment (36%) (Economist Intelligence Unit 2007).

KM is a wide and all-encompassing term for managerial activities, related with knowledge and learning: creating an environment which will establish the right conditions with a common infrastructure, tools, processes and leadership with the purpose of addressing the knowledge needs of a particular business context. To be successful, KM needs to create an environment in which the following five activities will flourish: 1) Systematic problem solving, 2) Experimentation with new

approaches, 3) Learning from one's own experience and past history, 4) Learning from the experiences and best practices of others, and 5) Transferring knowledge quickly and efficiently throughout the organization (Garvin 1993).

With the purpose of improving the organization's efficiency and effectiveness through better decisions, organizations have started to consciously design and deploy **KM solutions** that instigate utilization of existing knowledge and new knowledge creation which is needed in current and future decision making activities. Design of KM solution incorporates design of organizational structure, business process design, definition of roles and responsibilities around knowledge-related activities, the role of information technology, cultural facets of knowledge work, design of incentive schemes, and KM-related measurement mechanisms (Baloh 2008; Becerra-Fernandez González and Sabherwal 2004; Tiwana 2002).

However, even though there is abundance of KM solutions that are regularly being introduced in companies, many KM projects get abandoned and over 70% of them do not deliver what they have promised at the start (Chua and Lam 2005; Davenport and Glaser 2002; Desouza and Awazu 2005; Stewart 2002; Wing et al. 2005). Analyzing literature for reasons of failures and reasons of successful projects, one can see that we need to differentiate KM 'success' models from KM 'solutions'. The first group of studies (i.e. (Butler Heavin and O'Donovan 2007; Chua et al. 2005; Malhotra and Galletta 2003) are typically related to success factors of organizational *change* activities; they are useful in answering the ***how*** *to implement* question as opposed to ***what*** *to implement* question. The latter is the domain of the second group of studies (Becerra-Fernandez et al. 2004; Choi and Lee 2002; Earl 2001; Hansen Nohria and Tierney 1999; Kankanhalli Tanudidjaja Sutanto and Tan 2003; Kelleher and Levene 2001; Koenig 2004; Swan and Newell 2000; Tiwana 2002; Zack 1999), which developed numerous prescriptive frameworks on what set of organizational interventions to introduce and what internal (e.g. business model) and what external (e.g. characteristics of environment) factors this decisions depend upon. Nevertheless, it seems the findings were inconclusive as many KM initiatives fail to deliver the promised benefits. One of the suggestive reasons for wrong KM solution design is captured in the following quote:

"The KM activities and technology solutions are introduced indiscriminately, especially without regard to the type of knowledge being managed or the nature of work being conducted by the knowledge worker. This just will not work and benefits will remain elusive." (Desouza 2006, quoting Chief Knowledge Officer of a Financial Services Organization)

In spite of vast body of research that discussed flaws and inconclusions when trying to derive a "blanket prescription" KM strategy for the whole organization on one hand {i.e. Davenport, 1995 #247; Earl, 2001 #180; Hansen, 1999 #120; Kankanhalli, 2003 #181; Zack, 1999 #243}, and encouraging preliminary evidence when applying KM strategy within a business context on the other hand (Becerra-Fernandez and Sabherwal 2001; Maier and Remus 2002; Massey Montoya-Weiss and O'Driscoll 2002; Michailova and Gupta 2005; Swan et al. 2000), little research has been done on how to develop a process dependent KM solution. **It can be argued that when analyzing business context on a finer level, KM solution for a particular scope can be more formulated, and IT support for KM practices designed.** Developing a company-wide KM strategy cannot be fruitful, as very different knowledge needs exist in organizations, calling for different KM solutions. People perform different tasks in course of their daily work, for which they need different knowledge. The tasks conducted by a member of the R&D lab of your organization will differ from the work being conducted by a production engineer or the marketing analyst, or the secretary. It is nonsensical to argue that a particular KM solution will fit to the whole company and it is more plausible that various KM solutions will exist in an organization. We argue that KM projects can be more successful if they are treated as business process oriented organizational change projects.

The goal of this article is 1) to provide a six-step method for design of process-level KM solutions, and 2) to show practical application the proposed method in the case of Samsung Electronics Gumi.

RESEARCH METHODOLOGY

In order to answer the research question, we have considered inputs from both primary and secondary data. From existing research in strategic management, organizational design, knowledge management, information management, and information systems, a method for design of KM solution has been derived first. Recent published and internal reports about KM initiatives projects have also been examined. As part of an ongoing larger-scale research project (Baloh 2008), exploratory multiple case study research has been undertaken to validate the method. Multiple sources of evidence were chosen to facilitate deeper understanding of the research phenomenon and improve possibility to generalize (Miles and Huberman 1994). This design was chosen as case studies are particularly useful for problems where the context of action is critical (Benbasat Goldstein and Mead 1987), and the research and theory are at formative stages or call for a revision of understanding (Lee 1991). Using this approach, researchers can gain a rich understanding of the context of the research (Saunders Lewis and Thornhill 2003). A case study approach focuses on describing actually existing relationships in local contexts and enables capturing the relationships that exist in reality in local contexts in greater detail (Galliers 1992).

Concepts may be broadly applied to a case, but research is performed to both gain a holistic view of the context and try to identify, explore, and explain how all the factors in a particular setting are related and interdependent.

The paradigm adopted for this research in progress is the one of action research. It represents the evaluation part of a design science type of research (Hevner March Park and Ram 2004) where KMS design method is being crafted. Namely, March and Smith {March, 1995 #166} identify two processes in design-science research in IS: *build* and *evaluate*. Purposeful artifacts are first built to address unsolved problems and then they must be evaluated with respect to the utility provided in solving those problems. In the previous step, the method was built based on existing research. To demonstrate plausibility, managers and KMS developers in four companies were interviewed to assess and amend the initially proposed method. To improve generalizability of the method, theoretical sampling ensured choice of companies from distinct environments in the global/local context of manufacturing/service based industries. Purposive sampling was also applied in each organization to choose the most knowledgeable subject-matter experts (Patton 2002): data collection involved semi-structured interviews with senior executives from business development, R&D, marketing, and product management areas. The interview data were complemented by analysis of corporate and annual reports, company presentations, and business press. In follow-up sessions, findings and interpretations for each company were reviewed and validated with the help of key informants to improve the credibility of the findings.

Now, in the second step – which is presented here –, the method is being evaluated. The method has been applied to the case of Samsung Electronics Gumi, where authors have been involved as external consultants in organizational change project. Currently we describe a phase 1 of an action research project, which is still in progress, where initial design propositions by the team have been proposed. As typical for action research type of engagement, authors believe that the proposed design of a KM solution will go through series of design-deployment circles before the final results on business actual organizational performance improvements can be reported and shown. Encouraging preliminary results however lead to this report.

THE SIX STEP KM SOLUTION DESIGN METHOD

The KM solution design method developed (Baloh 2008) consists of six steps, which are discussed in more detail in the rest of this section. These steps are similar to a generic business process reengineering approach, however, the added value of the paper is the KM-related additions to these steps. Furthermore, the method does not only tell what to analyze and how to assess KM practices and solutions already in place (knowledge audit approach), but, in its full version {Baloh, 2008 #858}, suggest ways to remedy the problem and improve the problematic business process by presenting a new KM design that could reap business benefits. Step 1 - Identifying the critical business process

Before doing anything we namely need to know the company. It means making sense of strategic vision & position, creating a vision of the future which is worth pursuing. We analyze what industry the company is in: What is the level and nature of turbulence within the industry? What are the products and services produced? Who are the main costumers, the main competitors? What is the definition of "value" for the most important customers?

Identifying the critical business processes that we will improve is the next important step: We need to understand what are the critical processes from the business perspective: which processes have the most influence to the value of the outputs created for (internal or external) customers (Tonchia and Tramontano 2004).

Next, we focus on finding the business processes worth changing. To justify the chosen business process, we have to make sure, that the process has most influence on the business objectives: Does the process output influence customer satisfaction? Does the process output influence company profit? In this sense, KM introduction is no different than any other organizational change - most firms use 'high impact' approach, which calls for choosing the most important processes or those that conflict most with the business vision (Davenport 1993). Barnes suggests five selection criteria: *"which process is critical, which has the quickest pay-off, which has the biggest pay-off, which is the most visible, and which is the easiest"* (2007).

Step 2 - Identifying the challenge

In this step we identify knowledge related problem symptoms. We are looking for risks, failures and opportunities in the chosen business process where improved knowledge discovery, capture, sharing and application could alleviate these pain points. What is the problem we want to tackle? What is our key issue? We need to find out what are knowledge-associated opportunities for the chosen business context if KM systems are introduced and which are the knowledge-associated risks for this context if there are no knowledge-related organizational mechanisms and technologies in place. Examples of knowledge related challenges include (Baloh 2008):

- Failure to apply existing knowledge results in reinvention of the wheel, repeated failures, inconsistent performance across locations.
- Lessons from projects or everyday activities are learned but not shared**.**
- No knowledge is gained from failures and they are quickly forgotten.
- Problems are solved within particular department and not in collaboration with others (don't know who to contact, or tendency to hoard problem and knowledge and try to 'do your best alone', instead of creating a 'wide circle' inside and outside organization).
- Risk of tacit knowledge walk-outs (company-critical knowledge is held by few individuals and is not shared).

To analyze our existing knowledge and to find out where we have to improve, we can use self-assessment frameworks and other tools like knowledge based benchmarking and river-diagrams (Collison and Parcell 2003).

In this step, KM project team, which will help to design and implement knowledge management solution, needs to be built. *"Selecting the right blend of team members to lead the knowledge management project is a critical step"* (Tiwana 2002). This team should be knowledge heterogeneous (requisite variety) but socially homogeneous. The team members should be experts in different knowledge domains to increase collaborative creativity and need to 'get along well', to increase the collaborative capability. Along with this 'social space', also the right physical environment for the project team to work in, must be created. Sufficient variety of, on the other hand, sufficiently overlapping knowledge domains, and the social and physical 'shared spaces' facilitate in creation of *ba* where knowledge exchange and creation happens (Nonaka and Takeuchi 1995).

Step 3 - Identifying the goal of the KM solution

In this step we determine the results we need to define, what is the purpose of our KM solution. Namely, business goals can be achieved by improving how knowledge is leveraged in the organization. What kind of KM strategy is fitting to the chosen business context? Most importantly, it needs to be tied to the business objectives (Barnes 2007). *"A clearly articulated link between KM and business strategy is the key predictor of its success,"* argues Tiwana (2002)

The KM strategy will provide a path, a structure, that will facilitate improved delivery of service to customers (business goals) by achieving knowledge-related goals. Do we need a solution that will improve utilization (exploitation) of existing or creation (exploration) of new knowledge (March 1991)? Which knowledge processes (i.e. socialization, externalization, combination or internalization Becerra-Fernandez et al. 2004; Nonaka 1991) do we need to nurture?

In example, if the knowledge related challenge is that employees can't find critical existing knowledge in time, the purpose could be to improve explicit knowledge sharing and application and the goal to speed up delivery of technical documentation and improve content and currency of documentation. By doing that, the company will achieve the business goal set: to reduce training and support costs; to increase service revenues by 10% and to increase customer satisfaction by 5% points.

Step 4 - "As-Is" Knowledge Management Solution

After the strategy and fitting goals of KM solution are crafted, existing KM processes in the chosen context need to be analyzed to assess the current state. What KM processes are in place? How is learning 'before', 'during' and 'after' operationalized (Collison et al. 2003)? We will dissect if there are any knowledge processes in place and how well are they supported by knowledge management technologies and mechanisms. Is the current KM system in place and if they support the goal KM related goals set in an earlier step.

Step 5 -"To-Be" Knowledge Management Solution

Step five is the most difficult to implement: how can KM make a difference in the process of achieving the desired business results? We have to create a new KM solution based on the analysis of the business process. Then we can decide which knowledge type (i.e. explicit or tacit) is important and which knowledge process to focus on. Finally we can decide on fitting organizational mechanisms and technologies. When deciding on KM solution design, it is of critical importance to assess how knowledge work is being performed, how knowledge is created, and where/how does one get information needed.

With this information, it will be easier to assess the situation and will lead to ideas beyond the normal analysis. An example where knowledge practices have not been analyzed in enough detail comes from a corporate credit risk analysis process in an UK financial institution. Mondale et al. (2006) showed, that implementation of the "official" KMS failed because its design

was influenced by the theory of finance, which states that credit officers use standard financial models to focus on quantitative credit risk management mechanisms in attempt to eliminate complexity and uncertainty. *"In practice, credit officers balance their use financial data, models and systems with less formal processes of meaning making within a community of practice."* In other words, design of KMS failed to include facilities for enabling or supporting collaboration, as they implemented *'what they thought they were doing'* instead of *'what they actually were doing'*.

Collison and Parcel point out another issue: introducing learning at every opportunity. In any context it is essential to develop such a design that organizational mechanisms and technologies ensure three different stages of learning: learning 'before', 'during' and 'after' (2003). The argument for necessity of learning *before* is that it is highly likely that there is somebody who already has done something similar before. Thus, how can a KM solution be designed in a way to provide – up front – all the information possible that might be useful in fulfilling the task or making a decision? Authors continue with necessity of KM solution to provide support and enable learning *during* the process (2003). Four questions from After Action Review (AAR) military technique of *learning* are often used in project environment to help employees externalize and internalize lessons learned. KM solution needs to be designed in a way to provide and support teams to ask themselves 'what was supposed to happen, what happened, why did it happen and what can we learn from it' on a regular basis. Finally, learning *after* also needs to be supported and enabled by a KM solution. Since most activities are not once in a lifetime events, learning after is useful for capturing and sharing valuable knowledge. Ways to learn after include immediate meetings with the project team, putting that knowledge into a searchable database, and holding retrospect meetings.

Step 6 - Assess the impact

In this last step we need to analyze the impacts that KM solution will lead to, when implemented. Our new KM solution has to have an impact on the overall organizational performance. If the new KMS is effective and efficient, impacts can be seen on knowledge processes, employees, products and business goals. But *"having deployed the KMS and put a knowledge management strategy in place, how do you measure and evaluate its business impact?"* (Tiwana 2002)

There are different metrics to measure the impact of KM solutions on individual areas. For measuring impact on the **knowledge processes**, we can calculate the number of cooperative projects across subunits divided by the number of organizational subunits, the number of patents published, or the annual number of brainstorming retreats or camps. For measuring knowledge sharing we can calculate the number of communities of practice (COPs), the size of discussion databases or measure the annual number of shared documents published per employee, such as Skandia, who reports its knowledge assets on its corporate governance report (Skandia annual report 2005 2006).

There are several ways to measure the impact of KM solutions on **employees**. Some include estimating the proportion of employees who express high level of satisfaction with the organization and their jobs, like Google, where employees express high satisfaction toward their workplace (Fortune 2007).

To measure the impact on **products**, we can compute increased rate of new products launched, increased information on products or better service. An example is Apple, who *"for a variety of reasons, ranging from its philosophy of comprehensive aesthetic design to their advertising campaigns has engendered a distinct reputation in the consumer electronics industry and has cultivated a customer base that is unusually devoted to the company and its brand, particularly in the United States,"*(MacNN 2006).

For assessing the impact of KM solutions on **revenues and costs**, either traditional metrics such as ROI, Tobin's Q or TCO are used, and benchmarking, House of Quality or the balanced scorecard approach as mentioned by Tiwana (2002). Even more importantly, when striving for increased customer satisfaction, this is the measure to be taken into account.

THE SAMSUNG ELECTRONICS ANYCALL GUMI CASE

This section demonstrates the use of the proposed design method for a KM solution in Samsung Electronics Anycall.

Samsung Electronics (SE) is a South Korean multinational corporation and the world's largest and leading electronics and information technology company. SE focuses on five business areas: Digital Media, Semiconductor, Telecommunication Network, and LCD Digital Appliance. The main goal of SE is world leadership and securing overwhelming competitive strength, through innovations in process improvement and operations management. The sales share of mobile phone business is 33%, with the mobile phone manufacturing process responsible for 31% profit in SE. SE Anycall Gumi (SE Gumi in the rest of the paper) branch was established in 1980, main products include: mobile phones account for 80% and the 20% of the rest is fax machines. Mobile phone manufacturing's sales amount was around 20 million USD in 2007. Clearly, SE Gumi represents an important business in the Electronics and in the Group.

Step 1 - Identifying the critical business process for SE Gumi

The global market is currently dominated by big six mobile handset manufacturers: Nokia (37%), Motorola (13%), and Samsung (13,7%), who account for roughly 60 percent market share, followed by Siemens, Sony Ericsson, and LG Electronics, who account for about another 20 percent market share (Dias 2007). The industry is fast growing and rapidly changing, information oriented, dominated by strong competition, global, aiming directly at costumer, short interval life-circle for products, depends high on brand image and is highly risky. Since the mobile phones a highly profitable business entity in SE, we will focus on the new product development in the phone manufacturing process.

Step 2 - Identifying the challenge for SE Gumi

Here, we identify the challenges SE Gumi faces: market related problems and problems from within the organization.

SE Gumi needs gaining competitive advantage over rivals, therefore it is essential to develop new design and new technology constantly. But a great deal of innovative ideas fail due to lack of market orientation, new products being over-engineered and inadequately addressing customer needs. The main challenge for SE Gumi is to speed up innovation in order to create new designs, by enhancing knowledge discovery and knowledge sharing and integrating their costumers into the innovation process.

In order to constantly create new design it is important to enhance knowledge discovery. Until recently, SE Gumi followed the model of "closed" innovation (Chesbrough 2003). They have made investments in centralized R&D departments, hired the best people, and guarded their intellectual property. However, today they cannot depend on their R&D departments alone for innovations because of increased competition and shrinked profit margins.. Sales of mobile phones are very much driven by attractive device design and user interface configuration rather than only by advanced software and operating systems.: "*Ease of use and design -- not features -- are critical components to consumers' satisfaction with their cell phones, 24 % of respondents chose physical design as the most important factor,"* (Accenture 2005; Mello 2005). This however can be a challenge to the company, since it is difficult to find what the wishes and desires of costumers are in terms of mobile phone design. The trouble is that fully understanding customers' needs is often a costly and inexact process. Even when customers know precisely what they want, they often cannot transfer that 'sticky' knowledge to manufacturers clearly or completely (Baloh Awazu Desouza Wecht Kim and Jha 2007). SE Gumi thus needs to improve its innovation process also by integration of their costumers into the innovation process.

Step 3 – Identifying the goal for SE Gumi

SE's goal is *Leading the Digital Convergence Revolution and become the world leader on the mobile phone market.* In order to overrun Nokia, speed is important. Nokia produces new mobile phones in record time, dominating the world market. SE Gumi set a goal to increase the speed of innovation by 20%. The measure selected was an annual number of suggestions for new designs per employee.

Step 4 - "As-is" KM solution for SE Gumi

"As-is" KM Solutions analyze what knowledge management solution is already used in Gumi and how well it is working in realizing business objectives set. While searching for a way to apply KM in the past, SE Gumi established ProTeam. ProTeam Project is a strategy to build internal atmosphere and culture for supporting Communities of Practice (COPs). It is meant to integrate the individual employee and their opinions in the mobile phone manufacturing process. The slogan for ProTeam reads: *"Employees are our customers!"* and Gumi SE allows 20 hours a month per employee for COP activities. At this moment, in SE Gumi over 6.000 members (35% of all employees) have been organized in over 360 ProTeams. One of the goals is that employees are able to find and support a person who has a promising vision and capabilities to contribute to creating new organizational and technological design for Anycall mobile phones. ProTeams facilitate a balanced bottom-up and horizontal communication culture, encouraging employees to work be innovative individually and in out-of-ordinary-hierarchical-structure groups. But the project is cumbersome to control and focus: too many various projects are running simultaneously and precious efforts from scarce resource (people) are not prioritized and directed into innovative activities concerning mobile phone design.

Step 5 - "To-be" KM solution for SE Gumi

We design a new or improved KM solution based on the business challenge and business goals. To support the innovation process, we need to enhance knowledge discovery and knowledge sharing. By focusing on knowledge discovery, we will be able to discover already existing knowledge, create and develop new explicit or tacit knowledge important for innovation

processes. By applying knowledge sharing, we make sure that valuable knowledge will not get lost and that innovative ideas are not repeated. To facilitate knowledge discovery and sharing as a tool to increase speed of innovation for the new product development process we have suggested a blend of organizational and technological interventions to enable and facilitate the innovation process in SE Gumi: Brainstorming Hours, Internal Blogging, Costumer Decision Groups, Idea Mobilizatio and Knowledge Repositories.We are going to introduce **Brainstorming Hours**, to create an effective way of discovering and sharing knowledge in any stage of the product development innovation process – from early "idea generation" to "diffusion and implementation" (cf. Desouza Dombrowski Awazu Baloh Papagari Kim and Jha 2006; Mariello 2007). We will build a team out of members of each department in Gumi (R&D, manufacturing creative and technology) and let them meet weekly for two hours in a room specially designed for this activity. Brainstorm Hour Rooms will be designed with big floor to ceiling windows, to let in light and air, provide facilities for using wireless technology and have refreshments ready to create a relaxed and familiar atmosphere. These rooms will be available to employees for informal meetings or relaxation during office hours. The environment design will be a collaboration with SE Gumi and senior students from the fields of industrial design and architecture. To assess and measure progress, we can calculate the number of innovative ideas published per employee and collectively.

Furthermore, a Samsung Electronics-wide **internal blogging** will be encouraged. Employees can create blogs about design and innovative creation processes; blogs are technologically simple (easy publishing process) yet powerful intervention to encourage socialization, trust, knowledge sharing and knowledge discovery in organizations. Through blogs, employees can communicate freely, get to personally know each other more, and understand other's perspectives. Middle and senior management will be taking the lead and acting as role models; workshops on best practices of how and what to blog to have organizational impact, will be held by external consultants who have had experience in this field. If applied successfully, flow of creativity and thus rate of innovation will rise.

For SE Gumi, **costumer decision groups** are useful in terms of testing feedback from their Korean consumers. But to get hold of their worldwide clientele's wishes and desires, a software solution could help in one aspect. We will introduce a user-friendly **toolkit to integrate costumers in** as **early stage of the innovation process** as possible to get to their tacit needs (Baloh Jha Desouza Kim Awazu and Dombrowski 2006; Thomke and Von Hippel 2002). This toolkit will offer Lego-style virtual external (phone housing, accessories) and human computer interface (software functionalities) design to a selected costumer group (mobile phone users) from different backgrounds and different geographical locations. It will be used as a playground for customers and employees to create new designs and give feedback and / or amend suggested designs. It is important to build a loyal costumer group over a long period of time in order to build trust among the costumer group and with SE Gumi employees. If applied successfully, we will be able to notice an increased rate of new mobile phone launches with better customer-need fit.

Idea mobilization is the next meta process that needs to be supported. An idea, whether internally or externally generated, must move through a series of stages before it is adopted wholly into a company or a marketplace. Modifications to any existing products, processes, services or frameworks of thought lead to the movement of ideas from one location (physical or logical) of the organization to another (Argote and Ingram 2000; Rigby and Zook 2002). To achieve this, idea management tool will be introduced to help SE Gumi to easily capture ideas from employees, distribute them throughout the organization, and have them evaluated by peers or formal review teams, who add their views and knowledge. As reported in example by Cargill (who uses Imaginatik's "Idea Central" software) (Baloh et al. 2007):

"One of [tools] strengths is that once an idea is submitted, it is easy to build on that idea, fostering collaboration between the idea submitter, his/her peers, and the review team assigned to evaluate ideas. Communication before and during an idea campaign can highlight collaboration opportunities. Besides the focused business objective for an idea campaign, efficient evaluation, action and feedback on ideas submitted, and diversity of input are the most critical success factors for managing the idea early in the [innovation] process", Director of US Scientific Knowledge Services, Cargill

Companies who have institutionalized and IT-supported idea management process have significantly increased the rate of existing product- and process- improvement (Baloh et al. 2007). Very importantly, they opened up the communication inside the company - ideas are discussed and developed openly from the earliest stages not only in hierarchical but in horizontal manner. Furthermore, contributions of others to the idea are traceable, which proved (external and public recognition) to be a significant factor in promotion of a sharing culture and creativity.

Additionally **knowledge repositories** will be set-up to have codifiable critical knowledge captured and available throughout the company. We plan to create a Lessons Learned System with Alert function. First, lessons learned need to be captured. For that, project managers will receive training in *what* are organizationally interesting 'lessons' and *how* one can husk them out at the end of a project. Process-wise, project management office will prepare new reporting templates for project managers. They will also prepare standard operating procedures (SOPs) in which knowledge-oriented activities in project management

will be explained and detailed (i.e. how to write a closing report, how to create and store a project model, how to perform an After Action Review, etc.). Lessons learned will then be stored in a database, accessible by all employees. Since the amount of information might be overwhelming, we will introduce Alerts which will inform employees via e-mail of interest related, relevant newly stored knowledge..We can assess the proportion of information used that is available on Web pages, along with the proportion of relevant information that resides in the improved database.

Step 6 - Assessing the impact of KM solution for SE Gumi

In the final step we will assess the impact of the new and improved KM system on knowledge processes, people, products and overall performance (as suggested in i.e. Becerra-Fernandez et al. 2004) and measure the results. Other approaches that can be used to measure knowledge management performance are: House of Quality, Quality Function Deployment (QFD) and the Balanced Scorecard (BSC) Technique. We chose the process-people-performance access, because we wanted an approach that is simple to realize and focuses on the internal business process. At the time of writing we cannot yet report on results achieved as the organizational change has still been under way. We have however foreseen the measures SE Gumi will control to assess progress.

Knowledge processes: With the changes introduced we are trying to affect knowledge discovery and sharing processes. To measure the impact on the knowledge discovery process, we can assess the number and rate-increase of new ideas made by each employee connected with the mobile phone manufacturing process, the percentage of ideas that get implemented, annual number of brainstorming retreats. The impact on the knowledge sharing process can be measured in example through idea-evaluation ratio and through the number and activity of COPs.

People: Through effective KM, employees can develop themselves and their abilities, thus increase their work abilities, which, boosts employees' confidence and promotes teamwork. This innovative culture supporting work environment allows for the innovation process to unfold without restrictions or boundaries. To assess the impact on employees, SE Gumi will continue to use evaluation practice, which is already in place and performed by Human Resource management department, and which is measuring different aspects of internal employee satisfaction.

Product and performance: By integrating customers in the innovation process, SE Gumi will be able to discover costumer's needs and new trends in design, which will lead to more customized and personalized designed knowledge products in short time. We can measure the sped up manufacturing process of increased speed of innovation by comparing the rate of new products launched. If the new KM solution proves to be successful, Gumi will have a 20% increase in speed of innovation, thus producing better products ahead of rivals, which will result in bigger market share and in the long run will help to reach SE ultimate goal: being the number one in leading the Digital Convergence Revolution.

CONCLUSIONS AND FUTURE RESEARCH

This paper contributes to the KM and organizational design bodies of knowledge. It addresses a deficit in the existing body of literature, namely, the lack of design-oriented studies that focus on how to plan, design and build KM solutions that facilitate leveraging knowledge in a given context. As such, this article looks at highly relevant area of knowledge management, as practical experience and written reports show alarmingly high rate of KM-project-failures. On a KM discipline-wide-scale, our study hopefully encourages more process-related research, recognizing the flaws of 'blanket' approaches, and demonstrating how subunit (i.e. process) based approach makes it easier to narrow down the scope, the goals and to design a KM solution for a particular organizational context. In this sense, KM introduction is no different than any other organizational change project. This is positive both for re-focus and for the advancement of the KM research area, as researchers can leap across the foundations provided by the cumulative body of research in management and IS.

We must acknowledge the limitations of our work, which can serve as ideas for future research decisions, or just to make reader aware of the 'smallprint'. First, the discussed six-step method is only one possible method of KM solution design. It does not dismay other existing methods, methodologies or roadmaps, rather, it can serve as one of many, among KM practitioners can decide. Second, the report on implementation of the method in the case of Samsung Electronics Anycall only provides initial KM solution design, which is at the cycle 1 of an ongoing action research project. Authors anticipate that at least two more cycles will have to be undertaken in order to be able to report on organizational performance improvements. Finally, the building of the method and the findings presented are based on limited number of organizations. We acknowledge and understand the issue of generalizability, and have taken necessary steps when designing our research. We view our study as exploratory and preliminary, yet insightful. We wish to lay the foundation for future enquiry and therefore to contribute to this highly practically relevant stream of research.

On the final note, acceptance phase of organizational innovations such as adoption of new processes, organizational structure, or information technology, is often difficult due to power and political agendas in organizations (Markus Majchrzak and Gasser 2002). While acknowledging importance of cultural, social, and motivational factors that guide everyday working practices and human behavior, this research addresses the design aspect of a KM solution. Our findings should thus be seen as being embedded in the larger context of human actors, technology, and institutional properties, where KM solution is only one of many elements of social context that influence patterns of action (Barley 1986; Orlikowski 1992; Orlikowski and Barley 2001).

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