

Mobile knowledge management: systems and policies

[Business](#), [Management](#)



The terms knowledge and knowledge management are such broad topics that there have no common definitions. Knowledge is something that is believed and reliable, as distinguished from information which is a set of data arranged in meaningful patterns. Knowledge is information combined with experience, and reflection, integrating thinking and feeling.

Knowledge management refers to a set of practices to capture and disseminate know-how among organizations around the world (Denning, 1998) for reuse, learning and creating awareness across organizations (Wikipedia) . It is easier and faster to transfer information than knowledge from one individual to another.(Denning, 1998). Among the benefits of knowledge management practices are : increased ability to capture knowledge from outside organization and integrate knowledge from departments within the organization; improved skills and knowledge of workers; increased ability to adapt services to clients; define and provide new services to clients; improved worker efficiency and productivity; alleviated the impacts of worker departures (Pratt, 2006).

Knowledge management particularly semantic web documents has been applied in integratingecoinformatics resources and environmental data (Parr, et al., 2006). This was done using the tool ELVIS (Ecosystem Location Visualization and Information System) to constructfoodwebs (Parr, et al., 2006). Other applications were in data warehousing of student data in highereducation(Palmer, 2006) and knowledge management design team-based engineering (Reiner, 2006). The latter demonstrated the use of design history as a source of insight for team design process. It proposed a

modeling framework for collaborative and distributed knowledge management for design teams (Reiner, 2006)

Advances in computer and information technologies have greatly enhanced knowledge management. Palmer (2006) employed e-mail and the web to get participants to access a questionnaire on improving data quality in a data warehousing in a higher education setting . The use of metadata and end-user involvement were positively correlated with obtaining high-quality data in data warehousing.

Today, mobility and transportability are the emerging as important considerations for sharing information and knowledge. With mobile phones and hand-held computers using wireless technologies, people are no longer tied down to work in a physical office with rigid working hours but can do things in the comfort of their homes or elsewhere in a virtual office.

With the ease of sharing knowledge, abuses and infringement of intellectual properties were also made easier. Regulations within the organization and the national government in general are needed to safeguard the companies against these potential abuses. Policies are also needed for security and privacy and can determine the success or failure of a web service (Bonatti, et al. 2006).

Roman et al. (2006) proposed a combined WSMO (Web Service Modeling Ontology) and WS-policy framework consisting of a set of specifications with heavy industrial backing. This framework combines a conceptual model (Web Service Modeling Ontology), a formal syntax and language (Web Service

Modeling Language) and an execution environment (Web Service Execution Environment) (Roman et al., 2006).

Complete Problem Statement and Goal

The trend in knowledge management is headed towards the same direction as mobile entertainment. Entertainment equipment has gone down to the size of the i-pod and portability of the DVD complete with small screens and sound system. Although some of the features of the big system are conveniently packed into the miniature system, there will always be a trade-off between the capabilities of the big system and the portable small system.

This proposed research will look at the plight of the small system, the size of the mobile phone or hand-held computers that rely on wireless technology.

The goals are to optimize its use for the different knowledge management processes, and identify policies to safeguard its misuse especially the threat on knowledge security of the organization. The goals will be measured in terms of the number of process that the handheld devices can handle compare with the host computer, number of times communications breakdown and their causes, frequency of security breakdown through the use of the mobile devices.

Research question

“ To what extent will mobile systems, the size of mobile phones and hand-held calculators, be utilized in knowledge management?”

Hypotheses

Downsizing/outsourcing will be the trend in business which will require mobile systems for communication and knowledge management.

Mobile systems will become more sophisticated and powerful to be able to perform tasks that are currently done by bigger systems.

Security systems of company knowledge (data) will evolve along with the development of mobile systems

Relevance and Significance

More and more companies continue to invest in wireless e-mail, personal productivity applications, inventory management and sales automation.

More than half of 250 IT executives surveyed in October 2003 recognize the importance of wireless technologies in their organization's overall goals and improve user satisfaction (Ware, 2004). Most common wireless devices include a combination of mobile phones (with or without web browsers/email), laptop computers with wireless modem and PDA's with wireless connectivity and pocket PC's (Ware, 2004).

Among the different wireless applications that companies will continue to support in the future, email access tops the list followed by calendar/scheduling, web access, personal productivity (word processing, spreadsheets, presentation softwares), text messaging, real time inventory management, factory floor, transactions, global positioning system (GPS), human resources, finance/accounting, decision support, CRM, sales automation, wireless e-commerce, and procurement (Ware, 2004).

Overall 60% of those surveyed were positive that their wireless investment already paid for itself (Ware, 2004). The greatest benefits came from increased productivity, streamlined processes/greater efficiencies and improved user satisfaction (Ware, 2004). The challenges to wireless technologies are security, user support, privacy and budget restrictions (Ware, 2004).

Downsizing can cut down the cost of doing knowledge management.

Downsizing can be done through physical reduction in the size of the hardware (equipment), software that can be run on a hand-held computer or mobile phone set, or a networking system whereby the host computer does the data analysis and the final results downloadable to the mobile phones.

Government and company policies are needed to safeguard against misuse, industrial espionage and other information security issues.

Approach

For Hypothesis No. 1:

This will be a time series analysis, with years as independent variable, and numbers of companies undergoing downsizing/outsourcing and mobile devices as dependent variables.

A survey will be done on the internet and from published news reports such as CIO Reports regarding number of businesses which had undergone downsizing or outsourcing of their operations, during the past decade. This will be correlated with the number of mobile devices used by different companies during the same period. The time series plot of the data will show

the trends in downsizing and/or outsourcing and number of mobile devices through the years. The years will be the independent variable while the number of companies and mobile devices will be the dependent variables. A correlation between the two dependent variables will be made. A significant positive correlation and increasing trends in the graphs will support Hypothesis No. 1.

For Hypotheses No. 2 and 3:

This study will identify two companies of different sizes (large and small in terms of facilities, number of staff, type and volume of business) that have a host computer, a local area network (either wired or WIFI) and broadband internet access, and staff who have their own or office-issued hand-held computers or mobile phones with wireless internet capabilities through the years.

Questionnaires will be prepared and key management officers and office staff will be interviewed. Information to be gathered will include the company profile, the knowledge management system in place including softwares and consulting firms, knowledge management applications most frequently used, access security levels issued to different classes of office staff.

The staff will be asked to enumerate the processes they could do or would want to do using their mobile units, from simple text messaging to internet browsing that help in the overall decision-making process in the company.

The capabilities of their host computer will be tabulated side by side with the capabilities of their most common mobile device (brand, model, year acquired). Capabilities will be measured in terms of available memory and the number of tasks the device is capable of performing. This is again a time series data with year as independent variable and the number of features or tasks performed by the host computer and the mobile systems will be the dependent variables. If hypothesis no. 2 is correct we would expect an increasing number of tasks that can be performed by the mobile system.

For hypothesis No. 3, the dependent variable will be the frequency of data security breakdowns and the independent variable will be the years the company has been in operation. Another indicator will be the number of regulations formulated to curb security problems (dependent variable) through the years. Company management will be asked regarding existing company policies, code of ethics, data security and standard operational procedures through the years from the time the company was established.

They will be asked how frequent did they suffer breakdown in data security through their mobile devices through the years. They will also be asked to comment on the ideal design for their computer hardwares and softwares and features for the mobile equipment. They will also be asked to comment of what kinds of government support and regulations are needed to curb piracy and infringement of their intellectual properties.

This research will need the following resources: interviewers to interview at least three key company officers, two staff per office department (e. g.

human resources, procurement, marketing, operations, etc.); a knowledge management or IT specialist to evaluate knowledge management software system and how the ordinary staff can access to it using their mobile equipment.

References

1. Bonatti, P. A., Ding, L., Finin, T. and Olmedilla, D. 2006. Proceedings of the 2nd International Semantic Web Policy Workshop (SWPW'06). 5th International Semantic Web Conference (ISWC). Athens, Georgia, USA. Nov. 5, 2006.
2. Denning, S. What is knowledge management? Background paper to the World Development Report 1998. from Palmer, H. 2006. A data warehouse methodology and model for student data in higher education. PhD dissertation. Nova Southeastern University. UMI Number 3218332. 202pp.
3. Parr, C. S., Parafiynyk, A., Sachs, J., Pan, R., Han, L., Ding, L., Finin, T., Wang, D. 2006. Using the semantic web to integrate ecoinformatics resources. American Association for Artificial Intelligence (www. aaii. org).
4. Reiner, K. A. 2006. A framework for knowledge capture and a study of development metrics in collaborative engineering design. PhD Dissertation. Stanford University. UMI Microform 3219361. 258 p.
5. Roman, D., Kopecky, J., Toma, I. and Fensel, D. 2006. Aligning WSMO and WS-Policy. Proceedings of the 2nd International Semantic Web

Policy Workshop (SWPW'06). 5th International Semantic Web Conference (ISWC). Athens, Georgia, USA. Nov. 5, 2006.

6. Ware, L. C. 2004. The payoff of wireless IT investments. CIO Research Reports. From Wikipedia. Knowledge management. From http://en.wikipedia.org/wiki/Knowledge_management