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Issues in Knowledge Management Strategy

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ABSTRACT

This paper uses literature review and case studies to show that for successful knowledge management (KM) implementation there must be a KM strategy. The KM strategy must tie the KM initiative to competitive strategy as well as meet the needs of users of various experience levels. The Jennex and Olfman (2004) KMS Success Model is used to show how KM strategy affects KM and KMS success. Additionally, a review of other KM and KMS success/effectiveness models and KM and KMS success factors finds that there is consensus agreement to the need for a KM strategy. The paper concludes by looking at critical issues in the articulation of a KM strategy.

INTRODUCTION

Alavi and Leidner (2001) summarize and extend the significant literature relating to knowledge, knowledge management (KM), and knowledge management systems (KMS). They view organizational knowledge and organizational memory (OM) as synonymous labels as do Jennex and Olfman (2003). Huber, Davenport, and King (1998) summarize OM as the set of repositories of information and knowledge that the organization has acquired and retains. Stein and Zwass (1995) define OM as the means by which knowledge from the past is brought to bear on present activities resulting in higher or lower levels of organizational effectiveness, and Walsh and Ungson (1991) define OM as stored information from an organization's history that can be brought to bear on present decisions. This paper borrows from the KM and OM literature to define KM as the process of selectively applying knowledge from previous experiences of decision making to current and future decision making activities with the express purpose of improving the organization's effectiveness. This leads to the goals of KM being to:

- Identify Critical Knowledge
- Acquire Critical Knowledge in a Knowledge Base or Organizational Memory
- Share the stored Knowledge
- Apply the Knowledge to appropriate situations
- Determine the effectiveness of using the applied knowledge
- Adjust Knowledge use to improve effectiveness

A KMS is the system used to accomplish these goals. The KMS consists of information system and organizational components. Effectiveness of the KMS can be defined based on the effectiveness of its components.

Implicit is the need for a KM strategy for identifying key knowledge for capture and future use. This paper uses literature review and two case studies to:

- Validate the need for a KM strategy
- Define the what a KM strategy does
- Identify critical issues in formulating a KM strategy

Ultimately, the conclusion that a KM strategy is essential to successful KM is reached and discussed.

KMS SUCCESS

Many KM researchers have identified KM strategy as a key success factor including Barna (2002), Ginsberg and Kambil (1999), Holsapple and Joshi (2000), Jennex, et al. (2003), Koskinen (2001), Mandviwalla, et al. (1998), Sage and Rouse (1999), and Yu, et al. (2004). Additionally, many researchers have included some degree of KM strategy as a part of their KM and/or KMS success/effectiveness models. These include Bots and de Bruijin's (2002) KM Value Chain model, the Massey, et al. (2002) KM Success Model, Lindsey's (2002) KM Effectiveness model, the Jennex and Olfman (2004) KM Success Model, and Maier's (2002) KMS Success Model. This paper uses the Jennex and Olfman (2004) KMS Success Model, figure 1, to illustrate the role of KM strategy in KM/KMS success.

Jennex and Olfman (2003, 2004) generalized assessment of KMS success by adapting DeLone and McLean's (1992, 2003) IS Success Model based on a longitudinal study of KM in a utility engineering organization and KM/OM analysis of several utility Y2K projects. The key dimension is Information/Knowledge Quality and in particular the construct of Knowledge Strategy/Process.

The Information/Knowledge Quality dimension ensures that the right knowledge with sufficient context is captured and available for the right users at the right time. Knowledge strategy/process establishes the organizational processes for identifying knowledge users and knowledge for capture and reuse, the formality of these processes including process planning, and the format and context of the stored knowledge. Linkages reflect the knowledge and topic maps and/or listings of expertise available to the organization. Richness refers to the amount of context surrounding captured knowledge as well as its accuracy and timeliness.

KNOWLEDGE MANAGEMENT STATEGY

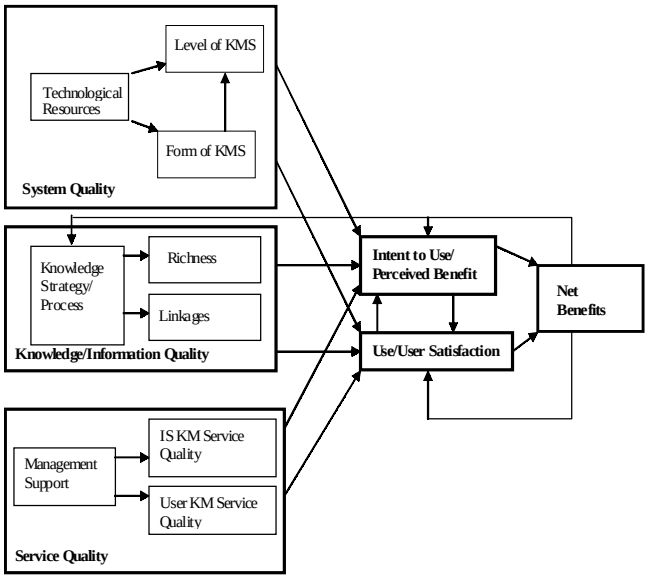
Literature Review

Hansen et al. (1999) describes two types of knowledge strategy, personalization and codification. Personification is the strategy of mapping knowledge so that users of knowledge can locate the source of knowledge and through discussion, obtain the context of the knowledge. Codification is the strategy of capturing knowledge in documents and/or databases with users retrieving the knowledge directly from the KMS with no or little contact with the source of the knowledge. Earl (2001) describes a cartography strategy that is similar to Hansen, et al's (1999) personalization strategy. Maier (2001) also describes the KM strategy of process orientation. This strategy integrates knowledge, users, and the process the knowledge is used in with the result that less context needs to be captured with the knowledge, as users are already familiar with it. These authors based their findings on case studies and observation. Also, all three state that the KM strategy needs to align the KM initiative with competitive strategy.

Case Study 1: Engineering Organization at a Nuclear Plant

Jennex Olfman (2002) describes a longitudinal study that explored the relationship between use of knowledge, KM, and knowledge worker

Figure 1. Jennex-Olfman (2004) KMS Success Model



productivity within the engineering group at a nuclear power plant. Three data points were taken over five years. One key finding was the identification of the Jennex Olfman KMS Success Model and in particular, the construct of KM Strategy/Process.

The first data point found a successful and effective KMS. A major reason for this success was that the KMS held the right knowledge and made it available for use. Since no formal KM initiative or organizational strategy was observed guiding what knowledge to capture, the second data point used a survey and interviews to discover these drivers. Engineers were given a list of drivers and asked to rate their frequency of use, importance, and if they were formal or informal requirements. An interesting observation was that frequency of use had little meaning because frequency of use was not linearly related to importance. This observation indicates that there is not an obvious relationship between importance of a driver and use of the driver because respondents were just as likely to rate a driver very important but used monthly as they were to rate the driver very important and used daily. Table 1 lists the 15 most important drivers along with their frequency of use and correlation constant between importance and frequency.

Table 1. Knowledge Driver Ratings

Driver or Reason Something is Captured in the KMS	n	Importance (Std Dev)	Frequency (Std Dev)	Correlation Constant
NRC requirement	19	1.05 (0.24)	3.26 (1.31)	0.339
You believe it is important to capture the knowledge	22	1.18 (0.41)	1.84 (1.30)	0.064
Procedure requirement	19	1.32 (0.47)	2.27 (1.03)	0.443
Near Miss Event	17	1.53 (0.64)	3.39 (0.96)	-0.354
Management/Supervisor directive	20	1.55 (0.70)	2.29 (1.36)	0.574
Site Event	18	1.56 (0.62)	3.21 (1.22)	-0.209
AR Assignment	20	1.60 (0.71)	2.19 (1.05)	0.277
Data/Trend Analysis	19	1.63 (0.49)	2.67 (0.90)	0.313
Lesson Learned	17	1.71 (0.59)	3.08 (0.76)	-0.320
Other Regulatory requirement	14	1.71 (0.65)	2.93 (1.54)	-0.559
Industry Event	20	1.75 (0.55)	3.44 (1.15)	0.226
Good Practice	19	1.79 (0.64)	2.67 (1.18)	-0.090
INPO Recommendation	15	1.80 (0.56)	3.47 (1.25)	-0.157
Group/Task Force recommendation	17	1.82 (0.35)	3.86 (1.03)	0.147
Co-Worker recommendation	18	1.83 (0.66)	2.56 (1.37)	-0.023

n=# of respondents using the driver; Importance: 1=Very Important, 2=Important, 3=Not Very Important; Frequency: 1=Daily, 2=Weekly, 3=Monthly, 4=more than monthly, less than yearly, 5=Yearly

Another important observation was that a formal strategy is needed to identify what knowledge should be captured and in what format it should be stored. One of the observed weaknesses of the KMS was a lack of integration. As stated earlier, no formal strategy was observed to be in place during the first two stages. This led to knowledge being captured in a variety of formats and leading to knowledge integration issues, as one engineer aptly put it:

"The only integration that exists is the ability to cut and paste knowledge from one system to another."

This problem was recognized and by the third stage a small KM organization had been put in place. While the third data point still found a lack of a formal strategy, the new KM organization was in the process of creating this strategy.

Finally, interviews with a group of new users found that the KMS needs to follow different strategies for different types of users and needs to reflect that the knowledge needs of users change over time and experience level. New users need a personalization strategy until they understand the context in which knowledge is captured and used, and then they were willing to switch to a codification strategy. Personalization is represented as "linkages" in Figure 1; codification corresponds to "richness" in the model.

Another aspect of knowledge strategy from Jennex and Olfman (2002) is that there may be a formal KM strategy and process coexisting with an informal KM strategy and process. Informal KM strategy and processes are those started by work groups and projects to manage knowledge and usually occur in the absence of a formal organizational KM strategy and process.

Case Study 2: Utility Industry Y2K Projects

Organizational activities such as projects can result in knowledge generation. Learning occurs from the acquisition, distribution, interpretation, and use of this knowledge by the project team. Jennex, et al. (2003) report a case study that proposed that projects improve performance by using KM to facilitate learning by team members. It was also proposed that organizations would use KM to facilitate organizational learning by providing methods/tools for capturing and disseminating project generated knowledge throughout the organization. To explore these propositions, members of United States (US) and non-US Y2K electric generation/transmission company (commonly called a utility company) Year 2000 (Y2K) projects were interviewed and surveyed on knowledge generation, perceived knowledge benefits, and methods used to capture knowledge benefits. Utility Y2K projects were selected because due to their large scope, high cost, high risk, and high stress there was a joint effort to create and use a common KMS to facilitate knowledge sharing between projects.

The results of the study were mixed. As expected, project personnel were strong in their belief that there were knowledge benefits and identified several. However, quite unexpectedly, the respondents were taking few actions to capture and use these knowledge benefits. This was consistent between US and non-US project members. It is assumed that organizations want to obtain as much benefit as possible from their investments, and since Y2K projects were very expensive and time consuming, it was expected they would take advantage of any generated knowledge benefits. A tenet of knowledge management is that organizations want to benefit from their knowledge. The case study did not initially support this for the Y2K projects. The implication was that organizations might not be concerned with learning or in capturing and using knowledge.

To explain these results it was assumed that the key to organizations managing and using knowledge is having an

organization wide KM strategy and process guiding the content of the KMS. Hansen et al. (1999) discussed the importance for having a strategy for managing an organization's knowledge and identified several cases where having the wrong strategy or no strategy caused organizations to fail to utilize their knowledge. Additionally, the Jennex-Olfman KMS Success Model (see figure 1) suggests that for a KMS to be successful there must be a knowledge strategy/process guiding the contents of the KMS. It was hypothesized that organizations failed to capture and use knowledge from their Y2K projects due to not having a KM strategy for the organization, even though they may have had one for the project. To test this hypothesis, the second part of the case study re-surveyed and interviewed the first part participants to find out if their organizations currently had a KM program and if they had one during Y2K. Responses were then analyzed using MANOVA with respect to the type of KM program, the numbers of knowledge benefits identified, and the knowledge capture actions taken. Additionally, knowledge benefits identified and knowledge capture actions taken were reviewed to see if there were any benefits or capture actions that were identified significantly more often by respondents having a KM program. Results of this case study found significantly more knowledge benefits identified and capture actions taken by those organizations having a KM strategy at the time of the case study and during Y2K.

DISCUSSION

The literature review and case studies provide guidance as to what a KM strategy should be. Table 2 lists the functions of a KM strategy.

It is recommended that all organizations implementing a KM initiative ensure their KM strategy includes all the above functions. Additionally, it is expected that these organizations will undertake the following activities:

- Modification of processes/procedures as a result of Organizational Learning
- Creation of new processes/ procedures as a result of Organizational Learning
- Creation/Modification of KM support tools to support the KMS and knowledge use
- Increased utilization of personnel who create, share, and/or utilize organizational knowledge at higher levels of authority/responsibility
- Use of lessons learned reports or post activity assessment to review and capture what was learned during organizational activities
- Creation of a learning organization

Finally, despite its promise, KM is perceived by many as all hype and little substance. This is because KM has been oversold as a cure all for corporate performance, the finding of this paper is that many KM initiatives fail to live up to promise because they do not have an appropriate KM strategy. Research is finding that KM is more than a technical solution, it requires organizational and process changes that to successfully implement require substantial planning. KM strategy provides the framework for this planning and the research reported in this paper identifies several issues for KM strategy formulation that are summarized in Table 3.

Table 2. Functions of a KM Strategy

Identification of users of the KMS
Identification of sources of knowledge
Identification of knowledge to be captured
Identification of goals/expectations of the KMS by identifying ties to organizational strategy
Identification of how captured knowledge is to be stored and represented
Generation of top management support
Establishment of process for adding, removing, and/or modifying knowledge to the KMS
Establishment of metrics for knowledge use
Establishment of feedback process on the effectiveness of knowledge use
Identification of the amount of context to be captured with the knowledge

Table 3. Issues for Knowledge Management Strategy Formulation

Identifying Users of the KMS Helps designers identify what knowledge and level of context needs to be captured	**Having an Organizational KM Strategy** Lacking this many organizations fail to recognize and capture knowledge benefits and to support competitive strategy
Identifying a Representation Strategy Transient workforces need to focus on a personalization strategy while static workforces should focus on a codification strategy	**Flooding the KMS with content** Knowledge strategy has to identify that knowledge necessary to achieve the goals of the KMS
Inadequate search capabilities for the KMS Knowledge needs to be stored in a format that facilitates search and retrieval	**Senior Management Support** Encourages knowledge sharing and ensures resource allocation
Security Knowledge processes need to ensure critical knowledge is secure	**Maintaining currency of knowledge** Knowledge has to be accurate and relevant temporally for users to use the KMS
KM Goals and Purpose KM initiatives need a clearly identified and communicated set of goals and purpose so that the impact of the initiative can be measured	**An Organizational Learning Culture** Organizations need a strategy that fosters a learning organization including incentives to share and use knowledge

Failure to address the above issues in the articulation of a KM strategy can lead to the KM initiative failing to deliver as promised and possibly even outright failing.

CONCLUSION

This paper validates the need for a KM strategy, defines what a KM strategy does, and identifies issues in KM strategy articulation. Table 2 summarizes these functions. The key conclusion from these functions is that a KM strategy needs to focus on a strategy that maximizes knowledge benefits to the KMS users with respect to enhancing organizational competitive advantage.

Table 3 summarizes issues in the articulation of a KM strategy. Failing to address these issues may shed light on why KM initiatives fail. Other than ensuring the KM initiative has a KM strategy, the next key issue is identifying a knowledge representation strategy. A key conclusion of this paper is that not only does the representation strategy have to reflect how the organization uses knowledge for competitive advantage, but it also has to reflect differing users in the organization. New users tend to need a personalization strategy. Experienced members tend to be effective with a codification strategy. New users will tend to migrate to being comfortable with a codification strategy as they become experienced. The Jennex and Olfman (2004) KMS Success Model (see figure 1) shows this through the linkages and richness constructs.

Finally, the ultimate conclusion of this paper, one that has been stated before but is worth repeating, is that an organization must have a KM strategy.

REFERENCES

Barna, Z., (2003). Knowledge Management: A Critical E-Business Strategic Factor, Unpublished Masters Thesis, San Diego State University.

Bots, P.W.G. and de Bruiin, H. (2002). Effective Knowledge Management in Professional Organizations: Going by the rules. 35th Hawaii International Conference on System Sciences, IEEE Computer Society Press.

DeLone, W.H. and McLean, E.R. (1992) Information Systems Success: The Quest for the Dependent Variable, Information Systems Research, 3, pp. 60-95.

DeLone, W.H. & McLean, E.R., (2003). The DeLone and McLean Model of Information Systems Success: A Ten Year Update. Journal of Management Information Systems, 19(4), pp. 9-30.

Earl, M. (2001). Knowledge Management Strategies: Toward a Taxonomy. Journal of Management Information Systems, 18(1), pp. 215-233.

Ginsberg, M. & Kambil, A., (1999). Annotate: A Web-based Knowledge Management Support System for Document Collections. Proceedings of the 32nd Hawaii International Conference on System Sciences, IEEE Computer Society.

Hansen M.T., Nohria, N., & Tierney, T., (1999). What's your strategy for managing knowledge? Harvard Business Review, March-April, pp. 106-116.

Holsapple, C. W., & Joshi, K.D., (2000). An Investigation of Factors that Influence the Management of Knowledge in Organizations. Journal of Strategic Information Systems, 9, pp. 235-261.

Huber, G.P., Davenport, T.H. and King, D. (1998) Some Perspectives on Organizational Memory, Unpublished Working Paper for the Task Force on Organizational Memory, F. Burstein, G. Huber, M. Mandviwalla, J. Morrison, and L. Olfman, (eds.) Presented at the 31st Annual Hawaii International Conference on System Sciences.

Jennex, M.E. & Olfman, L., (2002). Organizational Memory/Knowledge Effects on Productivity, A Longitudinal Study. Proceedings of the 35th Hawaii International Conference on System Sciences, IEEE Computer Society.

Jennex, M.E. & Olfman, L., (2003). A Knowledge Management Success Model: An Extension Of Delone And Mclean's Is Success Model. 9th Americas Conference on Information Systems, AMCIS, Association for Information Systems.

Jennex, M.E. & Olfman, L., (2004). Assessing Knowledge Management Success/Effectiveness Models. Proceedings of the 37th Hawaii International Conference on System Sciences, IEEE Computer Society.

Jennex, M.E., Olfman, L., & Addo, T.B.A., (2003). The Need for an Organizational Knowledge Management Strategy. Proceedings of the 36th Hawaii International Conference on System Sciences, IEEE Computer Society.

Koskinen, K.U., (2001). Tacit Knowledge as a Promoter of Success in Technology Firms. Proceedings of the 34th Hawaii International Conference on System Sciences, IEEE Computer Society.

Lindsey, K. (2002). Measuring Knowledge Management Effectiveness: A Task-Contingent Organizational Capabilities Perspective. Eighth Americas Conference on Information Systems, pp. 2085-2090.

Maier, R. (2001). Towards a Framework for Knowledge Management Strategies: Process Orientation as Strategic Starting Point. Proceedings of the 34th Hawaii International Conference on System Sciences, IEEE Computer Society.

Maier, R. (2002). Knowledge Management Systems: Information and Communication Technologies for Knowledge Management. Berlin: Springer-Verlag.

Mandviwalla, M., Eulgem, S., Mould, C., & Rao, S.V., (1998). Organizational Memory Systems Design, Unpublished Working Paper for the Task Force on Organizational Memory, F. Burstein, G. Huber, M. Mandviwalla, J. Morrison, and L. Olfman, (eds.) Presented at the 31st Annual Hawaii International Conference on System Sciences.

Massey, A.P., Montoya-Weiss, M.M., and O'Driscoll, T.M. (2002). Knowledge Management in Pursuit of Performance: Insights from Nortel Networks. MIS Quarterly, 26(3), 269-289.

Sage, A.P. & Rouse, W.B., (1999). Information Systems Frontiers in Knowledge Management, Information Systems Frontiers, 1(3), pp. 205-219.

Stein, E.W. and Zwass, V., (1995) Actualizing Organizational Memory with Information Systems, Information Systems Research, 6(2), pp. 85-117.

Walsh, J.P. and Ungson, G.R., (1991) Organizational Memory" Academy of Management Review, 16, 1, 57-91.

Yu, S-H, Kim, Y-G, and Kim, M-Y, (2004). Linking Organizational Knowledge Management Drivers to Knowledge Management Performance: An Exploratory Study. 37th Hawaii International Conference on System Sciences, HICSS36, IEEE Computer Society.

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