Identifying the Components of a Knowledge Management Strategy

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ABSTRACT (REQUIRED)

What should a good knowledge management strategy incorporate? This paper uses a study that compares a proposed set of knowledge management strategy components to the outcomes of knowledge management projects/initiatives. As expected it was found that highly successful knowledge management projects/initiatives are more likely to have the proposed set of knowledge management strategy components than less successful to unsuccessful knowledge management projects/initiatives. The conclusion of the paper is that the proposed set of knowledge management strategy components is an appropriate list that knowledge management practitioners and researchers can use to construct an organization's knowledge management strategy.

Keywords

knowledge management, knowledge management strategy, knowledge management success, critical success factor.

INTRODUCTION

Is knowledge management strategy a key to successful knowledge management (KM), and if it is, what are characteristics of a successful KM strategy? Many KM researchers have identified KM strategy as a key success factor including Barna (2002), Ginsberg and Kambil (1999), Holsapple and Joshi (2000), Jennex and Olfman (2005), 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 (2006) KM Success Model, and Maier's (2002) KMS Success Model. This paper supports that KM strategy is crucial to KM success and provides research to identify the components of a KM strategy.

KM SUCCESS

There are many issues to consider when discussing KM success but two that are very important and the subject of this paper are: how do you achieve KM success and how do you measure KM success. The following sections describe each of these issues.

Achieving KM Success

Jennex and Olfman (2006) postulated that the way to achieve KM success was to model KM critical success factors (CSF) into a success model that could be used to guide the design and implementation of KM initiatives (see Figure 1). They modeled antecedents of KM success, as identified in the literature; by adapting DeLone and McLean's (1992, 2003) IS Success Model. The KM success model uses system quality, knowledge/information quality, and service quality as functional drivers for the use and impact of knowledge-based systems. Knowledge quality refers to the usefulness of knowledge artifacts in terms of their correctness and inclusion of contextual meaning. System quality refers to how well KM performs with regard to knowledge creation, storage, retrieval and application. Service quality is a measurement of support for the KM initiative. Performance impact is judged by the ability of these constructs to affect use of the systems and overall user satisfaction. Knowledge benefits are generated by use of knowledge and derived from the quality of the knowledge in the system and service dimensions associated with the system. Benefits are also a result of increased use and user satisfaction.

As stated above, the Jennex and Olfman (2006) model incorporates KM critical success factors (CSFs). Jennex and Olfman (2005) summarized and synthesized the literature on KM/KMS critical success factors, CSFs, into an ordered set of 12 KM

CSFs. CSFs were ordered based on the number of studies identifying the CSF. The following CSFs were identified from 31 studies looking at 78 KM projects:

- A Knowledge Strategy that identifies users, sources, processes, storage strategy, knowledge, and links to knowledge for the KMS;
- Motivation and Commitment of Users including incentives and training;
- Integrated Technical Infrastructure including networks, databases/repositories, computers, software, KMS experts;
- An Organizational Culture and Structure that supports learning and the sharing and use of knowledge;
- A common enterprise wide Knowledge Structure that is clearly articulated and easily understood;
- Senior Management Support including allocation of resources, leadership, and providing training;
- Learning Organization;
- There is a Clear Goal and Purpose for the KMS;
- Measures are established to assess the impacts of the KMS and the use of knowledge as well as verifying that the right knowledge is being captured;
- The Search, Retrieval, and Visualization Functions of the KMS support easy knowledge use;
- Work Processes are designed that incorporate knowledge capture and use;
- Security/Protection of knowledge.

This list suggests that KM strategy may be the most important CSF (based on being the CSF most often mentioned in the literature). The key dimension in the KM Success Model for KM strategy 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.

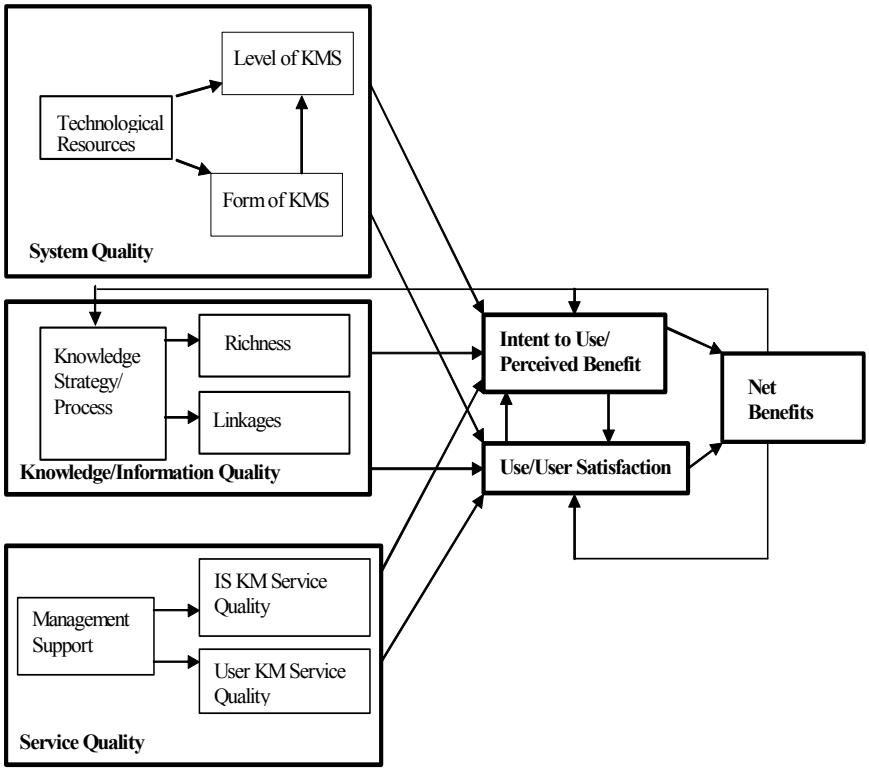

Figure 1, Jennex Olfman (2006) KM Success Model

Determining KM Success

Jennex, Smolnik, and Croasdell (2009) used exploratory surveys to generate a definition of KM success. This definition is:

"KM success is a multidimensional concept. It is defined by capturing the right knowledge, getting the right knowledge to the right user, and using this knowledge to improve organizational and/or individual performance. KM success is measured by means of the dimensions: impact on business processes, impact on KM strategy, leadership/management support, and knowledge content." (Jennex, Smolnik, and Croasdell, 2009, p. 186)

The impact on the KM strategy dimension looks at how a KM initiative changes or evolves the organization's KM strategy. It is expected that a successful KM initiative will result in positive changes to KM strategy by identifying more knowledge sources and users and perhaps changing KM goals while unsuccessful initiatives/projects will provide little to no insight or guidance towards evolving the KM strategy. The above definition of KM success includes more dimensions than just impact on KM strategy implying that there is more to KM success than impact on KM strategy, a view consistent with having 12 KM CSFs. However, the KM success dimension of impacts on KM strategy does suggest that a study comparing KM strategies between successful KM initiatives/projects and less than successful to unsuccessful KM initiatives/projects may yield insight into what a successful KM strategy should include.

Evidence Supporting KM Success as a Driver for Evolving KM Strategy

Jennex, Olfman, and Addo (2003) investigated knowledge capture and benefits from Year 2000, Y2K, utility projects. They initially found that some companies took actions to capture knowledge and realize benefits from their Y2K projects while some didn't. It was postulated that the reason some companies captured knowledge and realized benefits while others did not was because of KM strategy. A survey was administered to the subject companies that asked about whether or not they had a KM strategy, what types of actions they took to capture knowledge, and what benefits were realized. Surveys were sent to all 104 original respondents and a total of 73 responses were received (70.19% response rate). Responses were evaluated for suitability ultimately leaving 60 (63.83% final response rate) overall usable responses.

The results of the survey were rather startling. The survey was analyzed by categorizing the responses into groups: Those that had a KM strategy in Y2K and during the survey period, those that had a KM strategy in either Y2K or the survey period, and those that had no KM strategy in Y2K or the survey period. Groups were analyzed by determining how much knowledge each group generated and the likelihood for each to capture and re-use the generated knowledge. Summing the number of knowledge benefits identified operationalized generated knowledge. Summing the number of capture actions operationalized the likelihood of capturing and re-using knowledge. Average numbers of identified knowledge benefits and capture actions were calculated for each group. MANOVA was used to compare the three groups with the results summarized in Tables 1, 2, and 3: All analyses were highly significant with the least significant being "Pillai's Trace", p=.028. Table 2 shows the tests of "between subjects" effects for each of the dependent variables. These are highly significant for each dependent measure. Table 3 summarizes the p-values of the contrasts between conditions for each dependent variable. For each one, "Both" is significantly different from "Either" and "Neither". However, "Either" versus "Neither" is not significantly different. This led to the conclusion that having a KM strategy during and after a KM initiative is crucial to ensuring an organization captures and uses knowledge.

	Condition	Mean	Std Dev	N
Benefits	Either	6.26	3.314	19
	Both	9.00	2.629	12
	Neither	5.55	3.823	29
	Total	6.47	3.647	60
Actions	Either	2.58	2.364	19
	Both	5.08	2.109	12
	Neither	2.41	2.529	29
	Total	3.00	2.584	60

Table 1: Means and Standard Deviations of Measures by Condition

Source	DV2	SS	Df	MS	F	Sig
Conditions	Benefits	102.077	2	51.038	4.260	.019
	Actions	65.417	2	32.709	5.674	.006
Error	Benefits	682.857	57	11.980		
	Actions	328.583	57	5.765		

Table 2: Tests of Between Subjects Effects from MANOVA (DV: Dependent Variable, SS: Sum of Squares, df: degrees of freedom, MS: Mean Square)

Contrast	Benefits	Actions
Both > Neither	.025	.028
Both > Either	.036	.006
Neither <> Either	.486	.817

Table 3: Contrasts between Conditions (p-values)

This study showed that successful KM initiative/projects had an impact on KM strategy. Additionally, the surveys of Jennex, Smolnik, and Croasdell (2009) using a survey with 194 respondents found agreement that successful KM initiatives/projects should have an impact on KM strategy. Note that the above results from Jennex, Olfman, and Addo (2003) are presented in more detail as their only publication has been through a conference proceeding, the survey from Jennex, Smolnik, and Croasdell (2009) is not presented in such detail as it has been published as a journal article.

COMPONENTS OF A KM STRATEGY

So what are the components of a KM strategy? Jennex and Addo (2005) used the literature, Jennex, Oflman and Addo (2003), and the longitudinal case study reported in Jennex (2008) (performed between 1996 and 2004) to generate the components of a KM strategy as being:

- Identification of users of the KMS
- Identification of sources of knowledge
- Identification of knowledge to be captured
- Identification of goals/expectations of the KM initiative 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

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.

METHODOLOGY

A survey was initially generated using the previously cited literature, specifically Jennex and Addo (2005), to generate a list of items representative of impacts on KM strategy. Additional questions related to the primary function of the respondent (KM practitioner, KM manager, KM user, academic, KM researcher, and KM student), the experience level of the respondent (0-2 years, 3-5 years, 6-10 years, or over 10 years), and if the KM project/initiative being referred to was successful or not (7-

point Likert scale). The research model, shown in figure 2, is based on Jennex, Olfman, and Addo (2003) and is designed to determine what impacts to KM strategy are demonstrated with respect to the success of a specific KM initiative/project.

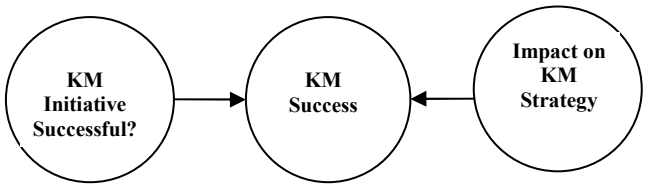

Figure 2: Research Model

The items for Impact on KM Strategy were:

1. My last KM project resulted in changes to my organization's KM goals
2. My last KM project resulted in the creation or modification of knowledge related key performance indicators
3. My last KM project resulted in changes to the way my organization assessed knowledge use in the organization
4. My last KM project resulted in changes in my organization's incentives for using and sharing knowledge
5. My last KM projected resulted in my organization increasing its awareness/mapping of knowledge sources and users
6. My last KM projected resulted in increased resources for our KM systems and repositories
7. My last KM project resulted in the creation of new or additional knowledge capture processes

The items were validated using an expert panel. Panel feedback caused the rewording of some items resulting in the above list.

Survey Monkey was used to post the survey and collect responses during a two month period in the spring of 2011. Requests to respond to the survey (with the survey link) were posted on AISWorld list server, three KM practitioner list servers, and through individual invitations sent to KM researchers and practitioners known by the authors. Surveys were collected over a two month period with two reminders posted to the above list servers (this is for this paper; responses were still being collected at the time of submission in an attempt to get a larger response base). A total of 144 surveys were collected of which 88 were usable. The large number of rejected surveys is based on many potential respondents starting the survey but realizing that they were not familiar with a specific KM project/initiative and that general opinions were not being requested. This was determined based on comments included in the responses and through list server postings to the authors.

The 88 responses were divided into two analysis groups. Those respondents who responded agree (6) or strongly agree (7) that their last KM project/initiative was considered successful (57 responses) were placed in the successful group while all other respondents (31 responses) were placed in the unsuccessful group. Respondents who responded slightly agree (5) to the success of their last KM project/initiative were placed in the unsuccessful group to help make the groups more equal in number and because it was felt that those who responded slightly agree may be biased against reporting their project/initiative as a failure.

Impact on KM strategy items were analyzed using three methods: method 1 used the highest score for the items; method 2 used the average of the scores for the items; and method 3 used the total number of associated items met with an item score of 6 or 7 being needed to consider the item met. Means for each of these were generated for each group and t-tests were used to determine if the differences between groups were significant. A final analysis that was done was the splitting of the success group into agree (41 responses) and strongly agree (16 responses) and t-tested to determine if the differences between these two groups were significant.

RESULTS

The results were mostly as expected: the more successful the KM project/initiative the more the KM project/initiative measured items in more dimensions. This suggests that the model of KM success (Jennex, Smolnik, and Croasdell, 2009) is correct and that KM project/initiative managers should use multiple measures in each of the four dimensions in order to measure success. Specific results follow.

Respondent Demographics

Two demographics were gathered, respondent position and experience level. These demographics are summarized in Tables 4 and 5.

Position	Overall n=88	Successful Project n=57	Unsuccessful Project n=31
KM Practitioner	20.5% (18)	24.6% (14)	13% (4)
KM Manager	29.5% (26)	31.6% (18)	26.% (8)
Academic	21.5% (19)	12.3% (7)	39% (12)
KM Researcher	20.5% (18)	22.8% (13)	16% (5)
KM Student	8% (7)	8.8% (5)	6% (2)

Table 4: Respondent Position %(#)

Experience (years)	Overall n=88	Successful Project n=57	Unsuccessful Project n=31
0-2	12.5% (11)	14.0% (8)	10% (3)
3-5	23% (20)	21.1% (12)	26% (8)
6-10	21.5% (19)	21.1% (12)	22.5% (7)
>10	43% (38)	43.9% (25)	41.5% (13)

Table 5: Respondent Experience %(#)

The tables show that there is a 50-50 split between practitioners and researchers/academics/ students. Additionally, the majority of respondents are experienced and only a few have 2 or fewer years of experience. It is interesting to note that practitioners were more apt to report on a successful KM project/initiative while the academic focused respondents were more apt to report on unsuccessful KM projects/initiatives.

Item Results

Table 6 summarizes the results of the survey. Inserting a table in the text can work well. See Table 1 below.

Analysis Method	Success Group (n=57)	NonSuccess Group (n=31)
Highest Value Method	6.2 (0.9502)	5.8 (0.8980)
Average Value Method	5.0 (0.1150)	4.5 (0.8914)
Item Count Method	3.3 (2.3433)	2.0 (1.8439)

Table 6: Summary Results, Method (Mean/(Std.Dev)/(n))

Significance tests using a 1-sided t-test assuming unequal variance was used to determine if the differences listed in Table 6 between the two groups were significant. Table 7 lists the results of these tests and it should be noted that all differences were considered significant at 0.01. Additionally, Table 8 lists the results of group comparisons between success subgroups (the first group was where success=7 and the second group was where success=6) and again it should be noted that all differences were significant at 0.01.

High Value	$t_{51}=2.61$	$p < 0.01$
Average Value	$t_{64}=4.26$	$p < 0.01$
Item Count	$t_{60}=3.46$	$p < 0.01$

Table 7: T-Test Comparison Between Groups: (Success vs Nonsuccess)

High Value	$T_{49}=1.68$	$p < 0.01$
Average Value	$T_{27}=1.70$	$p < 0.01$
Item Count	$T_{29}=1.70$	$p < 0.01$

Table 8: Group 7 vs 6 Methods, (Mean/(Std.Dev))

DISCUSSION

Why more KM strategy items for successful KM projects? This study postulates that KM does not exist in an organizational vacuum. KM cannot be bolted onto an organization nor can it be done independent of the organization. Knowledge use and value only occurs within context of the users and the organization. To be successful with KM, organizations need to fully understand what knowledge is needed, who needs it, how it is used, and why it is used. Successful KM projects/initiatives reflect this and so incorporate more KM strategy items. The following ranks the strategy items from highest agreement to lowest:

1. creation or modification of knowledge related key performance indicators
2. increasing its awareness/mapping of knowledge sources and users
3. creation of new or additional knowledge capture processes
4. changes to the way my organization assessed knowledge use in the organization
5. increased resources for our KM systems and repositories
6. changes to my organization's KM goals
7. changes in my organization's incentives for using and sharing knowledge

The most successful KM initiatives/projects commonly saw items 1-5 above and less commonly saw items 6 and 7. Data wasn't collected to explain this but it is postulated that changes to KM goals and incentives isn't as necessary in organizations that commonly experience KM initiative/project success. The list also suggests that key performance indicators and awareness/mapping of knowledge sources and users is a very common outcome. This is somewhat expected. Successful KM initiatives/projects are more eager to measure success than those that aren't as successful while increased awareness/mapping of knowledge users and sources reflects user satisfaction with the initiative/project.

CONCLUSION

The goal was to identify crucial components of a KM strategy by looking at successful KM projects/initiatives. The study started with assumptions of what are crucial KM strategy components and attempted to validate them. The study is mostly successful and this list is considered a useful list of what a KM strategy should encompass. Successful KM projects/initiatives are more apt to experience the items on the list than those KM projects/initiatives that are less successful or unsuccessful. This is not an earth shattering conclusion but it is reassuring to KM researchers and practitioners that the KM strategy items proposed in the literature are supported in actual KM projects/initiatives.

This study has several limitations. The first is a relatively small sample size. More KM projects/initiatives need to be looked at. Also, perhaps this is not the best methodology for validating the components of a KM strategy. The study does show the differences between successful and less successful to unsuccessful projects. This is useful from a lessons learned viewpoint but may not be adequate for fully answering the research question. Finally, analysis using t-tests is not the best approach. This analysis was used for the conference paper, a fuller analysis will be done prior to any journal submittal.

ACKNOWLEDGMENTS

This paper is the outcome of a long series of studies with several participants. Parts of this research have been presented at the Hawaii International Conference on System Sciences and the Information Resource Management Association Conference. This paper reflects the next stage of data gathering and analysis building on these earlier presentations.

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