An Assessment of Topic Areas Covered in KM Journals (2000–2005)

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ABSTRACT

In recent years, knowledge management (KM) has received increasing attention from researchers and practitioners. In 2005, Peachey, et al. explored the KM literature that appeared in information systems (IS) journals. However, while many KM articles initially appeared in IS journals, KM-specific journals have begun to appear on the scene. This research reviews the literature published in KM-specific journals from 2000 to 2005. Using content analysis, this research explores the literature in KM-specific journals to determine the nature of the body of knowledge in KM. The results indicate that, although the coverage of KM topics within KM-specific journals is fairly evenly distributed, the KM topic of knowledge transfer has been receiving the greatest amount of attention by researchers and practitioners contributing to these journals. Additionally, the comparison of the two bodies of literature (KM and IS journals) shows that there are differences in the coverage of knowledge application.

1. INTRODUCTION

Knowledge management (KM) was first addressed as an identified concept in industries/ functions that were basically selling knowledge (e.g., professional services, pharmaceuticals, and research and development) [3]. Since then it has quickly moved into other industries and now is expected to be adopted in virtually every business unit and function (ibid). Peachey et al. [14] showed evidence of this rapid growth in their 2005 study of KM in the leading information systems (IS) journals. They found that over 2,000 articles were written on the subject from 2000-2004.

Peachey et al. [14] proposed that "understanding the future direction of research in KM requires that we first know what constructs in KM have received the most attention from researchers and where there currently are gaps in the published research." Thus, their study was designed to learn what types of KM articles had been published in the IS journals. To conduct the study, they developed a hybrid framework by combining the KM topics of *knowledge creation*, *storage/retrieval, transfer*, and *application* from Alavi and Leidner [1] with the KM topics of *knowledge generation*, *codification* and *coordination*, *transfer*, and *roles/skills* from Davenport and Prusak [4]. The study found all of the KM framework topics represented in the IS literature, with the KM topic of *knowledge transfer* being addressed more (approx. 42% of the time) than any of the other four KM topics. Peachey et al. [14] suggested that concentrating research on just one or two KM topics could cause an imbalance in KM research as a whole (ibid, p. 68). Given these findings, the purpose of the current study was to extend the research to focus on KM-specific journals.

2. EVOLUTION OF KM-SPECIFIC JOURNALS

With the work of Peachey, et al., we have an idea of the KM topics covered in IS journals. Similarly, Guo and Sheffield [6] identify IS journals as well as management science journals that publish a significant number of KM articles. Recently, KM-specific journals have begun to appear. Although no *official* "KM-specific journal" definition exists, one can be defined as a specialized publication dedicated to KM research and practice [9]. Furthermore, a KM-specific journal's main focus is to advance body of literature in KM by publishing articles only pertaining to KM that may not be published in IS or other discipline-focused journals.

Over the last five years, the number of KM-specific journals has begun to grow. For instance, Schwartz [16] identified a number of outlets "with major aspects of KM as a primary focus" [p. xxiv]. Jennex and Croasdell [9] also identified three journals that "surfaced to address KM research exclusively" [p. ii]: *Knowledge Management Review, The Journal of Knowledge Management, and Knowledge Management Research and Practice*. The evidence suggests the body of knowledge for KM is growing, and as Schwartz suggests "[there is a] compelling need to create a logical structure that maps out the field of knowledge management across its diverse disciplines' [16, p. xxv]."

With the findings of Peachey et al. concerning IS journals, the researchers felt a similar investigation of KM-specific journals would be informative as to the current state of and future development of the KM discipline.

3. RESEARCH QUESTIONS

Given the discussion above, the following research questions were proposed:

RQ1: *What are the dominant KM topics addressed in KM-specific journals?*

RQ2: *Is the KM literature in IS journals different than that being published in KM-specific journals?*

4. LITERATURE REVIEW

In attempting to define knowledge management, Alavi and Leidner reference Von Krogh's [17] definition of knowledge management: "Knowledge management refers to identifying and leveraging the collective knowledge in an organization to help the organization compete" [17, p. 113]. Alavi and Leidner further state that "knowledge management is largely regarded as a process involving various activities" [1, p. 114].

Two frameworks were selected to form a basis for the categorization of topics for this research. First, Alavi and Leider [1] was chosen based on the desire to compare the KM-specific journals with the results of the previous IS journal study [14]. Additionally, this framework is the fourth most often cited article in KM research [8].

Choosing the second framework was more challenging. Rubenstein-Montano et al. [15] examined 26 different knowledge management frameworks published in both academic and practitioner literature. In their review, they noted that "Holsapple and Joshi present the most comprehensive framework in the existing literature and are most closely aligned with the results of this study" [15, p. 10]. Given the strength of this recommendation and Holsapple and Joshi's extensive research in KM, we selected this framework for inclusion in this study.

Alavi and Leidner [1] created a KM framework with four KM categories, or focus topics:

1. knowledge creation
2. knowledge storage/retrieval
3. knowledge transfer
4. knowledge application.

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Alavi and Leidner [1] provided extensive definitions of the KM topics. *Knowledge creation* was defined in a manner similar to Nonaka [12, 13] as the continual interplay between tacit and explicit knowledge.

Knowledge storage and retrieval are those activities that an organization engages in to capture and locate knowledge for future use. Additionally, as stated by Davenport and Prusak [4], codification activities that put knowledge in a form that is useable for others are part of storage and retrieval activities.

Knowledge transfer is the process where knowledge flows from one entity to another such as between individuals, groups, organizations, or any combination thereof.

Knowledge application is the focus on use of organizational knowledge for competitive advantage.

Holsapple and Joshi [7] created a framework which consisted of five KM focus topics:

1. Managerial influences
2. Resource influences
3. Environmental influences
4. Activities
5. Learning/projection as outcomes

Holsapple and Joshi's research to produce the framework involved over "31 recognized researchers and practitioners in the KM field" [7, p. 235]. They claim the results of the Delphi panel yielded "a relatively comprehensive framework on which KM research and practice can develop" [7, p. 255]. Bartczak [2] also found the framework to be robust when used as grounding theory for a case study investigation of six military organizations practicing KM.

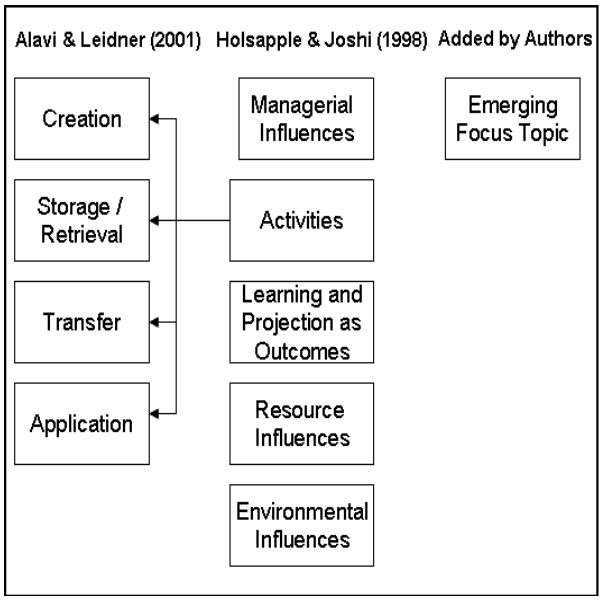
According to Holsapple and Joshi, *managerial influences* are influences that come from those employees within an organization who are in charge of KM functions [7].

Resource influences include the elements of knowledge resources, human resources, and material resources [7]. Each of these resources provides important capabilities for the conduct of KM.

Factors external to an organization that have a direct effect on how KM is conducted are *environmental influences* [7]. The six main factors that comprise *environmental influences* are: competition, fashion, markets, technology, time, and the GEPSE (governmental, economic, political, social, and educational) climate.

Activities are processes that people employ in the conduct of KM within an organization [7]. The four major activities which Holsapple and Joshi identify are acquiring, selecting, internalizing, and using knowledge.

Figure 1. KM topics framework



Learning occurs when an organization attempts to modify its human knowledge resources, and *Projection* is concerned with enhancing an organization's standing within its environment (e.g., its reputation/competencies in the market) [7].

Our challenge was to synthesize those KM topics into an overall framework. In an effort to capture possible *emerging topics* not addressed by the framework, we allowed a placeholder. The final framework is shown in Figure 1.

5. METHODOLOGY

This study used content analysis methodology based on Neuendorf's model [11]. Content analysis allows the researcher to utilize a step-by-step approach for assigning literature (in this case, KM) to a predetermined set of categories. The categories were provided by the model developed in the previous section.

A selection of articles from five KM-specific journals was examined for this study. Of the 469 articles included in these journals, 317 were deemed specifically relevant to this study. The methodology followed the steps highlighted below.

5.1. Theory and Rationale

This first step involved determining "what content will be examined and why." The literature review provided the information for the "what" and "why." The "what" in this review were the articles in the selected journals that reflect research in some aspect of KM. The "why" in this paper was a determination whether there exists a difference in the topic coverage in KM between the two sets of journals (leading IS journals and KM-specific journals).

5.2. Conceptualization

This step focuses on what variables are to be used in the study and their conceptual definitions. The conceptualizations were taken from the comparison work from Peachey et al. [14].

5.3. Operationalizations (Measures)

In order to answer the research question, this study first examined the articles in a manner similar to the study of the KM articles in the leading IS journals [14]. Each KM topic was considered to be an independent operational variable or measure. For an article to be coded in a specific category, specific research into the topic had to be present.

5.4. Coding Schemas

Human coders were used to conduct the research. A detailed code book and code form was created for use by the coders.

5.5. Sampling

The population of interest consisted of articles published in KM-specific journals. To determine what publications could be considered KM-specific journals and which of those journals should be used for the research, four distinct criteria were established. The first criterion was that the journal had to be currently in publication. This criterion did not preclude electronic journals as long as the respective websites were kept current. The second criterion was that KM-specific journals had to be peer-reviewed. The third criterion was that the journals had to specify KM as their primary focus area. The final criterion was that only journal articles published within the last five years, covering the period from January 1, 2000 to September 30, 2005, were coded.

Using these criteria, five KM-specific journals were identified: *Electronic Journal of Knowledge Management*, *Journal of Knowledge Management*, *Knowledge Management Research & Practice, Journal of Knowledge Management Practice* and *International Journal of Knowledge Management.* Due to the small number of journals, it was decided to use a census of the articles rather than sampling a subset.

5.6. Training the Coders

All coders had taken at least one graduate-level KM class and four were trained on coding in person. Each coder was given an eight page instruction sheet that provided detailed descriptions and specific examples of each topic. The fifth

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coder was not trained in person but had participated in similar research and was aware of the definitions of the KM topics.

5.7. Coding

Each of the 317 articles was coded by the primary researcher and one of the other four coders, ensuring a minimum of two coders per article. Each coder, with the exception of the primary author, reviewed approximately 64 articles. The coders reviewed each article and scored it in a particular topic category.

5.8. Inter-Coder Reliability

Neuendorf recommends the use of raw percent agreement which she states is "the most popular coefficient in the business and the social and behavioral sciences" [11, p. 148]. However, we selected to employ a more rigorous measure, Krippendorff's alpha-reliability [10], in an effort to eliminate the effects of chance agreements between coders.

5.9. Tabulation and Reporting

For purposes of this research, simple descriptive frequency calculations were employed to answer the research questions.

6. ANALYSIS AND RESULTS

6.1. Reliability

Intercoder reliabilities were calculated for each measure on the criterion of *agreement*. Seven of the eight *percent agreement* (PA) scores across all coders were above .60, and varied from a low of .58 to a high of .77. In her discussion of acceptable levels of inter-coder reliabilities using the more liberal raw percent agreement index, Neuendorf states that coefficients of .90 or greater would be acceptable to all, .80 or greater would be accepted in most situations, while below that there is less agreement [11]. As our Krippendorff's alpha reliability index was more conservative in nature, we believe the reliabilities (.58 - .77) were acceptable for this study. Table 1 outlines these results.

6.2 Findings

The distribution of KM topics across the KM-specific journal articles is shown in Table 2. The body of literature does contain all of the KM topics identified in the KM topic framework developed for this study. Secondly, the body of literature for KM- specific journals reflects a wide dispersion of topics ranging from a low percentage of coverage for the *environmental influences* and *knowledge application* topics to a high percentage of coverage for the *knowledge transfer* topic. In addition, there was one new "emerging" topic discovered during analysis. The emerging topic of *knowledge mapping* was found to be discussed in six percent of the articles reviewed.

Table 1. Intercoder reliability

KM Topic	Overall
Creation	.67
Storage/ Retrieval	.68
Transfer	.58
Application	.73
Managerial Influences	.77
Learning/ Projection as Outcomes	.63
Environmental Influences	.74
Resource Influences	.65

Table 2. KM topic coverage in KM specific journals

Number of articles where topics were observed and the percent of the sample population		
KM Topic	**Num**	**%**
Creation	102	32
Storage and Retrieval	113	36
Transfer	217	68
Application	55	17
Managerial Influences	90	28
Learning/Projection as Outcomes	92	29
Environmental Influences	36	11
Resource Influences	151	48
Emerging KM Topic: Knowledge Mapping	20	6

RQ 1 was answered by tabulating the number of units (i.e., KM-specific journal articles)

that contained each variable (i.e., KM topic). These tabulated numbers were then divided by the total units included in the study. The resulting percentages showed the distribution of KM topics across the KM-specific journal articles.

RQ 2 was answered by comparing the distributions calculated for RQ 1 against the distributions identified by Peachey et al. 413] for the leading IS journals. Since this study included more KM topics than the Peachey study, only the similar categories (i.e., *knowledge creation*, *knowledge storage/retrieval*, *knowledge transfer*, and *knowledge application*) were compared. Additionally, since this research used a simple descriptive frequency calculation method vice the proportional calculation method used in the Peachey study, the data collected from RQ 1 was recalculated using the proportional calculation method to ensure proper comparison.

In this study, if the coder identified an article as addressing a topic, it was coded with a 1 so an article could have from 1 to n for a total score where n is the total number of KM topics addressed in the article. Peachey et al. [14] weighted the coding so that in an article that addressed one topic, the topic would receive a 1. If an article researched two topics, each topic would receive a .5, and so on. The difference between coding methods explains the difference between the percentages shown in Table 2 and those illustrated in Figure 2.

After performing the recalculations we compared the four KM topics side-by-side and determined whether the bodies of KM-specific journals' and the leading IS journals' literature are similar or dissimilar. Figure 2 shows a graphical representation of the results of the two studies.

The results from the comparison of the two distributions showed only small differences. To determine if the differences between groups were significant, we first used a Chi-square test to determine if the distributions as a whole were different. The result was a value of 7.53 with 3 degrees of freedom and was significant at $p=.056$. From this we can infer that there is a significant difference (at $p<.10$) between the populations.

Next we examined the topics between KM journals and IS journals. The proportions were tested for equality by testing if the null hypotheses that the proportion of topic (KM journals) = proportion of topic (IS journals). The topic application showed a significant difference. The topics of *creation, storage* and *retrieval* and *transfer* did not show significant differences. Table 3 shows these results.

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Figure 2: Percent of topic areas appearing in KM and IS journals

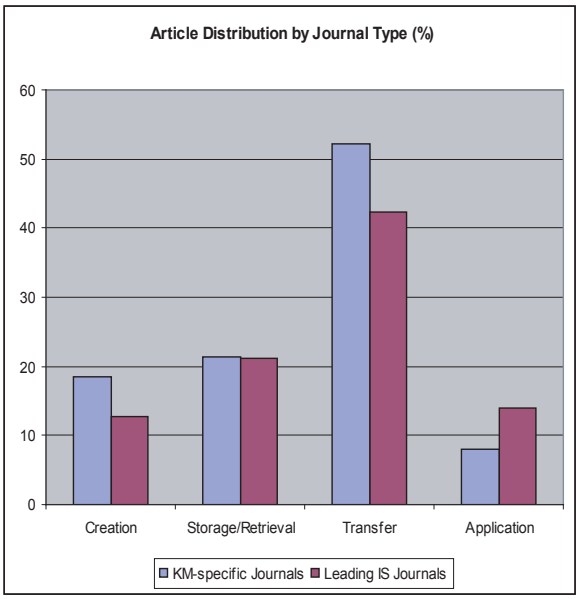

Table 3. Hypothesis tests of equality of topic coverage between KM and IS journals

KM Topic	P Value	Decision
Creation	.184	Do not reject
Storage and Retrieval	.642	Do not reject
Transfer	.316	Do not reject
Application	.04	Reject
Null Ho-Ha=0 and Alternative Ho-Ha≠0		

Table 4. Hypothesis tests of equality of topic coverage in KM Journals

	Storage and Retrieval	Transfer	Application
Creation	.744	**0.00**	**.03**
Storage and Retrieval	NA	**0.00**	**.013**
Transfer	**0.00**	NA	**0.00**
Application	**.013**	**0.00**	NA
Null Ho-Ha=0 and Alternative Ho-Ha≠0			

Lastly, we tested the proportions to determine if there were differences in the amount of coverage in KM journals between KM topics. Each set of proportions was tested to determine if they were the same, i.e. Ho=Ha. All the proportions were statistically different at $p<.05$ with the exception of the difference between the proportion of creation and the proportion storage and retrieval. Table 4 shows the P-values. Significant results are shown in bold.

6.3. Summary

An assessment of the coverage of KM topic areas in KM journals supported the finding that all pre-identified topic areas were covered in KM journals during the years 2000-2005. In addition, a new emerging topic area was identified*: knowledge mapping*. The highest percentage of coverage (68%) was for knowledge transfer, perhaps indicating the high interest in this topic by practitioners as well as researchers.

When the coverage of KM topic areas in KM journals was compared with the coverage in IS journals, a statistically significant difference was found in *application* (greater coverage in IS journals).

When comparing the topic areas from the Alavi and Leidner [1] framework in KM journals, there was a statistically significant difference between all combinations of topics with the exception of *creation* and *storage* and *retrieval*. *Transfer*, which received the most coverage, was followed by the pair of *creation* and *storage/retrieval*. *Application* received the least coverage in KM journals.

7. CONCLUSIONS AND RECOMMENDATIONS

The results from RQ 1 reveal that the body of KM literature in KM-specific journals reflects the KM topics in the KM framework. The fact that *knowledge transfer* was the most frequently identified topic area may well reflect the keen interest in knowledge transfer by many organizational practitioners of KM. However, as stated by Peachey et al., practitioners may find it hard to properly deploy effective KM systems if "the other [KM topics are not] more fully developed" [14]. Another possible explanation for the emphasis on transfer is that the topic may not yet be explored enough to locate other dimensions within the topic. Even though *knowledge transfer* did get significant coverage, discussion of the remaining KM topics was rather evenly distributed. A good example of this even distribution can be found in the KM topics of *knowledge creation (32%)*, *knowledge storage and retrieval (36%)*, *managerial influences (28%)*, *learning and projection as outcomes (29%)*, and *resource influences (48%)*. As for *environmental influences*, the low percentage of coverage (11%) may be indicative of the struggle to "identify and characterize them in a "comprehensive, unified, and organized way" [7, p. 242]. Another possible reason for the lack of coverage may be due to the internal focus many researchers and practitioners are applying to KM.

As for RQ 2, the comparison of KM coverage in KM and IS journals showed a difference in the proportion of articles that address *application* (greater in IS journals). This may be evidence that IS journals are more receptive to KM research that is "applied" with respect to how IS tools and/or theory is used in support of KM efforts.

It must also be noted that, during the process of this research, the KM topic of *knowledge mapping* was found to be discussed in six percent of the articles reviewed. Although other researchers have considered this activity as a subcomponent of broader activities such as knowledge storage [1] and knowledge codification [4], others are addressing it as a separate activity under the KM umbrella.

7.1. FUTURE RESEARCH

The field of KM is in its infancy, and is likely to reflect many changes over the coming years. New journals are coming on line, old ones are evolving their editorial interests, and new areas of investigation are likely to evolve as well. Our first recommendation for future research might involve a time series study that would capture these changes and help to elucidate the changing nature of the field. A second suggestion involves the large number of articles published that address issues in knowledge transfer. It is quite possible that examination of these articles may provide insight into further refinement of the topic.

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