Adoption of an Electronic Knowledge Repository: 
A Feature-Based Approach

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Abstract

Many organizations dedicate money and time to implement electronic knowledge repositories (EKRs). To better implement these systems and motivate users to contribute knowledge, we must better understand how different types of users actually employ an EKR. While a simplistic view might consider an individual’s level of EKR usage as high, medium, or low, a richer, feature-based approach allows us a more developed understanding of EKR usage. To achieve this objective, this paper develops an empirical taxonomy of EKR adoption profiles when other knowledge sources are available through surveys of 108 system administrators at a Fortune 500 Company. The three EKR user profiles – enthusiastic knowledge seeker, thoughtful knowledge provider, and reluctant non-adopter – are distinct in terms of knowledge sourcing behaviors and context.

1. Introduction

In an effort to better capitalize on the knowledge held by their employees, organizations are spending considerable amounts of time and money developing systems to capture this knowledge so that it can be organized, stored, and reused by other employees [1, 2]. This management of an organization’s knowledge is often done with an electronic knowledge repository (EKR), which can support both structured and unstructured information [1, 3] while facilitating the exchange of information among users [1, 4]. The management of knowledge is “becoming a critical business discipline as enterprises seek to enhance competitiveness in real time” [5, p. 1] and EKRs play an important role.

Even though EKRs are a fundamental piece of an organization’s knowledge retention and reuse strategy [6], many of the factors affecting EKR usage are not yet well understood [e.g., 4, 7, 8]. In general, prior studies of information system (IS) success and EKR success have focused on the use or non-use of the IS [e.g., 9, 10-12] or EKR [e.g., 13, 14-16], respectively. That is, while EKRs have received considerable attention in the literature [17, 18], the focus has been on the level of use, i.e., individuals have been assumed to use the EKR to a greater or lesser extent.

In contrast, this paper focuses on the type of use, i.e., the different ways in which the EKR is used. Accordingly, we classify the users of EKR into different categories based on the different ways in which they use the EKR. Furthermore, we examine factors that may affect the different ways in which individuals are using the EKR, such as individual characteristics [e.g., 8, 19-21], the context [e.g., 7, 13, 22], and the system [e.g., 7, 12, 23].

Potential users of an EKR not only have access to the EKR but also to other knowledge sources to do their job [8]; these can include colleagues and manuals [8]. Furthermore, knowledge workers may choose to explicitly avoid use of an EKR. Studies of system administrator work practices have shown that they utilize EKRs, Google, vendor documentation, and colleagues to seek and share knowledge essential in their work [24]. We explicitly incorporate these realities in the empirical study.

Thus, this paper contributes to EKR research by developing an empirical taxonomy of EKR adoption profiles when other knowledge sources are available. We do this in the context of system administration. The continuously evolving environment in which a system administrator (sysadmin) works makes even routine tasks, such as installation or troubleshooting, novel, which puts sysadmins on the bleeding edge of technology [e.g., 24, 25].

While a general adoption or use theory would outline a single adoption style for all users, taxonomies explicitly include a few alternative profiles [26, 27]. We utilize six attributes of EKR and cluster analysis to develop a taxonomy including three distinct groups of EKR adoption. Moreover, using discriminant analysis, we identify how an individual user’s profile of EKR usage depends on the individual’s characteristics, and the individual’s perceptions of the EKR and the context. Thus, this
contributes also to the literature by identifying how different types of usage may be motivated by creating and emphasizing different aspects of the context. Finally, the taxonomy should provide insights to practitioners and researchers on how to motivate EKR users to contribute and reuse knowledge.

2. EKR Adoption

2.1. Types of EKR Adopters

Users who adopt EKRs may differ in terms of the attributes of their EKR adoption. Instead of simply examining level of EKR usage as high or low, this paper examines the ways in which each individual uses the EKR by focusing on the attributes and using the different categories of users based on classification using these attributes as this better explains EKR success [15].

2.2. EKR Usage Attributes

When studying EKRs, researchers clearly define two distinct activities involved in the use of an EKR: 1) knowledge sourcing [8], and 2) knowledge sharing [20]. We define knowledge sourcing as “the extent to which individuals intentionally access each other’s expertise, experience, insights, and opinions” [8]. Building upon this definition of knowledge sourcing and the work of others [21], we define knowledge sharing as the extent to which individuals intentionally share their expertise, experience, insights, and opinions. While some users may only source knowledge from a system [8], others may predominantly share their knowledge, perhaps assigned to the role of knowledge champions in their organizations [18, 21]. Often, users accept both roles and participate in both sourcing and sharing knowledge. But it is not clear how different types of users differ in their sourcing and sharing behaviors.

In this study, we collected information about users’ EKR usage behaviors. Knowledge sourcing behaviors included information about where they sourced their knowledge (e.g., the EKR, colleagues, or manuals). Knowledge sharing behaviors included information about how – and if – they shared their knowledge through the EKR.

2.2.1. Knowledge sourcing. Four constructs – knowledge sourcing from the EKR, no knowledge sourcing from the EKR, knowledge sourcing from colleagues, and knowledge sourcing from manuals – were used to assess knowledge sourcing.

The first construct, knowledge sourcing from the EKR, represents knowledge sourcing actions with the EKR taken by the user. In this particular EKR, this includes sourcing knowledge from problem tickets, change tickets, best practices documents, and querying the EKR for related servers and related tickets. Sourcing knowledge from an EKR can provide users with knowledge that is targeted to them, their work, and their environment while also enabling greater organizational control over knowledge resources [8]. In the context of this study, sysadmins are able to access technical knowledge written for their specialty in their IT environment, which may make their work easier or faster to complete. We explicitly included the second construct – no knowledge sourcing from EKR – because even though organizations would prefer their employees use an EKR once implemented, reports suggest that many knowledge workers are still not willing to use them [28-30]. In fact, users may choose to explicitly source no knowledge from the EKR or to source knowledge from external sources. Sysadmins in particular identify with their occupational communities more than they do with their employer, which may lead them to seek knowledge from outside of their organization [31].

A prior study identified colleagues and official company or vendor documentation (i.e., manuals) as competitors of EKR for knowledge sourcing [8]. With the pervasiveness of instant messaging, email, and online forums and messageboards, colleagues are a convenient source of knowledge for many sysadmins, with co-location being no longer required. Furthermore, many vendors now publish documentation online, where it can be searched and accessed on the Internet. The availability and ease of access to these other knowledge sources will likely affect an employee’s use of an EKR.

2.2.2. Knowledge sharing. Two constructs, knowledge sharing through embedded processes and knowledge sharing as a separate explicit activity, were used to assess knowledge sharing. In the EKR studied, sysadmins are provided opportunities to contribute knowledge as part of their existing workflow. When a problem or change ticket is completed, they must complete a brief summary of the steps taken to close the ticket. These unstructured summaries are often shorthand, acronyms, and terse notes. The EKR has access to this data, which in turn can be sourced by other EKR users and presented in search results. This requirement to provide a summary of work completed was in place before the EKR was implemented and as such, is not perceived as a separate knowledge sharing activity by the users.
In contrast, formal knowledge sharing processes can also be used with the EKR. In this case, the user “steps away” from his or her technical work to draft and compose a document, which is then submitted to the EKR. These documents can describe a process or provide specifications and are often more formal, with a clear structure, complete sentences, and often containing references or links. While knowledge sharing may be encouraged by a user’s management and colleagues, it is a discrete work activity unrelated to many performance metrics, which often reflect the number of tickets worked on or closed in a given time period. In this case, knowledge sharing through documents is perceived as a distinctly separate work activity and is not required of the users.

A simplistic view of EKR use might consider an individual’s level of usage of EKR as high, moderate or low. However, the assessments above show that this categorization of use may be overly simplistic. A richer, feature-based approach [32] implies that we view the extents to which the individuals use various aspects of the EKR and their other existing means for knowledge use. Using such an approach, we will be able to empirically classify the users into groups based on the use of these different EKR and non-EKR knowledge behaviors. Stated formally, our first research question is:

RQ1: When a set of individuals who source and share knowledge through a variety of means are provided an EKR, what are the different ways in which they adopt?

3. Factors Affecting the Type of EKR User

The type of EKR user is believed to depend on their perceptions of context [e.g., 7, 13], their perceptions of the system [e.g., 7, 12, 23], and individual characteristics [e.g., 8, 19, 20]. Variables characterizing these dimensions in this study are discussed in the following subsections. Figure 1 summarizes the overall research model, showing the EKR usage attributes used for classification and the variables affecting EKR user types.

3.1. Perceptions of Context

Four constructs - coworker support, supervisor support, intrinsic rewards, and extrinsic rewards – were used to assess the perceptions of EKR context. In this context, the first two variables are the knowledge worker’s perceptions of the encouragement and support they receive from coworkers and supervisors in their knowledge activities, which include sharing and using knowledge, solutions to work-related problems, and communication [13, 22]. They have been found to have a positive effect on knowledge use and knowledge sharing [13].

Intrinsic rewards are feelings of satisfaction that come from performing a task and may include the joy of sharing knowledge [33]. Extrinsic rewards are rewards that are not innately connected to the task performed, and may include things like monetary incentives or acknowledgement at department meetings [34, 35]. These variables were included in the study because they have both been found to have a positive impact on perceptions of the knowledge in an EKR and knowledge use [7, 13].

3.2. Perceptions of System

Two constructs, perceived system quality and perceived output quality, were used to assess user perceptions of the system. System quality captures users’ perceptions of the system and an EKR’s ability to search for knowledge [e.g., 7, 12, 23]. Output quality captures users’ perceptions of the accuracy, trustworthiness, and reputation of the knowledge an EKR provides [7]. These constructs are included in the study because they are believed to be predictive of IS use [e.g., 7, 12, 23].
3.3. Individual Characteristics

Five constructs – knowledge sharing self-efficacy, time pressure, experience as a sysadmin, experience in current position, and gender – were used to assess an EKR user. Knowledge sharing self-efficacy is the perception one has about his or her own ability to share their knowledge and what affect their knowledge will have on others [8]. The effect of sharing one’s knowledge can include helping solving problems in the workplace [36], improving work efficiency [37], or making a difference in an organization [38, 39]. Knowledge sharing self-efficacy (KSSE) will likely differ among users; those with high KSSE will likely share more knowledge because they believe they are positively impacting their colleagues and organization, while those with low KSSE may not share knowledge because they feel they have nothing to offer [8].

Time pressure was included in this study because it has been shown to have an influence on knowledge sourcing behavior [e.g., 8]. Specifically, Gray and Durcikova found that among technical support workers, time pressure had a negative impact on knowledge sourcing from an EKR, with no significant relationship found between time pressure and knowledge sourcing from colleagues or documents [8].

Demographic data, such as years of experience as a sysadmin, years in current position, and gender were collected. Experience is included in this study because it can reflect the extent to which a user feels the need to access knowledge in an EKR, with junior users often requiring more information to do their work [20]. Tenure, or the number of years a user has been in his or her current position, has been found to be negatively associated with knowledge sourcing from documents [8]. Finally, gender is included because some studies suggest that among technical professionals, females prefer to interact with colleagues [19].

The second research question pursued in this paper using the above variables is:

**RQ2:** How do individuals’ characteristics, and their perceptions of their context and the EKR influence the way in which they adopt the EKR?

4. Research Methods

4.1. Research Context

Sysadmins are becoming increasingly important as organizations continue to embrace technology. As networks and systems become more complex, the human cost of system administration now greatly exceeds the cost of hardware and software components [40]. With responsibilities that can include the installation, configuration, monitoring, troubleshooting, and maintenance of increasingly complex and mission-critical systems, many of which are at the “bleeding edge” of technology, their work is different from that of everyday computer users, and even from other technology professionals [25].

Hardware and software additions to the network, firmware updates, and usage fluctuations result in a network that is constantly in flux and incredibly complex [41]. This continually evolving environment results in new situations and contexts every day, making even “routine” tasks a novel challenge. This work is most often learned on the job and through self-learning, and mastering the field of system administration may take several years [42].

Much of the difficulty in supporting this complex infrastructure lies in simply locating the source of an error [41] and then finding up-to-date information about the error and its set of possible causes and solutions. Because of this challenge, many technology companies are implementing EKRs to assist and support the work of their sysadmins.

The system administrators targeted for this study are technical support operators, whose work is contracted to customers and dictated by problem tickets and change tickets. Problem tickets are entered in the system by supported customers in response to a system error, such as a server crashing. Change requests are entered in the system by either customers or management to improve the system; these can include a firmware upgrade or a new server installation. One aspect of the sysadmins’ annual performance assessment is based on the amount of tickets they resolve and their average response time on tickets.

When work tickets are completed, the sysadmin is required to write a brief summary of the solution and steps taken to close the ticket. Although the ticketing system requires some kind of input when a ticket is closed, the level of detail provided is up to the sysadmin. This represents knowledge sharing through an embedded process. In contrast, sysadmins may also submit knowledge documents to the EKR. This knowledge sharing process is separate from the work that they do and is similar to what is traditionally done when a user contributes to a knowledge base. This represents knowledge sharing through a separate process.
4.2. Data Collection

This investigation utilizes a field study with surveys as the primary data collection method. Analysis was conducted at the individual level, and target respondents were system administrators employed at a Fortune 500 Company. In an effort to assist their sysadmins, the organization has developed an EKR. This voluntary use system provides a list of tickets to be worked on, current and historical system state information, and an interface to search for solutions to similar tickets. The sysadmins were not required to use the system to perform their work. In fact, much of the ticket information housed in the EKR was available to the sysadmins in other, disparate systems. Use of the EKR was restricted to authorized sysadmins and their managers.

A web-based survey was used for data collection because of the ease of distribution and familiarity with web technology. An invitation to participate in the survey was distributed to the 1,012 sysadmins authorized to access the EKR, although not all users who received the email were necessarily users of the system because use of the system was voluntary. Of the population of 1,012 potential users, 108 usable questionnaires were completed, a response rate of 11%. This response rate might be due to two factors: first, not all users who received the invitation to participate chose to use the EKR, which would have excluded those users from reporting on their system use. Second, prior studies have shown that the work of system administration is complex, involves juggling many tasks at once [43], and takes more than the standard 40-hour workweek to complete [44]. This may discourage users from taking time to complete the survey. Informal conversations and emails with managers and sysadmins indicated that managers guarded their employees’ time by not encouraging study participation.

Of the 108 users who completed the survey, 90.1% were male and 9.9% were female. Participants reported working in their current position for an average of 4.5 years (ranging from 0 to 25 years) and in their profession for an average of 6.5 years (ranging from 0.25 to 30 years). Respondents’ various technical responsibilities including Unix, Windows, database, and application administration in job roles that included help desk, level 2-3 support, and quality analyst. Participant demographics were similar to those found in the SAGE Salary Survey for 2007, considered the most comprehensive survey of sysadmin personal and work demographics. The diversity of our participants on important demographics (e.g., organizational tenure, experience, and gender), their broad range of administration responsibilities, and their similarities to the overall sysadmin population suggest the study’s external validity is not limited to the current data collection context. Additionally, comparing early and late respondents in terms of all contextual variables did not produce significant differences (p-value < 0.05 for t-test continuous variables and $\chi^2$ test for gender) in any cases.

4.3. Measurement of Research Variables

A cross-sectional survey instrument was developed following the methodology outlined by Dillman [24]. The constructs, their items and reliabilities are described in this section.

4.3.1. EKR usage variables used for classification.

The six EKR usage attributes, which were used for classifying the individual user, were measured using multiple-item scales based on knowledge management literature and included knowledge sourcing from the EKR, avoiding knowledge sharing from the EKR, knowledge sourcing from colleagues, knowledge sourcing from manuals, knowledge sharing through tickets (embedded in their workflow) and knowledge sharing through documents (contributing documentation as a separate activity). Items measuring knowledge sourcing from all sources were adapted from Gray and Durcikova [45]. Items measuring both knowledge sharing activities were adapted from Durcikova and Brown [46].

4.3.2. Variables affecting the type of EKR user.

The perceived context attributes were measured using multiple-item scales based on IS success and knowledge management literature. Items measuring supervisor and coworker support were taken from Kulkarni et al. [7]. Items measuring intrinsic and extrinsic rewards were taken from Kankanhalli et al. [18].

The perceived system attributes were measured using multiple-item scales based on IS success and knowledge management success literature. Items measuring perceived system quality were adapted from Bock et al. and Rai et al. [7, 10]. Items measuring perceived output quality were adapted from Bock et al. [8].

Attributes about individual characteristics were measured using multiple-item scales based on IS success and knowledge management literature. Items measuring knowledge sharing self efficacy were taken from Kankanhalli et al. [8]. Items measuring time pressure were taken from Gray and Durcikova [7].
Before implementing the survey, the instrument was reviewed by fellow researchers and practitioners at the Fortune 500 Company familiar with EKR use, satisfaction, and the particular EKR being studied. Each question was measured on a 5-point, Likert-type scale, anchored on 1 = strongly disagree to 5 = strongly agree. The reliabilities (as measured by standardized alphas) of all measures exceeded the 0.70 cutoff [47].

4.4. Data Analysis

4.4.1. Generation of the empirical taxonomy. Cluster analysis is a technique commonly used in the development of an empirical taxonomy [48]. Cluster analysis was conducted using five methods: Ward’s method [49], between-groups linkage method, within-groups linkage method, centroid clustering, and median clustering. The results for cluster solutions with three to five clusters were compared in terms of: (a) change in fusion coefficients relative to the cluster solutions with one fewer and one greater number of clusters; (b) number of individuals in each cluster (solutions including clusters with five or fewer individuals were excluded); and (c) results of univariate F-tests (solutions wherein the clusters did not differ in terms of any of the classifying variable were excluded) [50]. Based on these analyses, we found the solution with three clusters using Ward’s method performed the best. Finally, the three-cluster solution was more meaningful than the four- or five-cluster solutions, and was therefore selected for the empirical taxonomy. This cluster solution included one large cluster (cluster 1, which we label as “Enthusiastic Knowledge Seekers,” including 76 individuals) and two smaller clusters (cluster 2, which we label as “Thoughtful Knowledge Providers,” including 20 individuals, and cluster 3, which we label as “Reluctant Non-adopters,” including 12 individuals). These three clusters were significantly \( p \leq 0.01 \) different from each other in terms of each of the six attributes of EKR usage, as discussed later.

To interpret the clusters, post hoc comparisons of the means of the EKR use attributes were performed. Because more than two groups are involved, Duncan’s Multiple Range Test was used to compare the means of the context, system, and individual variables across the clusters [51]. In this test, pairwise comparisons are done across clusters and significant differences (at a predefined level, \( p \leq 0.10 \) in this study) are identified. Furthermore, the test sorts the clusters into groups wherein the means of the clusters within a group are not significantly different from each other, but differ at a statistically significant level from clusters in other groups. For example, for knowledge sourcing from the EKR, the test sorted the clusters into three groups, as seen by the designation of H, M, and L in Table 1. Each cluster is in a different group because their means were significantly different from each other, with Cluster 1 having the highest mean of sourcing from colleagues and Cluster 3 having the lowest. For knowledge sharing from colleagues, the test sorted the clusters into two groups. Cluster 2 is in one group (H) as the mean of sourcing from colleagues for this cluster significantly exceeds the means for the other two clusters. Clusters 1 and 3 are in the same group (L) because there is no significant difference between these clusters in the mean of sourcing from colleagues.

4.4.2. Conditions surrounding the various EKR adoption profiles. To identify the factors leading to the three profiles of EKR users, multiple discriminant analysis was conducted. The EKR use and contextual factors were used as discriminating variables. In general, \( n-1 \) discriminant functions are needed to discriminate most effectively among \( n \) clusters [52]. Therefore, two discriminant functions

| Table 1. A Comparison of the Types of EKR Users across the EKR Use variables. |
|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | \( t \) values\(^a\) | Enthusiastic Knowledge Seekers | Thoughtful Knowledge Providers | Reluctant Non-Adopters |
| Knowledge sourcing from the EKR | 49.29 *** | 5.1/H\(^b\) | 4.54/M | 1.08/L |
| No knowledge sourcing from the EKR | 4.15 *** | 3.54/H | 3.83/M | 1/L |
| Knowledge sourcing from colleagues | 6.09 *** | 4.18/L | 4.8/H | 4.1/L |
| Knowledge sourcing from manuals | 44.61 *** | 3.56/L | 4.72/H | 4.63/H |
| Knowledge sharing via embedded workflow | 12.13 *** | 3.55/L | 4.38/H | 3.98/L |
| Knowledge sharing via separate process | 16.02 *** | 2.57/H | 1.94/L | 1.92/L |

\(^a\) The significance levels of \( t \)-values as indicated as follows: *** 0.001 level; ** 0.01 level; * 0.05 level.
\(^b\) H, M and L indicate that the mean for the cluster was high, medium or low, respectively, based on Duncan’s Multiple Range Test.
were generated to discriminate among the three clusters in this study. The nature of each rotated discriminant function was assessed using its significant correlations with the discriminating variables. The differences among the clusters were then interpreted by examining the values of each discriminant function at the three cluster centroids. (See Sabherwal & King [52, p. 212-214] for an explanation of the statistical terms used here.)

5. Discussion: Taxonomy of EKR Adoption

The results of comparing the EKR use and contextual variables across the clusters are used to interpret the three clusters of EKR adoption profiles, label as enthusiastic knowledge seeker, thoughtful knowledge provider, and reluctant non-adopter. The names of the clusters are based on the relative mean of each attribute for the cluster. These results, which address Research Question 1, are shown in Table 1.

Depending on the context, system, and individual conditions, different EKR adoption patterns were found. An estimate of the effectiveness of the discriminant functions in predicting EKR adoption is provided by the hit ratio, i.e., the percentage of cases correctly predicted by the discriminant functions. The hit ratio was 76.2%, which is significantly better than the 53.3% accuracy expected by chance alone.

For each rotated discriminant function, its correlations with the discriminating variables at its values at the cluster centroids are shown in Table 2. These results address Research Question 2. Function 1 is correlated positively with coworker support and experience and correlated negatively with system quality and output quality. It discriminates between enthusiastic knowledge seekers and reluctant non-adopters. Function 2, which discriminates between enthusiastic knowledge seekers and thoughtful knowledge providers, is correlated positively with intrinsic rewards and negatively with extrinsic rewards. Together, these significant correlations of each function with the discriminating variables (indicating its nature) and the values of the rotated discriminant functions at cluster centroids (showing the clusters between which is most clearly discriminates) help explain the conditions under which each type of EKR adoption is used.

The three EKR adoption profiles that make up the empirical taxonomy are presented below and are based on the results presented in Tables 1 and 2. Summaries of the EKR adoption profiles are provided in Table 3.

5.1. Cluster 1: Enthusiastic Knowledge Seekers

This adoption profile was encountered in 76 cases and represents the greatest reliance among users on the EKR for knowledge sourcing, with low reliance on colleagues or manuals. These users perceived the system and its output to be of high quality. Knowledge is shared through documents, which are carefully organized and composed over time, but little insightful knowledge is shared through embedded processes that must be drafted and submitted quickly.

Enthusiastic knowledge seekers are low on knowledge sharing self-efficacy and have less experience as a sysadmin than the other two EKR adoption profiles, which may explain their reliance on the EKR for knowledge sourcing. One concern with this group is that they may be knowledge “free riders,” using the knowledge contributions of their coworkers while providing very few of their own [18].

One method of encouraging knowledge sharing via EKRs is through the promise of explicit rewards such as promotions or bonuses [18, 29], which do motivate this group of users. The reader should remember that in this study, extrinsic rewards were used to motivate knowledge sharing through discrete submissions, but not through embedded processes. Encouraging these users to submit to the EKR because of loyalty or duty or the joy of sharing knowledge will not be effective, as they are not motivated by intrinsic rewards. Even with reward programs in place, it is important to note that because on their low levels of experience and expertise in knowledge sharing, the knowledge they do submit may be of low quality.

5.2. Cluster 2: Thoughtful Knowledge Providers

Encountered in 20 cases, this adoption style can be characterized as one where users “mix and match” their knowledge sourcing behaviors, selecting the appropriate source – be it the EKR, manuals, or colleagues – based on the task at hand. These users provide significant insight through quality knowledge submissions using embedded processes, but submit less knowledge through formal documents than do the first cluster. Similar to enthusiastic knowledge seekers, these users felt the EKR and its output were of high quality.

Thoughtful knowledge providers consider themselves experts in knowledge sharing, have a moderate level of experience as a sysadmin, and are
motivated by intrinsic rewards, which contribute to their knowledge sharing through embedded processes. They are under a moderate amount of time pressure and are not motivated by extrinsic rewards, which may explain their low level of knowledge sharing through separate processes. Again, intrinsic rewards are likely associated with the sharing of knowledge through embedded processes – as is seen in this group – while extrinsic rewards were tied to knowledge sharing through separate processes.

Table 2. Factors Affecting EKR Adoption Types

<table>
<thead>
<tr>
<th>Discriminating variables</th>
<th>FUNC 1</th>
<th>FUNC 2</th>
</tr>
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<tbody>
<tr>
<td>Coworker support</td>
<td>0.394</td>
<td>0.604</td>
</tr>
<tr>
<td>Supervisor support</td>
<td>-0.121</td>
<td>0.321</td>
</tr>
<tr>
<td>Intrinsic rewards</td>
<td>0.047</td>
<td>0.454</td>
</tr>
<tr>
<td>Extrinsic rewards</td>
<td>0.010</td>
<td>0.536</td>
</tr>
<tr>
<td>System quality</td>
<td>-0.613</td>
<td>0.128</td>
</tr>
<tr>
<td>Output quality</td>
<td>-0.523</td>
<td>0.082</td>
</tr>
<tr>
<td>Knowledge sharing self-efficacy</td>
<td>0.347</td>
<td>0.332</td>
</tr>
<tr>
<td>Time pressure</td>
<td>0.317</td>
<td>0.087</td>
</tr>
<tr>
<td>Years as a sysadmin</td>
<td>0.475</td>
<td>0.011</td>
</tr>
<tr>
<td>Years in current position</td>
<td>0.034</td>
<td>0.157</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.758</td>
<td>-0.014</td>
</tr>
</tbody>
</table>

Values of the rotated discriminant functions at cluster centroids.

If organizations want more knowledge sharing through discrete processes from this users group, messages tying their intrinsic motivators to formal knowledge submission should be used. Alternatively, if document submission from this group is more valued than document submission from the first cluster, studies suggest that no extrinsic reward system should be used at all, as extrinsic rewards may “cheapen” the knowledge contributed [34, 35]. That is, sysadmins in this group may feel no sense of duty or joy in sharing their expertise if it can simply be “bought” for a low price.

5.3. Cluster 3: Reluctant Non-Adopters

This adoption profile has a high level of knowledge sourcing from manuals but a low level of knowledge sourcing from other sources. Low levels of knowledge sharing through either embedded or discrete processes were reported. It was encountered in 12 cases.

Similar to cluster two, reluctant non-adopters are also experts in sharing knowledge, but they lack the intrinsic motivation to do so. When compared to the other two clusters, this group has the greatest work experience and is under the most time pressure. They are motivated by extrinsic rewards, but do not contribute knowledge to the EKR because they perceive the EKR and its output to be of low quality. Because the EKR in this study was a purely volitional system, they are likely not willing to take the time to adopt the new system when existing processes allow them to complete their work.

Table 3. Summary of the EKR Adoption Profiles

Users adopted as Enthusiastic Knowledge Seekers 70% of the time
- RQ1: Rely on EKR with little use of other knowledge sources, and contribute more documents but less insight than #2.
- RQ2: Motivated by extrinsic rewards rather than intrinsic motivation. Don’t consider themselves experts in knowledge sharing.

Users adopted as Thoughtful Knowledge Providers 19% of the time
- RQ1: Use EKR along with external sources. Seem to “mix and match.” Make moderate use of knowledge from EKR, but actively share knowledge through embedded processes.
- RQ2: Motivated by extrinsic rewards rather than intrinsic motivation. Don’t consider themselves experts in knowledge sharing.

Users adopted as Reluctant Non-Adopters 11% of the time
- RQ1: Rely on explicit knowledge sources beyond EKR. Make little use of EKR for either sharing or sourcing knowledge, and also don’t source knowledge socially.
- RQ2: Also consider themselves experts, but lack intrinsic motivation to share knowledge. Consider co-workers support to be greater. They view the EKR to be of low quality in terms of both system and output quality, and seem to be under the greatest time pressure.

6. Conclusion

This paper has argued that EKR use is more than simply use or non-use; that it is comprised of knowledge sourcing and knowledge sharing, both of which can be assessed at differing levels. Six attributes, of which four represent knowledge sourcing activities and two represent different methods of knowledge sharing, were used to generate an empirical taxonomy of EKR adoption types. We were able to obtain three distinct clusters, which capture the variations and interrelations among the EKR use attributes we proposed, based on system, context, and individual characteristics. Our taxonomy is summarized in Table 3.
This study is subject to several limitations. First, this study concentrated on system administrators, technical experts who work in complex, high-risk environments. While this reduced variations among our subjects, it may limit generalizability to other contexts. Second, the generalizability may also be limited by our relatively small sample size and low response rate, which may have been higher with management support. Third, the taxonomy is based on knowledge sourcing and sharing attributes that may not be present in all EKR implementations. Although care was taken to select representative attributes, others may exist in different contexts.

Despite these limitations, this research offers implications for research and industry. First, it provides a more detailed view of the ways in which users adopt EKRs, moving beyond the simple use or non-use concept. Second, the taxonomy should help researchers and practitioners better understand ways in which EKR users can be motivated to both contribute and reuse knowledge. Third, the study presents us with some insights into the conditions under which different adoption profiles are found. Further research is needed to investigate usage types, knowledge contribution among different users, and the differences among the three EKR adoption profiles.

7. References


