Who Profits from Knowledge Management?:
A Case of Experience versus Expertise

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Abstract
Although many organizations are implementing knowledge management systems (KMS), there is little empirical evidence about whether KMS use by varying levels of experience and expertise can improve individual and organization performance. In this study, we examined the impact of using a codification-based KMS on the sales performance of 1,340 sales representatives in a pharmaceutical firm. We found that KMS use was directly related to performance – the more knowledge assets that sales representatives read, the more likely they were to exceed their quota. Experience and expertise moderated this relationship. Inexperienced sales representatives who exceeded their sales quota in the previous year derived significantly greater benefit from KMS use than did other sales representatives. Experienced sales representatives who failed to reach their sales quota in the previous year derived significantly less benefit from KMS use than did other sales representatives.

1. Introduction
Many firms implement Knowledge Management Systems to efficiently capture, organize and disseminate their most critical organizational resource – knowledge. A Knowledge Management Systems (KMS) is “a class of information systems applied to managing organizational knowledge” [1]. One common objective of KMS is to enable employees to enhance learning, improve performance and produce long-term sustainable competitive advantage [35]. Many KMS carefully organize knowledge into reusable knowledge assets that are stored in a formal KMS and shared throughout the firm [21].

However, there is little concrete evidence of whether such KMS can indeed improve performance. The formal codified knowledge in such systems tends to be explicit knowledge, knowledge more likely to be of value to inexperienced knowledge workers [21]; it is unclear whether workers with long established job experience benefit from the reuse of codified knowledge assets stored in a KMS differently than novices who recently began their career. Likewise, explicit codified knowledge may have less value to high expertise, high performing knowledge workers because they have already internalized the explicit best practices contained in the KMS; such best practices may have greater value for lower expertise, lower performing workers who do not yet understand the best practices of their jobs.

The objective of the current study is therefore to empirically examine whether there is a relationship between KMS use, experience, expertise and performance. The question of this study is: “Do employees with different job experience and expertise benefit differently from the use of a KMS?” In an attempt to answer this question, we worked with a large multinational pharmaceutical firm in the United States (herein called “Farmaco”) to examine the differential effects of the use of their Field Sales KMS by employees with varying job experience and expertise on sales performance. In the next section, we review prior literature. We then present and describe our research model and develop hypotheses. Next, we describe our field study methods and introduce our selected site, knowledge workers, and the KMS we investigated. We then describe in detail the data used in our analysis. Following discussion of our statistical analysis and results, we present and conclude this paper with implications of our study for both research and practice.

2. Prior Research
There are many different approaches to managing knowledge and building KMS to support the KM process [18]. One of the most fundamental dichotomies is the KM strategy adopted by the firm, whether codification or personalization [20,21]. With a codification strategy, the firm’s knowledge is carefully organized into reusable knowledge assets that
are stored in a formal KMS and knowledge is shared through the reuse of these assets. With a personalization strategy, knowledge is shared through person-to-person contacts; while a KMS might help knowledge seekers find experts, the KMS itself plays a much smaller role in the personalization strategy than it does in the codification strategy.

A codification strategy is best suited to organizations that reuse the same knowledge repeatedly. Such organizations have a high demand for certain types of knowledge and therefore require a scaleable KM strategy. They are willing to invest significant resources in the creation and packaging of knowledge assets, in return for a more efficient knowledge transfer [16,25,41]. Hence, the role of IT and a KMS in facilitating the transfer of knowledge is central to the success of a codification KM strategy [1,29], while the role of IT and KMS may be less central to the success of a personalization strategy [5,6,21,27]. Therefore, we chose to focus on KMS that follow a codification strategy.

A codification strategy is essentially a “people-to-documents” approach, in which the firm expects to derive performance benefits through reusing knowledge assets [37]. KMS and IT in general can only add value to an organization when they are used [13,14,15,32]. That is, KMS per se cannot add value; they only provide value when their use changes behavior. Usage is the key to link between KMS investment and performance [16,17]. Use is necessary but not sufficient to produce value [14,17,32]. Value to individuals arises when use of the knowledge in the KMS enables them to perform their work in ways that are more efficient, more effective, and/or more satisfying. This improved individual performance then may lead to improved organizational performance [13].

Because the goal is to reuse the knowledge as much as possible in a codification-based approach [21], the organization is more likely to invest in acquiring and validating knowledge with high applicability to many users. The 80-20 rule usually applies, in that the knowledge selected for the KMS may be the most common 20% of knowledge likely to be of value to 80% of the users.

While some authors have argued that codification-based KMS cannot improve performance because it provides routine knowledge often well-known to the target users [e.g., 27], others argue that the just in time delivery of context specific knowledge can significantly improve performance [e.g., 12]. In order to improve performance, the knowledge provided to a knowledge worker must be relevant to the task at hand and must be not previously considered [39]. If this is true and if the knowledge asset can be successfully understood and reused by the knowledge worker, only then is performance likely to improve.

The goal then, of most codification-based KMS, is to carefully capture organizational knowledge, validate it, and disseminate it so it is meaningful within the target reuse context. If the KMS is successful in doing this, and if the knowledge workers choose to use the system, adapt the knowledge it contains to their tasks, and successfully reuse the knowledge, then performance will increase. However, if any link in this chain fails, then the organization is likely to see few performance benefits. We hypothesized:

\[ H1: \text{KMS use will improve individual knowledge worker performance.} \]

2.1. Experience

One major factor that affects performance in general is the amount of experience one has [26,31]. Prior research has identified three major dimensions to experience – organizational tenure (length of time with the organization), job tenure (length of time in the current job in the current organization), and job experience (length of time within the profession) [28]. McEnroe [28] examined all three dimensions of experience as potential predictors of performance, and found that job experience alone predicted performance. Other studies have also found job experience – length of time with the profession – to be the dominant experience-based predictor of job performance [e.g., 26,31]. In general, job experience has shown to reflect organizational and domain knowledge rather than task-specific knowledge [11]. Further, prior studies often use job experience as proxy for organizational and domain knowledge [e.g., 19].

As Markus [25] points out, knowledge seekers with different experience will have different needs and expectations for the KMS. Some KMS users will be novices with little job experience seeking answers to immediate problems and seeking to improve their expertise in their job. These users will have the greatest knowledge needs because they lack the knowledge of their more experienced counterparts [25]. They are likely to be the largest users of the KMS and the most likely to benefit from the 80-20 rule of providing routine knowledge.

Such users likely have little organizational, contextual, and task-specific knowledge and may not be able to articulate the question, internalize the knowledge, or successfully adapt it to their individual contexts, which means that the burden of making the knowledge intellectually accessible and easy to apply falls on those creating and packaging the knowledge [25]. Under such circumstances, novice knowledge
workers may rely on the KMS to improve performance by seeking organizational, domain, and task-specific knowledge that will assist them with their work. Thus, their short-term interest may focus primarily on their profession [4].

In contrast, experienced knowledge worker with extensive experience will have a deep base of knowledge. They will have seen and experienced most of the different events that can occur in the job. They are most likely to seek knowledge for challenging or unusual situations that they have not previously encountered [25]. In other words, it is less likely that the very task-specific knowledge they need to conduct their sales activity will be available in the KMS (at least compared to the routine knowledge sought by inexperienced workers). Since they will be less likely to find the knowledge they need in the KMS, they may find themselves more likely to contribute knowledge to the KMS for others to benefit, rather than using the KMS to acquire knowledge. In the rare occasion when the highly experienced knowledge workers find the knowledge they need, they will find it easier to apply and use the knowledge because of their greater organizational, contextual, and task-specific tacit and explicit knowledge [25,40]. Therefore, we hypothesized:

H2a: Less experienced, novice knowledge workers will gain the greatest performance benefits from KMS use.

H2b: Highly experienced knowledge workers will gain the least performance benefits from KMS use.

2.2. Expertise

Another major factor that affects performance is the expertise held by the knowledge worker. Several studies have defined expertise as a combination of knowledge and ability, with the capability to achieve strong results with this knowledge [e.g., 2,3]. Other studies characterize expertise as an ability to leverage task-specific knowledge and achieve superior performance in a given context [e.g., 24]. However, most notable expertise framework defines expert as an individual who displays special skill or task-specific knowledge in a specific domain [33,34]. Collectively, expertise can be defined as an individual’s ability to use task-specific knowledge to achieve superior performance.

Similar to the novice knowledge workers above, those who have less expertise may rely on the KMS to improve performance by seeking knowledge that will assist them with their work. Because they have been less successful in the past, they may be motivated to seek ways to improve their knowledge and skills, and the KMS may provide a simple, face-saving way to seek knowledge. In this case, they are seeking to substitute the knowledge and best practices in the KMS for their own knowledge [10]. KMS use is likely to bring noticeable performance benefits because low expertise individuals have the greatest opportunity for performance improvement – they have the greatest potential to gain from the knowledge in the KMS.

In contrast, high expertise “expert” knowledge workers already possess significant task-specific knowledge and therefore are more likely to seek unique organizational and domain knowledge as well as other “specialized knowledge” that will augment their existing skill set [25]. Because the KMS using codification strategies are designed to provide highly reusable knowledge, this specialized knowledge is less likely to be in the KMS because the organization is more interested in making available knowledge with high applicability to many users. They are less likely to benefit from the general knowledge and best practices in the KMS because they are more likely to already know this knowledge (or perhaps to have even contributed it to the KMS in the first place). Likewise, because they are already high performers, there is less opportunity to improve their performance relative to others. We hypothesized:

H3a: Knowledge workers with low expertise will gain the greatest performance benefits from KMS use.

H3b: Knowledge workers with high expertise will gain the least performance benefits from KMS use.

2.3. Summary

In summary, we argued that in general, the more knowledge workers use a KMS, the more knowledge they would acquire and more likely they are to improve their performance. However, some knowledge workers are likely to benefit to a greater or lesser extent from the knowledge in the KMS than others. Those with low experience are likely to benefit more from use that those with high experience, and those will low expertise are likely to benefit more from use that those with high expertise. In short, we argue that current performance, the dependent variable, is affected by KMS system use, and that the job experience and expertise of knowledge workers moderates this relationship between KMS system use and performance. Figure 1 illustrates our research model.
Experience and expertise operate independently and thus are additive: low experience, low expertise knowledge workers should benefit the most from KMS use, while high experience, high expertise knowledge workers should benefit the least from KMS use. Knowledge workers with low experience and high expertise and those with high experience and low expertise should benefit the same as knowledge workers with average experience and expertise. Table 1 summarizes these hypothesized interaction effects.

Table 1. Hypothesized interaction effects relative to those with average experience and average expertise

<table>
<thead>
<tr>
<th>Expertise</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Greater than average</td>
</tr>
<tr>
<td>High</td>
<td>No different than average</td>
</tr>
</tbody>
</table>

3. Methodology

We conducted a field study at a large multinational pharmaceutical firm, which we call Farmaco. Our focus is on the Field Sales KMS used by Farmaco to support its U.S. field sales representatives. We conducted over ten semi-structured interviews with the KM team that developed and supported the Field Sales KMS, “shadowed” two KM Associates for one day each, and held numerous meetings over a course of one year. Our primary focus, however, is quantitative; we were given access to internal log data on KMS usage, time in position data on each sales representative, and the sales performance of each sales representative. Because Farmaco operates on quarterly basis, our analyses focused on quarterly sales and usage data.

The next section provides brief background information on Farmaco. This is followed by a description of knowledge workers and a description of the Field Sales KMS. We then discuss the data we used and the analysis technique.

3.1. The firm

A leader in the pharmaceutical industry, Farmaco develops and markets pharmaceutical products throughout the world through application of latest research from their own worldwide laboratories. Farmaco also collaborates with other scientific organizations to develop and market their products on a global basis. Part of Farmaco’s aim is to respond to the world’s medical needs for the purpose of saving and improving lives while also trying to reduce the health care costs.

Farmaco is organized by both functional business units and geographic business units. Research and manufacturing are organized in a separate business units, but sales is organized by geographic region. The largest individual sales business unit is the U.S. affiliate, which is responsible for all sales within the United States. The U.S. affiliate has marketing and other support functions, but its largest component is the dozen or so principal sales divisions (The specific number of divisions is not disclosed for the reason that this may reveal Farmaco’s identity.), each focusing on a different set of disease states for which the firm offers drugs, or types of physicians (e.g., primary care physicians, specialist physicians, HMO administrators).

Because Farmaco focuses on prescription drugs, almost all of its revenues come from a very small set of products. The success in managing this select set of brands, each of which has only a limited life before generics arrive, is extremely important to the firm’s success. Farmaco markets their products primarily through the use of their knowledge workers – sales representatives.

3.2. The knowledge workers

The pharmaceutical industry is a knowledge intensive industry. Medical research is inherently knowledge work and relationship between the sales representatives and the doctors is intensely knowledge-based. Each sales representative markets their product by interacting with physicians and informing them about existing and newly-released products. The role of the sales representatives is constrained by government regulation so there are many rules that reps must follow when providing information.

Each sales representative is assigned to one and only one division, and within that division, is responsible for the assigned doctors within his or her
sales territory only. The representatives within a sales division are not competing for the same physicians. Instead, they work to increase the knowledge of disease states and Farmaco’s products during their interactions with the physicians in their territory. A sales representative’s ability to meet or exceed the pre-established quarterly quota for sales is tied closely to his or her compensation.

Sales quotas are set annually based on the expected sales from the representative’s sales territory independent of the performance of the individual representative (The way in which the quota is set is proprietary. Quotas are set on an annual basis and have specific amounts for each quarter. Quota can be adjusted mid-year based on market fluctuations). Because career progression is directly related to an individual sales representative’s performance, there is a confluence of interest between the firm and its representatives. Because sales representatives do not directly compete with each other within a sales division there is no inherent conflict of interest in sharing knowledge.

3.3. The knowledge management system

Farmaco’s Field Sales KMS is a Lotus Notes-based system that allows the highly mobile sales representatives to work on-line or off-line through a replicating process. The ability to work off-line is critical since most work occurs in the field, and they can use KMS in their cars or doctors’ offices (The KMS can be used while waiting to be seen by a doctor.). Knowledge is posted in the system for sales representatives to search (a “pull” system), but several times per month the brand team or the sales operations team will push critical knowledge to sales representatives.

Each sales representative is assigned to a single division and each division has its own knowledge content although all sales divisions share the same KMS software. The general sales knowledge is common to all divisions and constitutes organizational and contextual knowledge whereas the knowledge about the drugs that are customized for each division so that sales representatives only see the knowledge they need constitutes task-specific knowledge. For example, users can only see knowledge about the drugs they sell. Although some knowledge may be common across divisions that sell the same drugs, many times the knowledge is different because it has been customized to better meet the needs of the doctors the sales representatives serve (e.g., the knowledge needed to interact with a primary care physician is different than that for a specialist).

Such customization requires care and attention. Each brand team and the sales operations group has one knowledge associate assigned (either full time or part time) to help it manage its knowledge in the system. Each division receives 1-2 new knowledge postings per day (excluding the unusual flurry around the launch of a new drug). The KMS delivers 60,000 to 75,000 knowledge assets per quarter to the sales representatives (i.e., a total of 60,000 to 75,000 knowledge documents are displayed each quarter).

3.4. Data

We used three independent sources of data in this research – time in position data for each sales representative, KMS usage data managed by Knowledge Management function, and sales performance data managed by a third-party outside contractor. Our analyses are constrained by the data provided to us by Farmaco. We have one dependent variable (current sales performance) and five independent variables (KMS use and the interaction amongst job experience, KMS use, and expertise).

Farmaco operates on a quarterly basis, and thus our data and analyses are also on a quarterly basis. We selected the third quarter of 2002 (i.e., July, August, and September 2002) as our period of study because the system roll-out began in February 2002 and was completed by May 2002.

3.4.1. Performance. Our dependent variable was sales performance for third quarter 2002, defined as an individual’s percent of sales quota achieved – that is, how an individual’s actual quarterly sales compared to the sales quota for their sales territory set for that quarter. A sales representative who exactly met his or her quota would receive a 100, while a representative under quota by one percent would receive a 99.

3.4.2. KMS Use. The first set of independent variables is KMS use. Computer-recorded measures of system use are generally preferred to subjective measures such as self-report measures [23,36], so we used the number of knowledge assets displayed on an individual sales representative’s screen in the current quarter (third quarter 2002). This excludes any navigation information and simply counts the number of documents in the Notes repository that each person opened. This suffers from the common problems associated with computer recorded metrics (e.g., undercounting of use for those documents printed, and referred many times on paper, rather than in the system) but such issues are generally believed to be outweighed by the greater accuracy that computer recording brings over the use of perceptions [23,36].
Likewise, the display of a knowledge document does not necessarily mean that the document is read and the knowledge it contains reused by the sales representative; however, documents that are displayed but not read or not used should have no effect on performance and thus serve to render insignificant any relationship between document display and performance. In short, while counting the number of knowledge documents displayed is an imperfect measure of knowledge use, it is a conservative and reliable measure.

### 3.4.3. Job Experience

Job experience is defined as the number of months an individual has been employed by Farmaco as a field sales representative since the vast majority are college graduates. Farmaco categorizes their field sales representatives into four distinct categories according to job experience – up to six months, up to 18 months, up to 36 months, and more than 36 months. We eliminated all sales representatives with less than six months job experience at the start of the third quarter 2002 because they are just beginning their sales careers. We also eliminated all sales representatives who transferred between divisions or left Farmaco during the first two quarters of 2002, giving a total of 1,340 sales representatives. These individuals were then categorized as 1) 18 months or less job experience at the end of the quarter (i.e., September 30, 2002); 2) more than 18 months and up to 36 months job experience at the end of the quarter; or 3) more than 36 months of job experience at the end of the quarter.

### 3.4.4. Expertise

We used an individual’s prior year’s percent of sales quota achieved as a proxy for expertise – that is, the percent of quota they sold in 2001. We categorized the field sales representatives into three distinct categories according to expertise – low expertise, average expertise, and high expertise. The categories were determined by taking one standard deviation away from the mean prior year’s percent of sales quota achieved (mean = 100.52, std. dev. = 7.72). These individuals were then categorized as 1) low expertise, or percent of quota sold in 2001 more than one standard deviation below the mean (or less than 92.8), 2) average expertise, or percent of quota sold in 2001 within one standard deviation of the mean (or between 92.8 – 108.24), or 3) high expertise, or percent of quota sold in 2001 more than one standard deviation above the mean (or greater than 108.24).

### 3.4.5. Job Experience x Expertise x KMS Use Interaction

For each level of experience, KMS use and expertise, a cross-product term was created. In other words, one cross-product variable was created by taking a product of experience under 18 months, current use, and low expertise. Three other cross-product variables were created in a similar fashion for inclusion in our final analysis (under 18 months, current use, and high expertise; over 36 months, current use, and low expertise; and over 36 months, current use, and high expertise).

### 3.4.6. Division

In addition to the hypothesized antecedent and moderating variables, a control variable – division – was entered into the regression as a set of four dummy variables.

### 3.5. Analysis

Regression analysis was used for hypothesis testing using SPSS v10.0.7 statistical software package. To test Hypothesis 1, multiple regression was used with the following model:

$$\text{Sales Performance} = \beta_0 + \beta_1(\text{Division 1}) + \beta_2(\text{Division 2}) + \beta_3(\text{Division 3}) + \beta_4(\text{Division 4}) + \beta_5(\text{KMS Use}) + \epsilon \quad (1)$$

To test Hypotheses 2 – 5, hierarchical regression was employed to test the moderating effects of employee’s job experience and expertise on sales performance. As illustrated in Table 2, the independent and control variables are entered in the first step of the regression followed by appropriate interaction terms in the second step [22,38]. To test for the interaction effects, the following terms were added to Equation (1):

$$+ \beta_6(\text{KMS Use}*\text{Low Job Experience}*\text{Low Expertise})$$
$$+ \beta_7(\text{KMS Use}*\text{Low Job Experience}*\text{High Expertise})$$
$$+ \beta_8(\text{KMS Use}*\text{High Job Experience}*\text{Low Expertise})$$
$$+ \beta_9(\text{KMS Use}*\text{High Job Experience}*\text{High Expertise})$$

### 4. Results

Table 2 shows the results of the regression analysis. The analysis examined the impact of KMS use and the four use-by-experience-by-expertise factors on current sales performance. As seen in Table 2, the KMS system use hypothesis (Hypothesis 1) is supported. The variables entered in Step 1 yielded an adjusted $R^2$ of 0.032 (F-statistic = 9.977, $p < 0.001$). Current KMS system use is significant, indicating that sales performance increased as KMS use increased ($\beta_5 = 0.055$, $t = 2.017$, $p < 0.044$).
Table 2. Results of regression analysis for sales performance

<table>
<thead>
<tr>
<th>Variables</th>
<th>Step 1: Enter Independent Variables</th>
<th>Step 2: Enter Interaction Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Std. β</td>
<td>std. error</td>
</tr>
<tr>
<td>Constant Term</td>
<td>9.09</td>
<td>9.07</td>
</tr>
<tr>
<td>Division 1</td>
<td>1.33**</td>
<td>9.11</td>
</tr>
<tr>
<td>Division 2</td>
<td>0.81**</td>
<td>9.13</td>
</tr>
<tr>
<td>Division 3</td>
<td>1.33**</td>
<td>9.09</td>
</tr>
<tr>
<td>Division 4</td>
<td>1.17**</td>
<td>9.08</td>
</tr>
<tr>
<td>Current Usage</td>
<td>0.06*</td>
<td>0.02</td>
</tr>
<tr>
<td>Interaction: Use, Low Experience, Low Expertise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction: Use, Low Experience, High Expertise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction: Use, High Experience, Low Expertise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction: Use, High Experience, High Expertise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.032</td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>9.98***</td>
<td></td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>5, 1334</td>
<td>9, 1330</td>
</tr>
<tr>
<td>Change in R²</td>
<td>0.008</td>
<td></td>
</tr>
<tr>
<td>F Change</td>
<td>2.717*</td>
<td></td>
</tr>
</tbody>
</table>

n = 1340, * p < .05, **p < .01, ***p < .001

Moreover, entering the interaction terms in Step 2 resulted in a change in R² of 0.008 (F-statistic = 2.717, p < 0.05). Two of the four interaction terms are significant (β⁶ = 0.063, t = 2.337, p < 0.020; β⁸ = -0.058, t = -2.087, p < 0.037). First, sales representatives with high levels of expertise and 18 months or less experience derived greater performance benefits from use than representatives with average experience and expertise. Second, sales representatives with low levels of expertise and more than 36 months of experience derived fewer performance benefits from use than representatives with average experience and expertise. Moreover, entering the interaction terms in Step 2 resulted in a change in R² of 0.008 (F-statistic = 2.717, p < 0.05). Two of the four interaction terms are significant (β⁶ = 0.063, t = 2.337, p < 0.020; β⁸ = -0.058, t = -2.087, p < 0.037). First, sales representatives with high levels of expertise and 18 months or less experience derived greater performance benefits from use than representatives with average experience and expertise. Second, sales representatives with low levels of expertise and more than 36 months of experience derived fewer performance benefits from use than representatives with average experience and expertise. The two remaining interaction terms are not significant (β₆ = -0.011, t = -0.402, p < 0.687; β₆ = 0.017, t = 0.628, p < 0.530) suggesting that sales representatives with low experience and low expertise, and those with high experience and high expertise benefit from KMS use just as much as representatives with average experience and expertise. Table 3 summarizes the observed interaction results.

Table 3. Actual interaction effects relative to those with average experience and average expertise

<table>
<thead>
<tr>
<th>Expertise</th>
<th>Low Experience</th>
<th>High Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>No significant difference</td>
<td>Significantly greater</td>
</tr>
<tr>
<td>High</td>
<td>Significantly lower</td>
<td>No significant difference</td>
</tr>
</tbody>
</table>

5. Discussion

The results of this study show that in general, use of a KMS improved performance: the more knowledge assets a sales representative read, the greater his or her sales as a percent of quota. However, not all sales representatives benefited equally from use. Inexperienced sales representatives with high expertise benefited more from KMS use than did those with average experience and expertise; the standardized betas suggest that they benefited twice as much from use as did an average sales representative (.063 + .063). Likewise, highly experienced sales representatives with low expertise benefited much less from use than an average sales representative; the standardized betas suggest that they did not derive any benefit from KMS use (.063 - .058).

Our analyses are constrained by the data provided to us by Farmaco. Hence, a limitation of this study is our use of one quarter data in one organization, which reduces generalizability.

5.1. Impact on sales performance

Our primary interest was whether there were differential benefits from using the KMS at different levels of experience and expertise. We had expected that less experienced sales representatives with low levels of expertise would benefit more from the use of the knowledge in the KMS than would more experienced sales representative experts; given the same level of use, less experienced sales representatives with low levels of expertise would benefit less.

However, this was not the case. Table 3 summarizes the results (cf. Table 1). While the majority of the sales representatives, on average, experienced the same performance benefit from each
knowledge asset they read, the less experienced sales representatives with high expertise benefited the most from the use of the KMS relative to those with low levels of expertise – twice that of the majority of sales representatives. One interpretation is that the inexperienced, high expertise sales representatives may have assimilated “enough” task-specific knowledge which allow them to reuse and apply effectively the organizational, contextual, and new task-specific knowledge that is made available through the KMS. This suggests that the ability to recognize the value of “new knowledge,” assimilate and effectively apply them in a short period of time is critical to performance improvement [9].

An alternative explanation for the differential benefit may lie in the ability for the inexperienced experts to effectively use the knowledge to boost current sales. Sales professionals tend to be very results oriented because their compensation is directly tied to their sales performance. It could be that the inexperienced, expert sales representatives are particularly good at seeking relevant knowledge when there is an immediate potential to apply the knowledge and reap an immediate performance benefit.

Counter to our expectation, more experienced sales representatives with low expertise received no benefit from using the KMS; their combined betas were essentially zero (.063-.058=.005). One interpretation is that the task-specific knowledge required for conducting their sales activity may not be packaged sufficiently well to allow these users to effectively reuse the knowledge. In other words, low expertise sales representatives lacked the tacit and/or explicit knowledge to effectively identify, recognize, and apply new knowledge required to conduct their sales activities [9]. Moreover, with KMS delivering 60,000 to 75,000 knowledge assets per quarter, the staggering number may create an “information overload” phenomenon to the users. Accordingly, these users who lack tacit and explicit task-specific knowledge will have difficulty filtering and finding appropriate knowledge.

Another explanation for the lack of benefit may lie in the nature of the users. Experienced, low expertise sales representatives may lack the ability to adapt to new situations (e.g., unusually militaristic doctor) or may lack in technical competencies (e.g., computer laptop), general abilities (e.g., patience), or mode of knowledge acquisition (e.g., diverse experience, education) [30].

We hypothesized that the inexperienced, low expertise sales representatives would reap the greatest benefit since there would be more “new knowledge.” However, these users did not benefit any more than the vast majority. One plausible explanation may be that they are learning organizational, contextual, and task-specific knowledge all at once; that is, they have a steep learning curve during the earlier stages of their career. Hence, while they are becoming ingrained into the organizational culture, they are developing psychological traits (e.g., people skills, communication skills, and the ability to adapt to new situations) and cognitive skills (e.g., the ability to identify exceptions to rules and effectively work under stress), which are an integral part of expertise [34].

Finally, the high experienced high expertise sales representatives did not benefit from KMS use any more or any less than the vast majority. While these users have the prerequisite tacit and explicit knowledge required to effectively recognize and apply knowledge assets, it may be that the codification-based KMS does not provide “challenging” or unusual knowledge that they have not previously encountered. Hence, it is unlikely that a very task-specific knowledge they need to conduct their sales activity will be available in the KMS. However, they are the most skilled and therefore the most able to employ any new knowledge they find.

Another plausible explanation for lack of our finding may be related to motivation and its important relationship to expertise [30]. There are two dimensions of motivation, and they include intrinsic and extrinsic motivation. In their study of Software Operations Support expertise [30], motivation was an important part of expertise and one that could affect performance. Intrinsic motivation is characterized as the needs of individuals are satisfied in the content of the activity itself, or the activity “is valued for its own sake and appears to be self sustained” [8, p. 599]. Extrinsic motivation is where the needs are indirectly satisfied (e.g., pay-for-performance), or satisfaction does not lie in the content of the activity itself. Calder and Staw [8] suggest that monetary compensation is a primary vehicle to extrinsically motivating employees, and that money is a “goal which provides satisfaction independent of the actual activity itself” [8, p. 599]. Given their levels of experience and expertise, it may be that what we are observing is due to a zero-sum game. That is, the seasoned veterans are extrinsically motivated and prefer to “coast” with or without the use of KMS while others are more intrinsically motivated and prefer to use KMS to augment their sales abilities.

5.2. Implications for research and practice

We believe that this study offers several implications for future research and for practice. First, our study provides empirical evidence suggesting that experience and expertise moderate the relationship between system use and performance; there is differential effects from system use with varying levels
of employee’s experience and expertise on sales performance. More research is needed to verify these relationships and explain the differences.

Second, we need additional to understand how and why low experience, high expertise individuals appear to gain more from using KMS than do others. What aspects of the way in which they use the system, the types of knowledge they acquire, or the way in which they apply this new knowledge to job situations create this additional value – value twice as high as the average KMS user? Likewise, why do high experience, low expertise individuals gain no value from using KMS? Perhaps we can create knowledge around the use of KMS that can improve the performance.

Third, we believe incorporating other prior research such as psychological traits and cognitive skills [34] and motivation [30] may provide additional insight regarding the role of expertise on performance. It may be that low experience, high expertise individuals are simply more capable and more motivated and therefore are more active in cognitively processing, understanding, and acting on the new knowledge they gain from using KMS [see 7].

Finally, while our study suggests that the majority of KMS users experience performance benefits from KMS use, those responsible for packaging knowledge assets must pay careful attention to how their experienced low-performing users can better make use of the knowledge they acquire from the KMS. This would require careful assessment to improve the packaging and organizing features of the KM process for the non-beneficiaries to benefit (e.g., experienced novices) without losing sight of the current beneficiaries (e.g., inexperienced experts) who need to continue to benefit.

6. References


