Motivating Knowledge Sharing in Diverse Organizational Contexts: An Argument for Reopening the Intrinsic vs. Extrinsic Debate

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ABSTRACT

In an effort to assess the generalizability of factors that influence the disposition of knowledge sharing within organizations, this paper replicates a previous study that provided support for intrinsic motivators playing a dominant role in organizational science literature but applies it to a different community. A recent survey of 156 U.S. and Canadian law enforcement, forensic, and information assurance professionals discovered differences in the findings between the community examined in the earlier study and this one and suggest that there is merit in reopening the discussion between intrinsic and extrinsic motivators and the role they play in an organization. Examination of these two studies further suggests that the impact of motivators, both intrinsic and extrinsic, varies with the context of the knowledge management system to which they are applied. This paper then concludes with suggestions on direction of future research.

KEYWORDS

Knowledge Management Systems, Knowledge Sharing, Extrinsic and Intrinsic Motivation

INTRODUCTION

Within the organizational science literature, much theoretical and prescriptive work has been carried out regarding identification of the factors that drive individuals to share knowledge. A key aspect to this work has been the comparison of extrinsic and intrinsic motivators. Though an active debate, the organizational science community appears to have settled on a preference towards intrinsic motivators as drivers for knowledge sharing (Davenport et al. 2000).

With the emergence and continued growth of knowledge management systems (KMS), both in practice and as a focus of research within the field of information systems (IS), interest in this work has been reinvigorated. As a reference discipline for IS, organizational science has supported the development of models that promise guidance...
for both managerial processes surrounding KMS and KMS design itself. One such model is the result of a recent study published by Management Information Systems Quarterly (Bock et al. 2005). The results of the study highlight intrinsic factors as the key to improving an individual’s attitude towards knowledge sharing and, therefore, intention to share knowledge. This outcome fits well with current thinking in the field of organizational science. It would appear that the empirical work currently being carried out by the IS research community supports the theoretical foundation upon which it was built. Intrinsic factors are demonstrating to, indeed, be more significant than extrinsic factors (Bock et al. 2002; Bock et al. 2005).

However, the authors of the 2005 study highlight an interesting aspect of their work in that the survey participants were all members of a society which can be broadly described as “collectivist” in nature. They suggest that the generalizability of their model should be examined further in order for their complete set of findings to be strongly supported. In short, the previous study may have demonstrated that intrinsic motivators drive knowledge sharing, but these findings are potentially restricted to a context where the climate is biased towards sharing knowledge to begin with. It remains to be seen what influence intrinsic and extrinsic motivators have on communities where individualism and greater self-sufficiency may be the norm.

If the prior model is found to not generalize across varying social and organizational contexts, then it is possible that the exclusive application of intrinsic motivators will not achieve success with regards to shaping knowledge sharing behaviors in varied contexts as well. A finding such as this would support three changes in direction for future research in this domain: First, a call for increased refinement of factors that characterize organizational context with regard to knowledge sharing behaviors. These factors would become increasingly important because prescription for improving KMS processes and design would necessarily begin with an identification and characterization of the climate within which the KMS operates. This first stream of research would find its roots in the previous study, which introduced an original and significant operationalization of aspects of organizational climate germane to KMS.

Second, if the link between intrinsic motivation and knowledge sharing is shown to fail in an alternate context, then research in this area should revisit the debate between intrinsic and extrinsic knowledge sharing motivators. Whereas the prior study demonstrated that extrinsic motivation had no significant positive effect and intrinsic motivation had a strong positive effect, if the impact of intrinsic motivation is demonstrated to be reduced or removed in an alternate context, it would then follow that a deeper investigation of extrinsic motivators in varied contexts becomes a priority (Davenport et al. 2000). This second avenue is critical if the notion of a contingency between KMS context and effective motivators can be demonstrated. If this is the case, then ultimately the success of KMS implementation will likely depend upon a mixed bag of both intrinsic and extrinsic factors, tailored to the specific context within which the KMS is implemented. Finally, if it is found that intrinsic motivators are not generalizable across various contexts, then it falls upon researchers to identify common motivators, intrinsic and extrinsic, that fit this requirement.

The current study examines this issue by replicating the work of Bock et al. in a distinctly different population less prone to sharing knowledge freely. The goal is to compare and contrast the relative strengths and directions of the links between factors proposed to encourage knowledge sharing and intention to share knowledge across populations with disparate organizational and cultural climates. The emphasis of the comparison will be to 1) provide support for the prior study in terms of the significance of organizational climate and subjective norms, and 2) identify changes in the role that intrinsic motivators play in a new organizational and cultural context. Discovery of support for these two objectives will provide a basis for the shifts in research agenda described above and a reopening of the debate founded in the organizational science literature between intrinsic and extrinsic motivators for knowledge sharing.

The rest of this paper is organized as follows: First, a brief discussion introducing the intrinsic vs. extrinsic debate within the organizational science literature is presented, with an emphasis on highlighting the foundation for the
current predilection towards intrinsic motivators, and thus the theoretical origins for the Bock et al. study. This is followed by a description of the Bock et al. research and findings. Next, the characteristics of the current study’s sample are presented in order to highlight the differences from the previous study, as are the results of the replication. Finally, a discussion of the impact of these differences is presented and the potential shifts in research direction proposed above are revisited.

**ORGANIZATIONAL SCIENCE: INTRINSIC VS. EXTRINSIC MOTIVATION TO SHARE KNOWLEDGE**

Organizational science has a foundational role in contemporary theory regarding motivation to share knowledge (Argyris 1964; Likert 1961; McGregor 1960). A key aspect to the contribution of organizational science has been a theoretical examination of the impacts of intrinsic and extrinsic motivators. Intrinsic motivators are rooted in Social Exchange Theory (Blau 1967), and include factors such as gratitude, trust, and personal obligation (Bock et al. 2002). Extrinsic motivators are derived from Economic Exchange Theory and include factors such as monetary reward, promotion, and supervisory control (Bock et al. 2002; King et al. 2008).

Though problems with intrinsic motivators have been identified in the literature, including the difficulty of intervening in existing intrinsic reward structure and controlling such a structure once it is in place, the organizational science literature has concluded that such motivational structures are better suited to the organizational context than their extrinsic counterparts (Osterloh et al. 1999). The literature purports that intrinsic motivators match well with the creative tasks of the organization, such as knowledge creation and sharing, while extrinsic rewards favor simple repetitive tasks (Amable 1996; Osterloh et al. 1999; Schwartz 1990). Further, it is argued that extrinsic motivators create undue pressures which serve to lower an employee’s learning level (Deci et al. 1995). It is from this perspective that the organizational science literature argues extrinsic motivators will decrease in effectiveness over time and eventually hold the potential to de-motivate (Blau 1967; Kelman 1958; Kohn 1993).

With research in IS referencing organizational science literature as a foundation for understanding the knowledge sharing process, it is natural that IS studies seeking to identify drivers to motivate such behavior have also emphasized intrinsic rewards. A recent example can be found in the research of Bock et al. (2005), where intrinsic motivators were not only emphasized in the research model’s design, but supported by the findings as well. Characteristics of their sample, however, underscore an admitted concern for the generalizability of those outcomes that pertain specifically to the role of intrinsic motivators. The following section describes their research design, identifies the characteristics in question, and details the outcome of their study.

**RESEARCH AND FINDINGS FROM BOCK ET AL.**

In a recent publication in Management Information Systems Quarterly, Bock et al. (2005) developed a model to assess the impact of organizational climate, subjective norms, and a set of motivators (one extrinsic, two intrinsic) on the individual’s attitude towards and intention to share knowledge. The constructs of their model as described in their work are presented in figure 1. Those which will be focused on in the comparison with the replicated study have been highlighted. The research model is presented below in figure 2, and a summary of the results of their hypothesis testing is presented in figure 3.
The researchers used structural equation modeling to test their hypotheses, resulting in the path estimates and t-values for the model presented in Figure 4. The key findings from their work include that 1) organizational climate strongly influences an individual’s attitude towards and intention to share knowledge (H8 and H9), and 2) intrinsic motivators influence an individual’s attitude toward knowledge sharing both directly through anticipated reciprocal relationships (H3), and indirectly through the individual’s sense of self-worth (H5). Additionally, their work demonstrated a negative relationship between extrinsic rewards and attitude towards knowledge sharing.
The results of the Bock et al. study support organizational theory in favoring intrinsic motivators over extrinsic motivators. However, the demographics of their survey participants, the fact that they sampled purely from Korean firms, create a limitation to the outcome. The authors themselves note:

“Because data collection was limited to organizations in a highly collectivist national culture (Hofstede 1991), our findings should not be interpreted as necessarily applicable to firms in distinctly different national cultures.” (p. 100)

This collectivism underscores a predisposition to share knowledge for the good of the community. In a context such as this the results of the Bock et al. study, as pertains to motivators for knowledge sharing, are necessarily constrained to demonstrate support for intrinsic motivators in a context where the subjects are already internally motivated to share knowledge.

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: The more favorable the attitude toward knowledge sharing is, the greater the intention to share knowledge will be.</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: The greater the anticipated extrinsic rewards are, the more favorable the attitude toward knowledge sharing will be.</td>
<td>Not Supported (significant but in opposite direction)</td>
</tr>
<tr>
<td>H3: The greater the anticipated reciprocal relationships are, the more favorable the attitude toward knowledge sharing will be.</td>
<td>Supported</td>
</tr>
<tr>
<td>H4: The greater the sense of self-worth through knowledge sharing behavior is, the more favorable the attitude toward knowledge sharing will be.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H5: The greater the sense of self-worth through knowledge sharing behavior is, the greater the subjective norm to share knowledge will be.</td>
<td>Supported</td>
</tr>
<tr>
<td>H6: The greater the subjective norm to share knowledge is, the greater the intention to share knowledge will be.</td>
<td>Supported</td>
</tr>
<tr>
<td>H7: The greater the subjective norm to share knowledge is, the more favorable the attitude toward knowledge sharing will be.</td>
<td>Supported</td>
</tr>
<tr>
<td>H8: The greater the extent to which the organizational climate is perceived to be characterized by fairness, innovativeness and affiliation, the greater the subjective norm to share knowledge will be.</td>
<td>Supported</td>
</tr>
<tr>
<td>H9: The greater the extent to which the organizational climate is perceived to be characterized by fairness, innovativeness and affiliation, the greater the intention to share knowledge will be.</td>
<td>Supported</td>
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</tbody>
</table>

Figure 3: Hypothesis summary and results from Bock et al.
REPLICATION DETAILS AND RESULTS

With the increase in cyber crime, law enforcement (LE) professionals specializing in digital forensics and information security, find themselves in an environment where knowledge sharing is becoming a necessity. In fact, there is such a rise in cyber crime activity that LE agencies have to turn some people, for example cyber stalking victims, to volunteer agencies to lend assistance (Barnes and Biros, 2007). Even with such assistance, there is still a large backlog of cyber cases waiting to be investigated.

A major part of the problem is cyber crimes often require large amounts of time and effort simply to get access to data in computers to use in an investigation. Further, unlike the cybercrime cases many see on shows like *CSI*, investigators must painstakingly process digital evidence to insure it suitability for court action. Many LE agencies simply do not have the knowledgeable manpower to develop the tools and techniques to do this. Further, LE agencies often do not share such techniques between departments. Therefore, it is commonplace for one agency to reinvent a technique that another agency may have invented months before. To combat this waste of resources, the US Defense Cyber Crimes Center (DC3) sponsored the development of the National Repository of Digital Forensic Intelligence (NRDFI) and hosts an annual cyber crimes conference attended by the hundreds of US law enforcement agencies. The conference served as an excellent data collection opportunity in which to replicate the Bock et al. study in a very different social environment. Law enforcement and LE support personnel are traditionally wary of sharing knowledge, and of utilizing knowledge from unfamiliar sources due to the stakes involved with that knowledge being accurate (Burkman et al. 2008). Incorrect information can mean the difference between winning and losing cases and, in some cases, life and death. Also, LE professionals face certain impediments to sharing such as a concern that their techniques will be leaked to the public (i.e. criminal element).

At the cyber crimes conference, 156 LE professionals specializing in digital forensics and information security were surveyed using an instrument that employed the same questions as by Bock et al. Of those surveys, 3 were found to be incomplete and were removed, leaving 153 useable surveys for analysis. Basic demographic data of the respondents can be found in Table 1 below.
Table 1. Respondent Demographic Data

We then followed the same methodology and analysis utilized by Bock and colleagues. Table 2 summarizes our findings with respect to the hypothesis. Figure 5 depicts the results when structural equation modeling was employed on the original model using the US law enforcement data. The differences between the two communities are readily apparent.

![Figure 5: SEM estimates and T-values from replication](image-url)
Motivating Knowledge Sharing in Diverse Organizational Contexts

### Table 2: Results of Hypothesis Testing

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While our findings for H2, H4, H5, H6, and H8 are similar to the original study, there are some critical differences in the results. First, in a pro-knowledge sharing climate Bock et al. discovered a significant negative relationship between their extrinsic reward construct and an individual’s attitude towards knowledge sharing (H1). However, when replicated in a climate characterized by skepticism towards both sharing knowledge and utilizing shared knowledge, the effect became insignificant.

Further, while Bock and colleagues discovered a positive direct link between intrinsic motivation (reciprocal relationships) and attitude towards knowledge sharing (H3), our replication was unable to support this finding. Due to the lack of significance of the link between subjective norms and attitudes towards knowledge sharing discovered in our replication, the indirect link between intrinsic motivators (sense of self worth) and attitude towards knowledge sharing was not reproduced either. Intrinsic motivation was insignificant in a climate less predisposed to share knowledge. One final difference of note: while the model, when deployed in a pro-knowledge sharing climate, found a significant positive link between organizational climate and intention to share knowledge (H9), when replicated in a less collectivist context that link was found to be negative.

**DISCUSSION**

In an effort to replicate the findings from a study examining motivating factors for sharing knowledge, results proved incongruous across a number of critical dimensions. This replication proves particularly interesting due to the fact that the two sampled populations differ on their predispositions towards knowledge sharing. In the first sample participants were pro-knowledge sharing, resulting in a negative impact for extrinsic motivation to share knowledge and a positive impact for intrinsic motivation. These results are in line with contemporary theory in the organizational sciences, favoring intrinsic motivators for creative tasks such as knowledge artifact creation, distribution, and application.
However, in the second sample where participants were predisposed to skepticism towards sharing knowledge and utilizing others’ shared knowledge, extrinsic motivators were no longer negatively linked towards knowledge sharing attitude and the link between intrinsic motivators and attitude proved insignificant.

While contradictory in some ways with the original study, these results support a major contribution from the work of Bock et al. in that organizational climate and context is confirmed as a critical determinant to the effectiveness of motivators to share knowledge. When the two studies are paired, it becomes clear that the impact of motivators (both intrinsic and extrinsic) varies with the context of the implemented KMS. The results presented here extend this contribution by suggesting three key directions for future research in this area.

First, the debate in the organizational science literature between intrinsic and extrinsic motivators should be reopened. The study presented herein provides evidence that links between either class of motivator do not remain constant across contexts. The scope of extrinsic factors must be broadened and explored more richly beyond the traditional “carrot on a stick” mentality. This includes notions of supervisory control, organizational mandates, etc. The research community in this domain should rethink the pro-intrinsic bias inherited when building from a foundation of organizational theory.

Second, further work should follow the path laid by Bock et al. in identifying aspects of organizational climate and context germane to knowledge sharing. One potential addition to this area is the notion of stakes for sharing and using shared knowledge. Previous research has shown that some communities, such as LE, may be reluctant to share due to a concern for information security, and may be reluctant to used shared knowledge due to a skepticism of its validity and value in support of legal prosecution (Weiser et al. 2006). For any given context, the risks for participating in knowledge sharing can vary and have the potential to shape which motivators are found to be the most effective.

The evidence presented here points towards a contingency between context and motivational factor effectiveness, making the first step of any meaningful process to support KMS development and management an appropriate assessment of organizational climate and context (Jennex et al. 2007; Turner et al. Forthcoming 2009). Combined with an emphasis on refined exploration of both intrinsic and extrinsic motivators across varying contexts as described above, the goal for future work in this area should be one where the research supports prescription of the nature, “tell me your context, and I’ll tell you how to facilitate KMS usage”. Perhaps consideration of global cultural issues is also in order.

Third, the negative relationship found in the replication between organizational climate and intention to share knowledge should not be overlooked. The role of the characteristics of the organization was still found to be significant, but in the context of the replication the relationship has changed. Within the law enforcement community and law enforcement support personnel, the better the individual relates to their organization, the less likely they are to share knowledge. One possible explanation for this borrows from the notion of ego-centric networks (Jarvenpaa et al. 2005). For the context of the replication, law enforcement digital forensics professionals and support personnel, there may exist a duality for the construct “organization”. Individuals are typically one of a few forensics specialists in a larger law enforcement department. That department would traditionally be considered their organization. The survey items developed to capture aspects of the organization were geared towards this definition, in fact. However, because of the relatively isolated position these individuals hold within their department, they also belong to, and can sometimes identify more fully with, subsets of the broader community of practice spanning across agencies but within the same area of specialty. For instance, one LE professional may share information with a colleague with whom she has worked with in the past, but is not a member of her current department. When individuals in this community share knowledge, it is within this alternative form of organization that they do so. Thus, the negative relationship discovered here may be due to a tradeoff between an individual’s sense of belonging to their local organization and their propensity to willingly share with and trust certain members of the broader community. If they relate to and have developed an ego-centric group within their local department,
they may find no need to expand that group to the broader community. However, if they are truly isolated in their local department, they may be more likely to participate in knowledge sharing activities across departmental boundaries in an effort to develop such a network. This relationship should be explored further, as it also pertains to the rapidly growing organizational context of virtual teaming.

CONCLUSION

The study presented here replicates a recent study looking at the role of organizational climate, and intrinsic and extrinsic motivators on intentions to share knowledge. Because the participants of the first study were shown to be predisposed to share knowledge, the findings regarding the superiority of intrinsic motivators were called into question. The current study, therefore, selected a set of participants identified as skeptical towards participation in knowledge sharing activities. Due to the contrast in contexts for the two studies, and because of key discrepancies found in the results, a number of critical research directions emerged. 1) The debate between intrinsic and extrinsic motivators embedded in organizational theory, a reference discipline for IS research in this domain, should be reopened. Evidence from the current study suggests that intrinsic motivators are not, in fact, universally applicable. The context of the KMS appears to drive the relative effectiveness of motivators both intrinsic and extrinsic. 2) Additional work should take place to refine measures of organizational context germane to knowledge sharing. The current study suggests a contingency between context and effective motivators, which promotes improved characterizations of context. The goal of future work in this domain should be to apply enhanced characterizations and a deeper understanding of the role of motivators (both intrinsic and extrinsic) to support prescription of the nature, “tell me your context, and I’ll tell you how to facilitate KMS usage”. Finally, the duality of the construct “organization” should be explored further as modern organizational forms such as virtual teaming emerge and develop. As noted in the results of the current study, this duality has the potential to play a critical role in the individual’s intention to share knowledge.

REFERENCES

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