An Examination of the Role of Social Influence and Organizational Hierarchy on Knowledge Management System Usage

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ABSTRACT
Recent work on the social nature of relocating knowledge identifies knowledge management and its facets as a complex process, going well beyond the simple transfer of bundles of knowledge. This increase in the number of knowledge transfer studies has also led to new insights regarding knowledge management systems (KMSs). Still, we know little about the role of social influence in stimulating individuals to share through KMSs. Thus, we propose a framework for examining the role of social influence at different levels of the organizational hierarchy and its effects on KMS usage. Specifically, the research model examines the moderating effect of the hierarchical level of an employee on the relationship between prior KMS use by employees at various hierarchical levels and current KMS use. We define a set of propositions based on social influence theory to further our understanding of how organizations can facilitate knowledge sharing within their boundaries.

Keywords: knowledge management, social influence, hierarchical model

1. INTRODUCTION
Knowledge management has become an increasingly important phenomenon in recent MIS literature. Knowledge management (KM) can be defined as “how an organization manages its collective expertise and subject matter knowledge” [1]. With the development of information systems focused around storing and sharing knowledge, many scholars have devoted more attention to increasing these efforts. Recent work on knowledge transfer has identified its complexities, going well beyond relocating bundles of knowledge [2-4]. This increase in the number of knowledge sharing studies has also led to new insights regarding knowledge management systems (KMSs). However, little is known regarding the role of social influence factors in promoting or restricting knowledge sharing through KMSs. Therefore, the purpose of this study is to propose a framework for understanding the role of social influence and its relationship with knowledge contribution within an organization.

In addition to understanding the relationship between social influence and knowledge contribution, there is also a need to understand the effects of social influence at multiple levels in an organizational hierarchy. This study adopts the use of a newer and less often used data analysis technique, hierarchical linear modeling. To date, few studies in the social sciences have examined such topics while differentiating social influence among superiors, subordinates, and coworkers. Specifically, this study seeks to answer the following research question: How does social influence among different levels in the organizational hierarchy affect contribution and knowledge acquisition regarding a KMS?

The rest of this study is presented as follows: First, the theoretical frameworks used in this study are described. The development of specific propositions to be measured is then presented, along with the proposed research model. A discussion of the proposed methodology follows, concluding with contributions, limitations, and implications for future research.

2. THEORETICAL DEVELOPMENT
The Unified Theory of Acceptance and Use of Technology
Explanations of how individuals use technology and its antecedents largely draw on Venkatesh’s [5] Unified Theory of Acceptance and Use of Technology (UTAUT). Although individual use of technology is one of the most heavily researched areas in information systems [6, 7], UTAUT was recently extended to UTAUT2, spurring new adoption papers in the field. Its constructs include performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit, along with three individual difference constructs—age, gender, and experience. UTAUT2 is a highly successful theoretical model derived from eight individual technology acceptance models, boasting an $R^2$ of 74% in behavioral intention and 52% in technology use from its seminal study [5] [8]. Aligning with the theoretical perspective of UTAUT2, this study focuses on the constructs of facilitating conditions and habit, which leads to the first two of our propositions:
Proposition 1: An individual’s KMS use is positively related to his/her facilitating conditions.

Proposition 2: An individual’s KMS use is positively related to his/her habits.

Social Influence Theory
The motivation to share knowledge is quite complex, and depending on their particular culture, organizations may vary in expectations of knowledge sharing. The amount of knowledge shared with employees, especially overall strategic planning information, can be limited by those at the highest levels of an organization. However, much information needed for effective decision making should be available in an accessible repository to enhance organizational performance and perhaps achieve a greater competitive advantage. This would allow an organization to use and transfer knowledge among its workforce. How and why employees contribute this knowledge as well as the functionality of a specific KMS that promotes high levels of usage are important questions as employee use may be a consequence of social relationships [9].

According to Kelman’s social influence theory, three theoretical processes influence an individual’s attitudes, beliefs, and behaviors: compliance, internalization, and identification [10]. First, compliance transpires as individuals perceive pressure to behave in a certain way, in order to either gain rewards or avoid punishment. Secondly, identification occurs when an individual consciously or unconsciously assimilates others’ opinions and acts in harmony with them. Lastly, identification processes lead individuals to conform to those of a respected social group in order to create an advantageous relationship with them [10]. As organizational members conduct their everyday work lives, these three processes reveal themselves in ways that directly impact daily operations and productivity outcomes. As an example, some employees may tend to withhold knowledge or information from others for a variety of reasons, which is a natural human tendency [11]. When organizations offer incentives, such as pay for performance, this may also discourage knowledge sharing because employees may prefer to use information to their personal advantage [12]. However, when limited knowledge sharing occurs within an organization, the possibility increases that gaps in knowledge will occur, which are likely to produce unpleasant work-related outcomes [13].

Early work by Kelman established that individuals often seek to maintain a favorable image within a reference group [10]. If the people in one’s work group believe that he or she should enact a particular behavior, such as using a KMS, then using the system would tend to raise a person’s status within the group. This example illustrates the identification process in Kelman’s social influence theory. Increased status within one’s work group can be the basis of power and influence because of processes that impact employee interaction, such as social exchange, coalition formation, and resource allocation [14]. As individuals continue to perform behaviors consistent with the expectations of their work groups, “the increased power and influence resulting from elevated status provides a general basis for greater productivity” [15]. Individuals may also perceive that using a KMS, as in our example, will lead to improvements in their job performance. “This result is consistent with social exchange theory, indicating that the goal for people sharing their knowledge is for building long-term relationships” [16, 17]. Social exchange theory comes from the intersection of economics, psychology and sociology to increase understanding of social behavior, or more specifically, the movement of resources, in economic trades [18]. It views the exchange relationship as “actions contingent on rewarding reactions from others” [19]. For instance, individuals who give much to others try to get much from them, while those who get much from others feel compelled to give much to them, creating a balance through give and take. Power results from this resource dependency, helping to shape the relationship [20]; it also originates from the structure [21].

Knowledge Management Systems
Organizations are learning that knowledge management systems are a key resource for storing and retrieving information that facilitates tasks and work routines. The movement of knowledge across individual and organizational boundaries into repositories and into organizational routines and practices is ultimately dependent on employees’ knowledge-sharing behaviors. Knowledge management systems (KMSs) can be defined as “IT-based systems developed to support and enhance the organizational processes of knowledge creation, storage/retrieval, transfer, and application” [22]. KMSs include systems, policies, processes and procedures used to manage this creation, storing, sharing, and, ultimately, the reuse of knowledge [22-24]. KMSs derive from Knowledge Management (KM), which has been defined as “the process of capturing, storing, sharing, and using knowledge” [11, 25]. Spender and Scherer proposed that KM consists of the following components: people, processes, technology, culture, and structure [26]. These components represent the foundation of a KMS. On a day-to-day basis to actually operationalize managing knowledge, a KMS would certainly be “more than just the totality of systems in an information technology department” [1]. In order to effectively manage knowledge, an organization would be required to “consciously create a KMS” [1]. A KMS enables an organization to “systematically manage knowledge in order for its workforce to acquire, create and use knowledge to innovate and compete in the marketplace” [1].

The capability of organizations to manage knowledge strategically is one of the most significant sources of competitive advantage [27]. Organizational members should value the exchange of knowledge and expand on knowledge shared within an organization. “Organizational members ought to be prepared to throw in their knowledge and react to others’ knowledge so that organizational knowledge can be scaled and innovative knowledge can be created and readily accessible to competent members inside the organization and potential utilization with the help of KM systems” [28]. “Successful knowledge sharing through KMSs depends on both knowledge contributors populating KMSs with content and knowledge seekers retrieving content from KMSs for reuse” [29]. In essence, the KMS provides for knowledge exchange in order to facilitate knowledge reuse. Knowledge management processes have been found to be significant predictors for organizational creativity. “Business organizations can achieve strategic and economic benefits of knowledge management by utilizing organizational creativity in an effective fashion” [23].

Prior experience also helps individuals understand the true benefits of a KMS and its relevance to their jobs. Those who have used a KMS and have achieved favorable results are more likely to use it again because of their positive beliefs and anticipation that benefits will continue to accrue [30]. Greater experience with a KMS can lead to more familiarity with the
system and technology, which may enable more effective usage [8]. Additional research reveals that beneficial past behavior has a positive effect on future behavior. Furthermore, some researchers assert that past usage is the only antecedent of future usage, even to the extent that it overshadows the impact of intention to use [15].

As with most information systems, the success of a KMS depends upon the extent of use, which may be tied to system quality, information quality, user satisfaction, individual and organizational impact, and usefulness of information [22, 31]. To enhance the quality of a KMS, “research focusing on KMS use process, and development of intuitive search, retrieval, and display, is needed” [22]. System quality itself is “influenced by attributes such as ease of use, characteristics of human-computer interface, and flexibility and effectiveness of search mechanisms” [17, 22]. Although systems use is common in many businesses today, the “most difficult part of a knowledge management system is not the technology or the structure of the information. These are simple tools not the actual content. The true work is in creating an atmosphere where all team members and staff members are comfortable with an environment of sharing” [32].

Researchers also suggest that one of the most common information systems perspectives is that “technology utilization is governed by the match between technology features and the requirements of the task” [33]. As rational and experienced users, individuals tend to “select tools and methods that enable them to complete tasks with the greatest net benefit” [33]. In a study of KMS usage antecedents based on an analysis of data collected from 192 industries, the research findings indicated that their “results also give implications to the managers that employees’ KMS usage are also influenced by their task interdependence, perceived fit between task characteristics and KMS functionalities and, most important of all, their confidence in usage” [29]. Thus, we posit the following proposition:

Proposition 3: An individual’s KMS use is positively related to his/her prior KMS use.

To summarize the important findings related to KMS usage, we present the following table as a reference:

<table>
<thead>
<tr>
<th>Author</th>
<th>Study Content</th>
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<tbody>
<tr>
<td>Yang, Moon, and Rowley, 2009[35]</td>
<td>Improving understanding of the impact of social influences on different types of users’ perceptions and adoption of IT.</td>
<td>Knowledge workers considering adopting innovative IT are sensitive to general perceptions of its usefulness.</td>
</tr>
<tr>
<td>Malhotra and Galletta, 2003 [36]</td>
<td>The role of knowledge workers’ motivation and commitment in KMS implementation.</td>
<td>Commitment and motivation are significant antecedents to KMS usage in an organizational knowledge management program context.</td>
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<tr>
<td>Kankanhalli, Tan, and Wei, 2005 [17]</td>
<td>Formulating and testing a theoretical model to explain Electronic Knowledge Repositories (EKR) usage by knowledge contributions.</td>
<td>Knowledge self-efficacy and enjoyment in helping others significantly impact EKR usage by knowledge contributions.</td>
</tr>
<tr>
<td>Ghosh and Scott, 2007 [24]</td>
<td>Knowledge management processes and organizational enablers associated with effective knowledge management systems for a clinical nursing setting.</td>
<td>A simple technical system to support clinical KM will not address the diversity of tasks nurses routinely perform.</td>
</tr>
<tr>
<td>Aktharsha, Anisa, and Ali, 2012 [28]</td>
<td>Validating the research model and examining the effect of Organizational Trust within the Knowledge Management context.</td>
<td>Social factors have major influence on Knowledge Sharing behavior along with technological factors.</td>
</tr>
<tr>
<td>Bock, Zmud, Kim, and Lee, 2009 [37]</td>
<td>Developing an integrative understanding of the factors supporting or inhibiting individuals’ knowledge-sharing intentions.</td>
<td>Attitudes toward subjective norms as well as organizational climate affect individuals’ intentions to share knowledge.</td>
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Hierarchical-Level Social Influence
Organizations most able to build and prolong competitive advantage are those that leverage their “know-how in a methodical approach” [28]. “The key to leveraging the knowledge of an organization is providing insight, thought, leadership and context to those who benefit the most in generating and using organizational knowledge” [28]. Knowledge interchanges within organizations may take place top-down, bottom-up, or horizontally, depending on hierarchical structure and management styles [38]. The hierarchical status within an organization, the type of work, and responsibility of the person within the organization may help determine KMS usage. In addition, the hierarchy, including supervisors, subordinates, and peers, influences the usefulness of a KMS.
Social factors, affect, perceived usefulness, perceived ease of use, and facilitating conditions significantly affect KMS usage to share knowledge [28]. Results from a survey of academic faculty across a variety of disciplines regarding their beliefs about the use of internet technologies in their teaching revealed support for the hypothesis that “perceived social influence from referent others in support of the use of a technology has a significant positive influence on individual beliefs about the usefulness of that technology” [39].

Social influence is demonstrated through interactions between peers and between supervisors and subordinates. “Social influence is most likely to occur where communication is most pervasive” [40], thus individuals would be influenced by their most frequent communication partners. In the work setting, this would involve subordinates, peers, and superiors. An important measure of managerial effectiveness is the success achieved in influencing subordinates, peers, and superiors [41]. In studies analyzing power in a work setting, there is much agreement that superiors who believe they exert strong influence over their subordinates attribute the behaviors of their subordinates to their own personal influence rather than to aspects of the subordinates themselves [42].

A recent study further drawing on Kelman’s [10] work involving KMS usage data of over 80,000 employees of a management consulting firm looked at the possibility that understanding two key processes underlying social influence as distinct and separate from compliance-based social influence might provide new insights and guidance for managers. “These two social influence mechanisms are likely to influence individuals’ use of highly visible technologies like KMS (1) when individuals identify with a group and as a result adopt their behaviors, and (2) when they consciously or unconsciously internalize others’ opinions and act in accordance with these assimilated opinions” [43]. The model used for this research focused on specific social groups whose behaviors might affect an individual’s KMS use. The results revealed a “pattern of influence that varies systematically depending on a user’s rank and the kind of reference group in question (peer, superior, subordinate, extended professional population)” [43]. Their analysis “confirms the presence of social influence effects on KMS use, and reveals that different reference groups influenced individuals at different hierarchical levels” [43]. The practical implications of this study for managers include “understanding how various sources of influence are likely to affect employees’ KMS use may improve their ability to diagnose the cause of a faltering KM initiative and take actions to create a critical mass of engaged and active users” [43].

In literature regarding training employees to use information technology, it is thought that training practitioners and researchers “focus primarily on skill acquisition and transfer at the individual level, rather than considering the broader sharing of attitudes, values, and norms at the group level” [44]. These authors further suggest that what actually transpires in training for technology usage is less related to acquiring specific skills and is more a “function of learners’ assimilating attitudes and intentions to use IT from other members in the training setting” [44]. A specific hypothesis from their study was “The level of an employee’s IT usage will be related to the level of his coworkers’ average IT use,” and they found very strong support for the hypothesis [44]. After controlling for employees’ job type, these researchers still found that coworkers’ average level of IT use was a strong predictor of the individual’s IT usage, which means that “knowing whether an individual’s coworkers use IT in their jobs helps to predict the individual’s level of use, without regard for the particular job roles performed by these employees” [44]. These research findings would also suggest that employees in a work setting would be influenced by their coworkers and/or supervisors in using a KMS. Taking these discoveries into consideration, we posit the following propositions:

Proposition 4: An individual’s KMS use is positively related to his/her superiors’ prior KMS use.

Proposition 5: An individual’s KMS use is positively related to his/her peers’ prior KMS use.

Proposition 6: An individual’s KMS use is positively related to his/her subordinates’ prior KMS use.

Proposition 7: Hierarchical level moderates the relationship between others’ prior KMS use and an individual’s KMS use such that individuals who have higher levels in the organizational hierarchy are less likely to be influenced by others.

We propose the following research model to investigate the ways social influence, facilitating conditions, and habit influence an individual’s KMS usage by suggesting it varies as a function of other employees’ actual KMS usage, rather than perceived use (See Figure 1).

![Proposed Research Model](image)

Figure 1. Proposed Research Model

3. DISCUSSION

This paper proposes the use of UTAUT2 and social influence theory for better understanding the relationship between actual KMS usage and social influence, facilitating conditions, habit, and prior KMS usage. It also introduces the importance of exploring organizational connections at various levels. In conjunction with the theoretical framework, we suggest the importance of examining the hierarchical levels in an organization to demonstrate how an individual’s position in the network, relative to one’s own, influences contribution to an IS. For instance, we would expect superiors to have more influence on individuals than subordinates. Thus, a supervisor’s KMS
usage is likely to have a greater impact on his subordinate’s KMS usage than the impact individuals’ would have on each other at similar levels of the organizational hierarchy.

This paper takes the initial steps of model creation; however, only understanding the qualitative aspects of the proposed relationships is a limitation that leads to opportunities for future research. We propose future studies should empirically examine the suggested research model from this paper, while including several demographic variables along with the main constructs identified. Demographics, including but not limited to, gender, age, geographic location, culture, experience with KMS, and tenure within an organization have been shown to impact the usage of KMS. For example, males have been shown to be less risk averse compared to females, indicating their increased likelihood of experimenting with a KMS before their female counterparts. In Europe, specifically, “about twice the number of men than women above age 55 use a computer” [45]. In essence, along with gender, age appears to be a variable that could influence KMS usage. We would expect younger employees who are exposed to higher levels of technology at a younger age to be more likely to use a KMS.

4. CONCLUSIONS

In conclusion, the purpose of this study was to investigate and further assess how social influence among different levels in the organizational hierarchy affects contribution and knowledge acquisition regarding a KMS. A research model was developed and propositions were presented. The next step would be to examine these propositions and techniques to determine whether they are empirically supported. The findings from this study will provide several potential areas for further investigation on the usage of KMS at various hierarchical levels in an organization.

5. REFERENCES


[34] L. Damodaran and W. Olphert, "Barriers and Facilitators to the Use of Knowledge Management Systems," Behaviour & Information Technology, Vol. 19, No. 6, 2000, pp. 405-413.


