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Full and Partial Knowledge Sharing on Intra-Organizational Broadcast Media

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ABSTRACT

Knowledge sharing, along with its potential predictors, has been a popular research topic. This research extends prior research by examining potential predictors of knowledge sharing together within a more comprehensive model with two additional contexts: the type of recipient of the knowledge is the recipients of intraorganizational broadcast media, and the type of knowledge sharing behavior (full knowledge sharing and partial knowledge sharing). The results of this study suggest that what predicts knowledge sharing behaviors depends on the type of knowledge sharing behavior when considering why people share their knowledge through intra-organizational broadcast media. We explore theoretical implications and future research avenues.

Keywords:

Knowledge sharing, trust, ownership, organizational culture, perceived value of knowledge.

INTRODUCTION

Knowledge sharing has been a very popular research topic in knowledge management for some time now, and as a result there is a sizable amount of literature identifying different predictors for successful knowledge sharing, such as culture, management support, trust. However, the majority of previous research has considered only a few predictors of knowledge sharing at a time. Similarly, the operationalization of knowledge sharing has varied greatly (Ford et al. 2008), making it challenging to appreciate which predictors should be considered. This research addresses the following question: Given the complex work environment for knowledge workers, what predictors become relevant when the previously documented significant predictors are considered, and under what contexts are they relevant? Our research extends prior research two ways: we include multiple "key" predictors of knowledge sharing to examine which predictors are relevant when they are considered together; and we consider two sharing behaviors, full knowledge sharing and partial knowledge sharing, to examine their impact on the relevancy of the predictors.

There has been an assumption within the knowledge management literature that knowledge sharing and knowledge hoarding are anti-theses of each other, and construe the same construct. However, recently there has been research that has illustrated that knowledge sharing (a.k.a., the communication of knowledge) and knowledge hoarding (a.k.a. the protection of knowledge) are not the same construct and can co-occur (Ford et al. 2008). Ford and Staples (2008) identified the various combinations of these two constructs result in different knowledge-transfer behaviors: full knowledge sharing (in which there is no protecting knowledge), partial knowledge hiding (in which some knowledge is communicated, but relevant knowledge is also protected and withheld), knowledge hiding (in which knowledge is protected and not communicated), and disengagement (where knowledge is neither communicated nor protected). Similarly, Connelly and her colleagues have found that hiding is a separate behavior with different antecedents than partial sharing (labeled partial hiding in their studies; Connelly et al. 2006), and team-based competition increased sharing but competition did not hiding behaviors (Connelly et al. 2009). Thus, when examining "knowledge sharing" it is important to parse apart the various possible behaviors.

Another relevant contextual factor for knowledge sharing behaviors is the recipient of knowledge sharing (e.g., Connelly et al. 2003; Ford et al. 2006; Markus 2001; Szulanski et al. 2000). In this study, we investigate knowledge sharing behaviors where the recipient(s) of the knowledge are not necessarily known to the informer; the informer is sharing knowledge through intra-organizational broadcast media (e.g., mass email, organizational intranet, KMS, library documents, etc.). In this regard, we are not examining a single type of technology; rather, we are interested in the informer's behavior given the context that s/he may not know exactly who will be accessing their knowledge but they do know that the recipient is a fellow organizational member. We chose this type of recipient because it has theoretical relevance; Social Exchange Theory has been used to a large extent for explaining knowledge sharing. However, there are two traditions of Social Exchange Theories: one based on individualistic assumptions (e.g., Blau 1964), the other based on collectivistic assumptions (e.g., Gouldner 1960). In individualistic cultures, such as the dominant cultures in North America, the benefits from the exchange are expected to come from the recipient directly (Ekeh 1974). Yet, the informer cannot expect to know who the recipients are

to be able to gleam the benefits from them directly. Nor do they know the recipients' level of expertise or motives for the knowledge. Thus our study investigates what predictors are relevant for the two sharing behaviors, full knowledge sharing (where the informer shares all relevant knowledge), and partial knowledge sharing (where the informer withholds and protects some relevant knowledge while sharing other knowledge), when sharing to potentially unknown recipients via intraorganizational broadcast media.

RESEARCH MODEL

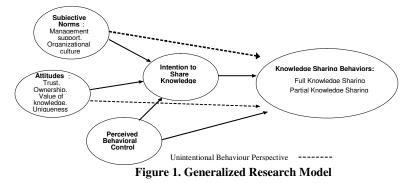
In developing the research model, we apply two theoretical perspectives: knowledge sharing as intentional behavior and knowledge sharing as unintentional, reflexive behavior.

The theoretical perspective that knowledge sharing is an intentional behavior is consistent with the view that knowledge sharing is a volitional act, done as a conscious, reasoned decision (e.g., Bock et al. 2002; Bock et al. 2005). In this study, we use the Theory of Planned Behavior (Ajzen 1991) to potentially explain actual knowledge sharing behaviors and to extend previous research (Bock et al. 2002). To date, only one study has studied the relationship between intentions and actual knowledge sharing (Bock et al. 2002). While their results supported the predictive relationship between intentions and actual knowledge sharing ($\beta = 0.118$, p<0.05), only 1.4% of the variance for actual knowledge sharing was explained. While intentions never perfectly predict actual behaviors, they do tend to explain more variance than 1.4%. Thus we re-examine this relationship between intentions and actual sharing. As well, using the Theory of Planned Behavior as a framework, we have identified and include several "key" predictors of "knowledge sharing" in the knowledge management literature that either constitute a subjective norm (organizational culture and perceived management support), attitudes (perceived value of knowledge, psychological ownership of knowledge, organizational ownership of knowledge, uniqueness of knowledge, interpersonal trust and distrust of close colleagues and organizational trust), and perceived behavioral control (time, opportunity and ability).

The foundational assumption for the Theory of Planned Behavior is that "humans are rational animals that systematically utilize or process the information available to them" (Fishbein 1979, p. 66). Others may disagree to a certain extent with this statement and argue that humans occasionally behave automatically or reflexively as opposed to thoughtfully in many circumstances (e.g., Bargh et al. 1996; Cialdini 2001). Our second theoretical perspective adopts this view and examines the possibility that the predictors of knowledge sharing may influence behaviors more directly.

Consistent with this argument, there is a growing trend in behavioral research to examine behaviors that are not predicted by (solely) intentions. For example, one line of research suggests that behaviors can become habitual, thus become automatic rather than intentional in nature (e.g., Aarts et al. 2000). Past behavior, when repeated sufficiently, becomes non-intentional and second nature to the individual, which becomes less cognitively demanding on the individual (Aarts et al. 2000); humans need cognitive shortcuts to be able to thrive in complex environments (e.g., Gigerenzer et al. 1996). Other cognitive shortcuts, which result in a less intentional response, are: reciprocation, commitment and consistency, social proof, liking, authority (directed deference), and scarcity (Cialdini 2001). Similarly, other researchers have shown that subjective norms, such as management support, and attitudes can influence behaviors directly (e.g., Cooper et al. 2001). Thus, we include direct relationships between the predictors that proxy cognitive shortcuts to actual sharing behaviors (perceived management support for authority, uniqueness for scarcity, trust/distrust and sociability for liking).

Due to space limitations, we are unable to present the full rationale for each predictor; however, see Table 1 for a summary of the predicted relationships and hypothesis, along with support citations from previous research. (See Figure 1 for the general research model.) Also, due to the few studies which formally investigate the separate behaviors, this study is somewhat exploratory, and the expected differences between the two behaviors are not formally represented in hypotheses. Instead, we propose the research question: How do the predictors differ for the two sharing behaviors, if they differ at all?



Description/Rationale	Supporting Citations
zed Relationships	
Defined as <i>the person's subjective probability that</i> <i>s/he will perform the knowledge sharing behavior in</i> <i>question</i> , the Theory of Planned Behavior suggests that there is a strong relationship between intention to perform a behavior and actually carrying out the behavior.	(Ajzen 1991; Bock et al 2002; Fishbein et al. 1975 Sheppard et al. 1988)
Management support and organizational culture cue employees on what behavior is appropriate or desired, and can be conceived as sources for subjective norms relevant for the study of knowledge sharing behavior. The organizational cultural dimensions of sociability (the extent to which organizational members befriend each other) and	Management support: (Connelly et al. 2003; Davenport et al. 1998; Martiny 1998; Pfeffer et al. 1999) Organizational culture:
solidarity (the extent to which organizational members agree upon the goals) (Goffee et al. 1996) support information sharing.	(Ford et al. 2003; Staples et al. 2000)
<i>Trust:</i> It has been argued that interpersonal trust is associated with knowledge sharing as it mitigates the associated risks and/or it works in accordance to the Norms of Reciprocity. <i>Ownership:</i> Psychological ownership (i.e., self-	<i>Trust:</i> (Bukowitz et al. 1999; Davenport et al. 1998; Ford 2003; Gray 2001; Kramer 1999; Rolland et al. 2000)
ownership) has been found to be positively associated with willingness to share, because the benefits of knowledge sharing go to the "owner" of the expertise. <i>Perceived Value of Knowledge:</i> Valuable knowledge (defined in terms of usefulness and benefits) has	<i>Psychological and</i> <i>Organizational Ownership:</i> (Constant et al. 1994; McLure Wasko et al. 2000; Pierce et al. 1991)
been associated with more sharing since sharing does not de-value the knowledge, and the informer may derive more benefits from sharing it. <i>Uniqueness:</i> Unique knowledge has been associated with less sharing and more hiding, either because sharing diminishes its uniqueness for the informer or it is also considered confidential.	Perceived Value of Knowledge: (Augier et al. 2001; Ford et al. 2006; Leidner 1999; Shariq 1999; Ye et al. 2006a; Ye et al. 2006b)
	<i>Uniqueness:</i> (Ford et al. 2006)
The more opportunity, time, resources and ability an individual perceives to have, the more likely s/he will intend to perform the behavior in question. The extent to which perceived behavioral control proxies actual behavioral control, then it should positively influence actual behaviors directly.	(Ajzen 2002; Ajzen et al. 1986; Taylor et al. 1995b)
tionships	
Due to direct deference to authority, perceived management support should directly influence informer's sharing behaviors. Since managers are viewed as authorities within the organizational context, and via Agency Theory, they can make their wishes known to their subordinates through direct	(Cialdini 2001; Cooper et al. 2001; Milgram 1974)
	zed Relationships Defined as the person's subjective probability that s/he will perform the knowledge sharing behavior in question, the Theory of Planned Behavior suggests that there is a strong relationship between intention to perform a behavior and actually carrying out the behavior. Management support and organizational culture cue employees on what behavior is appropriate or desired, and can be conceived as sources for subjective norms relevant for the study of knowledge sharing behavior. The organizational cultural dimensions of sociability (the extent to which organizational members befriend each other) and solidarity (the extent to which organizational members agree upon the goals) (Goffee et al. 1996) support information sharing. Trust: It has been argued that interpersonal trust is associated with knowledge sharing as it mitigates the associated risks and/or it works in accordance to the Norms of Reciprocity. Ownership: Psychological ownership (i.e., self- ownership) has been found to be positively associated with willingness to share, because the benefits of knowledge sharing go to the "owner" of the expertise. Perceived Value of Knowledge: Valuable knowledge (defined in terms of usefulness and benefits) has been associated with more sharing since sharing does not de-value the knowledge, and the informer may derive more benefits from sharing it. Uniqueness: Unique knowledge has been associated with less sharing and more hiding, either because sharing diminishes its uniqueness for the informer or it is also considered confidential. The more opportunity, time, resources and ability an individual perceives to have, the more likely s/he will intend to perform the behavior in question. The extent to which perceived behavioral control proxies

Table 1. Summary of Hypotheses with Supporting Citations

Hypothesis 6. (a) Interpersonal trust is positively related to actual knowledge sharing, and (b) interpersonal distrust is negatively related to actual knowledge sharing. Hypothesis 7. The perceived organizational cultural dimension of sociability is positively related to actual knowledge sharing.	Liking influences behaviors as people tend to prefer "to say yes to the requests of people we know and like" (Cialdini 2001, p. 144). Individuals are more likely to assist a friend in need than a stranger or someone they do not like or trust. Interpersonal trust and sociability (the extent to which co-workers befriend each other; Goffee et al. 1996) are used as proxies for liking.	(Cialdini 2001; Ma 1992)
Hypothesis 8. Uniqueness is negatively related to actual knowledge sharing.	People value and will actively protect or seek items or resources that are perceived to be scarce. Unique knowledge is perceived to be a scarce commodity to which other individuals do not have access. Thus, if an individual perceives the knowledge to be unique, then they are also likely to attempt to protect it more.	(Brehm et al. 1981; Cialdini 2001)

Table 1 (continued). Summary of Hypotheses with Supporting Citations

METHODOLOGY

Research Design and Sample

In order to capture the relationship between intention to share knowledge and actual knowledge sharing, a two-part questionnaire was used as it is the recommended way to measure intentions prior to the actual behavior (Ajzen et al. 1980). Participants were given the first part of the questionnaire at Time 1. This questionnaire contained construct measures for the antecedent variables, intentions to share and the control variables (explained below). The questionnaire at Time 2 was sent to participants two weeks later and asked the participants to report the extent of their various knowledge sharing behaviors.

A total of 414 individuals completed the questionnaire at Time 1 (for an estimated response rate of 11%) and 308 Time 2 questionnaires were completed (representing an attrition rate of 26%). Of the Time 2 responses, individuals were removed from the final sample if they did not complete the Time 2 questionnaire between 8 and 19 days of completing the Time 1 questionnaire (an appropriate recall period, based on results of a pilot test), or if there was not a matching Time 1 questionnaire, or if the responses appeared to be invalid (e.g., all questions having the same response – which was only one respondent). This resulted in 237 participants who had completed the Time 2 questionnaire (13.6 days after completing the Time 1 questionnaire, on average). Since testing the research model required both data from Time 1 and Time 2, the analysis presented below (except for the demographic summary in the next paragraph) is based on a sample size of 237.

The sample consisted of 60% females and 40% males whose age varied widely (between 21 and 65). The majority of the participants were well educated, represented every type of level within an organization. Nearly every industry was represented within the sample. The organizations also varied in size from under 50 employees (22%) to over 1000 employees (30%).

Construct Measurement

Where possible, we chose existing valid measures from the literature. This was possible for all the antecedents. We measured the subjective norms as follows: perceived management support (6 items; Connelly et al. 2003), and the organizational cultural dimensions sociability and solidarity (4 items per dimension; Goffee et al. 1996). The attitudinal constructs were measured as follows: interpersonal trust and distrust (5 and 4 items, respectively; McAllister et al. 2003), organizational trust (4 items; Mayer et al. 1999), psychological ownership (4 items adapted for knowledge; Van Dyne et al. 2004), organizational ownership (adapted 3 items; Constant et al. 1994), perceived value of knowledge and uniqueness of knowledge (14 and 3 items respectively; Ford et al. 2006). Perceived behavioral control was measured with an adapted Taylor and Todd's (1995a) 3 item scale with an additional 5 items to measure perceived available time, resources, opportunity and level of ease.

The new measure proposed by Ford and Staples (2006) for actual sharing behaviors and intentions for these behaviors, was used as it met the fundamental caveats regarding the operationalization of behaviors (Fishbein, 1979): the behavior in question must be a behavior and not a behavioral category, and there must be correspondence for the timeframe and targets of the behaviors for the measures of intentions and actual behaviors. However, it had never been tested previously, so we tested the new measure for face validity, convergent validity, and reliability using a card sort and pilot study (Churchill 1979; Straub 1989). Questionnaires were also pre-tested for respondent comprehension, burden and interest, and questionnaire issues (Czaja 1997).

Analytical Procedures

With a mediated research model, structural equation modeling (SEM) was warranted. Partial Least Squares (PLS) was chosen as the SEM tool for this analysis. PLS uses a combination of principal components analysis, path analysis, and regression to simultaneously evaluate theory and data (Pedhazur 1982; Wold 1985). The path coefficients are standardized regression coefficients, while the loadings can be interpreted as factor loadings. Significance of the path coefficients are calculated using bootstrapping (generating t-statistics and significance levels). The hypotheses were considered supported if the hypothesized paths were significant and in the direction as hypothesized.

RESULTS

Measurement Model Results

Table 1 reports internal consistency values for the constructs in the research model of the full knowledge sharing data using the Fornell and Larker (1981) internal consistency formula (Cronbach's alpha is included for comparative purposes). The internal consistency scores all exceed 0.7 and had an average variance extracted score of 0.5 or higher indicating adequate reliability. The square root of this measure was used to assess discriminant validity (Fornell & Larker, 1981), and we examined the loadings of each individual item to ensure that adequate discriminant validity existed¹. Overall, the results suggest the measurement model is adequate so the structural model was examined for the full sample and each of the conditions.

Structural Model Results

We will first discuss the findings for the Full Knowledge Sharing Model, and then discuss the results for the Partial Knowledge Sharing Model (see Figure 2).

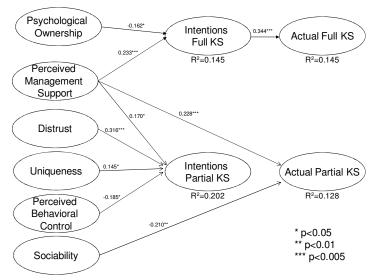


Figure 2. Research Model Results

Full knowledge sharing model

Hypothesis 1 (intentions are positively related to actual sharing) and Hypothesis 2a (perceived management support is positively related to intentions) were supported. All other hypotheses were not supported (p>0.05). Interestingly, while Hypothesis 3d (psychological ownership) was not supported, a significant negative relationship was found. Intentions to share accounted for 14.5% of the variance for Actual Full Knowledge Sharing, and psychological ownership and perceived management support accounted for 14.5% of the variance for Intentions to Fully Share Knowledge.

Partial knowledge sharing model

Unlike the results for full knowledge sharing, partial knowledge sharing model did not provide support for Hypothesis 1 (intentions positively related to actual behavior; p>0.05). Intentions for partial knowledge sharing were predicted by

¹ Due to space limitations, these tables are not presented here; however, the cross-loading matrices and correlation matrix of latent variable scores are available from the authors.

perceived management support (H2 supported), distrust and uniqueness (H3 not supported given opposite relationship), and perceived behavioral control (H4 not supported given opposite relationship), and had 20.2% of the variance explained. Conversely, actual partial knowledge sharing was predicted only by perceived management support (H5 supported) and sociability (H7 not supported given opposite relationship), and had 12.8% of the variance explained. No other hypotheses were supported.

DISCUSSION

We sought to address the research question, "Given the complex work environment for knowledge workers, what predictors become relevant when the previously documented significant predictors are considered, and under what contexts are they relevant?" The results from our study suggest that perhaps the best answer to the question in laymen's terms is, "It depends."

The relevant predictors appear to be contingent upon which behavior is being considered. As shown in the summary of the findings in Figure 2, different predictors were found for the two types of behaviors. For example, only psychological ownership and perceived management support were significant predictors to intentions to share knowledge fully, and intentions did predict actual full knowledge sharing (supporting the position that this behavior is reasoned and intentional). For partial knowledge sharing, perceived management support, organizational culture (sociability), perceived behavioral control, distrust, and perceived uniqueness of the knowledge became relevant. Furthermore, intentions did not predict actual partial knowledge sharing that partial knowledge sharing was better explained as an unintentional behavior than intentional behavior.

More importantly, these results provide further support to the proposition that full and partial knowledge sharing are separate constructs as they have separate nomological networks (very different predictors) and load on separate factors. The only common predictor was perceived management support. Thus, when studying knowledge sharing, researchers should be explicit about whether or not they are investigating full or partial knowledge sharing. Collapsing the two behaviors into a single categorical behavior of "knowledge sharing" is likely why there are so many predictors listed within the knowledge management literature.

Limitations and Recommendations for Future Research

As always, there are limitations to this study. Self-reporting through a questionnaire is potentially limited by recall ability, perceptual accuracy and response bias; however, having the respondent complete two different surveys at two different time periods does strengthen the results (as compared to asking for intentions and actual behavior in the same questionnaire). However, it is possible that commitment and consistency may have impacted our results, such that measuring intentions prior to the actual behaviors may have triggered more knowledge sharing behaviors than if intentions had not been measured. Future research using objective measures of knowledge sharing would be valuable to strengthen the validity of the reported findings. However, it should be noted that objective measures might not exist to differentiate between full and partial knowledge sharing, unless within an experimental setting.

Future research is warranted in this area to explore the relationships between the different knowledge sharing behaviors. Our results suggest partial and full knowledge sharing are separate constructs, but we did not examine whether or not these knowledge sharing behaviors are mutually exclusive, or if there are spillover effects. This was beyond the scope of this research; however, to explore whether or not this would be a fruitful line of research, we added a direct relationship between intentions to share fully to intentions to share partially and direct relationship between actual full knowledge sharing with actual partial knowledge sharing. The results of this alternative model were strong positive relationships between full and partial. Adding these relationships also dramatically increased the amount of variance explained in the actual partial sharing behaviors (R^2 =0.664) while leaving the other relationships significant as well. This suggests there may be a strong spillover effect. If one is fully sharing knowledge, then they are also likely to partially share knowledge. This is supported by the idea of commitment and consistency. Future research should be done to confirm this exploratory analysis, in the meantime, it appears as though these two behaviors might not be mutually exclusive ("either/or") but rather complimentary ("and").

CONCLUSION

The contributions of this research are three-fold. First, we illustrate that, while the Theory of Planned Behavior explains some of the actual sharing behaviors, it is fairly limited in its application in this context. When two contexts are included, the knowledge sharing behavior (i.e., the extent shared) and the recipient type, two different knowledge sharing models result with a more concise picture of why people share their knowledge at work through intra-organizational broadcast media.

Second, we illustrate that many of the predictors once believed as 'key' for knowledge sharing are not significant within the comprehensive framework. Third, we illustrate that the predictors for full knowledge sharing are substantially different than the predictors for partial knowledge sharing.

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