Cognitive or Affective? Unpacking the Effect of Attitude on Information Sharing Behavior

Full Paper

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Abstract
Prominent psychology research indicates an attitude is composed of three separate components, cognitive, affective and behavioral. This research considers the individual effect of each of these attitudinal components on a specific behavior, information sharing. Using conceptually and empirically supported scenario vignettes, as well as self-reported and computer recorded behavior, the relationship between the cognitive component of information sharing attitudes and actual information sharing behavior is supported.

Keywords
Information sharing; Attitude; Scenario-based measurement; Computer-recorded behavior

Introduction
Information is considered one of the most valuable assets of an organization (Barney, 1991; Grant, 1996; Alavi et al., 2006). In the seminal work of Robert Grant (1996), one of the essential characteristics of information is the transferability of this information within the firm. Some information is transferred primarily through communication, while other information may be considered tacit knowledge, and must be codified and observed to be applied and acquired through practice (Grant, 1996). Firms that can disseminate information between individuals and departments may develop a competitive advantage over those that cannot (Barney, 1991). Information sharing is defined as “the provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures” (Wang & Noe, 2010; p. 117). Information sharing is an important topic in the business management field, particularly in the knowledge management research stream.

The construct of information sharing gained popularity in 1994 as Constant et al. (1994) presented a seminal theory regarding attitudes of information sharing in organizations. The researchers presented a measurement of information sharing attitudes and the link between these attitudes and information ownership beliefs as well as behaviors regarding information sharing. Since this research, several other researchers have studied the concept of information sharing in organizations through both qualitative and quantitative methods (Jarvenpaa & Leidner, 1998; Jarvenpaa & Staples, 2000; Ruppel & Harrington, 2001; Alavi et al., 2006; Li & Lin, 2006; Wang & Noe, 2010).

However, limitations exist in the information sharing research stream. First, many of the studies record users' intentions to share (Constant et al., 1994; Jarvenpaa & Staples, 2000; 2001) or self-reported information sharing behavior (Bock et al., 2005), without measuring actual behavior. Measuring the intentions leads to a possible issue with response acquiescence or social desirability bias (Schwab, 2005) as subjects may be responding as they believe they should respond, as opposed to responding with their actual intentions or behaviors.

Second, variables measured in the information sharing literature are captured by a single source at a single period (Wang & Noe, 2010). A research design that measures variables in a single measure at a single period suggests causal inferences are limited, as temporal precedence cannot be established. Wang
and Noe (2010) suggested collecting the values for information sharing separately from the outcome variables to limit common method bias.

Third, the attitude construct is a complex object. Seminal psychology theory (Olstrom, 1969) postulated attitudes have three components, affective, cognitive and behavioral. A comprehensive attitude measurement may only capture a portion of the influence of attitude on behavior. This could lead to an issue of misspecification, where a statistical model does not include all collinear independent variables in the causal model (Schwab, 2005).

The present research addresses these issues by unpacking information sharing attitudes into three separate components and measuring the effect of each component on information sharing attitudes. This addresses the issue of model misspecification. The research design incorporates the use of scenario-based vignettes and computer recorded information sharing. The combination of survey data with objective measures of information sharing mitigates the risk of common method bias (Podsakoff et al., 2003).

**Literature Review**

**Information Sharing Attitudes**

As earlier discussed, information sharing is defined as “the provision of task information and know-how to help others to collaborate with others to solve problems, develop new ideas, or implement policies or procedures” (Wang & Noe, 2010; p. 117). An attitude is defined as “an individual’s propensity to evaluate a particular entity with some degree of favorability or unfavorability” (Eagly & Chaiken, 2007; p.583). These definitions may be combined to derive the definition of information sharing attitudes as an individual’s propensity to evaluate with some degree of favorability or unfavorability the provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures.

Information sharing attitudes have been researched in both the organizational behavior field, as well as the IS field. IS experts began researching information sharing attitudes as they specifically relate to how some IS and knowledge management systems are used, while organizational behavior research conceptualized the construct by measuring information sharing in terms of individual attitudes and considered the reasons why an individual may choose to share information or hoard information (Constant et al., 1994). From these two research streams, informative findings have been presented in terms of how sharing information differs from sharing other organizational resources, and why individuals have positive or negative information sharing attitudes.

In regard to how sharing information differs from sharing other organizational resources, an important finding is that an individuals’ attitude toward information is different from his or her attitude toward other resources in the organization. Jarvenpaa and Staples (2001) empirically showed that, if individuals recognize information as an organizationally owned resource, then their propensity to share information changes from “unlikely to share” to “likely to share” information.

Several reasons have been presented as to why an individual would possess a positive attitude toward sharing information. For example, the perception of management support has been shown to influence information sharing attitudes. Connelly and Kelloway (2003) found that while information sharing is voluntary in most cases, it is not necessarily spontaneous. If individuals had reason to believe top management supported knowledge sharing, for example, by investing in information sharing technology and infrastructures, then the individuals were observed as being interested in acting in agreement with management direction. By this logic, the information sharing attitude of an individual is influenced by the perceived support of management.

However, reasons have also been presented as to why negative information sharing attitudes exist. One of the reasons individuals may not have positive attitudes toward information sharing is fear of being betrayed, deceived, or replaced. Renzl (2008) studied the effect of fear about information sharing and described this fear as “fear of being betrayed, being deceived, or of being easily replaceable, i.e. the fear of losing one’s unique value” (Renzl, 2008; p.210). Renzl showed that if an individual is fearful of losing his or her power, or worth in the group, the individual will be less likely to share information.
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Attitude Components
As previously mentioned, an attitude is defined as “an individual’s propensity to evaluate a particular entity with some degree of favorability or unfavorability” (Eagly & Chaiken, 2007; p. 583). This definition of an attitude means an individual must evaluate an object and form a consistent preference with respect to that object. Following this logic, forming an attitude towards an item includes determining the level of value the individual ascribes to the item.

A prominent psychology researcher, Olstrom (1969) considers three components of an attitude and states, “It has been long assumed that attitudes have affective, behavioral, and cognitive components” (p. 5). The cognitive component of an attitude reflects the values and attributes assigned to the attitudinal object, for example beliefs about the object, relationships to the object with other objects, and characteristics of the object (Olstrom, 1969). In terms of information sharing, a cognitive attitude would consider the desirable and undesirable qualities of information sharing. A person may believe information sharing is good for an organization, or adds value to the department. This is the cognitive component of an attitude.

The second component of an attitude is the affective aspect. This component is sometimes referred to as the “gut reaction” (Olstrom, 1969; p. 16). A statement illustrating the affective component of an attitude should express “like or dislike, feelings, and emotional and physiological reactions.” (Olstrom, 1969; p. 16). If a person felt apprehensive toward information sharing, then this feeling would comprise the affective aspect of the information sharing attitude.

Finally, an attitude is composed of a behavioral aspect. This component solicits the behavior intention toward an object. Olstrom (1969) says a statement representing the behavioral component should reflect the respondent’s personal action tendencies toward the object. He points out, “They should be statements of past action, future intentions, and predicted behavior in hypothetical situations.” (p. 16). If a person was to state he or she did not plan on sharing information, then the attitude toward information sharing is poor, based on the behavioral component.

Previous Measurements
Observing attitudes, more particularly, components of attitudes, is sometimes difficult as attitudes may be internalized. Straub et al. (2002) describe this concept by saying “internalization goes beyond what others do and say and how we respond to them” (Straub et al., 2002; p. 19). The researchers argue for meaningful measurements of psychological constructs by eliciting responses through embedding attitudes in scenarios along with other “distractor” variables. By using these techniques, true and accurate scores may be obtained, as a context is provided and respondents are not guided by the wording of the item to a particular response.

For this reason, some researchers have chosen scenario vignettes to measure attitudes. Vignettes are “stories about individuals and situations which make reference to important points in the study of perceptions, beliefs, and attitudes.” (Hughes, 1998; p. 381). The vignette method (a.k.a., the scenario method) has recently been used to measure factors in IS research, such as evaluating interface design (Speier & Morris, 2003), accountability and unauthorized access (Vance et al., 2015), ethical decision making in IS (Thong & Yap, 1998), adoption of electronic channels (Choudhury & Karahanna, 2008), and virtual team trust (Robert et al., 2009).

Measuring attitudes through vignettes provides several advantages over other data collection tools, such as direct survey questions. One of the major advantages is precision (Robert et al., 2009). This is particularly true in this study where the term “information sharing” may mean different things to different people. If an individual was asked “Do you value sharing information?”, one respondent might consider social media use, while another might consider disclosing personal information or gossip. By describing the scenario, the likelihood of misinterpretation from respondents is decreased.

Vignettes are also helpful in decreasing response acquiescence (Hughes, 1998). Response acquiescence is defined as “a self-report response style in which the respondent tends to agree with a questionnaire item regardless of its content” (Schwab, 2005; p. 49). A scenario vignette presents an opportunity for sharing information, without making a judgement regarding the behavior, so the respondent may be less likely to agree without consideration of the content. Finally, vignettes protect against contamination by other factors affecting the respondent at the time of the study (Hughes, 1998). As Hughes (1998) points out, the
vignette provides a “snapshot” of a given situation (p. 383). This means the researcher can control the context and information provided.

Hypothesis Development

Prominent researchers have demonstrated the explanatory power of attitudes on the behavior of individuals. For example, the Theory of Planned Behavior (TPB) is a seminal theory positing the effects of attitudes on behavior, mediated by intention (Ajzen, 1991). As information sharing is a behavior of an individual, the effect of an information sharing attitude on the behavior of information sharing logically follows, as behavior intentions carry the effect of the attitude to the behavior. This logic has been supported empirically, for example in the context of technology usage (Davis, 1989) and e-commerce (Pavlou & Fygenson, 2006).

The focal attitude in the present research is the information sharing attitude. As discussed, favorable information sharing attitudes promote free and open sharing of information (Wang & Noe, 2010). The use of IS enables this free and open information sharing. IS provides a viable platform for sharing information, such as internal documents and data among customers and employees (Lai & Mahapatra, 1998). Conceptually, Scott (1998) described several ways intranets have been used to share knowledge, such as providing video conferencing to facilitate the transfer of tacit knowledge, or an intranet that offers a place for users to share original experiences. Therefore, if an individual expresses positive attitudes toward sharing information, reflected in the cognitive, affective, and behavioral components of an attitude, then the likelihood to share information is increased. The three model hypotheses flow from this reasoning, and are presented in figure 1:

**H1:** Information sharing behavior is positively related to information sharing attitude by the cognitive component of the information sharing attitude.

**H2:** Information sharing behavior is positively related to information sharing attitude by the affective component of the information sharing attitude.

**H3:** Information sharing behavior is positively related to information sharing attitude by the behavioral component of the information sharing attitude.

![Figure 1. Research Model with Hypotheses](image-url)

Research Design

The target population for this research includes any user of an IS in an organization. A sample from a public institution or private company would both be considered a subset of the target population if the organization offers an IS. The sampling frame for the current research includes undergraduate students enrolled in a core business management course (two courses were selected for recruitment). This sample population uses the IS (Blackboard) in the course. Student populations have invariably been used in previous research regarding IS use (Agarwal & Karahanna, 2000; Chen et al., 2002; Polites & Karahanna, 2012; Guiso et al., 2013), information sharing attitudes (Constant et al., 1994), and perceptions of the organizational environment (Wolfe & Loraas, 2008). Along with these studies that used a student population, this research will be at risk for generalizability issues (Schwab, 2005).
One of the ways this issue is mitigated is through the research design and setting. As Polites and Karahanna (2012) pointed out, a research setting that is not a contrived setting may provide an appropriate student sample. In their study of the effect of habit on IS adoption they asked university students to answer questions about their actual use of email to carry out a real and natural task. Similarly, many employees in organizations outside of academia use email to perform work functions. Therefore, the research setting is comparable to a setting of the target population. This is also true for the present research. Information sharing was measured through the observation of student use of a specific IS tool, the course discussion board. This is a similar technology used in business settings, namely an organizational intranet. Therefore, the insights gained from this student sample are likely to be applicable for the target population.

Participating students earned extra credit for their participation through completion of the survey. A mild incentive, such as extra credit has been shown to increase participation (Dillman et al., 2014). The participants were promised confidentiality, but his or her name was required to earn extra credit and link the responses with the observational data, therefore the survey is confidential, but not anonymous.

**Information Sharing Attitude Measurement**

To capture information sharing attitudes, scenario vignettes originally presented in the seminal work of Constant et al. (1994), and then later deployed by Jarvenpaa and Staples (2001). These two studies use the vignettes to elicit deeply rooted attitudes regarding information sharing or information hoarding in individuals. In terms of reliability, the specific vignettes were previously validated (Jarvenpaa & Staples, 2000; 2001; DiGangi & Wasko, 2008; Wolfe & Loraas, 2008; Saetang et al., 2010) and highly cited (Wasko & Faraj, 2000; Schultz & Leidner, 2002; Connelly & Kelloway, 2003; Bock et al., 2005; Poston & Speier, 2005; Lin, 2007; King, 2007; Wang & Noe, 2010).

The instructions for the vignettes read “Please read the below scenarios and respond to the questions as honestly as possible. Remember there are no wrong answers, just give your personal opinion.” In total, three vignettes measured information sharing attitudes. One of the vignettes may be found in figure 2. The other two vignettes presented a scenario of a professional organization instead of a company.

![Figure 2. Information Sharing Measurement Vignette (Jarvenpaa & Staples, 2001)](image)

Each of the three components of an attitude is present in the vignette questions at the end of the scenario. The first question asked, “How appropriate is it for Mel to ask you for help?”. This question addresses the cognitive component of an attitude.Olstrom (1969) described the cognitive component of an attitude to include “beliefs about the object, characteristics of the object, and relationships of the object.” (p. 16). A statement representing the cognitive component of an attitude would not include how the respondent feels about the object (that would be affective), but instead focuses on what the respondent believes as fact regarding the object. The question of whether Mel’s action is appropriate or not is a matter of belief. The respondent will provide the cognitive component of an attitude in answering this question.

The second questions asked, “How justified would you be in refusing to give Mel a copy of your material?”. This question addresses the affective component of an attitude, sometimes referred to as the “gut
reaction” (Olstrom, 1969; p. 16). A statement illustrating the affective component of an attitude should express “like or dislike, feelings, and emotional and physiological reactions.” (Olstrom, 1969; p. 16). The question from the vignette measures this emotion by eliciting the feeling the respondent would have after refusing to help. If they feel justified in refusing, then they would have a lower attitude toward information sharing than someone that would not feel justified in refusing. Thus, the emotion involved with information sharing is measured through this question.

The last question asked, “What is the likelihood you would help?”, this question addresses the behavior component of an attitude, as it solicits the behavior intention toward the object, information sharing. Olstrom (1969) says a statement representing the behavioral component should reflect the respondent’s person action tendencies toward the object. He points out, “They should be statements of past action, future intentions, and predicted behavior in hypothetical situations.” (p. 16). In the vignettes a hypothetical situation is presented and the cognitive, affective and behavior components of the information sharing attitude are measured. Based on the conceptual (Fishbein & Ajzen, 1975; Eagly & Chaiken, 2007; Straub et al., 2002), empirical (Constant et al., 1994; Jarvenpaa & Staples, 2000; 2001), and theoretical (Olstrom, 1969) support, using scenario based vignettes to measure information sharing attitudes is valid, precise and accurate.

**Information Sharing Behavior Measurement**

Information sharing behavior was measured in two ways. First, user-reported information sharing behavior was collected from a single item on the survey. The item was loosely adopted from Burton-Jones and Straub (2006) study of the use of the software program Excel by undergraduate students. The item asked, “When I was using Blackboard, I used the features that helped me communicate with other students, such as the email or discussion board tool”. A seven-item scale was offered ranging from “to a very large extent” to “Never”. While other items were used to measure Blackboard use, this specific question measured information sharing behavior directly.

To limit common method bias (Podsakoff et al., 2003) and improve accuracy (Venkatesh & Davis, 2000; Johnson et al., 2014), the individual users’ Blackboard discussion board log for the duration of the course was collected. This computer-recorded log provided the number of visits to the discussion board. The Blackboard discussion board is a forum used primarily by students, but monitored by faculty, to ask questions about course materials, policies, technical issues, and resources available. Students can also respond to other students, sometimes answering a question, and other times indicating similar issues.

Observational data, such as use logs, are exceedingly important in IS research. Straub et al. (1995) investigated the link between self-reported use and computer recorded system use in a study of the Technology Acceptance Model (Davis, 1989) and found the two measures of use are not strongly correlated, contrary to the expectations of prior IS research. Recent research (Johnson et al., 2014) has also supported this finding when researching the impacts of electronic health IS systems. Furthermore, Devaraj and Kohli (2003) pointed to the self-reported measurement of actual use as a reason for the weak empirical support of the relationship between use and individual and organizational performance. The authors investigated the actual use of a health IS and the financial and quality performance measures of the hospital and found significant support for the increase in actual use leading to better performance measures.

**Analysis**

680 undergraduate were recruited for the study, of which 486 elected to participate. Of this sample, 138 cases were removed for unengaged responses. This left a sample of 348 usable scores. Four variables had missing values, none above 1%, therefore the missing values were filled with the median score.

Normality was a serious issue for this data set, particularly the discussion board use measurement. The study was conducted in two different class, both introductory and both business core classes. One class had 56 participants and the other, 292. The observed information sharing variable (discussion board hits) was severely skewed and kurtotic in each class, and a combined data set. The reason for this non-normal distribution may lie in the way the discussion board was used in each class. In the smaller class, the discussion board was a small part of the participation credit earned in the course. In the larger course the discussion board was not part of any course credit. In the large class, only a very few students (7 out of
590) elected to use the discussion board. Therefore, the effect of attitude on actual information sharing behavior could not be assessed properly with this class.

Given the normality issues, the information sharing behavior variable was transformed using the two-step process in SPSS (Templeton, 2011). Since the survey variables were Likert scale variables, a transformation was not appropriate, the kurtotic variable in the smaller class data set was dropped from analysis, meaning the data reflected normal distribution. Data analysis was conducted on two data sets, the full sample (mildly skewed), considering only self-reported use as the outcome variable, and the small sample (relatively normal), considering both self-reported behavior and actual behavior as outcome variables.

While the measurement model exhibited acceptable convergent (standardized estimates averaged above 0.7) and discriminant (standardized estimates averaged below 0.8) validity, the model fit was low. After further investigation, it appears the items from each vignette were cross loading on each other. For example, the affective, cognitive, and behavioral components from vignette 2 were very similar to each other. By covarying the errors from the items in the same vignette, much better model fit was achieved.

As mentioned, path analysis for the full sample could only be completed using self-reported information sharing behavior as the dependent variable. The model reflected very poor explanation of variance, resulting in an r-squared of only 0.02, meaning only 2% of the variance in self-reported information sharing behavior could be explained by the information sharing attitude. The individual effects of each attitudinal component were also very low and insignificant.

In the small sample, different results were obtained, as actual information sharing behavior was also considered. The two information sharing behavior measurements were not significantly correlated. The information sharing attitude explained 5% of the variance in the self-reported measure and 10% of the variance in the actual behavior measure. When considering the self-reported measure, the cognitive and affective effects were found to be negative, while the behavior component reflected a positive effect. However, all three effects were insignificant, and therefore, when self-reported information sharing behavior was predicted, all hypotheses were unsupported. The path coefficients for self-reported use may be found in the left side diagram of figure 3.

![Path Analysis of Attitude on Information Sharing Behavior](image)

**Figure 3. Path Analysis of Attitude on Information Sharing Behavior**

When considering actual information sharing behavior, the effect of the cognitive component was found to be high, positive and significant at the 95% level, therefore supporting H1. The affective effect was also positive, but lower and insignificant. The behavioral component was found to be low, negative, and insignificant. Therefore, even when using observed information sharing behavior, hypotheses 2 and 3 were unsupported. The path coefficients may be found on the right side of figure 3.

**Findings & Conclusions**

Three important findings will be discussed from this analysis. First, the analysis shows a weak relationship between attitude and behavior in terms of information sharing. In the full sample, only 2% of the variance could be explained, and even in the smaller sample, only 5% or 10% of the variance could be explained. While the vignettes have been supported conceptually, empirically, and theoretically, they may...
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not be capturing the attitude effectively with a student sample. The vignettes refer to a work scenario, that students in the sample may not have encountered yet. This might explain the weak relationship.

Second, the analysis shows attitudes are more effective in explaining actual behavior than self-reported behavior. In fact, attitudes were twice as effective in explaining actual behavior. This may indicate the sensitivity of the information sharing behavior measurement. Previous researchers have shown the disconnect between self-reported and observed behaviors, particularly regarding IS use (Venkatesh & Davis, 2000; Devaraj & Kohli, 2003; Johnson et al., 2014). This research indicates the operationalization of the information sharing construct is also sensitive to data collection decisions.

Finally, the results show the cognitive component is the only significant predictor of information sharing behavior. Recall the cognitive component of an attitude refers to the beliefs associated with an object, and the relationships with that object. This component reflects the values and attributes associated with information sharing. This research empirically supports the relationship between the value placed on information sharing by an individual, and the actual information sharing behavior of the individual.

Surprisingly, the affective component of the information sharing attitude did not reflect the same effect. The affective component reflects how an individual feels about information sharing, particularly, the emotional response to information sharing. This study indicates information sharing behavior may not be predicted by this emotional response as much as the cognitive, or factual response to information sharing.

Also, it is surprising the behavioral component did not reflect a significant effect on information sharing behaviors. Since the behavioral component measures a person’s future intentions or predicted behavior, it would be logical for this relationship to be supported. The lack of support may indicate individuals may not be able to accurately predict information sharing behavior. An individual may not like sharing information, they might not even think they will share information, but if the person believes information sharing adds value for the group, then his or her information sharing behavior may be positive.

These findings may be extended to account for the limitations in the current research design. In the current research design, self-reported expected behavior of a fictitious scenario is compared to actual behavior of a real-life situation. While this may lend insight in the comparability and enduring nature of an attitude, the comparison may not be appropriate. Furthermore, the scenario may affect the subjects differently than sharing information in a course. In an organization, information sharing may help the company as a whole, thus improving an employee’s pride and accomplishment. However, sharing course information may help the class as a whole, but have little influence on the accomplishment of the student (in fact, the opposite could be argued). A good mitigation for this limitation is to measure a subject’s information sharing within a group project, where an individual’s grade may be improved by sharing.

The measurements of the current research may also be revised to be more direct and precise. There is a possibility the vignette question targeted to elicit the affective component of an attitude may instead be measuring another emotion, such as ethical or cognitive. The idea of information sharing be “justified” may not measure how one feels about information sharing, but instead whether it is fair or proper. Future research directed toward more of these deeply rooted emotions (ethical beliefs, justice, fairness) is needed to further our understanding of information sharing attitudes and behaviors.

As earlier mentioned, the need for information sharing is an important topic for researchers and practitioners. This research indicates the power of the cognitive component of the information sharing attitude on actual information sharing behavior. Managers may focus on promoting the appropriateness of sharing information to stimulate behavior. Perhaps by discussing the concept of organizational ownership of information, managers may appeal to the cognitive component of the attitude.

While the current research is not free from limitations, it moves the discussion of information sharing forward toward a more unified model of understanding information sharing behavior and motivations. This research unpacks the attitude construct into three separate components and considers the effects of each of these components on information sharing behavior. The cognitive component is the highest and only significant predictor of information sharing behavior. The research also finds the relationship between information sharing attitudes and information sharing behavior is weakly supported. Finally, this research finds the information sharing behavior construct is sensitive to measurement technique, in terms of self-reported versus observed behavior.
References and Citations


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