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Developing an Instrument for Measuring Knowledge Sharing Attitudes

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ABSTRACT

External pressures frequently compel firms who might otherwise be natural competitors to work together. For example, technical problems often need to be solved in order to create high-quality products. Recognition that the solution requires more than the capacities of an individual firm may then lead to collaboration (Stohl & Walker, 2002). Knowledge sharing among firms, departments or most often, among peers within an organization, provides better solutions to increasing development and production costs, decreasing research-to-market times and escalating problem and product complexity. A knowledge sharing strategy can significantly benefit firms (Stohl & Walker, 2002). However individuals with valuable specialized knowledge within the firm may perceive attempts to promote knowledge sharing as a threat to their personal competitive advantage. In this paper we first investigate the issues for firms wishing to cultivate a positive attitude to knowledge sharing amongst personnel. We then present a statistically validated pilot study that examines the requisite conditions for such positive knowledge-sharing attitudes to emerge.

INTRODUCTION

Earlier studies in the literature (e.g., Moore & Benbasat, 1991; Rogers, 1983; Tornatzky & Klein, 1982) do not provide a specific measurement for assessing knowledge sharing attitudes within organizations. In this paper, we attempt to fill this gap. We begin by investigating the role of beliefs in the formation of knowledge sharing attitudes. We then present an initial effort to develop an instrument for measuring attitudinal scale.

We recognize the existence of a number of external variables that can affect the formation of beliefs, such as demographics, personality traits, and attitude towards targets. However, within the confines of this paper, we explore only those beliefs that appear to directly underpin the formation of knowledge sharing attitudes without taking into account external variables that may influence these beliefs.

LITERATURE REVIEW

Our literature review revealed a number of factors affecting an individual's willingness to share knowledge with others.

Social Context

An individual may want to have a good relationship within his or her social circle. S/he may be motivated to contribute knowledge to others, as a means of maintaining a good relationship with other members of the same social circle (e.g., Short et al., 1976).

Moreover, an individual may receive more respect from others in the social circle if s/he contributes knowledge to others. S/he is likely to have an improved self-image, higher prestige and status in the social circle (e.g., Dutton et al., 1994).

In addition, as the individual contributes his/her knowledge, s/he may also receive knowledge in return. Although this may not necessarily happen on each occasion, the individual is likely to perceive him/herself as increasing his chances for receiving knowledge from others in the social group (e.g., Blau, 1967).

Anticipated Benefits

The growth in professional knowledge in specific fields means that without sharing knowledge, individuals cannot solve everyday life problems, whether at the level of the individual, of a group, of a firm, or of a multinational corporation. It becomes self-evident that if an individual shares his knowledge with others, in the end, all the people in the group can achieve better performance, be more effective, and be more productive (e.g., Compeau et al., 1999).

An individual is likely to form a positive attitude where s/he perceives these social and anticipated benefits as likely outcomes of knowledge sharing. Where an individual does not perceive these benefits as a likely result of knowledge sharing, s/he may form a negative attitude to knowledge sharing. For example, if an individual has initiated an attempt at knowledge sharing with others, but has experienced a lack of response, s/he may form a negative attitude and not wish to share knowledge in the future.

Apart from factors affecting knowledge sharing attitudes, certain conditions mediate the process of knowledge sharing.

Conditions that mediate the process of knowledge sharing

Group. There should be an in-group and out-group status. A group may be formed in a workplace. This may also be an interest group after work. There should be some kind of relationship between the members. It is only where some relationship exists, that certain types of group behavior can be expected (e.g., Short et al., 1976).

A Need. There should be a need, such as people working together towards a common goal. If an individual wants to share his or her knowledge, the receiver should have a requirement for the knowledge. For example, a group of people working together to complete a project has a common goal. They all hope to complete the project satisfactorily by complementing each other's expertise. The need for a successful project outcome requires knowledge sharing (*e.g., Latham & Locke, 1979*).

Trust. Trust should be developed between the sender and receiver of knowledge. If no such trust exists in the relationship, there are no expectations during or after knowledge sharing (e.g., Mayer & Davis, 1999).

Prior Experience. Prior experience of sharing knowledge with others will also affect an individual's attitude either to repeat or reject further opportunities for knowledge sharing (e.g., Compeau et al., 1999).

A Cooperative Environment. A cooperative environment is more likely to support a knowledge sharing process than is a competitive one. Experience can breed trust so that an individual realizes that knowledge

sharing will at the very least, cause him no harm. Where an individual finds knowledge sharing results in a negative outcome for him/her, that individual is unlikely to support further knowledge sharing (e.g., Pruitt, 1981).

We have identified several dimensions of beliefs about knowledge sharing as a basis for a composite survey instrument to predict individual attitudes to knowledge sharing. Constructs drawn from our analysis of the above-mentioned theories enabled us to develop an instrument to measure knowledge-sharing attitudes.

MODEL FRAMEWORK DEVELOPMENT

With the above-mentioned theories and conditions to facilitate knowledge sharing, relevant constructs from previous literatures and studies are discussed below to develop the model framework to study knowledge sharing attitudes.

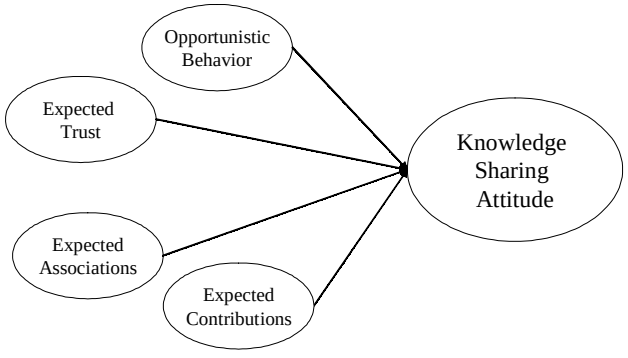
Cooperative Intentions. Cooperative intentions are referred to in marketing studies of relational selling behavior. Cooperative versus competitive behavior has been linked to perceptions of trust and satisfaction in negotiation contexts (e.g., Crosby et al., 1990; Mayer & Davis, 1999; Pruitt, 1981). Empirical studies also suggest that cooperation precedes trust (Axelrod, 1984). The extent to which another party is expected to behave cooperatively in part reflects the rules for problem/conflict resolution. To understand *cooperative intentions* in a knowledge-sharing context, an individual is expected to have a more positive attitude to share knowledge if s/he is working in a cooperative environment or workplace, which s/he can rely on, and in which s/he can work in harmony. Hence, an individual's perception of co-workers' *cooperative intentions* is hypothesized as a dimension of our instrument for measuring knowledge sharing attitudes within the workplace.

Perceived Opportunistic Behavior. Cooperative relationships are subject to '*opportunistic*' behavior. That is, an individual may exploit the other for short-term gain. Examples of *opportunistic behavior* in a workplace are withholding or distorting information, shirking or failing to fulfill promises or obligations. Once an individual perceives his/her workplace as supportive of *opportunistic behavior*, s/he is more reluctant to share knowledge. Social psychologists (Deutsch, 1973; Rempel et al., 1985) have discussed the perception of *opportunistic behavior* as the converse of trust in the dynamic of cooperation. Parkhe (1993) views opportunistic behavior as a transaction cost in cooperation. Trust evolves out of past experience and prior interactions such that the older the relationship, the greater the likelihood it has passed through a critical shakeout period of conflict and influence attempts by both sides. An individual's perception of *opportunistic behavior* will be negatively related to the history of cooperation. Therefore, the perception of *opportunistic behavior* within the workplace is hypothesized to be a dimension that inhibits positive attitudes to knowledge sharing.

Expected Associations. Expected associations, defined as the degree to which one believes one can improve mutual relationship through one's knowledge sharing, is a construct specifically developed to measure knowledge sharing attitudes (Bock & Kim, 2002). Based on social exchange theory, social interaction among people tends to engender feelings of personal obligation, gratitude, and trust. An initial offer of knowledge to a newcomer in the workplace results in a friendly relationship. The individual who has received the help feels an obligation to reciprocate. If a newcomer reciprocates appropriately, s/he will prove him/herself to be trustworthy and a relationship will be established (Blau, 1967; Bock & Kim, 2002; Gouldner, 1960). Therefore, it is assumed that if employees believe they can improve relationships with other employees by offering their knowledge, they are likely to develop a more positive attitude toward knowledge sharing.

Together with *trust* discussed in the previous section, all the above-mentioned dimensions contribute to the knowledge-sharing attitude and are summarized in the following figure (Fig.1).

Figure 1: Knowledge Sharing Attitude Dimensions



RESEARCH QUESTION

This study aims to develop a survey instrument to measure knowledge-sharing attitudes among academics.

The key research questions we investigate in this paper are the following:

- Under what circumstances is an individual willing to share his/her knowledge with others?
- What factors/beliefs/attitudes underpin willingness to share knowl edge with others?

For the purposes of this paper, we define knowledge as the intellectual capital of an individual. We exclude publicly available information as knowledge in our study. However, we do not confine knowledge sharing to any specific communication means, such as face-to-face, formal and informal written documents, conversations, and any other communications channels.

RESEARCH DESIGN

Subjects

The survey was distributed to faculties and research students in universities throughout the world. Thirty-one responses were collected at the end. Out of these, fourteen were faculty staff; another fourteen were research students, and three comprised non-academics working in universities. There were twenty-two male respondents and eight female respondents; one respondent was unidentified with missing value.

Organizational Context

In the study, we consider knowledge is possessed within an individual, instead of an organization. We confine our study to an individual's knowledge sharing within an organization and an individual's viewing of the outcome from his workplace. The academic field was the organizational context under investigation, as the study subjects were taken from all faculties and from research students who were working in universities.

Online Resources Website and Discussion Forum

The subjects contacted were primarily potential participants to the IRMA2004 International Conference, or potential reviewers for the conference. The subjects were encouraged to complete an online questionnaire when they were first contacted. The subjects were also encouraged to take part in an online discussion forum. The subjects received irregular notice on a special topic, together with an online resources website link. They could share views with other respondents on current issues, trends and research opportunities related to the specific topic. Respondents could express their own views, ask for comment, or search for collaborative opportunities. The website and online discussion forum were kept open until the closing date for conference participation.

Data Collection

Data were collected during July 2003 to September 2003. Questionnaire items were adopted from previous literature (See Appendix I). The questionnaire was hosted on a website online and the subjects were provided with a link to complete the questionnaire online. All the data received were collected and analyzed with respect to the reliability (using Cronbach's alpha values) and construct validity (using convergent, discriminant and factorial analysis).

Table 1: Descriptive Analysis

	Mean	Std. Deviation	Cronbach's Alpha
Expected Trust (ETRUST)			
ETRUST1	4.6452	1.58216	0.8787
ETRUST2	5.3333	1.02833	
ETRUST3	5.0968	1.35043	
ETRUST4	5.2258	1.28348	
Expected Associations (EASSO)			
EASSO1	5.5161	1.41117	0.8845
EASSO2	5.4516	1.43385	
EASSO3	5.4839	1.45765	
EASSO4	5.2581	1.26406	
Expected Contributions (ECONTR)			
ECONTR1	5.0645	1.71144	N/A
Opportunistic Behavior (OPPBEH)			
OPPBEH1	3.7097	1.59569	0.6839
OPPBEH2	3.9000	1.70900	
OPPBEH3	3.7000	1.44198	

Convergent and Discriminant Analysis

RESULTS

Data Analysis

The initial objective was to ensure content validity. A deductive approach was used in the study. A search of previous literature was conducted to identify the dimensions in knowledge sharing. We also reviewed, measurement of relevant beliefs and attitude constructs related to measurement of knowledge sharing in other object domains. Previously validated items from other studies were adapted with modifications to ensure the items were relevant to the measurement of knowledge sharing. We undertook a pilot-test to ensure items were readable and understandable. Unclear items were modified or deleted accordingly.

Showing in Table 1 below, the mean value of all the constructs exceeds 4.64 apart from that for Opportunistic Behavior (measured under 4). Opportunistic behavior related closely to negative attitudes to knowledge sharing whereas, low opportunistic behavior among the respondents related closely to a positive attitude towards knowledge sharing.

We then analyzed measurement validity in terms of reliability and construct validity. Reliability was evaluated using Cronbach's alpha of items of the same dimension. Cronbach's alpha for each construct was either close to or exceeded 0.7, the widely accepted value for exploratory studies. The result indicates strong reliability over the same items within each construct.

Construct validity was evaluated by examining the convergent and discriminant validity, and by using inter-item correlation analysis and factor analysis. Showing in Appendix II of the correlation coefficient matrix, the inter-item correlations were significantly higher than the intra-item correlations. Moreover, all the items underwent factor analysis to examine the convergent and discriminant validity of the constructs (See Table 2). Principal component extraction method, with Varimax, Kaiser normalization rotation method was applied to extract four components from the items. All the items exceeded 0.65 in factor loadings with EigenValues of more than one. The total variances explained by the four components are 78.193%, indicating the convergent and discriminant validity of each construct under investigation.

Table 2: Factor Analysis

	Components			
	1	2	3	4
ETRUST1	**0.80**	0.25	0.12	0.20
ETRUST2	**0.65**	0.48	0.22	-0.14
ETRUST3	**0.89**	0.19	0.00	0.07
ETRUST4	**0.92**	0.11	0.03	0.07
EASSO1	0.47	**0.67**	0.24	0.37
EASSO2	0.32	**0.85**	0.00	0.02
EASSO3	0.22	**0.77**	0.17	0.04
EASSO4	0.08	**0.84**	0.03	0.21
ECONTR1	0.15	0.22	-0.04	**0.93**
OPPBEH1	0.11	0.29	**0.71**	-0.01
OPPBEH2	-0.04	-0.25	**0.83**	0.19
OPPBEH3	0.16	0.25	**0.78**	-0.24
Eigenvalues	5.212	1.759	1.399	1.014
% of Variance	43.434	14.657	11.655	8.447

DISCUSSIONS & CONCLUSION

The instrument developed here offers several contributions to research. The most obvious is the creation of an overall instrument to measure various belief dimensions of knowledge sharing attitudes. The creation process included a review of known existing theories that support the conditions for knowledge sharing, and the adaptation of relevant items with modifications supported by the literature. Our analysis indicates that the instrument provides a high degree of confidence in its content and construct validity.

The development process also helped to clarify and refine definitions of knowledge sharing. Through the development process, some ambiguous concepts were either clearly identified as distinct dimensions in the scale, or were deleted.

This exploratory study also provides us with a basis for future research for a better understanding of the conditions and causal relationships between knowledge sharing attitudes, their antecedents and ensuing behavioral intentions.

Limitations

In this study, not all belief dimensions, such as, individual personality or demographic variables, were under investigation. We recognize these variables as likely to affect attitudes to knowledge sharing, but treat them as *external* factors not included under the category of beliefs surveyed in the instrument.

Due to time constraints this pilot study relies on a small sample which the authors intend to follow up with a larger scale sample study to examine the reliability and validity of the scale and further examine its applicability to real life situations. The final item on the expected contribution construct may also lessen the validity of the attitude scale.

This study targeted academics and researchers as a specific group featuring many interactions and knowledge sharing opportunities. The study of this specific target group gave us the best opportunity to investigate our findings. However, there are many other opportunities for organizations to facilitate knowledge sharing internally or across allied firms we have not considered in this paper. Further studies would offer the possibility of examining the generalizability of this instrument in different fields and sectors.

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APPENDIX I: MEASUREMENT ITEMS

(All items are randomly arranged (Question Number in bracket) and half of them are used with negation wordings (-ve). They are all measured with 7-point Likert Scale where 1 refers to Strongly Disagree and 7 refers to Strongly Agree)

Constructs	Items
Expected Trustworthiness (Mayer & Davis, 1999)	
1	If I share knowledge within my organization, my co-workers will believe that I try hard to be fair in dealings with others.
2	If I share knowledge within my organization, my co-workers will believe that I am very concerned about their welfare.
3	If I share knowledge within my organization, my co-workers will know that I am very capable of performing my job.
4	If I share knowledge within my organization, my co-worker will feel very confident about my skills.
Expected Associations (Bock & Kim, 2002)	
1	My knowledge sharing would strengthen the ties between existing members and myself in the organization.
2	My knowledge sharing would get me well acquainted with new members in the organization.
3	My knowledge sharing would expand the scope of my associations with other members in the organization.
4	My knowledge sharing would create strong relationships with members who have common interest in the organization.
Expected Contribution (Bock and Kim 2002)	
1	My knowledge sharing would help the organization to achieve its performance objectives.
Opportunistic Behavior (Parkhe, 1993)	
1	My co-workers have always provided me a completely truthful picture of the workplace.
2	My co-workers will never promise to do things without actually doing them later.
3	My co-workers seem to feel that it is okay to do anything within their means that will help further their own interest.

APPENDIX II: INTER-ITEM CORRELATION COEFFICIENT MATRIX

TRUST1	ETRUST2	ETRUST3	ETRUST4	EASSO1	EASSO2	EASSO3	EASSO4	ECONTR1	OPPBEH1	OPPBEH2	OPPBEH3
1.00											
0.54	**1.00**										
0.72	**0.65**	**1.00**									
0.75	**0.57**	**0.81**	**1.00**								
0.50	0.66	0.45	0.52	**1.00**							
0.41	0.52	0.36	0.38	**0.75**	**1.00**						
0.42	0.43	0.28	0.33	**0.70**	**0.72**	**1.00**					
0.25	0.48	0.32	0.17	**0.63**	**0.65**	**0.47**	**1.00**				
0.43	0.07	0.29	0.27	0.44	0.18	0.21	0.41	**1.00**			
0.16	0.31	0.00	0.07	0.28	0.23	0.28	0.27	0.07	**1.00**		
0.01	0.01	-0.01	0.03	0.18	-0.15	0.03	-0.18	0.02	**0.28**	**1.00**	
0.28	0.35	0.17	0.17	0.28	0.20	0.28	0.27	-0.04	**0.55**	**0.44**	**1.00**