Understanding the Instrumental Value of Knowledge Sharing Behaviour: The Three-Way Interaction of Task Environment, Individual Difference and Organizational Instrumentality

Xi Zhang
USTC-CityU Joint Research Center, xizhang@mail.ustc.edu.cn

Doug Vogel
City University of Hong Kong, isdoug@cityu.edu.hk

Chuanjie Guo
University of Science and Technology of China, cjguo@ustc.edu.cn

Follow this and additional works at: http://aisel.aisnet.org/pacis2008

Recommended Citation
http://aisel.aisnet.org/pacis2008/168
UNDERSTANDING THE INSTRUMENTAL VALUE OF KNOWLEDGE SHARING BEHAVIOUR

Zhang, Xi, and Chen, Zhenjiao, USTC-CityU Joint Research Center, USTC Suzhou Institute for Advanced Study, Ren’ai Road, Dushu Lake Higher Education Town, SIP, Suzhou, P.R. China, xizhang@mail.ustc.edu.cn, sharon@mail.ustc.edu.cn

Vogel, Doug, City University of Hong Kong, 83 Tat Chee Ave., Department of Information Systems, Kowloon, Hong Kong, P. R. China, isdoug@cityu.edu.hk

Guo, Chuanjie, University of Science and Technology of China, Jin’zhai Road, Hefei, P.R.China, cjguo@ustc.edu.cn

Abstract

Knowledge management literature offers inconsistent findings on the moderating effects of employee’s exchange ideology (EI) on the relationship between organizational instrumentality (e.g. reward) and employee’s knowledge sharing behaviour (KS). This study contributes to the literature by examining how interaction effect of EI and instrumentality (INS) depends on the task environment variable, i.e., task visibility (TV). The results show that TV×EI×INS had a significant interaction in the prediction of employee’s knowledge sharing behaviours in the organization. Specially, in the work environment of high task visibility, the positive relationship between INS and KS is stronger when the employee’s EI is higher. In the environment of low task visibility, INS is unrelated to KS regardless of the level of individuals’ EI. Theoretical and practical implications are discussed in the final section.

Keywords: Knowledge sharing, Instrumentality, Exchange ideology, Task visibility.
INTRODUCTION

Knowledge sharing is a critical step in the knowledge management (Wasko and Faraj 2005), as it can enable organizations to leverage their most valuable asset of employees sharing their knowledge with others. Without effective knowledge sharing, organizations might not integrate experts’ critical knowledge, skills and abilities (KSAs) to accomplish the complex and innovation work (Breu and Hemingway 2004). Thus, how to encourage employees’ knowledge sharing behaviour is the important research issue in the knowledge management (KM) field.

Knowledge sharing has been characterized as an exchange involving the provision of personal experience and knowledge in return for economic and social benefits (Kankanhalli, Tan et al. 2005). In the literature, economic exchange has been represented by organizational instrumentality, reflecting the explicit benefits of organization membership (e.g., improved pay, conditions, and benefits). Organizational instrumentality (INS) involves explicit and enforceable terms which organizations can provide directly. Thus, many organizations have provided instrumentality as critical KM strategies to encourage employees’ knowledge sharing behaviours. However, a review of knowledge sharing literature shows organizational instrumentality affects employees’ knowledge sharing behaviours at dissimilar levels: none (Moon and Park 2002), positive (Kankanhalli, Tan et al. 2005; Lin 2007) and even negative (Bock and Kim 2002; Bock, Zmud et al. 2005). Subsequently, to explain the inconsistent findings, researchers draw on contingency perspective to explore moderated variables that might interact with organizational instrumentality.

Based on social exchange theory, the employee-organization exchange is also influenced by individual exchange ideology (EI), defined as “the strength of an employee’s belief that work effort should depend on treatment by the organization” (Eisenberger, Huntington et al. 1986). High EI individuals are calculative and rational. Since knowledge sharing was considered as an exchange process, recent studies have examined the moderator effect of exchange ideology on the relationship between instrumentality and knowledge sharing (Redman and Snape 2005; Lin 2007). Unfortunately, related empirical studies reported ambiguous results of the moderating effects of exchange ideology again (Eisenberger, Huntington et al. 1986; Witt 1991; Witt 1991; Redman and Snape 2005). Some previous studies confirmed the positive moderating effects of exchange ideology on the effect of organizational support and employees’ repayment. However, other studies found exchange ideology has significantly negative moderating effects on instrumentality-employees’ repayment. Redman et al. (2005) suggested that to the extent by which employees will repay their organization in an organization-employee exchange relationship may depend on different organizational contexts. Therefore, it is expected that the interaction effect of exchange ideology and instrumentality may be conditional upon a third-level contextual variable.

The free riding theory (Jones 1984) identifies a series of contextual factors that may attenuate the positive effects of collective instrumentality on rational employees’ repayment behaviour, such as organizational structure, division of labour, group size, and task characteristics. From the perspective of free-riding theory, free riding is a phenomenon that rational employees (who aim to maximize net benefits) respond organizational instrumentality with little repayment (Albanese and Fleet 1985). Among these, one of the most important contextual variables is task visibility. In current research, it refers to employees’ effort (e.g. sharing knowledge with co-workers) on their jobs can be identified (George 1992). Under the high task visibility, high EI individuals believe that organizational instrumentality is due to their previous effort input. To obtain more anticipated benefits, they will be more likely to respond organizational instrumentality with more repayment, such as contributing knowledge. Under the low task visibility, high EI individuals deem that organizational instrumentality is not related with their previous knowledge contribution, and will accept organizational instrumentality without any knowledge sharing behaviour. Thus, the interaction effect of instrumentality and employees’ exchange ideology might be dependent on employees’ perceived task visibility.
So far, rare studies examined a three-way interaction that perceived task visibility regulates the interaction between organizational instrumentality and employees’ exchange ideology. To bridge up this gap, this study aimed to move beyond a two-way interaction and examine a three-way interaction in which task visibility moderates the interaction effect of organizational instrumentality and employees’ exchange ideology on employees’ knowledge sharing behaviour.

The remainder of the paper is organized as follows. In section two, we describe the literature and present the research hypotheses. In sections three, we present the study’s research methodology respectively. In section four, we present the result of data analysis. From section five to six, we discuss the results, present the implications, limitations and suggest future research directions.

1 LITERATURE REVIEW & HYPOTHESES

1.1 Interaction of EI with INS

Perceived organizational instrumentality (INS) derived from “instrumental rationality-based commitment”, reflects employees’ perceptions of the likelihood that organization will bring employees with various material benefits (Hui and Lam 2000). From the perspective of exchange theory, most researchers tend to elaborate the relationship between organizational instrumentality and employees’ response as an exchange process. For example, Hui et al. (2000) examined instrumentality-organizational citizenship behaviour (OCB) relationship, and found that employees who perceive higher levels of instrumentality are more likely to perform higher levels of OCB. However, social psychologists suggested that this organization-employee exchange is also dependent on employees’ exchange ideology (Eisenberger, Huntington et al. 1986). Exchange ideology (EI) is concerned with the extent to which individuals believe that their own reciprocating behaviour (e.g. knowledge sharing) should be a function of the benefits they receive from the social exchange (Eisenberger, Huntington et al. 1986). The individual with stronger exchange ideology will be more calculative and rational, and they are more likely to be motivated by the explicit benefits and costs from exchange process. The individual with lower exchange ideology will be more motivated by moral and obligation, and be less sensitive to explicit benefits (Eisenberger, Armeli et al. 2001).

Eisenberger et al. (1986) found that high EI employees will be more likely respond to extrinsic benefits with effort input than low EI employees. They argued that extrinsic benefits signify effort-benefit expectancy for high EI employees. To exchange more anticipated extrinsic benefit, high EI employees will be motivated to input more work efforts.

Knowledge sharing literature denoted that knowledge sharing involves a set of costs (e.g., work effort and loss of power), thus organizations should provide various extrinsic benefits to incentive employees’ knowledge sharing (Kankanhalli, Tan et al. 2005). According to the logic of Eisenberger et al.’s (1986) argument, for the employees with high exchange ideology, higher instrumentality (instrumental commitments) connotes high the net benefits of knowledge sharing, and will lead to higher levels of knowledge sharing behaviour. For the employees with low exchange ideology, higher instrumentality will not increase their knowledge sharing, as their knowledge sharing behaviours are due to their moral and obligation rather than the extrinsic benefits. Based on the above argument, the positive effect of instrumentality on knowledge sharing behaviour should be stronger for people with high exchange ideology than for people with low exchange ideology.

More recently, research reported extremely ambiguous results on the interaction effect between exchange ideology and instrumentality. For example, some previous studies confirmed the positive moderating effects of exchange ideology on a set of social exchange relationships in organizations (Eisenberger et al. 1986; Witt 1991a; Witt 1991b). For instance, in the small student groups, Lin (2007) found that exchange ideology intensifies the positive relationship between participative
decision making and knowledge sharing. In contrast, other studies have challenged these findings. For example, in the large unions of United States, Redman et al. (2005) found exchange ideology has significant and negative moderating effects on the instrumentality-organizational citizenship behaviour relationship. What is the critical reason for these ambiguous findings? Redman et al. (2005) suggested that the moderating effects of EI may be contingent on the different organizational contexts. In other words, organizational contextual factors may act as a third-level moderator to regulate the interactive effect of instrumentality and exchange ideology on employees’ reaction. Based on the free-riding theory, current research proposed that task visibility (TV) is one of the third-level moderators. And a three-way interaction of instrumentality, EI and TV may provide an explanation for previous ambiguous findings.

According to the rationale of free-riding theory, rational individuals tend to minimize their costs by free riding under the condition of low task visibility (Stigler 1974). When task visibility is low, individuals’ contribution is unidentifiable and effort-benefit link is ambiguous. Individuals may not obtain any benefits from high levels of effort nor receive any punishment for low levels of effort. Therefore, to maximizing their net benefits, rational individuals are prone to respond extrinsic benefits with lowest inputs or costs.

1.2 The Three-way Interaction between INS, EI, and TV

Empirical evidence shows that task visibility is negatively associated with free riding behaviour in organizations (Price 1987; George 1992). In the context of knowledge sharing, task visibility refers that individuals’ various efforts on job is identifiable, including knowledge contribution (George 1992). It is expected that high task visibility will be related to high knowledge sharing. Although, the main effect of task visibility is widely examined, little is known about the moderating effect of task visibility in an exchange relationship, especially under the context of knowledge sharing. When task visibility is high, knowledge shared by individuals is highly identifiable. Individual will more tend to regard organizational instrumentality as a reward for their previous knowledge sharing. Therefore, employees with high EI, who like to maximize their anticipated benefits, will be more likely to response organizational instrumentality with knowledge sharing. However, for employees with low EI, who place little importance on extrinsic rewards, the organizational instrumental will not affect their knowledge sharing to their organizations. In contrast, when task visibility is low, individuals’ knowledge sharing is not identified. Employees will deem organizational instrumentality as a collective incentive rather than a reward to their knowledge contribution. For high EI individuals, they have a free riding tendency to maximize their own net benefits, and respond organizational instrumentality will little knowledge contribution behaviour. For low EI employees, as only moral reason or obligation can induce their knowledge sharing, organizational instrumentality will not affect their knowledge sharing.

Therefore, it is expected that the interactive effect of exchange ideology and instrumentality is dependent on task visibility. The above argument is captured by the following hypotheses. The conceptual model of three-way interaction of task visibility, exchange ideology and instrumentality is illustrated in Figure 1.

**Hypothesis 1:** There will be a three-way interaction of INS, EI, and TV on employees’ KS behaviour.

**Hypothesis 2a:** INS will be unrelated to KS under the condition of low task visibility regardless of the level of individuals’ exchange ideology.

**Hypothesis 2b:** For employees with high perceived TV, the positive relationship between INS and KS is stronger when EI is high than when it is low.
2 METHOD

2.1 Operationalization of Constructs

A cross-sectional survey instrument was designed to get information about all of the variables. We adapted existing scales to enhance validity (Stone 1978). The formal definition of each constructs is described in Table 1.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Organizational Instrumentality (INS)</td>
<td>Employees’ perceptions of the likelihood that organization will bring employees with various material benefits (Hui and Lam 2000).</td>
</tr>
<tr>
<td>Individual Exchange Ideology (EI)</td>
<td>The strength of an employee’s belief that work effort should depend on treatment by the organization (Eisenberger et al. 1986).</td>
</tr>
<tr>
<td>Perceived Task Visibility (TV)</td>
<td>Employees’ beliefs about the extent to which their supervisors were aware of how much effort they exerted on the job and how hard they worked (George 1992).</td>
</tr>
<tr>
<td>Knowledge Sharing Behaviour (KS)</td>
<td>Individual sharing work relevant experiences and information within organizations (Lee 2001).</td>
</tr>
</tbody>
</table>

Table 1. Definition of Constructs

Some questions were modified to match the background of this study. One construct for knowledge sharing behaviours measured by the frequency from “Never” to “very frequently”. All the other constructs were measured through seven-point scales anchored from “strongly disagree” to “strongly agree”. A summary of survey items is listed in Table 2. Given the survey was executed in China, we used a backward translation to ensure consistency between the Chinese and the original English version of the instrument (Singh 1995).

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item Wording and Code</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Instrumentality (INS)</td>
<td>• The organization’s chances of improving my pay are great (INS1) &lt;br&gt; • The organization’s chances of improving my physical work environment are great (INS2) &lt;br&gt; • The organization’s chances of offering me job security are great (INS3) &lt;br&gt; • The organization’s chances of making my job more interesting are</td>
<td>Sverke et al. (1995)</td>
</tr>
</tbody>
</table>
The organization’s chances of getting the fire brigade to operate in a better way are great (INS5)
- The organization’s chances of bringing an improvement in my work situation are great (INS6)
- The organization’s chances of giving me more influence over my work are great (INS7)

Employee Exchange Ideology (EI)
- Employees should not care about the organization that employs them unless that organization shows that it cares about its employees (EI1)
- Employees should only go out of their way to help their organization if it goes out of its way to help them (EI2)
- An employee should work as hard as possible no matter what the organization thinks of his or her efforts (EI3) (R)
- If an organization does not appreciate an employee’s efforts, the employee should still work as hard as he or she can (EI4) (R)
- An employee who is treated badly by a company should work less hard (EI5)
- An employee’s work effort should depend partly on how well the organization deals with his or her desires and concerns (EI6)
- An employee should only work hard if his or her efforts will lead to a pay increase, promotion, or other benefits (EI7)
- An employee’s work effort should not depend on the fairness of his or her pay (EI8) (R)

Task Visibility (TV)
- My supervisor is generally aware of when a team member is putting forth below average effort (TV1)
- My supervisor is aware of the amount of work I do (TV2)
- It is generally hard for my supervisor to figure out how hard I am working (TV3) (R)
- My supervisor usually notices when a team member is not working hard (TV4)
- It is difficult for my supervisor to determine how hard I am working (TV5) (R)
- It is hard for my supervisor to determine how much effort I exert on my task (TV6) (R)

Knowledge Sharing (KS)
- I share work reports and documents with members of my team (KS1)
- I share report templates, models, and designing methodologies with members of my team (KS2)
- I share success and failure stories about my work in documents with members of my team (KS3)
- I share related knowledge obtained from other media (KS4)
- I share my experience or know-how from work with other team members (KS5)
- I provide my knowledge about know-where or know-whom at the request of other team members (KS6)
- I share my expertise obtained from my education or training with other team members (KS7)

Note: (R) Reverse-coded

Table 2. Survey Items

2.2 Respondent and procedure

Study participants were part-time MBA students from Shanghai and Suzhou, two eastern cities in mainland China. All respondents had similar backgrounds, and were knowledge workers likely to participate in knowledge sharing activities in their firms.
We sent 120 questionnaires to these respondents, and received 96 valid returned questionnaires, achieving a response rate of 80%. Out of 96 respondents, only 15 were female (15.6%). 47 respondents were in the age of 20 to 29 (49%). Among respondents, 36 had work experiences of 4 to 6 years (37.5%), and 35 had work experiences of 1 to 3 years (36.4%). On average, respondents worked in the organizations with 15.7 employees.

3 RESULT

The constructs were first assessed for reliability and validity. After ascertaining that the constructs could meet parametric requirements of the regression test, the hypotheses were tested using moderated multiple regression analysis.

3.1 Measurement Model

3.1.1 Descriptive Statistics

Table 3 presents means, standard deviations, correlations and Cronbach’s alphas of study variables. Instrumentality was found to have positive correlation with perceived task visibility ($r=0.270$, $p<0.01$). This replicates partial empirical result of Hui et al.’s (2000) study. Perceived task visibility was positively correlated with knowledge sharing ($r=0.376$, $p<0.001$), which provides some empirical supports for the notion that employees with high perceptions of task visibility are more likely to share knowledge.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>KS</th>
<th>INS</th>
<th>EI</th>
<th>TV</th>
</tr>
</thead>
<tbody>
<tr>
<td>KS</td>
<td>5.81</td>
<td>1.12</td>
<td>(0.93)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INS</td>
<td>4.72</td>
<td>1.17</td>
<td>0.152*</td>
<td>(0.92)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EI</td>
<td>3.79</td>
<td>1.43</td>
<td>-0.114</td>
<td>-0.134</td>
<td>(0.89)</td>
<td></td>
</tr>
<tr>
<td>TV</td>
<td>4.74</td>
<td>1.35</td>
<td>0.376***</td>
<td>0.270**</td>
<td>-0.137</td>
<td>(0.88)</td>
</tr>
</tbody>
</table>

Note: Numbers on the diagonal are Cronbach's alphas. * $P<0.1$; * $P<0.05$; ** $P<0.01$; *** $P<0.001$.

Table 3. Descriptive Statistics

3.1.2 Reliability

We assessed reliabilities of all independent variables by calculating Cronbach’s alpha at individual level. As shown in table 3, all the Cronbach’s alpha values were found to be greater than 0.7, the threshold suggested by Nunnally (1978).

3.1.3 Convergent and Discriminant Validity

The items were tested for validity using factor analysis with principle components analysis and varimax rotation (See Table 4). Convergent validity was assessed by checking loadings to see if items within the same construct correlated highly amongst themselves. Discriminant validity was assessed by examining the factor loadings to see if questions loaded more highly on their intended constructs than on other constructs (Cook and Campbell 1979). Tabachnick and Fidell (2000) suggested that loadings should be at least 0.32, and loadings from 0.45 to 0.54 are considered fair, 0.55 to 0.62 are considered good, 0.63 to 0.70 are considered very good and above 0.71 are considered excellent.
Factor analysis yielded 4 components with eigenvalues above 1. These 4 components corresponded to the 4 constructs. The validity of each construct is supported.

<table>
<thead>
<tr>
<th>Question</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>KS1</td>
<td>0.82</td>
<td>0.02</td>
<td>-0.06</td>
<td>0.20</td>
</tr>
<tr>
<td>KS2</td>
<td>0.84</td>
<td>-0.01</td>
<td>-0.12</td>
<td>0.19</td>
</tr>
<tr>
<td>KS3</td>
<td>0.81</td>
<td>-0.09</td>
<td>-0.15</td>
<td>0.09</td>
</tr>
<tr>
<td>KS4</td>
<td>0.67</td>
<td>0.12</td>
<td>-0.15</td>
<td>0.07</td>
</tr>
<tr>
<td>KS5</td>
<td>0.83</td>
<td>0.10</td>
<td>-0.10</td>
<td>0.18</td>
</tr>
<tr>
<td>KS6</td>
<td>0.86</td>
<td>0.19</td>
<td>0.00</td>
<td>0.10</td>
</tr>
<tr>
<td>KS7</td>
<td>0.88</td>
<td>0.03</td>
<td>-0.05</td>
<td>0.08</td>
</tr>
<tr>
<td>INS1</td>
<td>0.13</td>
<td>0.81</td>
<td>-0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>INS2</td>
<td>0.11</td>
<td>0.89</td>
<td>-0.09</td>
<td>0.10</td>
</tr>
<tr>
<td>INS3</td>
<td>-0.03</td>
<td>0.74</td>
<td>-0.04</td>
<td>0.17</td>
</tr>
<tr>
<td>INS4</td>
<td>0.02</td>
<td>0.89</td>
<td>-0.07</td>
<td>0.02</td>
</tr>
<tr>
<td>INS5</td>
<td>-0.02</td>
<td>0.87</td>
<td>-0.06</td>
<td>0.13</td>
</tr>
<tr>
<td>INS6</td>
<td>0.09</td>
<td>0.87</td>
<td>-0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>INS7</td>
<td>0.07</td>
<td>0.69</td>
<td>-0.03</td>
<td>0.18</td>
</tr>
<tr>
<td>EI1</td>
<td>-0.08</td>
<td>-0.11</td>
<td>0.66</td>
<td>-0.01</td>
</tr>
<tr>
<td>EI2</td>
<td>-0.19</td>
<td>0.00</td>
<td>0.73</td>
<td>0.10</td>
</tr>
<tr>
<td>EI3</td>
<td>-0.15</td>
<td>0.02</td>
<td>0.82</td>
<td>-0.05</td>
</tr>
<tr>
<td>EI4</td>
<td>-0.11</td>
<td>-0.04</td>
<td>0.81</td>
<td>-0.09</td>
</tr>
<tr>
<td>EI5</td>
<td>0.00</td>
<td>0.01</td>
<td>0.86</td>
<td>-0.12</td>
</tr>
<tr>
<td>EI6</td>
<td>-0.05</td>
<td>-0.02</td>
<td>0.83</td>
<td>0.02</td>
</tr>
<tr>
<td>EI7</td>
<td>-0.06</td>
<td>-0.13</td>
<td>0.76</td>
<td>-0.12</td>
</tr>
<tr>
<td>EI8</td>
<td>0.00</td>
<td>-0.12</td>
<td>0.57</td>
<td>0.00</td>
</tr>
<tr>
<td>TV1</td>
<td>0.14</td>
<td>0.17</td>
<td>0.00</td>
<td>0.72</td>
</tr>
<tr>
<td>TV2</td>
<td>0.03</td>
<td>0.12</td>
<td>-0.06</td>
<td>0.82</td>
</tr>
<tr>
<td>TV3</td>
<td>0.23</td>
<td>0.16</td>
<td>-0.13</td>
<td>0.76</td>
</tr>
<tr>
<td>TV4</td>
<td>0.23</td>
<td>0.12</td>
<td>-0.01</td>
<td>0.75</td>
</tr>
<tr>
<td>TV5</td>
<td>0.07</td>
<td>0.03</td>
<td>-0.02</td>
<td>0.81</td>
</tr>
<tr>
<td>TV6</td>
<td>0.15</td>
<td>0.12</td>
<td>-0.01</td>
<td>0.80</td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>5.01</td>
<td>4.98</td>
<td>4.78</td>
<td>3.89</td>
</tr>
<tr>
<td>Variance explained (%)</td>
<td>17.85%</td>
<td>17.82%</td>
<td>17.07%</td>
<td>13.91%</td>
</tr>
<tr>
<td>Cumulative variance (%)</td>
<td>17.85%</td>
<td>35.68%</td>
<td>52.75%</td>
<td>66.65%</td>
</tr>
</tbody>
</table>

Table 4. Validity of Questions

3.2 Control Variables

Previous studies suggest that gender (Jarvenpaa and Staples 2000; Lin 2007), age (Jarvenpaa and Staples 2000), and work experience (Lee 2001) may have an impact on knowledge sharing. The basis of these differences in thinking and behaviour may influence the formation of knowledge sharing. In this study, gender, age and experience of participants are included as control variables. Department size, which may affect the individual’s free-riding tendency of knowledge sharing (Albanese and Fleet 1985), is also considered as a control variable since the knowledge sharing behaviour is usually lower in larger departments.
3.3 Hierarchical Multiple Regression Results

To test the hypothesized three-way interaction, a four-step hierarchical linear regression model was examined for knowledge sharing behaviour (Aiken and West 1991). Following Aiken and West (1991), the independent variables were mean-centred before forming the interaction terms. In the first step, the control variables were entered into the regression. In the second step, the three main effects of organizational instrumentality (INS), exchange ideology (EI) and task visibility (TV) were entered. In the third step, three two-way interactions were included. In the fourth step, the three-way interaction was included.

As shown in Table 5, in step 1, no variables were significantly related to knowledge sharing behaviour. In step 2, task visibility was significant positive related to knowledge sharing behaviour, and explained 10% of the variance ($R^2=0.10$, $F (3, 81) = 3.1, P<0.05$). The main effects of INS and EI were not predictive for knowledge sharing behaviour. In step 3, all possible two-way interactions showed no significant effects on employees’ knowledge sharing behaviour either. Finally, in step 4, the focal three-way interaction reached high significance, and explained 11% of the variance in employee’s knowledge sharing behaviour ($R^2=0.11$, $F (1, 77) = 12.1, P<0.001$). Therefore, hypothesis 1 was confirmed.

### Table 5. Results of Hierarchical Multiple Regression

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Standardized Coefficients</th>
<th>$\Delta R^2$</th>
<th>$R^2$ (adj.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1: Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td>0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>0.05</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td><strong>Step 2: Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instrumentality (INS)</td>
<td>0.11*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exchange Ideology (EI)</td>
<td>-0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Visibility (TV)</td>
<td>0.27*</td>
<td>0.10*</td>
<td>0.14(0.07)</td>
</tr>
<tr>
<td><strong>Step 3: Two-way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INSxEI</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INSxTV</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EIxTV</td>
<td>0.17</td>
<td>0.03</td>
<td>0.17(0.06)</td>
</tr>
<tr>
<td><strong>Step 4: Three-way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INSxEIxTV</td>
<td>0.38***</td>
<td>0.11***</td>
<td>0.28(0.18)</td>
</tr>
</tbody>
</table>

*p<0.1; **p<0.05; ***p<0.01; ****p<0.00

To evaluate our hypothesis 2a and 2b, we plotted the interaction (see Figure 2) and examined the simple slopes according to Aiken and West’s (1991) procedure. The results show that organizational instrumentality does not have significant relationship with knowledge sharing behaviour under the conditions of low TV, regardless of the level of individual EI. Therefore, the interactive effect fully confirms hypothesis 2a.

Under the conditions of high TV, organizational instrumentality has a positive and significant relationship with knowledge sharing behaviour at high levels of both TV and individual EI (p<0.01). However, organizational instrumentality does not have significant relationship with knowledge sharing behaviour under the conditions of high TV and low EI. The interactive effect is in support of
hypothesis 2b that for low perceived TV employees, the positive relationship between INS and KS is stronger when employees’ EI is high than when it is low.

![Figure 2. Three-way interaction patterns](image)

**4 DISCUSSION**

Past research has found that employee’s exchange ideology has moderating effects in the relationship between organizational instrumentality and knowledge sharing behaviour (Sinclair and Tetrick 1995; Redman and Snape 2005; Lin 2007). However, the moderating effects have been inconsistent. Some findings suggest the positive effects while others suggest absent or negative effects. Our findings unite and begin to clarify these past findings by investigating task visibility as the third-level moderator.

Our results showed that the three-way interactions of organizational instrumentality, employee’s exchange ideology and task visibility reached high significance, and explained 11% of the variance in employee’s knowledge sharing behaviour. Closer examination of these interactions showed instrumentality had more positive effect on knowledge sharing for high TV and high EI. Under the condition of low TV, instrumentality was unrelated to knowledge sharing regardless of high or low EI.

The practical implication of our findings seems to be clear. Organizational instrumentality aimed at increasing employees’ knowledge sharing behaviours should consider task visibility and individual difference. Based on our findings, high task visibility is essential for the effectiveness of organizational instrumentality. Thus, organizations should establish an individual performance evaluation process to be associated with the instrumentality. Our second suggestion is that organizations should consider “different strokes for different folks”. In the other words, organizations should provide a portfolio of incentives different individuals for everyone favouring the outcomes of their sharing effort. Numerous studies have suggested several organizational interventions facilitating knowledge sharing behaviour. For example, organizational rewards will have positive influence on individual explicit motivation (Moon and Park 2002; Lin 2007), while sharing culture may be positively related to individual’s intrinsic motivations (MvDermott and Dell 2001).

In this study, there is an alternative explanation of the three-way interactive effect of INS, EI and TV from the cost-benefit perspective. Based on social exchange theory, individual will maximize the benefit and minimize the cost in making a decision (Blau 1964). The individual’s perception of benefits on social interaction is dependent on individual EI (Eisenberger 1986). While the individual’s perception of costs on social interaction is dependent on individual’s perception of TV (George 1992). Therefore, there is expected to be a three-way interaction of INS, EI and TV. The future studies may be conducted to examine the three-way interactive effects from different perspectives.

This study also has some potential limitations. First, common method variance may bias our findings to some degree. However, findings concerning the direction of interaction effects may be less susceptible to common method bias than are those concerning the significance of main effects (Podsakoff, Mackenzie et al. 2003). Second, the sample in this study consisted of 96 part-time MBA students. The statistic power of our findings may be doubtable for sample size. Based on Tabachnick
and Fidell’s (1989) criteria in multiple regression analysis, sample size should be to have at least 5
times more cases than IVs. And it is perfect that if sample size is to have 20 times more cases than IVs.
With an N of 96 and 7 IVs (including 4 control variables) in our regression analyses, our cases to
independent variables ratio is 1:13.7, which is acceptable. Thus, we would argue the small sample size
may lower our power, but this was not a relevant factor given the effect sizes that we found. Third, the
subjects in this study were part-time MBA students. The student sample may reduce the generalization
of this study (Randall and Gibson 1990). However, we would argue using part-time MBA students
with work experience, rather than those without work experience, helps facilitate improved external
validity (Scandura and Williams 2000). In the future studies, more data in the real organizations
should be collected.

5 CONCLUSION

In this study, we examined the task visibility (TV) as a moderator of interactive effects of
organizational instrumentality (INS) and employee’s exchange ideology (EI) on employee’s
knowledge sharing behaviour. In the results, we found there is a three-way interactive effect of INS,
EI and TV. Furthermore, under the condition of high TV, we found INS is more related to employee’s
knowledge sharing behaviour for the employees with high EI rather than those with low EI. While
under the condition of low TV, INS is unrelated to employee’s knowledge sharing behaviour
regardless of the level of EI. This finding is consistent with prior studies about absent or negative
reaction of incentives with the perspective of free-riding behaviour. We believe that these findings
contribute the knowledge management literature by showing there is a three-way interactive effect of
task characteristics, organizational interventions and individual difference on knowledge sharing
behaviour within organization. In the practice, we suggest that organizations should establish a
“visible” individual performance evaluation process to be associated with application of organizational
incentives. Future studies will be conducted to collect more data in the real organizations and to
examine three-way interactive effects from different perspectives.

References

York, Sage.
Academy of Management Review 10(2): 244-255.
Bock, G. W. and Y. G. Kim (2002). "Breaking the Myths of Rewards: An Exploratory Study of
Attitudes about Knowledge Sharing." Information Resources Management Journal 15(2): 14-
21.
Examining the Roles of Extrinsic Motivators, Social-Psychological Forces, and
Organizational Climate." MIS Quarterly 29(1): 87-111.
Psychology 71(3): 500-507.


