TECHNOLOGICAL, INSTITUTIONAL, AND SOCIAL-PSYCHOLOGICAL INFLUENCES ON KNOWLEDGE SHARING IN WORK GROUPS: A MULTILEVEL INVESTIGATION

YU YAN

DOCTOR OF PHILOSOPHY
CITY UNIVERSITY OF HONG KONG
APRIL 2009
Technological, Institutional, and Social-psychological Influences on Knowledge Sharing in Work Groups: A Multilevel Investigation

Submitted to
Department of Information Systems
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

by

YU Yan

April 2009

二零零九年四月
Abstract

Recognizing knowledge as a valuable asset and as an important factor of competitiveness and sustainability, organizations are purposefully deploying knowledge management initiatives. One of the main objectives of these initiatives is to enhance knowledge sharing. Modern organizations increasingly adopt group settings to cultivate knowledge sharing among group members. The most important initiatives taken in this regard include: 1) the deployment of technologies such as knowledge management systems (KMS), and 2) meta-structuring actions such as championship and redesigning business processes and reward systems to increase the interdependence among individuals within groups. Although both researchers and practitioners recognize the importance of such initiatives, there is very little empirical evidence of their effectiveness. Furthermore, the effects of these initiatives on the social/psychological factors driving knowledge sharing are not well understood. More importantly, there is a lack of a theoretical framework explaining the direct and indirect effects of technological and meta-structuring factors on individual knowledge sharing within groups. Methodologically, prior research examining the drivers of knowledge sharing has focused on one single unit of analysis, either the individual level or the group/organizational level. Such an approach fails to explain the interrelationship between the macro meta-structuring actions and the individual’s micro socio-psychologies.

To address these theoretical and methodological gaps, this thesis uses the structuration theory as framework and follows a multilevel approach to examine how KMS and meta-structuring initiatives affect group member knowledge sharing behavior. A research model explaining the direct and indirect effects of KMS appropriation and meta-structuring factors, i.e., championship and interdependence, is developed, theoretically justified and empirically tested. The KMS appropriation factors are based on the theory of
adaptive structuration and technology-in-practice. The group structures are identified on the basis of the interdependence and leadership research to reflect the institutional aspect of structuration. Individual socio-psychological factors shaping individual motivation and cognition, derived from social identity theory and the literature of climate, are identified as mediators of the effects of group structures.

The empirical study consists of a survey administered in China, involving 473 individual members nested in 60 knowledge-intensive work groups from 10 different organizations. The results of a multilevel analysis reveal the distinct roles of technology appropriation, group meta-structuring and individual socio-psychological factors on the group member knowledge sharing. The results highlight the importance of KMS appropriation within groups – the consensus of the KMS use at the group level would be beyond individual attitudes. The study also demonstrates the mediating effects of individual socio-psychologies that link the purposive managerial practices to individual knowledge sharing behavior. Theoretical, methodological and practical contributions are discussed in the thesis.

**Keywords:** Knowledge Sharing, Structuration, Social Identification, Knowledge Management Systems, Appropriation, Multilevel Research, Work Group
# Table of Contents

**ABSTRACT** ........................................................................................................ I

**TABLE OF CONTENTS** ....................................................................................... III

**LIST OF FIGURES AND TABLES** .................................................................... V

**CHAPTER 1 INTRODUCTION** ......................................................................... 1
  1.1 Phenomenon ................................................................................................. 1
  1.2 Research Gaps .............................................................................................. 3
  1.3 Significance ................................................................................................... 6
  1.4 Organization ................................................................................................. 9

**CHAPTER 2 LITERATURE REVIEW** .............................................................. 10
  2.1 Critical Review of Knowledge Sharing ....................................................... 11
    2.1.1 Beneficial knowledge sharing ............................................................... 11
    2.1.2 Motivation to knowledge sharing ........................................................ 12
    2.1.3 KMS and knowledge sharing ............................................................... 16
    2.1.4 Organizational rationality .................................................................. 19
  2.2 Structuration: Dual Influences ................................................................. 22
    2.2.1 Theory of structuration ................................................................ 22
    2.2.2 Group process and Nested structuration theory .............................. 26
  2.3 KMS Appropriation .................................................................................... 27
    2.3.1 Structuration theory in IS research ............................................... 27
    2.3.2 KMS appropriation in organizations ............................................. 32
  2.4 Group Design, Climate and Influences ..................................................... 34
    2.4.1 Institutional theory ........................................................................ 34
    2.4.2 Interdependence and group design ............................................... 38
    2.4.3 Champions and leadership ............................................................... 41
    2.4.4 Group climate ................................................................................ 42
  2.5 Social Cognition, Affection and Behavior ............................................. 44
    2.5.1 Cognitive-affective foundation for behavior .................................. 44
    2.5.2 Social identification and categorization ......................................... 45
  2.6 Chapter Summary ...................................................................................... 48

**CHAPTER 3 RESEARCH FRAMEWORK** ....................................................... 50
  3.1 A Multilevel Model for Knowledge Sharing ..................................... 50
  3.2 Hypotheses Development ....................................................................... 57
    3.2.1 Effects of KMS appropriation variables for knowledge sharing .......... 57
    3.2.2 Effects of individual identification variables for knowledge sharing .... 60
3.2.3 Effects of group structural variables for knowledge sharing .......................... 66

3.3 Chapter Summary ................................................................................................. 79

CHAPTER 4 METHODOLOGY .................................................................................. 81
4.1 Sample and Data Collection .................................................................................. 81
4.1.1 Pilot studies ........................................................................................................ 82
4.1.2 Main study ........................................................................................................ 82
4.2 Measures ................................................................................................................ 84
4.2.1 Measurements of dependent variable ............................................................... 84
4.2.2 Measurement of independent variables at individual level .............................. 85
4.2.3 Measurement of independent variables at group level ..................................... 86
4.3 Data Analysis ......................................................................................................... 89
4.4 Chapter Summary ................................................................................................. 90

CHAPTER 5 ANALYSES AND RESULTS ................................................................... 91
5.1 Common Method Variance .................................................................................... 91
5.2 Reliability and Validity Assessments .................................................................... 95
5.2.1 Reliability assessment ....................................................................................... 95
5.2.2 Within-group agreement and between-groups variability ............................... 95
5.2.3 Unidimensionality and convergent validity assessment ................................. 97
5.2.4 Discriminant validity assessment .................................................................... 99
5.3 HLM Results for Hypotheses Testing .................................................................. 103
5.3.1 Overview .......................................................................................................... 103
5.3.2 HLM null models ............................................................................................. 104
5.3.3 Multilevel model results ................................................................................... 105
5.4 Chapter summary .................................................................................................. 114

CHAPTER 6 DISCUSSION .......................................................................................... 116
6.1 Group Consensus vs. Individual Attitudes ............................................................. 116
6.2 Group Structures and Individual Social-psychology ............................................ 118
6.3 Identity-oriented Social-psychology ..................................................................... 121

CHAPTER 7 IMPLICATIONS AND CONCLUSION .................................................... 125
7.1 Theoretical Implications ...................................................................................... 125
7.2 Methodological Implications ................................................................................ 131
7.3 Managerial Implications ...................................................................................... 133
7.4 Limitations and Future Directions ....................................................................... 136
7.5 Conclusion ............................................................................................................ 139

APPENDIX: OPERATIONALIZATION OF CONSTRUCTS ........................................ 141

REFERENCE .......................................................................................................... 146
List of Figures and Tables

Figure 2.1  Literature Review Map .......................................................... 10
Figure 2.2  Dimensions of Duality of Structure ........................................ 24
Figure 2.3  Nested Theory of Structuration .............................................. 26
Figure 3.1  A Multilevel Model for Individual Knowledge Sharing in Work Group 56
Table 3.1  Summarization of Hypotheses ................................................ 79
Table 4.1  Demographic Information of Respondents, Teams, and Organizations...84
Table 5.1  Correlations of Individual level and Group level Variables ............ 93
Table 5.2  Marker-Variable based Common Method Variance Assessment ........ 94
Table 5.3  Reliability Assessment of Latent Variables ................................. 95
Table 5.4  Reliability Assessment of Group-level Variables .......................... 96
Table 5.5  Goodness of Fit Indices of Confirmatory Factor Analysis ............... 97
Table 5.6  Factor loadings of Individual Level Latent Variables .................... 98
Table 5.7  Factor loadings of Group Level Latent Variables .......................... 99
Table 5.8  Discriminant Validity Assessment of Individual-level Variables ....... 100
Table 5.9  Discriminant Validity Assessment of Group-level Variables .......... 100
Table 5.10  Pair Comparisons for Discriminant Validity Assessment .............. 102
Table 5.11  HLM Analyses for Individual-level and Group-level Effects .......... 108
Table 5.12  HLM Analyses for Mediation Effects ....................................... 109
Table 5.13  Results of Regression Analyses .............................................. 113
Table 5.14  Summary of Hypotheses Testing ............................................ 114