Knowledge Sharing within Organizational Boundaries of Hong Kong Construction Firms

TANG Tak Man

MSc, MBus, BSc (Hons)

Doctor of Business Administration

University of Newcastle, Australia

April 2010
STATEMENT OF ORIGINALITY

This dissertation contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to this copy of my dissertation, when deposited in the University Library, being made available for loan and photocopying subject to the provisions of the Copyright Act 1968.

________________________
TANG Tak Man
ACKNOWLEDGEMENTS

It is my privilege to express the deepest thanks to the following people who have given immense support and wise counsel to me. My greatest debt of gratitude is owed to my supervisor Dr Thomas NG, Associate Professor of the University of Hong Kong, who provided not only his patience and kindheartedness in the production of this dissertation, but also his treasured comments and continuous encouragement. Thanks also go to a group of academics from the University of Newcastle who directed me to pertinent research material and contributed to the refinement of my dissertation proposal.

In addition, the dissertation would not have been possible without the valuable contributions from the focus group members who, despite their own obvious cares in specialist practices, found time to give thoroughly advice. Also, thanks to the industry practitioners who have completed the questionnaire. Their comments and factual information are particularly useful for evaluating the relevance and practical implications of the work and bringing this research closer to existing practice.

Thanks are due to all those involved. They have devoted tremendous time and effort to this work. All credit is due to the contributions, while criticisms and faults remain my own responsibility.
# Table of Contents

ACKNOWLEDGEMENTS .......................................................................................................................... II

SYNOPSIS .................................................................................................................................................. X

CHAPTER 1 – INTRODUCTION .................................................................................................................. 1

1.1 BACKGROUND ................................................................................................................................. 1

1.2 AIM AND OBJECTIVES ...................................................................................................................... 3

1.3 THEORETICAL FRAMEWORK ......................................................................................................... 4

1.3.1 Group Dynamics .......................................................................................................................... 6

1.3.2 Motivation .................................................................................................................................... 7

1.3.3 Normative Consequences ........................................................................................................... 8

1.3.4 Work Environment ..................................................................................................................... 8

1.4 RESEARCH QUESTIONS ................................................................................................................. 9

1.5 RESEARCH DESIGN ....................................................................................................................... 10

1.5.1 Focus Group Discussion .............................................................................................................. 11

1.5.2 Questionnaire ............................................................................................................................ 12

1.6 LIMITATIONS ................................................................................................................................... 14

1.6.1 Objectivity ................................................................................................................................. 14

1.6.2 Sampling .................................................................................................................................... 15

1.7 OUTCOMES AND SIGNIFICANCE ................................................................................................. 15

1.7.1 Academic Contribution .............................................................................................................. 15

1.7.2 Managerial Relevance .............................................................................................................. 16

1.8 DISSERTATION CONTENTS .......................................................................................................... 17

1.9 CONCLUSION ................................................................................................................................. 19

CHAPTER 2 – LITERATURE REVIEW .................................................................................................... 21

2.1 INTRODUCTION ............................................................................................................................... 21

2.2 DEFINITION OF KNOWLEDGE .................................................................................................... 22

2.2.1 Epistemology of Knowledge ....................................................................................................... 23

2.2.2 Taxonomy of Knowledge ........................................................................................................... 25

2.3 KNOWLEDGE SHARING IN THE CONTEXT OF KNOWLEDGE MANAGEMENT ....................... 29
2.4 KNOWLEDGE SHARING SYSTEM ................................................................. 32
  2.4.1 Need for Knowledge Sharing ............................................................... 33
  2.4.2 Attributes of Communicated Knowledge ............................................ 34
  2.4.3 Knowledge Network ........................................................................ 38
  2.4.4 Strategy of Knowledge Sharing .......................................................... 42
2.5 BARRIERS TO KNOWLEDGE SHARING ...................................................... 50
  2.5.1 Consequences of Performing Knowledge Sharing from an Individual Perspective ... 52
  2.5.2 Evaluation of Knowledge Sharing from an Organizational Perspective ............ 56
  2.5.3 Group Dynamics .............................................................................. 58
  2.5.4 Motivation to Comply ........................................................................ 68
  2.5.5 Work Environment .......................................................................... 72
2.6 CONCLUSION ............................................................................................ 75

CHAPTER 3 – RESEARCH METHOD ................................................................. 78
3.1 INTRODUCTION .......................................................................................... 78
3.2 RESEARCH DESIGN AND APPROACH .................................................... 78
3.3 RESEARCH MODEL .................................................................................. 81
3.4 REVIEW OF LITERATURE AND FORMULATION OF HYPOTHESES ................. 85
3.5 RATIONALITY AND OPERATIONALISATION OF FOCUS GROUP DISCUSSION ........ 86
3.6 QUESTIONNAIRE ..................................................................................... 95
3.7 STATISTICAL ANALYSIS ......................................................................... 103
  3.7.1 Qualitative Analysis .......................................................................... 103
  3.7.2 Quantitative Analysis ....................................................................... 104
3.8 ETHICAL AND SAFETY IMPLICATIONS .................................................... 117
  3.8.1 Focus Group ..................................................................................... 117
  3.8.2 Questionnaire .................................................................................. 119
3.9 LIMITATIONS ............................................................................................ 120
  3.9.1 Research Approaches and Methods .................................................... 120
  3.9.2 Data Sampling .................................................................................. 122
3.10 CONCLUSION .......................................................................................... 123
CHAPTER 4 – RESEARCH RESULTS ................................................................................. 126

4.1 INTRODUCTION ........................................................................................................... 126

4.2 COMMENTARY OF FOCUS GROUP .............................................................................. 126

4.3 SAMPLE SIZE AND TESTING ASSUMPTIONS ................................................................. 128

4.4 BACKGROUND OF THE RESPONDENTS .................................................................. 129

4.5 HYPOTHESIS TESTING ................................................................................................. 134

4.5.1 Hypothesis 1 – Fear of Receiving Criticism of Knowledge by Junior Staff ............... 134

4.5.2 Hypothesis 2 – Knowledge Sharing for Problem Solving by Junior Staff ............... 137

4.5.3 Hypothesis 3 – Relying on Information of Similar Projects to Solve Problems .......... 139

4.5.4 Hypothesis 4 – Problem-solving Capability of Senior Staff across Different Scales of Organisations ...................................................................................................................... 140

4.6 FACTOR ANALYSIS ..................................................................................................... 143

4.7 RELIABILITY ANALYSIS ............................................................................................ 147

4.8 REGRESSION ANALYSIS ............................................................................................. 148

4.9 NAMING OF CONSTRUCTS ......................................................................................... 150

4.10 STRUCTURAL EQUATION MODEL (SEM) ................................................................. 150

4.11 CONCLUSION ............................................................................................................... 156

CHAPTER 5 – DISCUSSION OF RESULTS ...................................................................... 159

5.1 INTRODUCTION ........................................................................................................... 159

5.2 HYPOTHETICAL TESTING ........................................................................................... 159

5.2.1 Years of Work Experience and Fear of Receiving Criticism for Own Knowledge.... 160

5.2.2 Stimulation of Sharing Knowledge by Less Experienced Staff .............................. 162

5.2.3 Repetitiveness of Projects and Relying on Company Information for Problem-solving .................................................................................................................. 167

5.2.4 Contribution from Senior Staff working in Small Organizations to Problem-solving 172

5.3 CONSTRUCTS AND VARIABLES IN THE RESEARCH MODEL ............................... 177

5.3.1 Group Dynamics ...................................................................................................... 177

5.3.2 Work Environment and Motivation ........................................................................ 188

5.3.3 Normative Consequences ....................................................................................... 197

5.3.4 Organization benefit – reduce repeated mistake, enhance problem solving ability and reducing time for problem-solving .................................................................................. 200
5.4 ANALYSIS OF SEM RESULTS ........................................................................................................ 201
  5.4.1 Organizational Benefit and Self-interest ........................................................................ 202
  5.4.2 Knowledge Network ........................................................................................................... 203
  5.4.3 Covariance and Correlations among Variables ............................................................ 205
  5.4.4 Model Fit ............................................................................................................................... 208

5.5 RECOMMENDATIONS ............................................................................................................... 210
  5.5.1 Knowledge Network ........................................................................................................... 211
  5.5.2 Normative Consequences ............................................................................................... 215
  5.5.3 Flourishing Team Spirit ...................................................................................................... 216

5.6 CONCLUSION ............................................................................................................................. 219

CHAPTER 6 – CONCLUSION AND IMPLICATION ........................................................................... 223
  6.1 INTRODUCTION ...................................................................................................................... 223
  6.2 PRACTICAL INSIGHTS FROM FOCUS GROUP ................................................................. 223
  6.3 INTERRELATED RESEARCH FINDINGS WITHIN A HOLISTIC RESEARCH MODEL .......... 227
  6.4 DEVELOPMENT OF A VALID AND RELIABLE CONCEPTUAL MODEL ......................... 228
  6.5 POSSIBLE WAYS TO STIMULATE KNOWLEDGE SHARING WITHIN ORGANIZATIONS .... 233
  6.6 FUTURE RESEARCH IMPLICATIONS ................................................................................... 236
APPENDIX C – TRANSCRIPT OF FOCUS GROUP DISCUSSION

APPENDIX D.1 – DESCRIPTIVE STATISTICS

APPENDIX D.2 – EMPLOYMENT DURATION OF THE RESPONDENTS

APPENDIX D.5 – FACTOR ANALYSIS FOR GROUP DYNAMICS

APPENDIX D.6 – FACTOR ANALYSIS FOR WORK ENVIRONMENT AND MOTIVATION

APPENDIX D.7 – REGRESSION ANALYSIS FOR NORMATIVE CONSEQUENCES - FACTOR 1

APPENDIX D.8 – REGRESSION ANALYSIS FOR NORMATIVE CONSEQUENCES – FACTOR 2

APPENDIX D.9 – REGRESSION ANALYSIS FOR GROUP DYNAMICS – FACTOR 1

APPENDIX D.10 – REGRESSION ANALYSIS FOR GROUP DYNAMICS – FACTOR 2

APPENDIX D.11 – REGRESSION ANALYSIS FOR WORK ENVIRONMENT & MOTIVATION – FACTOR 1

APPENDIX D.12 – REGRESSION ANALYSIS FOR WORK ENVIRONMENT & MOTIVATION – FACTOR 2

APPENDIX D.13 – REGRESSION ANALYSIS

(15 VARIABLES FROM THE FOUR FACTORS)

APPENDIX D.14 – REGRESSION ANALYSIS

(13 VARIABLES FROM THE FOUR FACTORS)

APPENDIX D.15 – TESTS OF NORMALITY

APPENDIX D.16 – MODIFICATION INDICES (ORIGINAL MODEL)

APPENDIX D.17 – ESTIMATES OF THE ORIGINAL MODEL

APPENDIX D.18 – ESTIMATES OF THE FINALIZED MODEL

APPENDIX D.19 – MODEL FIT SUMMARY OF THE FINALIZED RESEARCH MODEL

APPENDIX D.20 – BOOTSTRAP CONFIDENCE INTERVAL OF R2

APPENDIX D - COMPUTER PRINTOUTS

ERROR! BOOKMARK NOT DEFINED.
SYNOPSIS

The organizations’ performance is enhanced with knowledge. Practitioners in the construction industry are apt to share tacit knowledge through face-to-face discussions of practical problems. However, it is still a widespread critique that most experiences gained by practitioners reside with individuals rather than organizations. This study attempts to synergistically bring the theoretical foundations and pragmatic insights together to develop a research model which deduces ways to cultivate knowledge sharing among colleagues through face-to-face interactions within organizational boundaries of the private sector of Hong Kong construction firms.

Qualitative and quantitative methodological approaches were used in the study. In particular, the amalgamation of the Theory of Reasoned Action and Luft and Libby’s multiplicative model was employed as the research framework. Observable phenomena in organizations were unfolded through a focus group discussion in the presence of five council members from affiliated professional bodies. A 35-item questionnaire was also mailed to 750 local private construction firms. This survey resulted in responses from 204 contractors, representing a return rate of 24%.

Results indicated that junior staff were much more fearful than experienced staff about
receiving criticism about their personal knowledge, and that they shared their knowledge purposively for problem-solving rather than to seek new knowledge. However, experienced staff tended to use their own judgment to solve problems and assumed greater contributions to problem-solving. Furthermore, the factor analysis and structural equation modelling revealed four constructs. The standardised regression weights of three constructs on the extent of knowledge sharing were: (1) self-interest (r=0.75); (2) organizational benefits (r=0.57); and (3) knowledge network (r=0.53) while team spirit, affected knowledge sharing indirectly through the other three constructs. Thirteen variables from the four constructs explained 90% of the variability in the extent of knowledge sharing.

The findings inferred that management should arouse employees to the significance of knowledge sharing and their role in the organization. Staff of similar professions and positions should be located in proximity to each other to form a close-knit working community. In addition, team goals and rewards perform better for Hong Kong employees of a collectivist culture.

*Keywords: knowledge sharing, construction firms, collectivist culture, problemsolving*