

HOW KNOWLEDGE SHARING LEADS TO INNOVATIVE WORK BEHAVIOUR IN VIETNAMESE UNIVERSITIES

A Dissertation Presented

By

VAN DONG PHUNG

BSc Applied Informatics and Mathematics, Hanoi National University, Vietnam
M.A in Education Management, National Institute of Education Management, Vietnam
MSc in Information Systems Design, University of Central Lancashire, UK

Supervisor panel: Prof. Igor Hawryszkiewicz and Dr. Daniel Chandran

A thesis submitted in fulfilment of the requirements for the degree of

DOCTOR OF PHILOSOPHY



PhD in Information Systems
School of Information, Systems and Modelling
Faculty of Engineering and Information Technology

November 2018

ABSTRACT

Knowledge sharing (KS), a critical process of knowledge management (KM), is promoted by many universities, yet the success of KM initiatives mostly relies on the willingness of individuals to share their knowledge. However, KS has not always met many universities' expectations. Vietnam has shifted from a bureaucratically centralised planned economy to a market economy since 1986 placing big challenges on Vietnamese higher education in supporting a responsive national knowledge-based economy. To examine academics' knowledge-sharing behaviours (KSBs) in Vietnamese public universities, this study developed a new research model which modified the standard Social Cognitive Theory (SCT) model and augmented it with other theories (e.g. Theory of Planned Behaviour, Economic Exchange Theory, Social Exchange Theory).

This study used a mixed-methods sequential, explanatory strategy employing a quantitative data collection followed by a qualitative study. First, questionnaire surveys were conducted with a sample of 785 academic staff from public universities in Vietnam to: (1) examine the relationships between environmental-personal factors and KSB, moderated by transformational leadership, and (2) examine the relationship between KSB and innovative work behaviour (IWB), moderated by the quality of transactive memory systems (TMS). The current research used Structural Equation Modelling to assess the research model and test hypotheses. The significant quantitative findings were explored further in semi-structured interviews with seven experts from Vietnamese tertiary education to probe aspects of the KSB. The findings interpreted from both phases have shown that (1) two environmental factors (subjective norms, trust) and three personal factors (knowledge self-efficacy, enjoyment in helping others and reciprocal benefits) had positive impacts on KSB; (2) KSB had a strongly positive effect on IWB and; (3) transformational leadership positively moderated the effects of subjective norms, trust and knowledge self-efficacy on KSB of academic staff. Interestingly, two personal factors (expected organisational rewards and psychological ownership of knowledge) were found to have insignificant associations with KSB.

The study findings can be used by university leaders, academic staff and researchers in other contexts with similar characteristics in the region (i.e. Southeastern Asia developing countries). A clear understanding of the critical factors influencing KSB towards better IWB may help Vietnamese educational policymakers and university leaders develop suitable strategies to address the challenges of KS. This study contributes to the growing literature of KM, bringing Vietnam into the world map of KM research.

CERTIFICATE OF ORIGINAL AUTHORSHIP

I, Van Dong Phung declare that this thesis, is submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the Faculty of Engineering and Information Technology at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise reference or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

Signature of Student:

Production Note:

Signature removed prior to publication.

Date: 8th November 2018

ACKNOWLEDGEMENTS

I would like to express my heartfelt thanks and deep appreciation to the following people who have helped me to complete this thesis:

Foremost, I would like to express my sincere gratitude to my principal supervisor, Professor Igor Hawryszkiewicz for his dedicated supervision, invaluable guidance, critical thinking, motivation, enthusiasm, and immense knowledge. Without his guidance and encouragement, I could not have completed this thesis.

I also would like to thank my co-supervisor, Dr. Daniel Chandran, for his professional guidance, comments and practical suggestions.

Besides my supervisors, I especially would like to thank Professor Rajeev Sharma, Professor Randall Schumacker, Professor James Gaskin and Professor Barbara Byrne (statistical experts) for their supporting me with my learning and practicing statistics for data analysis.

My special sincere thanks also go to Mrs. Carol Charman, an Academic Skills Advisor at UTS. I acknowledge my great indebtedness to her. She is not only my “Academic Language Supervisor” but also a big friend in my life. I really appreciate her unconditional help; especially the many hours spent consulting, reading and editing drafts of my thesis.

I also would like to thank many university leaders, Deans and Deputy Deans in the four research sites in Hanoi, Vietnam for their strong support and approval for data collection. I am especially indebted to a number of academic staff in these universities for their participation in questionnaire surveys and interviews.

A special mention to my colleagues in Hanoi University, Dr. Dang Xuan Thu, Dr. Ngo Tuyet Mai, Dr. Ngo Van Giang, Dr. La Anh Tuan, Mr. Nguyen Van Kep, Mrs. Nguyen Thi Nga and Mrs. Nguyen Thi Thuy for supporting me in pretesting, translating and validating the research instruments and interview data.

I owe thanks to the Ministry of Education and Training of Vietnam and UTS for generously awarding me a joint UTS-VIED Scholarship to study PhD in Australia.

I would like to express my appreciation to all leaders, support staff and PhD students in School of Information, Systems and Modelling of the University of Technology Sydney for supporting my three-year PhD journey.

Last but not the least, a very special word of thanks needs to be addressed to my beloved wife and my dear son for their endless love, great unconditional support and encouragement throughout my research journey.

LIST OF PUBLICATIONS

Journal and book chapter publications

- Phung, V.D., Hawryszkiewicz, I., & Chandran, D. (2018). How Knowledge Sharing Behaviour Leads to Innovative Work Behaviour: A moderating role of Transformational leadership. *Journal of Systems and Information Technology* (under review).
- Phung, V.D., Hawryszkiewicz, I., Chandran, D., & Ha, B.M. (2018). Promoting Knowledge Sharing amongst Academics: A Case Study from Vietnam. *Journal of Information & Knowledge Management* (under review).
- Phung, V. D., & Hawryszkiewicz, I. (2018). Knowledge Sharing and Innovative Work Behavior: An Extension of Social Cognitive Theory. In *Crowdsourcing and Knowledge Management in Contemporary Business Environments* (pp. 71-102): IGI Global.
- Phung, V.D., Hawryszkiewicz, I., & Binsawad, M. (2018). Exploring How Environmental and Personal Factors Influence Knowledge Sharing Behavior Leads to Innovative Work Behavior. In *Advances in Information Systems Development: Methods, Tools and Management* (Vol. 26): Springer.

Conference publications

- Phung, V.D., Hawryszkiewicz, I., Chandran, D., & Ha, B.M. (2017). Knowledge Sharing and Innovative Work Behaviour: A Case Study from Vietnam. The 28th Australasian Conference on Information Systems (ACIS2017). December 2017, Hobart, Australia.
- Phung, V.D., Hawryszkiewicz, I., & Ha, B.M. (2017). The Influence of KS Behaviour and Transactive Memory Systems on Innovative Work Behaviour: A Conceptual Model. The 9th International Conference on Knowledge and Systems Engineering (KSE2017). IEEE. October 2017, Hue, Vietnam.
- Phung, V., Hawryszkiewicz, I., & Binsawad, M. (2017). Exploring How Environmental and Personal Factors Influence Knowledge Sharing Behaviour Leads to Innovative Work Behaviour in Vietnamese Higher Education Institutions. The 26th International Conference on Information Systems Development (ISD2017). September 2017, Larnaca, Cyprus: University of Central Lancashire Cyprus.

- Phung, V.D., & Hawryszkiewicz, I. (2017). Exploring Factors Influencing Knowledge Sharing Behaviour: The Moderating Effect of Transformational Leadership. The 18th European Conference on Knowledge Management (ECKM 2017). September 2017, Barcelona, Spain.
- Phung, V.D., Hawryszkiewicz, I., Kang, K., & Binsawad, M. (2017). Applying the Fuzzy Analytic Network Process to Establish the Relative Importance of Knowledge Sharing Barriers. The 19th International Conference on Information and Knowledge Management. March 2017, London, UK.
- Phung, V.D., Hawryszkiewicz, I., & Binsawad, M. (2016). Classifying knowledge-sharing barriers by organisational structure in order to find ways to remove these barriers. The 8th International Conference on Knowledge and Systems Engineering (KSE2016). IEEE. October 2016, Hanoi, Vietnam.

Research Showcase

- How Knowledge Sharing leads to Innovative Work Behaviour in Organisations, *UTS Faculty of Engineering and IT – Research Showcase 2018*.
- Promoting knowledge sharing for innovation in organisations. *UTS Faculty of Engineering and IT – Research Showcase 2017*.

Awards/Other Scholarly Activities

- Best paper award for **Van Dong Phung**, Igor Hawryszkiewicz, Daniel Chandran and Binh Minh Ha, “*Knowledge Sharing and Innovative Work Behaviour: A Case Study from Vietnam*”, The 28th Australasian Conference on Information Systems (ACIS2017), Hobart Australia, December 2017.
- One of the best papers presented at The 26th International Conference on Information Systems Development (ISD2017), **Van Dong Phung**, Igor Hawryszkiewicz and Muhammad Binsawad, “*Exploring How Environmental and Personal Factors Influence Knowledge Sharing Behaviour Leads to Innovative Work Behaviour in Vietnamese Higher Education Institutions*”, published by Springer in a volume of the Lecture Notes in Information Systems and Organisation series.
- PC Member for ISD 2017 (The 26th International Conference on Information Systems Development).

TABLE OF CONTENTS

Abstract	ii
Certificate of Original Authorship	iii
Acknowledgements	iv
List of Publications	v
Table of Contents	vii
List of Figures	xiv
List of Tables	xvi
List of Abbreviations	xix
CHAPTER 1 : INTRODUCTION.....	1
1.1 Background	1
1.2 Selection of study context: rationale and motivation.....	5
1.3 The purpose statement.....	8
1.4 Research questions and objectives.....	9
1.5 Overview of research design and method	10
1.6 The significance of the study	11
1.7 Thesis organisation	12
CHAPTER 2 : REVIEW OF RELEVANT LITERATURE.....	14
2.1 Introduction	14
2.2 Towards knowledge sharing	15
2.2.1 Overview of data, information and knowledge.....	15
2.2.2 Overview of knowledge management.....	16
2.2.3 Knowledge sharing and KSB.....	17
2.2.4 The importance of KSB in knowledge management systems.....	19
2.3 Innovative work behaviour	20
2.4 Previous empirical studies	21

2.4.1	The usage of theoretical foundations	21
2.4.2	Knowledge-sharing studies in the higher education context	25
2.4.3	Research methodology usage.....	31
2.4.4	Influential factors on KSB	31
2.5	Transformational leadership and KSB	48
2.6	Transactive memory systems and KSB.....	50
2.7	Gaps in the literature	52
2.8	Environmental and personal factors as critical factors influencing KSB	55
2.9	Summary of Chapter 2	57
CHAPTER 3 : RESEARCH MODEL AND HYPOTHESIS.....		59
3.1	Introduction.....	59
3.2	The development of the conceptual research model	59
3.3	Hypothesis development.....	63
3.3.1	Main effects.....	63
3.3.1.1	Environmental factors.....	63
3.3.1.2	Personal factors.....	66
3.3.1.3	KSB and innovative work behaviour.....	71
3.3.2	Moderating effects	72
3.3.2.1	Transformational leadership theory	73
3.3.2.2	The quality of transactive memory system.....	77
3.4	Summary of hypotheses	78
3.5	Summary of Chapter 3	79
CHAPTER 4 : RESEARCH METHODOLOGY		80
4.1	Introduction.....	80
4.2	The selection of a research design	80
4.3	The research design for this study.....	83

4.4	Phase I - The quantitative method.....	85
4.4.1	The development of the research instrument	85
4.4.1.1	Survey design workshop series for this study.....	85
4.4.1.2	Operationalisation of constructs	86
4.4.1.3	Scaling and measurement	87
4.4.1.4	Item development	87
4.4.1.5	Piloting the questionnaire	93
4.4.2	Data collection	94
4.4.2.1	Research participant sampling.....	94
4.4.2.2	Survey implementation procedure.....	95
4.4.3	Data analysis techniques	96
4.4.3.1	Factor analysis	97
4.4.3.2	Structural Equation Modelling (SEM).....	101
4.5	Phase II - The qualitative method	113
4.5.1	Qualitative data collection	113
4.5.2	Pilot study	117
4.5.3	Administering the interviews.....	118
4.5.4	Data analysis and interpretation.....	119
4.5.5	Reliability and validity.....	121
4.6	Ethics considerations.....	122
4.7	Summary of Chapter 4	123
CHAPTER 5	: PHASE I - QUANTITATIVE DATA ANALYSIS	124
5.1	Introduction	124
5.2	Descriptive statistics	124
5.2.1	Survey responses.....	125
5.2.1.1	Questionnaire survey	125

5.2.1.2	Characteristics of the sample	125
5.2.2	Data cleaning and preparation.....	128
5.2.2.1	Organising the data	128
5.2.2.2	Measurement scale.....	129
5.2.2.3	Missing data analysis.....	129
5.2.2.4	Outlier screening.....	130
5.2.2.5	Assessing normality	130
5.2.2.6	Impacts owing to sample size	131
5.3	Validation of measurement scale	131
5.3.1	Scale reliability assessment.....	131
5.3.1.1	Internal consistency	132
5.3.1.2	Item-total correlation	133
5.3.2	Exploratory Factor Analysis	137
5.4	Model assessment	142
5.4.1	Assessment of measurement model	142
5.4.2	Assessment of structural model and hypotheses testing	152
5.4.3	Analysis of moderate effects.....	156
5.4.4	Overall findings of hypotheses testing.....	160
5.5	Summary of Chapter 5	161
CHAPTER 6	: PHASE II - QUALITATIVE DATA ANALYSIS.....	163
6.1	Introduction.....	163
6.2	Participants' profiles	163
6.3	Qualitative results	167
6.3.1	Review of qualitative interviews: data collection and analysis	167
6.3.2	Reasons for promoting knowledge sharing in universities	168
6.3.3	Overall findings.....	172

6.3.4	Relationship between subjective norms and KSB (H _{1a})	173
6.3.5	Relationship between trust and KSB (H _{2a})	175
6.3.6	Relationship between knowledge self-efficacy and KSB (H _{3a})	177
6.3.7	Relationship between enjoyment in helping others and KSB (H _{4a}).....	178
6.3.8	Relationship between expected organisational rewards and KSB (H _{5a}) .	180
6.3.9	Relationship between reciprocal benefits and KSB (H _{6a}).....	182
6.3.10	Relationship between psychological ownership of knowledge and KSB (H _{7a})	183
6.3.11	Knowledge-sharing and innovative work behaviour (H ₈)	185
6.3.12	The moderating effects of transformational leadership	186
6.4	Critical factors emerged from the interviews.....	191
6.5	Summary of Chapter 6	193
CHAPTER 7 : RESULTS AND DISCUSSION		194
7.1	Introduction	194
7.2	Review of research purposes, questions and objectives.....	194
7.3	Responses to research questions and hypotheses.....	198
7.3.1	H _{1a} -H _{7a} : Impact of environmental and personal factors on KSB (Responses to RQ1)	198
7.3.1.1	H _{1a} : The impact of subjective norms on KSB	198
7.3.1.2	H _{2a} : The impact of trust on KSB.....	199
7.3.1.3	H _{3a} : The impact of knowledge self-efficacy on KSB	201
7.3.1.4	H _{4a} : The impact of enjoyment in helping others on KSB	202
7.3.1.5	H _{5a} : The impact of expected organisational rewards on KSB	203
7.3.1.6	H _{6a} : The impact of reciprocal benefits on KSB	204
7.3.1.7	H _{7a} : The impact of psychological ownership on KSB.....	205
7.3.2	H ₈ : Effect of KSB on innovative work behaviour (Response to RQ2)...	207

7.3.3	H _{1b} -H _{7b} : Transformational leadership (TL) as a moderator (Responses to RQ3)	208
7.3.3.1	H _{1b} : Moderating effect of TL on the relationship between subjective norms and KSB	209
7.3.3.2	H _{2b} : Moderating effect of TL on the relationship between trust and KSB	210
7.3.3.3	H _{3b} : Moderating effect of TL on the relationship between knowledge self-efficacy and KSB	211
7.3.3.4	H _{4b} : Moderating effect of TL on the relationship between enjoyment in helping others and KSB	212
7.3.3.5	H _{5b} : Moderating effect of TL on the relationship between expected organisational rewards and KSB	213
7.3.3.6	H _{6b} : Moderating effect of TL on the relationship between reciprocal benefits and KSB	213
7.3.3.7	H _{7b} : Moderating effect of TL on the relationship between POK and KSB	213
7.3.4	H ₉ : Joint effect of transactive memory systems quality and KSB (Response to RQ4)	214
7.4	Ideal model based on the combination of quantitative and qualitative results	214
7.5	Summary of Chapter 7	215
CHAPTER 8 : CONCLUSIONS		216
8.1	Introduction	216
8.2	Summary of research design and findings	216
8.3	Implications and recommendations	220
8.3.1	Theoretical implications	220
8.3.2	Practical implications	224
8.3.3	Country-specific implications	228

8.4	Limitations and recommendations for future work.....	229
8.5	Conclusion	231
REFERENCES.....		233
APPENDICES		248
Appendix 1: Profile of Vietnamese universities		249
Appendix 2: Survey questionnaire.....		256
Appendix 3: Interview protocols.....		268
Appendix 4: Ethical-related documents.....		274
Appendix 5: Demographics characteristics of the sample		286
Appendix 6: Descriptive statistics.....		288
Appendix 7: Results of Exploratory Factor Analysis (EFA)		291
Appendix 8: Results of Confirmatory Factor Analysis (CFA)		295
Appendix 9: Results of Structural Equation Modelling (SEM).....		298

LIST OF FIGURES

<i>Figure 1.1. Chapter outline.....</i>	<i>1</i>
<i>Figure 2.1. Chapter outline.....</i>	<i>14</i>
<i>Figure 2.2. Knowledge Value Chain. Source: Shankar et al. (2003)</i>	<i>15</i>
<i>Figure 2.3. A simplified model of KS. Adapted from Hendriks (1999).....</i>	<i>18</i>
<i>Figure 2.4. The process of reviewing previous studies to find knowledge gaps</i>	<i>21</i>
<i>Figure 2.5. Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975)</i>	<i>22</i>
<i>Figure 2.6. Theory of Planned Behaviour (TPB) (Ajzen, 1991).</i>	<i>23</i>
<i>Figure 2.7. The interactions between environment, person and behaviour (Bandura, 1986)</i>	<i>24</i>
<i>Figure 2.8. A research framework for studying KS. Adapted from Lee and Choi (2003).</i>	<i>32</i>
<i>Figure 2.9. Structure guidelines for the development of the research model and hypothesis for this study.</i>	<i>57</i>
<i>Figure 3.1. Chapter outline.....</i>	<i>59</i>
<i>Figure 3.2. The initial research model.....</i>	<i>63</i>
<i>Figure 4.1. Chapter outline.....</i>	<i>80</i>
<i>Figure 4.2. The sequential explanatory mixed methods design (Creswell, 2009)</i>	<i>82</i>
<i>Figure 4.3. Research design process</i>	<i>84</i>
<i>Figure 4.4. Main data collection process</i>	<i>96</i>
<i>Figure 4.5. Measurement model and structural model of structural equation models</i>	<i>106</i>
<i>Figure 4.6. The two-step SEM approach based on six stages of SEM.....</i>	<i>107</i>
<i>Figure 4.7. Data analysis in the qualitative approach. Adapted from Creswell (2009).....</i>	<i>121</i>
<i>Figure 5.1. Chapter outline.....</i>	<i>124</i>
<i>Figure 5.2. Gender of participants</i>	<i>126</i>

LIST OF TABLES

<i>Table 2.1: Key empirical studies on KS in the higher education sector</i>	28
<i>Table 2.2: Key empirical studies measuring KS outcomes</i>	35
<i>Table 2.3. A comparison of previous empirical studies</i>	37
<i>Table 3.1. The alignment among research questions, relationships and hypotheses.</i>	78
<i>Table 4.1: The profiles of the experts at the survey design workshop series</i>	86
<i>Table 4.2: Item measures of subjective norms</i>	87
<i>Table 4.3: Item measures of trust</i>	88
<i>Table 4.4: Item measures of knowledge self-efficacy</i>	88
<i>Table 4.5: Item measures of enjoyment in helping others</i>	89
<i>Table 4.6: Item measures of organisational rewards</i>	89
<i>Table 4.7: Item measures of reciprocal benefits</i>	89
<i>Table 4.8: Item measures of psychological ownership of knowledge</i>	90
<i>Table 4.9: Item measures of transformational leadership</i>	90
<i>Table 4.10: Item measures of knowledge sharing behaviour</i>	91
<i>Table 4.11: Item measures of transactive memory systems quality</i>	91
<i>Table 4.12: Item measures of innovative work behaviour</i>	92
<i>Table 4.13: Codes and measurement scales of constructs and questionnaire items</i>	92
<i>Table 4.14: The framework of basic configurations in SEM model</i>	104
<i>Table 4.15: Summary of path diagram notations</i>	105
<i>Table 4.16: Model-fit criteria and acceptable level</i>	109
<i>Table 4.17: Acceptable thresholds of convergent and discriminant validity</i>	112
<i>Table 5.1: An example of the codebook</i>	128
<i>Table 5.2: An illustration for the form of data matrix in SPSS</i>	129

<i>Table 5.3: The acceptable rule of thumb for considering internal consistency.....</i>	<i>132</i>
<i>Table 5.4: The Cronbach's alphas of the measurement scales.....</i>	<i>133</i>
<i>Table 5.5: The Item-Total Statistics of the SN scale.....</i>	<i>134</i>
<i>Table 5.6: The Item-Total Statistics of the TRU scale.....</i>	<i>134</i>
<i>Table 5.7: The Item-Total Statistics of the KSE scale.....</i>	<i>134</i>
<i>Table 5.8: The Item-Total Statistics of the EHO scale.....</i>	<i>134</i>
<i>Table 5.9: The Item-Total Statistics of the REW scale.....</i>	<i>135</i>
<i>Table 5.10: The Item-Total Statistics of the RB scale.....</i>	<i>135</i>
<i>Table 5.11: The Item-Total Statistics of the POK scale.....</i>	<i>135</i>
<i>Table 5.12: The Item-Total Statistics of the TL scale.....</i>	<i>135</i>
<i>Table 5.13: The Item-Total Statistics of the TMS scale.....</i>	<i>136</i>
<i>Table 5.14: The Item-Total Statistics of the KSB scale.....</i>	<i>136</i>
<i>Table 5.15: The Item-Total Statistics of the IWB scale.....</i>	<i>136</i>
<i>Table 5.16: The process of EFA for this study: methods and criteria.....</i>	<i>137</i>
<i>Table 5.17: Data factorability.....</i>	<i>138</i>
<i>Table 5.18: Total Variance Explained.....</i>	<i>139</i>
<i>Table 5.19: Promax-Rotated Component Analysis Factor Matrix: Full sets of variables.....</i>	<i>140</i>
<i>Table 5.20: Final reduced sets of variables to be used in further analysis.....</i>	<i>142</i>
<i>Table 5.21: Final reduced sets of variables to be used in further analysis.....</i>	<i>143</i>
<i>Table 5.22: The CFA Goodness-of-Fit statistics for the initial measurement model.....</i>	<i>145</i>
<i>Table 5.23: The fit indices for the initial and final measurement model.....</i>	<i>149</i>
<i>Table 5.24: Acceptable thresholds of convergent and discriminant validity.....</i>	<i>150</i>
<i>Table 5.25: Standardized factor loadings, Average Variance Extracted, and Reliability Estimates.....</i>	<i>151</i>

<i>Table 5.26: Average variance extracted (AVE), Maximum shared variance (MSV) and Composite reliability (CR).....</i>	<i>152</i>
<i>Table 5.27: The goodness-of-fit measures and structural parameter estimates for structural model</i>	<i>155</i>
<i>Table 5.28: Structural equations results for moderating effects models</i>	<i>159</i>
<i>Table 5.29: Structural equations results for hypotheses in moderating effects model.....</i>	<i>159</i>
<i>Table 5.30: The summary of results of hypotheses testing.....</i>	<i>160</i>
<i>Table 6.1. The demographics of the participants.....</i>	<i>164</i>
<i>Table 6.2. The findings from qualitative phase for validation of quantitative results.....</i>	<i>173</i>
<i>Table 6.3. The findings of qualitative phase for validation of quantitative results</i>	<i>187</i>
<i>Table 7.1: The summary of hypothesis results from quantitative and qualitative phases.....</i>	<i>197</i>

LIST OF ABBREVIATIONS

AGFI	Adjusted-Goodness-Of-Fit
AMOS	Analysis of Moment Structure
AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
CFI	Comparative-Fit-Index
CR	Critical Ratio
<i>DF</i>	Degree of Freedom
EET	Economic Exchange Theory
EFA	Exploratory Factor Analysis
GFI	Goodness-of-Fit Index
HANU	Hanoi University, Vietnam
HREC	Human Research Ethics Committee
ICT	Information And Communications Technology
IFI	Incremental-Fit-Index
Intvee	Interviewee
IS	Information Systems
IT	Information Technology
KM	Knowledge Management
KMO	Kaiser-Meyer-Olkin
KMS	Knowledge Management Systems
KS	Knowledge Sharing
KSB	Knowledge Sharing Behaviour
MIS	Management Information Systems
ML	Maximum Likelihood
MOET	Ministry of Education and Training, Vietnam

NAATI	National Accreditation Authority for Translators and Interpreters
NFI	Normed Fit Index
PCA	Principal Component Analysis
PCFI	Parsimony Comparative Fit Index
PGFI	Parsimony Goodness-Of-Fit Index
PNFI	Parsimony Normed Fit Index
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
SCT	Social Cognitive Theory
SEM	Structural Equation Modelling
SET	Social Exchange Theory
SPSS	Statistical Package for the Social Sciences
TLI	Tucker-Lewis-Index
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UNESCO	United Nations Education, Scientific, and Cultural Organization
UTS	University of Technology Sydney
WB	World Bank
χ^2	Chi-Square

CHAPTER 1: INTRODUCTION

The purpose of this chapter is to set the scene and provide a rationale for the study. It begins with an overview of the research background. The discussion then moves into the motivation and justification for the selection of the study context as Vietnamese university settings. The purpose statement is next presented, followed by a discussion of the research questions and objectives. An overview of the research design and method is also briefly discussed. Finally, this chapter turns to the significance of the study and the organisation of the thesis. The chapter's outline is displayed in Figure 1.1.

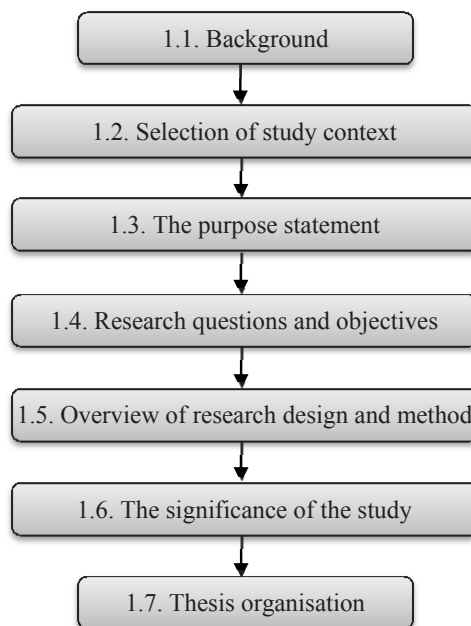


Figure 1.1. Chapter outline

1.1 Background

Many governments have been struggling to build a higher education system that is innovative to the needs of the knowledge-based economy. In such a system, it is undoubted that universities, as knowledge-intensive organisations, play an essential role in knowledge creation and transfer through their core activities such as research, dissemination, and working with other organisations to promote innovation (Ramayah et al., 2013; Fullwood and Rowley, 2017). As with many other organisations, universities recognise that Knowledge Management (KM) is becoming a vital competitive weapon for the demands of a national knowledge-based society (Loh et al., 2010). Universities have struggled to promote Knowledge Sharing (KS) as a recognised

key component of successful KM initiatives (Hendriks, 1999; Alavi and Leidner, 2001; Earl, 2001; Kuo and Young, 2008). There are three significant benefits associated with increased KS specifically in higher education. First, creating a knowledge-sharing culture where sharing knowledge is practised throughout the organisation, and every person generates, promotes, and uses knowledge in imaginative ways (Hawryszkiewicz, 2017) to benefit their organisation (Tohidinia and Mosakhani, 2010). Another important advantage is that it can initiate improved decision-making processes that could enhance learning and teaching, and speed up curriculum development and research (Fullwood and Rowley, 2017). Finally, KS also benefits universities through the creation, storage and accessibility of a large amount of knowledge from key persons to maximise organisation capability. It helps universities to meet their needs and to generate solutions and efficiencies that, in turn, provide businesses with competitive advantages (Reid, 2003; Lin 2007a; Fullwood and Rowley, 2017).

Organisations can successfully build a knowledge-sharing culture by directly integrating knowledge in their business plans and encouraging individuals' behaviours consistent with KS as well (Connelly and Kelloway, 2003; Lin and Lee, 2004; Lin, 2007a). This is because the success of KM initiatives mostly relies on the willingness of individuals to share their knowledge (Chatzoglout and Vraimaki, 2009). Davenport and Prusak (1998) described, "knowledge originates and resides in people's minds" (p.24). In this way, knowledge-based resources in organisations involve all the intellectual abilities and their members' knowledge (Ramayah et al., 2013) and thus, a shortage of knowledge does not usually happen in any organisations (Davenport and Prusak, 2000). However, the existence of knowledge in an organisation does not guarantee its utilisation (Davenport and Prusak, 2000) that mainly depends on its members' Knowledge Sharing Behaviours (KSBs), who actually share, generate and utilise knowledge (Henttonen et al., 2016). Consequently, promoting KSBs among employees has become a critical agenda for many organisations, especially universities today (Tangaraja et al., 2015).

In response to this problem, researchers have advanced critical arguments supporting KS in university settings. Ramayah et al. (2013) claimed that it is expected that universities are places in which university members freely share and exchange their knowledge with colleagues. Nevertheless, the reality has shown that KS is barely present within universities these days (Ramayah et al., 2013). Fullwood and Rowley (2017) have recently asserted that it could rationally be supposed that universities would

be proactive organisations, successful in promoting KS to achieve the success of KM. Also, that university leaders and managers would have a deeper understanding of the ways to efficiently manage and exploit the value of their knowledge resources. However, KM has not met many universities' expectations. Indeed, previous studies have reported that KM often fails in encouraging knowledge-sharing practices because it ignores the importance of individuals' willingness to share knowledge (Pfeffer and Sutton, 1999; Kankanhalli et al., 2005; Lin et al., 2009). Moreover, researchers have also shown that it is naturally challenging for university members to have a willingness to share knowledge for achieving common goals in their universities compared to other working environments (Sohail and Daud, 2009; Howell and Annansingh, 2013; Ramayah, 2014; Rahman, 2016; Fullwood and Rowley, 2017). This is because knowledge in universities involves not only institutional knowledge such as experiences, expertise, processes, or routinised knowledge being shared, but also includes academic and scientific knowledge (Ta, 2014). Many university staff believe that their knowledge is power, is valuable, and gives them the security of employment (Davenport and Prusak, 1998). Thus, people tend to think there may be a loss of ownership of knowledge that others may use their knowledge to their detriment and job security (Hawryszkiewicz, 2010). Therefore, KS is not automatically given in any situation that needs the willingness of individuals to share their knowledge with others (Hawryszkiewicz, 2010). Cheng et al. (2009) claimed that knowledge hoarding instead of KS could be more popular in higher education institutions. It is because the publication of research and lecturing by academics are a personal task (Fullwood and Rowley, 2017). Knowledge hoarding leads to negative effects such as inefficiency, fragmentation of services or service breakdown in the organisation (Konstantinou and Fincham, 2010). Such negative results have prompted researchers to examine further influential factors on KSB among employees and knowledge-sharing outcomes (Tangaraja et al., 2015).

Studying the impact of influential factors on KSB and knowledge-sharing outcomes has been considered from four perspectives. The first set of studies examined the relationship between factors influencing KS. The focus is on the investigation of the effect of knowledge-sharing factors. To identify this effect, researchers have examined some knowledge-sharing factors such as attitude, subjective norm, intention, organisation culture, top management support, and IT support (Bock et al., 2005;

Fullwood et al., 2013; Fullwood and Rowley, 2017; Lin, 2007b). A second considerably larger set of studies investigated, analysed and identified the relationships among factors influencing KS and KSB. A central proposition is that KS factors (e.g., attitude, intention or subjective norm) should influence KSB (Bock and Kim, 2002; Van den Hooff and Van Weenen, 2004; Liao, 2008; Chatzoglou and Vraimaki, 2009; Ramayah et al., 2013). A third small group of studies identified and recognised relationships among factors, KS, and KS effects. The primary objective of these studies was to identify and assess KS factors (e.g., attitude, intention or organisational culture) and KSB for improving organisational or individual performance (e.g. organisational innovation capacity; innovative behaviour; individual work performance) (Lin, 2007a; Lin et al., 2009; Yu et al., 2013; Radaelli et al., 2014; Akhavan et al., 2015; Liou et al., 2016; Henttonen et al., 2016). The final and smallest studies researched the relationship between factors influencing KS and KS effects. The purpose of these studies was to sharpen the understanding of the effects of KS factors on knowledge-sharing outcomes (i.e. work performance and behaviour) (Hung et al., 2011). These various approaches have highlighted the importance of KSB in promoting KS leading to improved organisational and personal capacities (e.g. organisational innovation capacity, individual work performance and behaviour).

Of the above studies, only a limited number of studies (e.g. Cheng et al., 2009; Sohail and Daud, 2009; Ramayah et al., 2014; Rahman et al., 2016; Fullwood and Rowley, 2017) have specifically investigated whether knowledge-sharing factors (e.g. organisational factors, individual factors, technology factors) facilitate or impede individual KSB. These studies were mostly conducted in public and private universities in Malaysia and the United Kingdom (see Chapter 2). How environmental and personal factors have direct effects on KSB leading to individual innovative work behaviour in university settings, however, remains an open question. Furthermore, leadership also plays a vital role in motivating and nurturing KSB by providing employees with experiential learning and opportunities for managing the processes whereby their staff participate in sharing knowledge (Bircham-Connolly et al., 2005; Fullwood and Rowley, 2017). However, far fewer studies explore the joint influence of transformational leadership and factors affecting KS on KSB. Furthermore, prior studies have reported that KS positively influences innovative work behaviour (Yu et al., 2013; Akhavan et al., 2015) and the quality of transactive memory systems (TMS) (Ariff,

2013). However, the joint effect of TMS quality and KSB on innovative work behaviour has not been adequately studied in past research.

The lack of understanding of the effect of these above factors on KSB or the impact of KSB on academics' innovative work behaviour in universities is regrettable because it is the sort of evidence that the university leader or university policymaker appears to need if they want to achieve successful KM initiatives and increased innovations.

Taken together, the current research attempted to contribute to the literature of KM by examining: (1) the effect of environmental and personal factors on KSB (2) the impact of the KSB on innovative work behaviour; (3) the joint effect of transformational leadership and environment-personal factors on KSB; and (4) the joint effect of TMS quality and KSB on innovative work behaviour.

1.2 Selection of study context: rationale and motivation

Vietnam has shifted from a bureaucratically centralised planned economy to a market economy since the introduction of the “Doi Moi” policy (“Renovation”) in 1986 (Dong et al., 2010). The Vietnamese Government has published its vision for the higher education sector (Dang, 2009). That is, building a higher education system, which is required to be innovative, responsive to the demands of the market, and vital to national knowledge-based development (WB, 2009). However, the nation's modernisations and industrialisation requirements in international integration process have placed big challenges on Vietnamese higher education. Many studies revealed that it is not easy to overemphasise the seriousness of the challenges facing the higher education sector in Vietnam (Vallely and Wilkinson, 2008; Huong, 2009; Nguyen and Vu, 2015). Le (2014) claimed that Vietnamese higher education has been so backward. There has even been a lack of a single Vietnamese university of recognised quality (Nguyen and Vu, 2015). Also, Nguyen and Nguyen (2008) pointed out that teaching programs, curriculums and methods have been out of date, resources have been limited, and resource utilisation has been inefficient. As a result, Vietnamese higher education institutions are largely isolated from international currents of knowledge because of their poor publication record (Vallely and Wilkinson, 2008; Nguyen and Vu, 2015). These latter issues are associated with knowledge generation and sharing in universities, in which many academics currently work (Ta, 2014). Consequently, given the critical benefits of KS in promoting successful KM initiatives in Vietnamese universities, this

research makes a significant contribution to both researchers and practitioners, which brings Vietnam into the world map of KM research.

The researcher has placed the research issues in public university settings in Vietnam for the following reasons.

Firstly, KM is still new in Vietnam for both academia and practitioners (Dong et al., 2010). KM is included in very few official national policies and documents. Moreover, there has been a lack of research into KS in emerging nations transitioning from centrally planned to market economies, such as Vietnam (Dong et al., 2010; Ta, 2014). This transformation is not automatic and cannot be occurred quickly in Vietnam. It can only happen if it is assisted by wise national strategies built on the support of retrieval of information about how other similar countries participate in transformation processes (Othman et al., 2014). Thus, it is necessary for Vietnam to learn the failures and successes experienced by those countries in their transformation to a knowledge-based economy. Therefore, the context has been selected to find out whether a linkage between knowledge-sharing cultures exists in developed countries with a Confucian culture and a Socialist-oriented market economy in which most of the public universities are backward and subsidised by the government.

Secondly, there has been lack of research into KM in university settings (Sohail and Daud, 2009; Fullwood et al., 2013; Ta, 2014; Fullwood and Rowley, 2017). Researchers have attempted to conduct knowledge-sharing research in general, in particular in business working environments. However, KS in the context of universities is different from other business sectors (Sohail and Daud, 2009; Howell and Annansingh, 2013; Ta, 2014; Fullwood and Rowley, 2017) as it involves not only institutional knowledge such as experiences, expertise or processes but also includes academic and scientific knowledge (Ta, 2014). Moreover, it is believed that academic staff tend to set a higher priority on personal scholarly accomplishment and teaching than on sharing collective visions towards common goals of their universities (Kim and Ju, 2008). Accordingly, KSB amongst university members is likely to be more complicated and challenging. It is critical in teaching, learning and research at universities (also known as knowledge-intensive organisations), in which their members freely share and exchange their knowledge with colleagues (Ramayah et al., 2013). Therefore, promoting KSB is not only necessary for academic staff but also crucial for students and learners. Understanding of KSB would help to achieve the success of KM leading to increased

creativity and innovation capacity for teaching, curriculum development and research in universities (Fullwood and Rowley, 2017).

Thirdly, most of the studies have focused on Western, developed countries with more advanced and mature strategies of KM. To date, very little is known about KS in higher education in non-Western contexts, especially in a communist system and less developed country such as Vietnam (Tohidinia and Mosakhani, 2010; Shanker et al. 2017; Phung et al., 2018). Moreover, there has been little research investigating developing countries in which strategies of KM in universities are less mature and low performing, leaving a notable performance gap between strategies in developing countries and developed countries. Consequently, the selection of this context helps to facilitate KS better and mitigate the above gaps.

Fourthly, KM research is an urgent, imperative need in Vietnam to participate in establishing the national project “Developing digitised Vietnamese knowledge system” (VGP, 2017). The project is promising to provide access to a comprehensive knowledge management system. It will promote and facilitate to all Vietnamese people the need for lifelong learning, mastery of knowledge, improving creative research, applying scientific and technological advances leading to supporting the development of the country (VGP, 2017).

Fifthly, the scope of the current research is set with the substantive focus on public universities subject to government supervision. The discussion on non-public tertiary institutions is outside the scope of this study. In a global context, East Asian regional and Vietnamese national contexts, public universities can be considered as non-profit bodies, which open to any resident (Ngo, 2014). The majority of Vietnamese universities are public ones account for eighty eight per cent of higher education institutions, which “have been the key providers of qualified human resources in Vietnam” (as cited in Ngo, 2014, p. 10). Moreover, more than seventy per cent of students are enrolled in public higher education institutions in East Asia, while globally the majority of universities are public ones in most countries (WB, 2011). Thus, the focus of this study would make a significant contribution at national, regional and global levels.

Finally, Dong et al. (2010) portrayed the Vietnamese profile as one of collectivism, unequal power distribution, and long-term orientation affected by Confucian values and ideals. The authors argued that as a premature assumption, such a cultural imprint

would necessarily mean a greater propensity towards KSB. Thus, to implement KM initiatives within a Vietnamese organisational environment has some unique aspects that involve some formidable challenges. Traditional cultural aspects alone are insufficient to account for all of the individual behaviours in such complicated settings as modern-day Vietnam (Dong et al., 2010). Accordingly, to better understand the knowledge-sharing culture in Vietnam, it is vital to examine salient factors that have affected the KSB such as environmental-related factors (trust, subjective norm), personal-related factors (e.g. knowledge self-efficacy, enjoyment in helping others, reciprocal benefits) and leadership styles. Few studies have made serious attempts to explore and develop a new knowledge-sharing model of public universities for modern Vietnam.

To conclude, the current research is therefore positioned in Vietnamese public university context implying that there is a problem concerning KS inside Vietnam. The extensive context recommends that Vietnamese higher education could not go against the general trend or stand still, instead, it should have a willingness to learn from other nations, especially those neighbouring countries that are its closest competitors, but concurrently are helpful sources of reference for the best knowledge-sharing practices in public universities (Ngo, 2014). This study rationally supposed that research into KS of public universities in Vietnam, a developing country as a “need help” nation, is of practical learning value in the development of new KM model of public universities for Vietnam.

1.3 The purpose statement

Given that there is an urgent need for a new successful KM model that can better promote a knowledge-sharing culture in Vietnamese universities. In response to this need, the paramount purpose of this two-phase, sequential mixed methods study is to develop a research model, which modifies the standard Social Cognitive Theory (SCT) model and augments it with other theories (e.g. Theory of Planned Behaviour, Economic Exchange Theory, Social Exchange Theory, and Transformational Leadership Theory) to account for academics’ KSBs. This novel model allows the study to (1) examine the relationship between environmental-personal factors and KSB, moderated by transformational leadership, (2) explore the relationship between KSB and innovative work behaviour, moderated by the quality of transactive memory systems, amongst academic staff who work in public universities in Vietnam.

In the first phase, quantitative research questions and hypotheses address the relationships between environmental factors (subjective norm, trust) and personal factors (knowledge self-efficacy, enjoyment in helping others, expected organisational rewards, reciprocal benefits, and psychological ownership of knowledge) and KSB to promote innovative behaviour between academic staff at four public universities in the North of Vietnam. The model also explores the moderating roles of transformational leadership on environment-personal factors and KSB and transactive memory systems on KSB and innovative work behaviour. As applied to this study, the SCT theory holds that this investigation would expect environmental and personal factors to influence or explain KSB because the SCT theory indicates that individual behaviour is affected by environmental influences and personal perceptions.

Information gathered from this first phase was explored further in a second qualitative phase. In the second phase, qualitative interviews were used to probe significant quantitative results by exploring aspects of KS with seven interview participants at public universities in Vietnam. The reason for following up with qualitative research in the second phase was to better understand and explain the quantitative results of the study context (Creswell, 2009).

1.4 Research questions and objectives

Given that the paramount intent of this study is to propose a new research model that helps to examine the impact of influential factors on KSB and how KSB leads to innovative work behaviour in Vietnamese university settings, the current research was designed to investigate and answer key research questions as follows:

1. What are the critical factors that influence KSB in Vietnamese university settings?

1.1. How do subjective norms affect KSB in Vietnamese university settings?

1.2. How does trust influence KSB in Vietnamese university settings?

1.3. How does knowledge self-efficacy influence KSB in Vietnamese university settings?

1.4. How does enjoyment in helping others influence KSB in Vietnamese university settings?

1.5. How do expected organisational rewards influence KSB in Vietnamese university settings?

1.6. How do reciprocal benefits influence KSB in Vietnamese university settings?

1.7. How does psychological ownership of knowledge influence KSB in Vietnamese university settings?

2. How does KSB influence innovative work behaviour in Vietnamese university settings?
3. What are the joint effects of transformational leadership and the critical factors on KSB in Vietnamese university settings?
4. What is the joint effect of the quality of transactive memory systems and KSB on innovative work behaviour in Vietnamese university settings?

Given the identified knowledge gaps and to achieve the primary research goal, this study was carried out with the below objectives:

1. To advance and validate a research model to explore the issues of KS in Vietnamese universities;
2. To explore the critical factors influencing KSB in Vietnamese universities;
3. To investigate and understand the impact of KSB on IWB in Vietnamese universities;
4. To explore the moderating role of transformational leadership on the relationships between environmental-personal factors and KSB in Vietnamese universities;
5. To explore the moderating role of the quality of transactive memory systems on the relationship between KSB and IWB in Vietnamese universities;
6. To validate the proposed research model using a qualitative study of semi-structured expert interviews;
7. To contribute knowledge to the existing body of knowledge about KM within the university setting context in a developing country and to provide practical information to universities about achieving the successful KM initiatives.

1.5 Overview of research design and method

This study applied a mixed methods approach to investigate the above research objectives and questions. According to Creswell (2009), researchers deploy a sequential mixed methods strategy with the qualitative follow-up phase allowing further explanation of the preliminary quantitative research. The purpose of this two-phase, sequential explanatory mixed methods approach was to investigate the effects of environment and personal factors on KSB leading to innovative behaviour. In the first phase, quantitative research questions and hypotheses addressed the relationships between environment-personal factors and KSB; KSB and innovative behaviour; the moderating effect of transformational leadership on the relationship between

environment-personal factors and KSB; the moderating effect of transactive memory systems on KSB and innovative behaviour at the public university context in Vietnam. The findings from this first phase were explored further in a second qualitative phase. In the second phase, the semi-structured interviews were deployed to probe significant findings from quantitative phase by examining aspects of KSB with seven participants (interviewees) at universities in Vietnam. The rationale for using follow-up qualitative interviews in the second phase was to explain and interpret critical quantitative findings from the quantitative phase. This phase also helped the researcher to better understand the central phenomena of the current research topic (Creswell, 2009, 2016).

In the first quantitative phase, this study developed the instruments through the literature review, a five-week seminar series with the experts at the University of Technology Sydney (UTS), and suggestions by the researcher's supervisors. Before administering the data collection, a pilot test was conducted to assess the questionnaire survey and the overall research model and hypotheses. The primary data collection was conducted by self-administered questionnaire method. The quantitative data analysis methods involved descriptive statistics, Explanatory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM). The IBM Statistical Package for the Social Sciences (SPSS) 22.0 and Analysis of Moment Structure (AMOS) 22.0 were used to perform Cronbach's alpha, EFA, CFA and SEM in this study. In the second qualitative research, this study developed and tested the interview protocol based on the significant findings obtained from the quantitative phase. The study then transcribed and analysed the interviews to validate the result from the first phase.

1.6 The significance of the study

This study makes several significant contributions to both theory and practice in many ways. First, to date, there has been no study comprehensively examining the relationships of environmental and personal factors on KSB and innovative work behaviour and which sheds light on the moderating roles of transformational leadership and transactive memory systems on these relationships at the tertiary level in a less studied country such as Vietnam. The findings from this study, when incorporated with those of other studies in the world, will lead to a deeper understanding of KSB into KS worldwide.

Second, there has been a lack of research into KM in university settings (e.g. Ta, 2014; Fullwood and Rowley, 2017). Consequently, more studies in this area are essential.

Third, most of the previous studies have examined the influence of limited salient factors on KSB indirectly through knowledge-sharing intentions based on Theory of Reasoned Action (TRA) or Theory of Planned Behaviour (TPB). However, TRA and TPB have limitations in explaining the direct effect of influential factors on an individual's actual behaviour; that is people may feign a willingness to, but fail to actually share their knowledge (Kuo and Young, 2008). Thus, this study contributes to limited number of research to examine individuals' actual KSB, not only their behavioural intention and attitudes to sharing knowledge (Bock and Kim, 2002; Bock et al., 2005; Chatzoglou, 2009; Henttonen et al., 2016).

Fourth, this study seeks to raise awareness in Vietnam and other countries with similar contexts and characteristics that it is necessary to pay more attention to non-technical factors (i.e. environmental and individual factors) as key determinants of successful KM initiatives and KS as well.

Fifth, knowledge of the critical factors influencing KSB amongst academic staff can be of value to many stakeholders, e.g. university policymakers, university leaders, lecturers, and researchers. This research provides empirical evidence to help them become more successful in developing relevant strategies for integrating KS and KM into teaching, learning and research.

Finally, the current research will make a significant contribution to the knowledge by providing a comprehensive research model of KS.

1.7 Thesis organisation

The thesis is organised into eight chapters including this introductory chapter (Chapter 1). The next chapter (Chapter 2) provides an extensive literature review on the research problem, which relates the current research to larger, extant dialogue in the literature, filling in gaps and extending previous studies. Chapter 2 starts with an overview of the relevant concepts towards KSB and the importance of KSB on knowledge management systems. This is followed by a detailed discussion about innovative work behaviour. Then, previous studies associated with research problem are reviewed with the objective of identifying the knowledge gaps in the current literature. Factors influencing KSB are also presented. The relationships between transformational leadership and KSB, and

transactive memory systems and KSB are discussed. Finally, the gaps in the literature will be identified by the synthesis of the review of previous studies.

Chapter 3 presents the theoretical considerations and the research model to address the relevant knowledge gaps identified in Chapter 2. The chapter starts with the presentation of the development of the conceptual model. This chapter further explains and justifies the relationships between the model constructs and propose the research hypotheses. Chapter 4 begins by presenting and justifying the selection of the research methodology for this study. The chapter explains and justifies the choice of the research design and methods (a two phases, sequential mixed methods approach) for this study. Following the research approach, the quantitative study (phase 1) is presented with the objective to present the development of the survey instrument, the procedure of data collection, and the selections of data analysis techniques. Next, the qualitative phase is discussed concerning data collection method and analysis strategy. Finally, chapter 4 presents the ethical considerations.

Chapter 5 reports the findings of the quantitative phase based on survey questionnaires. It begins by presenting descriptive results of the survey and data cleaning. Data cleaning aims to ensure that the collected data has suitable characteristics for subsequent analyses such as the validation of measurement scale (Exploratory Factor Analysis - EFA), the assessment of the measurement model (Confirmatory Factor Analysis - CFA) and the structural model (SEM - hypothesis testing). Chapter 6 focusses the results of qualitative data analyses. This chapter starts by describing the participants' profiles then discusses the results of the semi-structured interviews including the interpretation of the relevant statements transcribed and translated from interviews. Next, the comparisons of the quantitative and qualitative results for the explanation of each hypothesis are presented.

Chapter 7 interprets and discusses the findings from both the quantitative and qualitative data analyses for the whole research. The chapter first reviews the research purposes, questions and objectives. It then discusses the findings to answer the research questions and hypotheses. The chapter next advances an ideal model of KS based on the combination of the findings from both quantitative and qualitative phases. Chapter 8 summarises and concludes the research.

CHAPTER 2 : REVIEW OF RELEVANT LITERATURE

2.1 Introduction

This chapter reviews and summarises the major literature on the research problem, and relates the current research to the broader, extant dialogue in the literature, filling in gaps and extending previous studies (Creswell, 2009). The chapter begins with an overview of knowledge, Knowledge Management (KM), Knowledge Sharing (KS), Knowledge Sharing Behaviour (KSB), and the importance of KSB in knowledge management systems. This is followed by a detailed discussion about innovative work behaviour that will be measured as the outcome of KSB. Then, previous studies related to the research problem will be comprehensively reviewed. Factors influencing KSB and innovative work behaviour are also presented. Following this, transformational leadership and KSB, and transactive memory systems and KSB are discussed. Finally, the chapter synthesises the review of previous studies to recognise the gaps in the current literature before explaining the selection of environmental and personal factors as critical factors influencing KSB. The chapter's outline is presented in Figure 2.1.

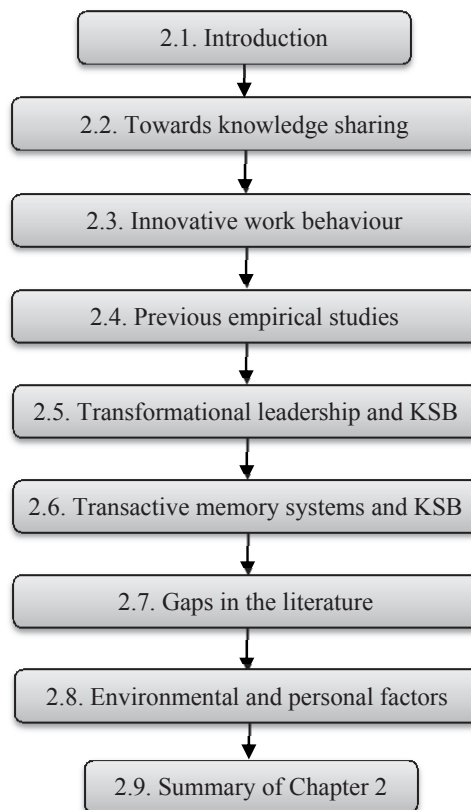


Figure 2.1. Chapter outline

2.2 Towards knowledge sharing

2.2.1 Overview of data, information and knowledge

Several studies in KM have suggested that it is essential to distinguish between data, information and knowledge. Some perspectives address the issue of defining knowledge by examining the nature of data, information and knowledge and their mutual relationships. From the general view of *data* as raw facts set into a situation, it becomes *information* as a result of the integration of important structures, and then it becomes *knowledge* by the integration of useful information, judgment, and experience (Tian et al., 2009). To date, there has been no single definition for data, information, and knowledge. Zins (2007) conducted a study, which reviewed and summarised 130 definitions of the concepts of data, information and knowledge, articulated by forty-five researchers by using five models in a Critical Delphi study carried out in 2003-2005.

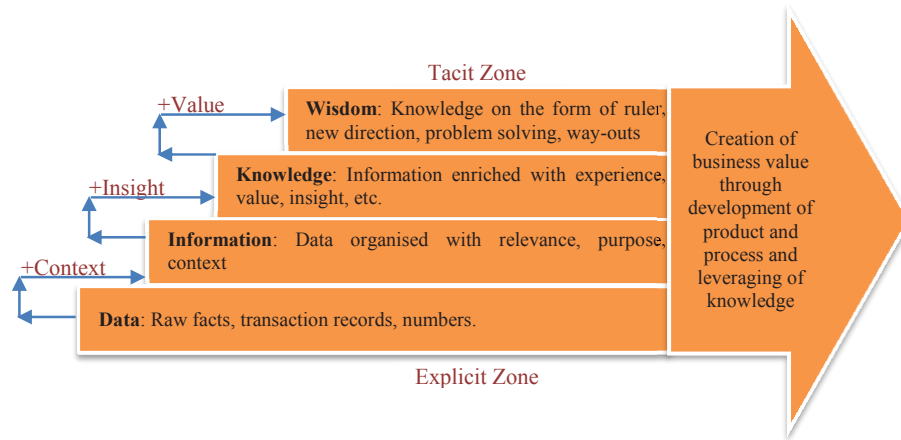


Figure 2.2. Knowledge Value Chain. Source: Shankar et al. (2003)

Stenmark (2002) argued that there is a simplistic view that treats knowledge and data at the highest and lowest level respectively, while information is in the middle of the hierarchy. By adding the additional “wisdom” layer in Stenmark’ approach, Shankar et al. (2003) examined the concept of a knowledge value chain as shown in Figure 2.2. In this knowledge value chain, data, information and knowledge are set in a hierarchic relationship with the others.

The difference between explicit and tacit knowledge is often distinguished in KM (Hawryszkiewicz, 2010). In research on KM in the manufacturing industry, Nonaka (1994) stated that knowledge could be both tacit and explicit. According to Hawryszkiewicz (2010), tacit knowledge is both a combination of cognitive processes

and physical facts used by people that a knowledgeable person owns but cannot easily be codified and stored. On the other hand, it is easier to understand the explicit knowledge that knowledge can be unstructured and structured and also is codified, stored and easy to access.

2.2.2 Overview of knowledge management

KM is not often easily defined because it spans many different areas. Davenport and Prusak (1998) defined KM as the process of capturing, storing, sharing, and using knowledge. To support this definition, Gupta et al. (2007) defined KM as the set of processes that manage the creation, diffusion, and use of knowledge including the creation of facilitating organisational structures, the assistance of organisational participants, setting IT instruments with stress on teamwork and the diffusion of knowledge into place. The authors stated that KM is an evolvement, interdisciplinary business model treating all aspects of knowledge within the context of organisations, involving knowledge creation, codification, sharing, and application of these activities to improve learning and innovation. It can be both technological tools and everyday organisational tasks including the creation of new knowledge and access of valuable knowledge from external sources, which, in turn leading to make decisions, using knowledge in processes and services, digitising information into databases, enabling knowledge increase, exchanging knowledge, and measuring the value of knowledge resources or/and the influence of KM (Gupta et al., 2007). KM is able to support these tasks towards organisational performance effectiveness (Maier, 2007).

Furthermore, KM is also critical in inter-organisational relationships from two potential advantages: longer-run new knowledge generation and short-term operational effectiveness (Gottschalk, 2008). Accordingly, KM is becoming vital for various rationales (Gupta et al., 2007). Dataware (1998) proposed seven steps to deploy KM as the following:

1. Identify the business problem,
2. Prepare for change,
3. Create the KM team,
4. Perform the knowledge audit and analysis,
5. Define the key features of the solution,
6. Implement the building blocks for KM and,
7. Link knowledge to people.

2.2.3 Knowledge sharing and KSB

KS is a difficult concept to define because it has been examined from multiple perspectives. There are several definitions of KS (Paulin and Suneson, 2012). Van den Hooff and De Ridder (2004, p. 118) defined KS as “the process where individuals mutually exchange their (implicit and explicit) knowledge and jointly create new knowledge”. Following this perspective, a KS process is distinguished into two forms: donating (giving) knowledge and collecting (receiving) knowledge (Van den Hooff and De Ridder, 2004; Van den Hooff and Van Weenen, 2004). Their definition is in line with many other researchers. For example, Grotenhuis and Weggeman (2002) made a distinction of KS into a “knowledge source” and a “knowledge receiver”, while Ardichvili et al. (2003) stated that KS comprises the providing for new knowledge and the request for new knowledge. The combination of these perspectives labels the two processes of KS as follows: (1) “Knowledge donating, communicating to others what one’s personal intellectual capital is; and (2) Knowledge collecting, consulting colleagues in order to get them to share their intellectual capital” (Van den Hooff and De Ridder, 2004, p. 118). From another perspective, Hendriks (1999) proposed a simplified model of KS in which KS is related to communication and is also different from but related to the distribution of information. Hendriks considered KS as shared practices and activities. The author also argued that an act of reconstruction is required when someone intends to learn from others that take knowledge to gain knowledge and, consequently, to share his or her knowledge. KS assumes a relation between the one holding knowledge and the other acquiring knowledge. The “simplified model of knowledge sharing” is shown in Figure 2.3 in which KS in a simplified form is described as a process with two sub-processes. In the first sub-process, KS assumes an act of “externalisation” by those who own knowledge as “knowledge owners”, while KS assumes an act of “internalisation” by those seeking to gain knowledge as “knowledge re-constructors” in the second sub-process. Many forms can be taken by “externalisation”, comprising knowledge-based performing actions, systemising it in a knowledge system or accounting for it in an educational talk. Likewise, “internalisation” also may take place in various forms such as learning by doing or seeking for understanding the codified knowledge. The model shows that the presence of barriers may twist the internalisation of externalised knowledge. These barriers may also be more basic including barriers of time, culture and language, and distance.

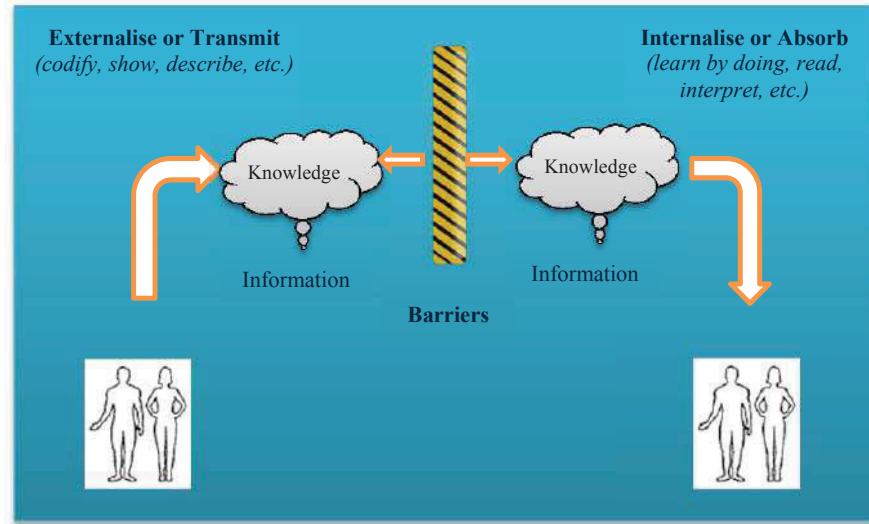


Figure 2.3. A simplified model of KS. Adapted from Hendriks (1999)

From another viewpoint of KS and context study, Lin (2007a) defined KS as a social interaction culture through which knowledge, skills, and experiences are exchanged among individuals in the whole department or organisation. Likewise, Schwartz (2006) defined KS as “the exchange of knowledge between and among individuals, and within and among teams, organisational units, and organisations. This exchange may be focused or unfocused, but it usually does not have a clear a priori objective”, or “an exchange of knowledge between two individuals: one who communicates knowledge and one who assimilates it. In KS, the focus is on human capital and the interaction of individuals. Strictly speaking, knowledge can never be shared. Because it exists in a context; the receiver interprets it in the light of his or her own background” (as cited in Paulin and Suneson, 2012, p. 3). By combining all the definitions above, KSB involves the exchange of knowledge between at least two parties, one that owns knowledge and the other that gains knowledge (Hendriks, 1999). In the current research, KSB is operationalised as an interaction among academic staff, which involves the exchange of knowledge among Vietnamese academic staff, measured by the frequency of employees participating in KS activities in Vietnamese universities. Knowledge, here, refers to what employees know, create and own, such as data, information, experiences, and skills they obtain through experience, work or education. Moreover, this study assumes that KS in the university settings is more than disseminating knowledge but creating it (Van den Hooff and Huysman, 2009). This selection is necessary for the clarity in accounting for the phenomenon of KSB among academic staff in universities.

In summary, KS is the critical key to the successful KM initiatives (Davenport et al., 1998; Al-Alawi et al., 2007). It is because KS is a voluntary behaviour and for the benefits of KM to be recognised, people need to be convinced that it is in their interests to share (Hislop, 2013; Fullwood and Rowley, 2017). These benefits can be taken from KS by providing both explicit links to gather knowledge and chances to socialise with others to exchange and interpret their knowledge (Hawryszkiewicz, 2010).

2.2.4 The importance of KSB in knowledge management systems

KS needs certain tools to support the exchange of knowledge among individuals (Cabrera et al., 2006). Knowledge management systems (KMSs) are usually known as tools and systems, which support KS in organisations (Davenport and Prusak, 1998). A KMS has been expected to be a technology-management tool designed to facilitate KS that helps to enhance the performance of organisations (Alavi and Leidner, 1999; Bhusry et al., 2011). However, a successful KMS involves both the technological aspect and human factors (Saad, 2015). Haron et al. (2017) cited that there are at a minimum about 31 billion US dollars lost per year in Fortune 500 firms caused by the failure of sharing knowledge in spite of the investment in KM initiatives including KMS. They also claimed that a lack of the consideration of individual behaviours is one of the key reasons why many KMS have failed in organisations. Saad (2015) supported that there has been little attention paid to the human aspects in developing KMS. To explain the role of the determinants of individual engagement in KS and KMS, Cabrera et al. (2006) used two measures associated with KMS: availability and perceived quality of contents. Availability refers to the extent of the accessible readiness people perceive KMS to be. The study argued that people would be willing to share their new ideas or ask advice from other people if they view the existence of appropriate KS tools to facilitate such exchanges. The availability perceptions are not what the KMS actually does, but what the users (individuals) who used the system perceive about it. Regarding perceived quality of contents of KMS, the study asserted that the quality of the contents might also influence KS by shaping the individual perceptions of the importance and influence of contributions. People may be encouraged to share their ideas with others if they perceive that the contents of a repository are valuable for them. Finally, Cabrera et al. (2006) concluded that systems-related variables are impacted by relevant factors predicting KSB. In summary, studying KSB will contribute to the development of KMS by providing the guidelines and requirements associated with KMS-based KS activities.

2.3 Innovative work behaviour

According to Janssen (2000), innovative work behaviour (IWB) involves three components considered as consecutive steps in personal innovation: idea creation, idea promotion, and idea implementation. The first step of individual innovation is to create an idea that is the generation of new and valuable ideas in any field (Amabile et al., 1996). Second, potential colleagues or partners will be promoted the idea, which occurs when an individual has created an idea and engages in social activities to get supporters for the idea (Janssen, 2000). Finally, the innovation process involves idea application by developing a model or innovative prototype that is likely to be tried and utilised in teams or the whole organisation (Kanter, 1998). Individuals accomplish fundamental innovations, while the completion of more complicated innovations often needs teamwork, which relies upon diversity of knowledge, ability, and work roles (Kanter, 1998; Janssen, 2000).

With the belief that individual IWB has positive effects on work outcomes, several researchers have dedicated increasing attention to factors that potentially foster IWB such as KS and IWB (Radaelli et al., 2014) and KS determinants, behaviours, and IWB (Akhavan et al., 2015). First, Yu et al. (2013) examined individual-level KS and innovative behaviour of employees and interactions between the individual level of KS and the climate of innovation within the organisation. The findings showed that KS and interactive behaviour among staff in the finance and insurance industry in Taiwan enhanced innovative behaviour and the ability to innovate and there is a positive association between KS and innovative behaviour. Second, Radaelli et al. (2014) conducted a study which investigated new insights into how employees' KS impacts their IWB. This study proposed three mechanisms linking an individual's KS behaviors to his or her own IWB: (1) a direct impact whereby the act of sharing derives a recombination and translation of knowledge that promotes innovation; (2) an indirect impact by which KS creates social conditions (i.e., reciprocation with new knowledge) for innovation; (3) a distal influence whereby the antecedents of KS also facilitates innovation. The results indicated that individuals who share knowledge also engage more in generating, promoting and implementing innovations. The study also recommended that it is the act of knowledge recombination and translation embedded in KS that utilises the most positive impact on IWB. Finally, Akhavan et al. (2015) examined the influence of socio-psychological factors from different theoretical

perspectives and whether it led to superior employees' IWB. The results supported the influences of three motivational factors (perceived loss of knowledge power, perceived reputation enhancement, and perceived enjoyment in helping others) and two social capital factors (social interaction ties and trust) on employees' attitude toward KS. The study also specified that individuals' KS behaviours improve their IWB.

2.4 Previous empirical studies

To identify the gaps for the current study, this review of the literature to date has highlighted the key empirical studies on KSB that are related to this study (see Table 2.3). These studies are classified into the following important aspects: topic, source, theoretical foundation, research context, research methodology, relationships among KS factors. The above classification used in the current study has helped to clearly understand the investigated factors (variables/constructs) and select an appropriate theory and methodology. Overall, these studies provide support for the view that there are relationships between environmental and personal factors on KSB, and individuals' KSB positively influences their innovative work behaviour. The following sections will summarise the results from four aspects: (1) Theoretical foundations, (2) Study contexts, (3) Research methodologies, and (4) Influential factors, which then will be synthesised to find knowledge gaps (Figure 2.4).

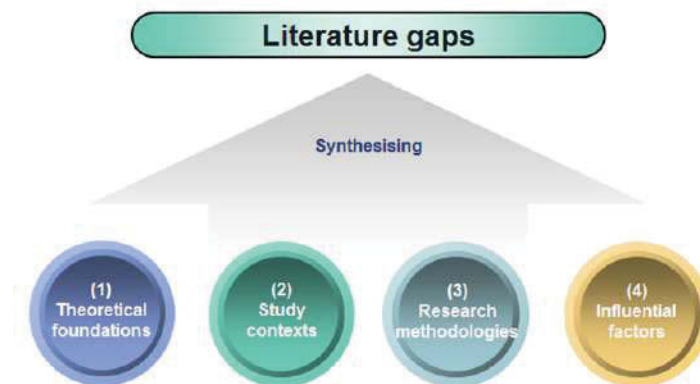


Figure 2.4. The process of reviewing previous studies to find knowledge gaps

2.4.1 The usage of theoretical foundations

This section (2.4.1) covers the use of relevant theories in prior studies. The motivation for this review, as also stated by Creswell (2009), is to explain the phenomena of KS and specify how and why the variables (KS factors) and relational statements are interrelated.

Theory of Reasoned Action (TRA)

The TRA theory was first introduced in 1975 by Fishbein and Ajzen. TRA was designed to account for the causal relationships among belief, attitudes, intentions and human behaviours (Rahman et al., 2016). TRA presumes that human beings usually make systematic use of the information available to them in rational ways (Bock and Kim, 2002). According to TRA (see Figure 2.5), an individual's behaviour is determined by his or her behavioural intention. The intention is determined by individual attitudes and subjective norms (Ajzen and Fishbein, 1980). TRA has been applied to explain the KSB in organisations in KM and IS research field.

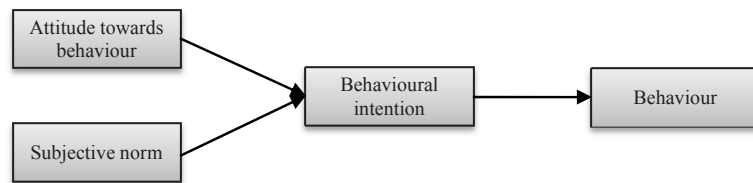


Figure 2.5. Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975)

A large number of researchers have applied TRA to investigate individual KSB (e.g. Bock and Kim, 2002; Bock et al., 2005; Lin, 2007b; Dong et al., 2010; Ramayah et al., 2013; Rahman et al., 2016). Rahman et al. (2016) argued that TRA had been commonly used in multiple disciplines for two critical reasons: (i) its ability to predict a personal behaviour, which is essential to assess a personal attitude toward performing certain behaviour; (ii) its significance to interpret the attitude toward the behaviour by involving another salient factor such as subjective norms.

Theory of Planned Behaviour (TPB)

TPB is a new generation of TRA made necessary by the original model's limitations in tackling behaviours over which people have incomplete volitional control (Ajzen, 1991). TPB, as shown in Figure 2.6, portrays the extension of TRA model. The model assumes that individual behavioural intentions are jointly determined by three independent factors: attitude, subject norms, and perceived behavioural control (Ajzen, 1991). Moreover, in TPB, the behavioural achievement can be directly predicted by both perceived behavioural control and intention. Like TRA, TPB has been widely used to predict and explain behavioural intention and actual behaviour in IS and KM (e.g. Harrison et al., 1997; Liao et al., 1999; Lin and Lee, 2004; Kuo and Young, 2008;

Chatzoglou and Vraimaki, 2009; Tohidinia and Mosakhani, 2010; Jeon et al., 2011; Akhavan et al., 2015).

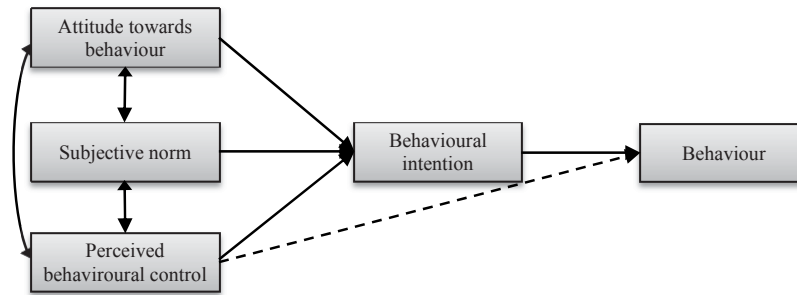


Figure 2.6. Theory of Planned Behaviour (TPB) (Ajzen, 1991).

In summary, some studies have investigated KS using TRA or its extension version TPB. Nevertheless, as Tangaraja (2015) noted, TRA and TPB are well-established theories, which provide pre-determined factors that impact actual behaviour through behavioural intention. However, Bock and Kim (2002) reported that even when intentions were high, behaviour might not take place if specific preconditions of a particular situation (e.g. accessibility) made the behaviour impossible. Moreover, in TRA and TPB, KSB has been investigated solely focusing on salient beliefs (subjective norms, attitudes, perceived behavioural control) as a very individualistic behaviour (Bock and Kim, 2002). TRA and TPB do not explain other factors that may facilitate or impede KSB such as culture (e.g. trust, intrinsic or extrinsic motivations) (Chatzoglout, 2009).

Economic Exchange Theory (EET) and Social Exchange Theory (SET)

The two theories, EET and SET, are often used to explain the social interaction of individuals (Bock and Kim, 2002). EET is concerned with extrinsic benefits. From this perspective, people will behave based on their rational self-interest (Bock and Kim, 2002; Hung et al., 2011). People will share their knowledge with others if they feel that the rewards exceed its costs (Kelley and Thibaut, 1978; Constant et al., 1994; Bock and Kim, 2002; Hung et al., 2011). Karlsen and Gottschalk (2004) revealed that without a lack of incentives to promote KS is the reason that often prevents success in IT projects. This is a reason why there have been many researchers focusing on the incentive systems for the success of KM initiatives (Bock and Kim, 2002). Hence, expected extrinsic rewards suggest that people would have a more positive attitude toward KS if they feel they will gain extrinsic benefits such as higher salary, higher bonus, promotion opportunities or job security in turn for their KS activities (Bock and Kim, 2002).

In contrast to EET, SET concerns itself with on intrinsic rewards (Blau, 1967). SET presumes that individual behaviours involve benefit maximisation and cost minimisation (Hung et al., 2011). In a social exchange, personal and social costs and benefits are able to affect knowledge contribution (Hung et al., 2011). Here, knowledge self-efficacy and enjoyment in helping others can be benefit factors, while the loss of knowledge power and the codification effort can be cost factors (Kankanhalli et al., 2005). The two theories are different that there are not any explicit constraints to receive future benefits (Kankanhalli et al., 2005). In this study, EET is used to explain extrinsic benefits such as expected organisational rewards and reciprocal benefits, while SET helps to account for intrinsic benefits such as knowledge self-efficacy and enjoyment in helping others.

Social Cognitive Theory (SCT)

SCT was first introduced by Bandura (1986) as a broader framework for understanding human motivation, thought and behaviour to predict and explain individual behaviour and behaviour changes. In the SCT's model, environmental influences, personal factors, and behaviours act as interactive relationships (Wood and Bandura, 1989). Bandura (2002) explains the main concepts of SCT by the “triadic reciprocal causation” as follows (see Figure 2.7).

- Environmental influences that impact the individual capacity to fulfil the behaviour successfully;
- Personal factors determine whether a person has low or high knowledge self-efficacy leading to his or her behaviour and;
- Behaviour is the response, which a person gains after his or her performing a certain behaviour.

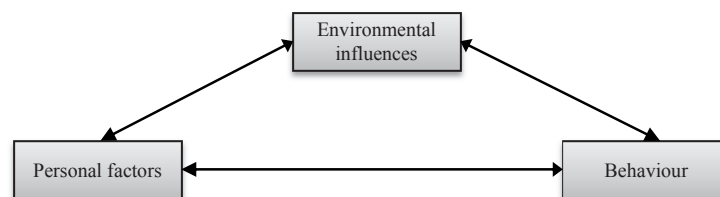


Figure 2.7. The interactions between environment, person and behaviour (Bandura, 1986)

The theory, in short, indicates that an individual behaviour is affected by environmental influences and personal perceptions. SCT has been broadly used in the literature of

information systems for identifying the individual behaviour (Hsu et al., 2007). However, there have been few studies using SCT to examine KSB. The first study to adopt the SCT based model to examine the determinants of KSB was conducted by Hsu et al. (2007). These authors are regarded as the pioneers who first utilised SCT in the field of KSB in virtual communities. Following this model, Lin et al., (2009) also applied SCT to examine KSB in virtual communities. However, Chang et al. (2015) stated that subjects of research are members in virtual communities could have the limitation of the generalisability of the results to other sorts of organisations. Till now, far few studies have applied SCT to investigate research on KSB in organisations that are different from virtual communities. Unlike virtual communities, an organisation such as a university has formal policies and procedures to guide the individual's KSB with the common interests or needs of organisational goals.

To conclude, from the above discussion the researcher has provided an overview of theories, which are commonly used in the prior research related to this study.

2.4.2 Knowledge-sharing studies in the higher education context

This section (2.4.2) supports the view that there has been a lack of research on KS in higher education in general and in the Vietnamese context in particular. The key empirical studies on KS in higher education are highlighted in Table 2.1. The results show that most of the extant studies on KS in the higher education context have focused on public and private universities in Malaysia and the United Kingdom.

In the context of Malaysia, the two first studies to investigate KS in the university sector was conducted by Cheng et al. (2009) and Sohail and Daud (2009). The results from Cheng et al.'s (2009) research found that there were positive relationships between reputation building and incentive systems on KS. Sohail and Daud (2009) found that a change from a mechanistic to an organic structure facilitates KS. More recently, Ramayah et al. (2013) applied TRA as the theoretical background for their study, which explored the factors influencing KS among academics in Malaysia. The authors collected data from 447 academics in 10 public universities scattered throughout Malaysia. The study found that anticipated extrinsic rewards, anticipated reciprocal relationships, sense of self-worth and subjective norms were critical factors of individual attitude towards KS in academia, which, in turn, had a positive influence on KSB. Subjective norms were also found have a positive impact on KSB. Finally, the study revealed that perceived behavioural control and organisational climate had a

significant influence on KSB. In another quantitative research carried out by Rahman et al. (2015), the authors proposed a research model to improve KSB among non-academic staff of higher learning institutions. The study focused on the relationships between trust and perceived risk, perceived risk and KSB, and workplace spirituality and KSB. The research gathered data from 230 non-academic staff. The results from the study showed that workplace spirituality had a positive impact on KSB. This means that the success of KS could have a strong link to workplace spirituality. Thus, managers in a higher learning institution at both university and department levels should consider the practice of spirituality to establish a knowledge-sharing culture in their department or the whole organisation. Perceived risk mediated the relationship between trust and KSB. Extending the research model in 2015, Rahman et al. (2016) explored the antecedents of KSB among the non-academic staff of higher learning institutions. The authors administered a survey of 220 non-academic staff of different public and private universities from the Klang Valley region in Malaysia. The research model emphasised the relationships between attitude, subjective norms and intention, and intention and KSB guided by TRA theory. The results from this study found that attitude and subjective norms had a positive influence on non-academic staff's KSB, in which intention acted as the mediating variable. The author believed that their study was one of the pioneer studies which applied TRA theory to examine the nature of KSB among the non-academic staff of higher learning institutions.

In the context of the United Kingdom with a different educational system and culture (Fullwood and Rowley, 2017), a survey was conducted by Fullwood et al. (2013) on 230 academics in 11 universities in the United Kingdom. This research aimed to examine the relationships between KS factors, attitude and intention to share knowledge. The authors said that this contributed to the limited research on KS in universities. The findings revealed that there was a positive relationship between attitudes towards KS and intentions to share knowledge. This means that academics' belief that KS will enhance and extend their relationships with colleagues, and provide chances for internal promotion and external appointments. The authors concluded that academics engage in KS concerning many types of knowledge associated with learning, teaching and research. Teaching was deemed to be most commonly exchanged. Thus, they believed that there is an implicit knowledge-sharing culture in universities. In other words, an embedded knowledge-sharing culture existed in universities, however that

culture is individualistic in nature and to some extent self-serving. The challenges facing universities is to attempt to find ways which support the creation, sharing, and dissemination of knowledge. Recently, by using the model of Fullwood et al.'s research (2013), Fullwood and Rowley (2017) conducted an online questionnaire survey with a sample of academics in different universities and disciplines in the United Kingdom. The results from the respondents of 367 academics concerning their attitude and intention towards KS confirmed that attitudes to KS had a positive influence on intentions to share knowledge. The research also found that personal beliefs amongst academics were more influential on their knowledge-sharing attitudes than organisational culture, in which leadership was an influential factor within the organisational culture. Expected rewards were found to be a highly significant personal factor towards KS, which is in line with other another investigation on KS in academic institutions in Malaysia (Cheng et al., 2009). The authors concluded that academics are willing to share knowledge and individual beliefs have more impact on KS than organisational culture.

Regarding the Vietnam context, rare research was conducted by Pham et al. (2015) examining the effect of organisational culture, knowledge-oriented leadership, knowledge-centred human resource practices, technology support, and job demands on KSB. The research survey was employed with a sample of 123 lecturers and support staff in 10 universities in Vietnam. The results from this study found that there were no relationships between culture, reward and KSB. This finding is not consistent with some studies in the Malaysian (Cheng et al., 2009) and the United Kingdom context (Fullwood et al., 2013; Fullwood and Rowley, 2017). However, leadership style and IT support had a positive impact on KSB. The study also uncovered interesting finding related to the non-significant association between cultural values (e.g. trust) and KSB. That is not consistent with the results from many other studies such as Lee and Choi (2003), Lin (2007a), and Al-Alawi et al. (2007) who have indicated the significant impact of trust on KSB in organisations. The authors also revealed that job demands and IT support are the essential enablers for lecturers' KSB in Vietnamese universities. The study recommended that further work should focus on investigating how knowledge enhances member and organisation performance of universities.

Table 2.1: Key empirical studies on KS in the higher education sector

Topic and reference	KS factors	KSB	KS effects	Theory/ Methodology	Finding/Future Work	Context
Knowledge sharing in Academic Institutions: a Study of Multimedia University Malaysia. <i>Cheng et al. (2009)</i>	Incentive System; Management System; Organizational Culture; Individual Attitude; Personal Expectation; IT Application	KS	N/A	N/A; Quantitative method	Incentive systems and personal expectation are the two key factors in promoting academics to engage in KS activity.	Private university in Malaysia
Knowledge sharing in higher education institutions: Perspectives from Malaysia. <i>Sohail amd Daud (2009)</i>	Nature of knowledge; Working culture; Opportunities to share; Motivation to share; Staff attitude	KS	N/A	N/A; Quantitative method	A change from a mechanistic to an organic structure is also facilitated to support sharing.	Private university in Malaysia
KS amongst academics in UK universities. <i>Fullwood et al. (2013)</i>	Organisational culture; Normative beliefs; Subjective norms; Attitude towards KS; Intention towards KS	N/A	N/A	N/A; Quantitative method	There was the positive relationship between attitudes towards KS and intentions to share knowledge.	Universities in UK
An investigation of factors affecting KS amongst UK academics. <i>Fullwood and Rowley</i>	Organizational culture; Normative beliefs; Subjective norms; Attitude towards KS;	N/A	N/A	N/A; Quantitative method	Attitudes to KS had a positive influence on intentions to share knowledge. The research also found that personal beliefs amongst academics were more influential on their KS attitudes than	Universities in UK

Topic and reference	KS factors	KSB	KS effects	Theory/ Methodology	Finding/Future Work	Context
(2017)	Intention towards KS				organisational culture, in which, leadership was an influential factor within organisational culture. Expected rewards were a highly significant personal factor toward KS.	
An Empirical Inquiry on Knowledge Sharing Among Academicians in Higher Learning Institutions. <i>Ramayah et al. (2013)</i>	Perceived behavioural control; Anticipated extrinsic rewards; Anticipated reciprocity; Sense of self-worth; Subjective norms; Organisational climate	KSB	N/A	TRA; Quantitative method	Anticipated extrinsic rewards, anticipated reciprocal relationships, sense of self-worth and subjective norm are critical factors of individual attitude towards KS, which, in turn, have a positive influence on the KSB. Subjective norms were found have a positive impact on KSB. Perceived behavioural control and organisational climate have a significant relationship on KSB.	Higher Education in Malaysia
Influence of Organizational and Technological Aspects on the KSB in Vietnam's University Context. <i>Pham et al. (2015)</i>	Knowledge-centered culture; Job demand; Knowledge-entered HR practices; Knowledge-oriented leadership; Information technology	KSB	N/A	N/A; Quantitative method	There were no relationships between culture, reward and KSB, while leadership style and IT support had a positive impact on the KSB. Job demands and IT support are the critical enablers for lecturers' KSB in Vietnamese universities.	University in Vietnam
Trust and workplace spirituality on KSB	Trust; Perceived risk;	KSB	N/A	N/A;	Workplace spirituality had a positive impact on KSB. The relationship between trust and KSB was	Higher learning

Topic and reference	KS factors	KSB	KS effects	Theory/ Methodology	Finding/Future Work	Context
Perspective from non-academic staff. <i>Rahman et al. (2015)</i>	Workplace spirituality			Quantitative method	mediated by perceived risk.	institutions in Malaysia
KSBs among non-academic staff of higher learning institutions. <i>Rahman et al. (2016)</i>	Attitude towards KS; Subjective norms; Intentions to share knowledge	KSB	N/A	TRA; Quantitative method	Attitude and subjective norms had a positive influence on non-academic staff KSB, in which intention acts as the mediating variable.	Higher learning institutions in Malaysia

2.4.3 Research methodology usage

The results from the reviewing of literature (see Table 2.3) indicated that most of the studies conducted on KS related to the current research have used the quantitative approach. These studies have used questionnaire surveys to collect data through paper-based or online methods. There has been little research used a mixed-method approach including quantitative and qualitative methods. For example, the combination of a sequential mix-method can be used in a complementary manner (Neuman, 2006) which applies the quantitative approach as the main approach, followed by qualitative approach as a complementary need. A mixed method is able to help researchers gain the highest level of understanding and investigating the research problem (Neuman, 2005).

2.4.4 Influential factors on KSB

The review of the literature to date has also covered approaches to investigate the relationships among factors influencing KS in many ways. By adapting the research models for studying KM developed by Lee and Choi (2003), this study has categorised knowledge-sharing factors into four groups based on how the relationships were identified (see Figure 2.8): (1) Relationship among factors influencing KS; (2) Relationship among factors influencing KS and KSB; (3) Relationship among factors, KS, and KS effects; and (4) Relationship among factors influencing KS and KS effects. Table 2.3 summarises the KS factors and their findings across studies.

A first set of studies examine the relationship among factors influencing KS:

The focus is on the investigation of the effect of KS factors. To identify this effect, researchers have examined some KS factors such as attitudes, subjective norms, intention, organisational culture, top management support, and IT support.

An observation from Table 2.3 shows that Bock et al. (2005) are the first scholars to advance an integrative comprehension of the factors facilitating or impeding individuals' KS intentions. The authors employed as their theoretical framework, the TRA theory (subjective norms, attitudes towards KS, intentions towards KS), and integrated with extrinsic motivators (anticipated extrinsic rewards, anticipated reciprocal relationships, sense of self-worth), social-psychological forces and organisational climate factors. These factors were considered to affect individuals' KS intentions. The study suggested that future research should extend the research models by including actual personal KSB. Up till now, this research has been widely cited by

many researchers and practitioners into KSB (Kankanhalli et al., 2005; Lin, 2007b; Chow and Chan, 2008; Fullwood et al., 2013; Fullwood and Rowley, 2017).

Following this model, Fullwood et al. (2013) and Fullwood and Rowley (2017) conducted surveys in 11 universities in the United Kingdom in 2013 and 2017 respectively. The results from these two studies were presented above in section 2.4.2.

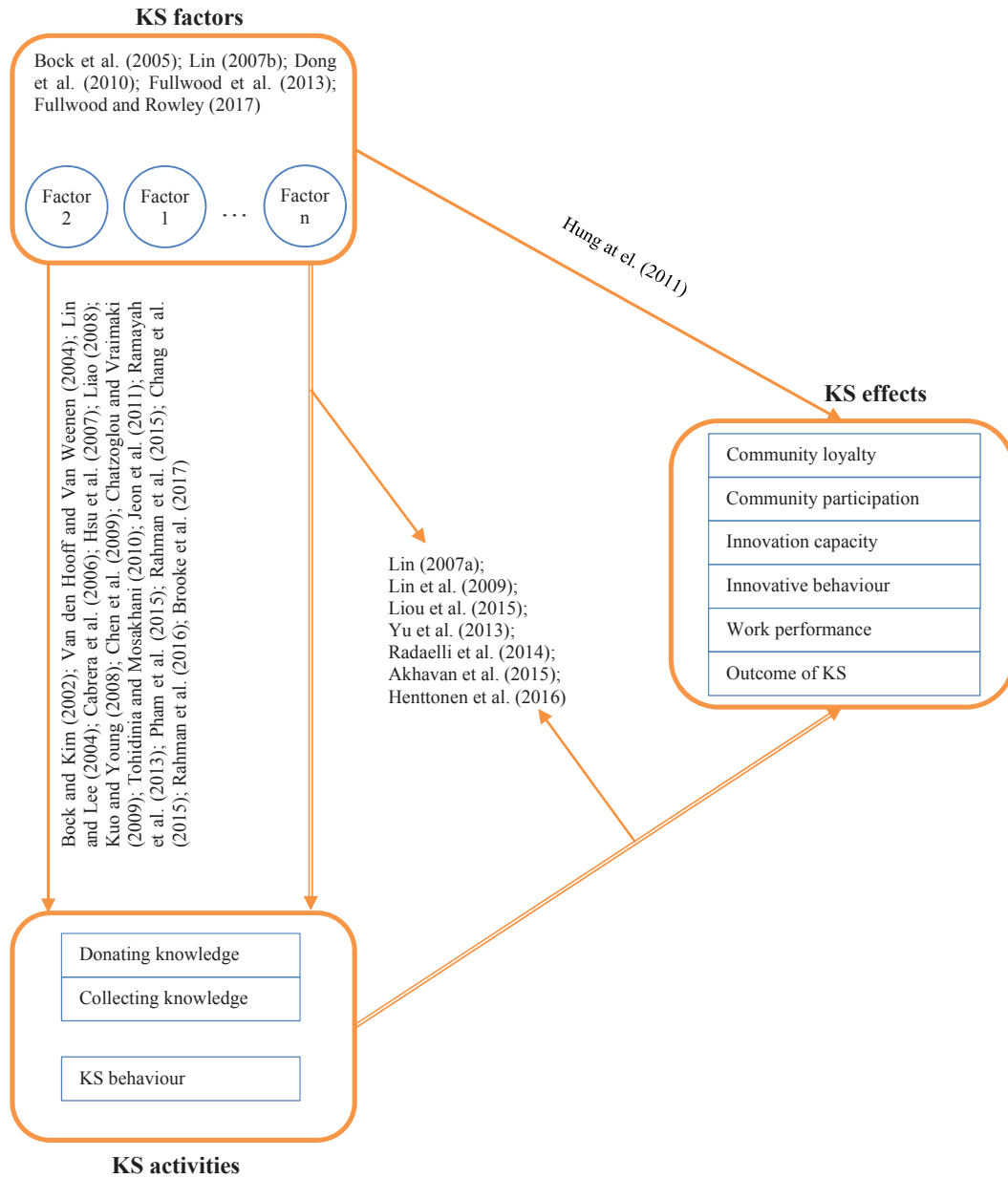


Figure 2.8. A research framework for studying KS.

Adapted from Lee and Choi (2003).

Another significant model was conducted by Lin (2007b), who developed a research model based on TRA to investigate the roles of both extrinsic (expected organisational rewards and reciprocal benefits) and intrinsic (knowledge self-efficacy and enjoyment in helping others) motivators on attitudes toward KS and to explain individual intentions toward KS. However, the research only concentrated on the motivational factors (salient beliefs) which affected attitude and intention toward KS. Thus, the author suggested that the further work must examine subjective norms to improve the explanatory power of the research model. This is because, following the TPB theory, behavioural intention is influenced by subjective norms.

A second considerably larger set of studies investigate, analyse and identify the relationships among factors influencing KS and KSB

A central proposition is that KS factors (e.g. attitude, intention or subjective norms) should affect KSB. Bock and Kim (2002) are the first authors who conducted a study to explore the effects of factors affecting KSB in the organisational context. They advanced a research model based on SET, self-efficacy, and TRA. Positive attitude toward KS was found as the most impact which leads to positive intention to share knowledge and, finally, to actual KSBs. However, expected rewards as the most salient motivational factor of KS did not significantly impact the attitude toward KS.

Another critical research model was developed by Van den Hooff and Van Weenen (2004). This model was used to examine the impact of organisational commitment and the use of Computer-Mediated Communication (CMC) on KS. The authors emphasised that it is important to distinguish two forms of KS: donating and collecting knowledge. The results indicated that the use of CMC is an antecedent of organisational commitment that in turn, impacts the willingness to both donating and collecting knowledge. The first study, which adopted the SCT based model examining the determinants of KSB in virtual communities, was conducted by Hsu et al. (2007). This study examined one environmental factor (trust) and two personal factors consisting of KS self-efficacy and outcome expectations. Hsu et al. (2007) recommended that future research should explore other critical environmental factors such as subjective norms.

Furthermore, Liao (2008) studied the managers' social power influencing R&D employees' KSB in both direct and indirect effects using the mediated variable of trust. Kuo and Young (2008) examined four types of volitional control mechanisms that may influence individual KS practices. The authors claimed that the use of KM involved

both psychological and environmental barriers, which can inhibit people from sharing their knowledge in spite of their intention to share knowledge. Also, by integrating the TPB theory with social network ties, Chen et al. (2009) investigated factors influencing KS from the perspective of human behaviour including attitude toward online KS, subjective norms, knowledge self-efficacy, social network ties jointly determine KS intention and lead to KSB.

Similarly, by using commonly used social psychology theory, TPB, Chatzoglou and Vraimaki (2009) attempted to understand the factors that influence KSB in bank employees using an aggregate research model. According to the study, in TPB, KSB is often considered solely focusing on salient beliefs which do not explain other factors that may impede KS. Thus, other factors such as leadership style, social influences (environmental factors) should pay more attention to reflect the effects of organisational accurately. By extending the TPB model, Jeon et al. (2011) developed a research model to discover the factors and relationships that affect the community of practice (CoP) members' KS attitudes, intentions, and behaviours.

In the higher education context, Ramayah et al. (2013) applied TRA as the theoretical background for the study to explore the influence of factors (anticipated extrinsic rewards, anticipated reciprocal relationships, sense of self-worth and subjective norms) on KSB. Pham et al. (2015) examined the effect of organisational culture, leadership style, human resource practices, technology support, and job demands on KSB in Vietnamese universities. Rahman et al. (2015) proposed a research model to improve KSB among the non-academic staff of higher learning institutions. The study focused on the relationship between trust and perceived risk, perceived risk and KSB, and workplace spirituality and KSB. Recently, by extending the research model in 2015, Rahman et al. (2016) explored the antecedents of KSB among the non-academic staff of higher learning institutions in Malaysia. The research model emphasises the relationships between attitude, subjective norms and intention, and intention and KSB guided by the TRA theory.

A third small group of studies identify and recognise relationships among factors, KS, and KS effects:

The main objective of these studies was to identify and assess KS factors (e.g., attitude, intention or organisational culture) and KSB for improving organisational or individual

performance (e.g. organisational innovation capacity; innovative behaviour; individual work performance).

Table 2.2 highlights the key research on KS and measure KS outcomes that are associated with this study. These studies presented below explores the relationships between KSB and its effects (e.g. innovation capacity, innovative behaviour) in different contexts of study. Overall, these investigations provide support for the view that individuals' KSB has a significant impact on their innovative work behaviour.

Table 2.2: Key empirical studies measuring KS outcomes

Key reference	Relationship	KS outcomes	Context of study
Lin (2007a)	KS process → Organisational innovation capacity	Organisational innovation capacity	Organisations in Taiwan
Lin et al. (2009)	KSB → Community loyalty	Community loyalty	Virtual communities in Taiwan
Yu et al. (2013)	KS → Innovative behaviour	Innovative behaviour	Financial and insurance companies in Taiwan
Radaelli et al. (2014)	KS → Innovative behaviour (<i>Not supported</i>)	Innovative behaviour	Healthcare in Italy
Akhavan et al. (2015)	KSB → Innovative behaviour	Innovative behaviour	High-tech companies in Iran
Liou et al. (2015)	KSB → Community Participation	Community Participation	Virtual communities in Taiwan
Henttonen et al. (2016)	KSB → Individual work performance	Individual work performance	City-based organisation in Finland
N/A	N/A	N/A	Higher education

As an early study, Lin (2007a) investigated the impact of organisational factors, individual factors and technology factors on KS processes and whether more leads to superior firm innovation capability. The results also indicated that employee willingness to both donate and collect knowledge allow the firm to improve innovation capability. Lin et al. (2009) applied SCT to examine KSB in professional virtual communities. The findings from the study showed that KSB had a strong significant impact on community loyalty. This outcome of KS benefits professional virtual communities by providing more knowledge, potential members, and sustainable advantages. Other studies more associated with this study, examining the effect of KSB on innovative work behaviour, conducted by Yu et al. (2013) in financial and insurance companies in Taiwan, Radaelli et al. (2014) in healthcare in Italy, and Akhavan et al. (2015) in high-tech companies in Iran. While, Yu et al. (2013) and Akhavan et al. (2015) supported that KSB had an essential role in the development of individual innovative behaviour, Radaelli et al.

(2014) found that KSB did not facilitate innovative behaviour. Radaelli et al. (2014) argued that knowledge that individuals gain through KS activities does not necessarily lead to innovative behaviour in healthcare organisations. Moreover, Liou et al. (2015) explored how the factors from the environmental level and personal level influence the KSB and community participation in virtual communities in Taiwan. The results indicated that there were positive relationship KSB and community participation. However, the results of the study are limited to the online community. Finally, Henttonen et al. (2016) examined the influence of KS propensity on KSB lead to individual work performance. The results asserted that there is a positive relationship between KSB and individual job performance.

In summary, all of these above studies, except for Radaelli et al.' (2014) research, supported that the outcomes of KSB are a positive impact at both organisational and individual levels such as individual behaviour, individual performance and innovation capacity. However, as refers to the final row of Table 2.2, there has been no research examines the effect of KSB on innovative work behaviour in the higher education sector. As Radaelli et al.' (2014) suggestion, the further work should pay more attention to other environments (e.g. education).

A final research group associated with the relationship among factors influencing KS and KS effects

The purpose of these studies is to sharpen the understanding of the effects of KS factors on KS effects (work performance or work behaviour). Hung et al. (2011) examined the effect of extrinsic and intrinsic motivation on KSB based on economic exchange theory, social exchange theory, and social capital theory on KSB towards outcomes of KS. The authors argued that people's motivation to share knowledge with others is the critical challenge in KM. The results indicated that a knowledge management system with built-in reputation feedback is significant to facilitate the success of KS.

Table 2.3. A comparison of previous empirical studies

Author(s)/ Context	KS factors	KSB/KSP	KS Effect	Theory/ Method	Main findings/recommendations
G1. The relationship among factors influencing KS					
Bock et al. (2005) <i>Organizations in Korea</i>	Subjective norms, Attitude, Intention, Extrinsic Rewards, Reciprocal Relationships, Sense of Self-Worth, Organizational climate	N/A	N/A	TRA Survey	Attitudes toward KS, subjective norms and organisational climate influence personal KS intentions. Furthermore, the results pointed out that subjective norms were impacted by sense of self-worth and organisational climate, while personal attitudes toward KS is positively driven by anticipated reciprocal relationships. Personal attitudes towards KS was negatively influenced by anticipated extrinsic rewards which are opposite to widely accepted practices related to KM initiatives. It may hinder the attitudes towards KS, rather than promote KS.
Lin (2007b) <i>Organizations in Taiwan</i>	Expected rewards, Reciprocity, Knowledge self-efficacy, Enjoyment in helping others, Attitudes, Intentions	N/A	N/A	TRA Survey	Individual attitudes predicted intentions, which revealed that motivational factors such as reciprocal benefits, knowledge self-efficacy, and enjoyment in helping others positively impacted on individual KS attitudes and intentions. However, expected organisational rewards did not significantly impact on individual attitudes and behavioural intentions regarding KS.
Ha et al. (2009) Organisation in Vietnam	Individualism, Power distance, Uncertainty avoidance, Communication competence, KS	N/A	N/A	N/A Survey	Individualism and power distance had the most substantial impact on the communication competence towards KS. However, uncertainty avoidance did not have a significant influence on communication competence towards KS. The authors argued that KS is a form of communication, formal or informal.

Author(s)/ Context	KS factors	KSB/KSP	KS Effect	Theory/ Method	Main findings/recommendations
					Thus, this study benefits many Vietnamese organisations to use the new lens of KS to account for the communication and individual KSB.
Dong et al. (2010) <i>Multinational companies in Vietnam</i>	Attitude, Intention, Subjective norms, Trust, Rewards, Expected associations, Sense of Self-Worth	N/A	N/A	TRA Survey	Better understand the factors impacting the intent to share knowledge within the Vietnamese organisational context. Subjective norms, social trust and sense of self-worth significantly influence attitude towards KS behaviours except for extrinsic awards and expected associations did not affect KS intention. The authors suggested that Vietnam is still in the early stages of preparing itself to engage in the knowledge-based economy fully and there has been a lack of investigations on emerging economies such as Vietnam.
Fullwood et al. (2013) <i>Universities in UK</i>	Organisational culture, Normative beliefs, Subjective norms, Attitude, Intention	N/A	N/A	N/A Survey	There was the positive relationship between attitudes towards KS and intentions to share knowledge. In other words, embedded KS culture is existed in universities. However, that culture is individualistic in nature and to some extent self-serving. The challenges facing universities attempt to find the ways which support to create, share, and disseminate knowledge.
Fullwood and Rowley (2017) <i>Universities in</i>	Organisational culture, Normative beliefs, Subjective norms, Attitude	N/A	N/A	N/A Survey	Attitudes to KS had a positive influence on intentions to share knowledge. Personal beliefs amongst academics were more influential on their KS attitudes than organisational culture, in which, leadership was an influential factor within

Author(s)/ Context	KS factors	KSB/KSP	KS Effect	Theory/ Method	Main findings/recommendations
<i>UK</i>	, Intention				the organisational culture. Expected rewards were found to be a highly significant personal factor toward KS. The authors concluded that academics are willing to share knowledge and individual beliefs have more impact on KS than organisational culture.
G2. The relationship among factors influencing KS and KSB					
<i>Bock and Kim (2002)</i> <i>Organisations in Korea</i>	Expected Rewards, Expected Associations, Expected Contribution, Attitude, Intention, IT usage	KSB	N/A	EET, SET, SCT, TRA Survey	Expected associations and contribution are the key factors decisively affect the personal attitude toward KS. Positive attitude toward KS was found as the most which lead to positive intention to share knowledge and, finally, to actual KSBs. However, expected rewards as the most salient motivational factor of KS did not significantly impact the attitude toward KS. The study also found that level of IT usage did not moderate the relationship between intention toward KS and KSB. The further investigation which should develop more direct and objective measures for KSB and social influences need to be investigated in the future.
<i>Van den Hooff and Van Weenen (2004)</i> <i>Firm in the Netherlands</i>	Computer mediated, communication (CMC)	KSP	N/A	Survey	The use of CMC is an antecedent of organisational commitment that in turn, impacts the willingness to both donating and collecting knowledge.

Author(s)/ Context	KS factors	KSB/KSP	KS Effect	Theory/ Method	Main findings/recommendations
Lin and Lee (2004) <i>Organizations in Taiwan</i>	Subjective norms, Attitudes, Perceived behavioural control, Intentions	KSB	N/A	TPB Survey	Senior managers' attitudes, subjective norms and perceived behavioural control were found to impact intentions toward KS positively. Additionally, senior managers' intentions to encourage KS would positively impact corporate KSB that is in line with the result of research conducted by Bock and Kim (2001, 2002). The authors suggested that further studies should consider more factors such as leadership styles or mutual trust.
Cabrera et al. (2006) <i>IT, systems and services in Spain</i>	Self-efficacy, Extrinsic rewards, Intrinsic rewards, Organisational commitment, KM systems, KS	KS	N/A	Survey	Personal self-efficacy and openness to experience were important to KSB. Personal competence and confidence were essential for an individual to engage in knowledge exchange. Furthermore, individuals who recognise their colleagues and supervisors to value KS feel more inclined to engage in such behaviour. The effect of social support on KS seemed significantly.
Hsu et al. (2007) <i>Virtual communities in Taiwan</i>	Trust, Knowledge self- efficacy, Personal outcome expectations, Community- related outcome expectations	KSB Direct	N/A	SCT Survey	KS self-efficacy, personal outcome expectations, and trust significantly influence KSB in virtual communities. KS self-efficacy was deemed an important role in guiding personal behaviour. Member would be a more positive attitude on KS when they believe that they could strengthen the relationships with others by sharing their knowledge. Having a high level of trust with others would help members mitigate barriers that facilitate self-regulating policies, source disclosure and establish brands of virtual communities. Hsu et al. (2007) recommended that the future research

Author(s)/ Context	KS factors	KSB/KSP	KS Effect	Theory/ Method	Main findings/recommendations
					should explore the critical environmental factors such as subjective norms.
Liao (2008) <i>Industry in Taiwan</i>	Expected rewards, Trust Coercive, Legitimate, Reference, Expert	KSB	N/A	Survey	Manager's reward power and expert power have direct effects, while reference power and expert power have indirect effects on KSB. It was also found that different social powers have different impacts on R&D engineers' KSB. Especially, trust was found has a positive impact on KSB.
Kuo and Young (2008) <i>Virtual community</i>	Attitude, Subjective norms, Controllability of KS, Knowledge self-efficacy	KSB	N/A	TPB Survey	Individuals do not often behave in in a manner consistent with their espoused beliefs. Perceived self-efficacy can explain the inconsistency of intention and action, but not by intention and controllability. Furthermore, an individual's action orientation moderates his or her approval of intention toward KS into behaviours. The use of KM involved both psychological and environmental barriers which can inhibit people from sharing their knowledge in spite of their intention to share knowledge.
Chen et al. (2009) <i>Virtual communities in Taiwan</i>	Subjective norms, Knowledge self-efficacy, Intention, Attitude, Social network ties	KSB	N/A	TPB Survey	Attitude, subjective norms and social network ties have positive impact on KS intention which, in turn, is significantly associated with KSB. However, knowledge creation self-efficacy did not significantly influence KS intention which is not in line with results from many previous studies.

Author(s)/ Context	KS factors	KSB/KSP	KS Effect	Theory/ Method	Main findings/recommendations
Chatzoglou and Vraimaki (2009) <i>Bank in Greece</i>	Subjective norms, Attitudes, Perceived behavioural control, KS, Intention, IT usage	KSB	N/A	TPB Survey	<p>Employees' attitude toward KS significantly impacts intention to share their knowledge. It also indicated that subjective norms have a positive influence on KS intention, which, in turn, lead to KSB. The most interesting finding is that the relationship between intention to share knowledge and the actual KSB was not significant. It is not consistent with many other studies.</p> <p>Other factors such as leadership style, social influences (environmental factors) should pay more attention to reflect the effects of organisational accurately.</p>
Tohidinia and Mosakhani (2010) <i>Oil industry in Iran</i>	Subjective norms, Attitude, Intention, Self-efficacy, Expected rewards, Anticipated reciprocal, Organisational climate, ICT usage	KSP	N/A	TPB Survey	<p>There were the positive relationships between self-efficacy, anticipated reciprocal relationships and attitude toward KS, while expected extrinsic rewards did not have a significant impact on this factor. The study also revealed that there was a positive relationship between organisational climate and subjective norms about KS. Also, the level of ICT usage reflected a positive influence on KSB. Finally, significant relationships were found between the TPB elements.</p>
Jeon et al. (2011) <i>Companies in South Korea</i>	Extrinsic motivation, Intrinsic motivation, Perceived behavioural control, Attitude, Intention	KSB	N/A	TPB Survey	<p>Both extrinsic motivational (reciprocity) and intrinsic motivational factors (enjoyment in helping others) positively impact attitude toward KS, in which intrinsic motivational factors were more significant. Moreover, some differences in KS mechanisms were indicated between normally managed CoPs and informally nurtured CoPs.</p>

Author(s)/ Context	KS factors	KSB/KSP	KS Effect	Theory/ Method	Main findings/recommendations
Ramayah et al. (2013) <i>Higher Education in Malaysia</i>	Behavioural control, Anticipated rewards, Anticipated reciprocity, Sense of self-worth, Subjective norms, Organisational climate	KSB	N/A	TRA Survey	Anticipated extrinsic rewards, anticipated reciprocal relationships, sense of self-worth and subjective norms are critical factors of individual attitude towards KS in academia, which, in turn, have a positive influence on the KSB. Furthermore, subjective norms were found have a positive impact on KSB. Finally, the study revealed that perceived behavioural control and organisational climate have a significant relationship on KSB
Pham et al. (2015) <i>University in Vietnam</i>	Knowledge-centered culture, Job demand, Knowledge-entered HR practices, Knowledge-oriented leadership, Information technology	KSB	N/A	Survey	There were no relationships between culture, reward and KSB, while leadership style and IT support had a positive impact on the KSB. However, the study found the exciting finding that is not consistent with the results from many other studies such as Lee and Choi (2003), Lin (2007a), and Alawi et al. (2007) have indicated the significant impact of trust on KSB in organisations. The authors also revealed that job demands and IT support are the crucial enablers for lecturers' KSB in Vietnamese universities. The study recommended that further work should focus on investigating how KS enhance the organisational performance of universities.
Rahman et al. (2015) <i>HEI in Malaysia</i>	Trust, Perceived risk, Workplace spirituality	KSB	N/A	Survey	Workplace spirituality had a positive impact on KSB. This means that the success of KS cannot be served without workplace spirituality. Thus, managers in a higher learning institution at both university and department levels should consider the practice of spirituality to establish a KS culture in their organisation. Perceived risk mediated the relationship between trust and KSB.

Author(s)/ Context	KS factors	KSB/KSP	KS Effect	Theory/ Method	Main findings/recommendations
Chang et al. (2015) <i>Virtual communities in Taiwan</i>	Trust, Commitment, Knowledge self-efficacy, KS Intention	KSB	N/A	SCT Survey	Trust and KSE positively impact KS intention at two points of measurement. The relationship between trust and KS intention reduce over time. It means that if virtual community members or KSE, they will have more intention to share their knowledge with others members. At the same time, the relationship between commitment and KS intention strengthen with time. Surprisingly, even though commitment did not have an impact on KS intention at the first point of measurement, it critically influenced KS intention at the second point of analysis. Commitment will become meaningful as it grows over time.
Rahman et al. (2016) <i>Edu-institutions in Malaysia</i>	Attitude towards KS, Subjective norms, Intentions	KSB	N/A	TRA Survey	Attitude and subjective norms had a positive influence on non-academic staff KSB, in which intention acts as the mediating variable. The author believed that their study is one of the pioneer studies which applied TRA theory to examine the nature of KSB among the non-academic staff of higher learning institutions.
Brooke et al. (2017) <i>Agriculture in Malaysia</i>	Self-efficacy, Enjoyment in helping others, Trust, Training, Prior experience, Social support	KSB	N/A	SCT Survey	Three individual-related factors and two environmental-related factors had a significant impact on KSB. The study also found that that the relationships between prior experiences (individual factor), social support, trust (environmental factor) and KSB were mediated by knowledge self-efficacy. The authors stated that the correct blend of individual and environmental factors is essential in promoting motivations for farmers engaging in KS activities. Future work should use the qualitative method because it may help to generate knowledge based on individual experiences associated with KSB.

Author(s)/ Context	KS factors	KSB/KSP	KS Effect	Theory/ Method	Main findings/recommendations
G3. The relationship among factors, KS, and KS effects					
Lin (2007a) <i>Organizations in Taiwan</i>	Enjoyment in helping others, Knowledge self-efficacy, Top management support, Organisational rewards, ICT use	KSP	Innovation capacity	N/A Survey	Two individual factors (enjoyment in helping others and knowledge self-efficacy) and one of the organisational factors (top management support) significantly influence KSP. The results also indicated that employee willingness to both donate and collect knowledge allow the firm to improve innovation capability.
Lin et al. (2009) <i>Virtual communities in Taiwan</i>	Trust, Knowledge self-efficacy, Norm of reciprocity, Perceived relative advantage, Perceived compatibility	KSB	Community loyalty	SCT Survey	Trust and KSE had a positive influence on KSB. The results are entirely consistent with Hsu et al. (2007) which implied that virtual member KSB is affected by social forces and personal perceptions. These two major of determinants of KSB promote the choice of behaviour indicates that KSBs are active agents rather than passive receivers of environmental pressures to share knowledge on them. Lack of studies in KSB that apply SCT in organisations. Unlike virtual communities, an organisation has formal policies and procedures to guide individual's KSB with common interests or needs reach to organisational goals.
Liou et al. (2015) <i>Virtual community in</i>	Knowledge self-efficacy, Anticipated reciprocal relationship, Norm of reciprocity, Anticipated ex rewards	KSB	Community Participation	N/A Survey	There were positive relationships between anticipated reciprocal relationship, norm of reciprocity, and anticipated extrinsic rewards and KSB. These factors had a significant impact on KSB. The relationship between anticipated extrinsic rewards and KSB was mediated by KSE. Moreover, the relationship between KSB and community participation was moderated by community identification.

Author(s)/ Context	KS factors	KSB/KSP	KS Effect	Theory/ Method	Main findings/recommendations
<i>Taiwan</i>					Further work should focus on the context of organisations, in which members often have formal relationships under the policies of organisations that differ from virtual communities.
Yu et al. (2013) <i>Financial and insurance companies in Taiwan</i>	Organisational innovation climate	KS	Innovative behaviour	N/A Survey	KS and interactive behaviour among staff in these companies in Taiwan promote innovative behaviour and the ability to innovate. There is a positive association between KS and innovative behaviour. Moreover, the study also found that a stronger organisational innovation climate is able to encourage employees' innovative behaviour. However, the relationship between KS and innovative behaviour was not moderated by organisational innovation climate.
Radaelli et al. (2014) <i>Healthcare in Italia</i>	Ability to share, Motivation to share, Opportunity, Knowledge reciprocation	KS	Innovative behaviour	N/A Survey	Individuals who share knowledge also engage more in generating, promoting and implementing innovations. It also recommended that it is the act of knowledge recombination and translation embedded in KS that utilises the most positive impact on innovative behaviour. Further work should improve this model by adding additional variables that comprehensively account for the role of KS in innovative behaviour.
Akhavan et al. (2015) <i>High-tech companies in</i>	Behavioural control, Attitudes towards KS, Subjective norms, KS intention	KSB	Innovative work behaviour	TPB Survey	Individuals' KS behaviours improve their IWB. The results from the study help the managers in the ways that facilitate their staff' attitudes, intentions, and behaviours towards KS to promote innovative work behaviours in their organisations.

Author(s)/ Context	KS factors	KSB/KSP	KS Effect	Theory/ Method	Main findings/recommendations
<i>Iran</i>					Further studies should investigate and compare the results from different areas and countries. Especially, the roles of moderating variables on the relationship between KS and IWB. Finally, future work should add more motivational factors as they affect individuals' KSB.
Henttonen et al. (2016) <i>City-based organisation in Finland</i>	Knowledge-sharing propensity	KSB	Individual work performance	Survey	KS propensity had a positive impact on KSB. Moreover, the relationship between KS propensity and individual job behaviour was mediated by KSB. Interestingly, the employees with the lowest educational levels had KS propensity does not influence their job behaviour, contrary to whom with the most highly educational levels.
G4. The relationship among factors influencing KS and KS effects					
Hung at el. (2011) <i>Organisations in Taiwan</i>	Extrinsic motivation: <i>Economic reward, Reputation feedback, Reciprocity</i> Intrinsic motivation: <i>Altruism</i>	KSB	Outcome of KS	TRA, TPB, EET, SET Survey	Economic reward did not impact some ideas generated, idea usefulness, and idea creativity. However, reputation feedback had a positive influence on a number of ideas generated, idea usefulness, and idea creativity. Provision of an economic reward significantly impacted only satisfaction with a meeting but did not influence the quantity and quality of contribution that are of first interest in a KM project. Finally, the findings revealed that the relationship between altruism and meeting satisfaction was positively and significantly, but altruism did not have a positive and significant impact on either the quantity or quality of contributions.

This table was used to identify the research gaps and develop the research questions and hypotheses to fill these gaps.

2.5 Transformational leadership and KSB

According to Shartle (1956), leadership can be considered as behaviours that “result in others acting or responding in a shared direction” (p.3). Research has been growing concern on the topic of leadership accompanied by an acceptance in distinguishing between transactional and transformational, with a stress on the latter (Hartog et al., 1997). Quinn (1988) made the comparison of transactional and transformational leadership with other differences in leadership – for example, relations oriented-task oriented leadership model (Hartog et al., 1997). However, Bass (1985) argued that other models, including Quinn’s model, can neither replace nor explain the transactional-transformational model (a new paradigm). Bass (1985) viewed transaction and transformation as separate dimensions. This means that a leader can be both transactional and transformational (Hartog et al., 1997).

Comparing with transactional leadership can better understanding of transformational leadership (Hartog et al., 1997). It can be argued that transactional leadership requires an exchange between the leader and follower (Burns, 1978). Followers will be given certain valued outcomes (e.g. salary, reputation) when they perform following their leader’s desires (Hartog et al., 1997). Based on Burns (1978), Bass (1985) notes that transactional leadership theories have focused on the idea that leader-follower relations rely upon a series of exchanges or implicit bargains between leaders and followers. The exchange of rewards for expected job performance from followers (i.e., contingent reward) is one of the key behaviours of transactional leadership (Bass, 1985; Walumbwa, Wu, and Orwa, 2008; Rezvani et al., 2017). In general, through his or her behaviour, the leader will be helpful by compensating for the shortages when the working conditions of the follower unsuccessfully provide the essential motivation, direction and satisfaction (Hartog et al., 1997). The leader not only offers rewards on the fulfilment of obligations but also emphasises consequences for non-compliant behaviours (Avolio, 1999; Bass, 1990; Rezvani et al., 2017). There have been several extensive transactional theories (Hartog et al., 1997). Some of these theories can be empirically tested such as the path-goal theory of leadership (House, 1971, 1996; House and Mitchell, 1974).

While a transactional leader inspires followers to do as expected, a transformational leader typically motivates subordinates to perform more than initially expected (Hartog et al., 1997). According to Bass (1985), transformational leadership is constructed based

transactional leadership and can be considered as a special case of transactional leadership. Transformational leadership anticipates subordinates' emotional attachment to the leader (House et al., 1988). Furthermore, in this theory, the leader's behaviour causes the emotional and motivational arousal of subordinates. Hater and Bass (1988) asserted that "The dynamics of transformational leadership involve strong personal identification with the leader, joining in a shared vision of the future, or going beyond the self-interest exchange of rewards for compliance" (p. 695) (Hartog et al., 1997). In this study, transformational leadership is defined as "a process by which leaders inspire their followers to perform at a higher level than expected and to potentially exceed the followers' own self-interests for a high-level of shared vision" (Bass, 1999 as cited in Han et al., 2016, p.4). It motivates individuals to feel empowered, which enhances individuals' engagement (Han et al., 2016). Such leadership behaviours include three distinct aspects: charisma, intellectual stimulation and individualised consideration (Bass and Avolio, 1997). Charisma refers to the extent to which the leader promotes pride and trust in subordinates by dealing with obstacles and being confident (Tepper, 1994). Intellectual stimulation refers to the extent to which the leader articulates new ideas that motivate subordinates to reconsider conventional practice and thinking (Tepper, 1994). Individualised consideration refers to the extent to which the leader communicates individually to followers by providing them with specialised recognition and by identifying each one's unique requirements (Tepper, 1994).

Previous empirical studies on transformational leadership have been conducted in the literature from many contexts. Indeed, transformational leadership has been found important in the internal organisational context by Vera and Crossan (2004). These authors discussed that transformational leadership behaviours inspire people to break through boundaries and share their experiences with others in a team or the whole departments. Srivastava et al. (2006) found that there were positive relationships between empowering leadership and both KS and team efficacy in the hotel industry, which, in turn, were both positively associated with team performance. Lee et al. (2010) indicated that through building the team's expertise, leaders promote team members' willingness to unfold and depend upon information in the team, which, in turn, enhances team KS. Von Krogh et al. (2012) found that the leadership style could be the key barrier to knowledge-sharing activities among members in the public organisations. Shih et al. (2012) found that the relationship between transformational

leadership and employee knowledge exchange and combination among R&D employees in Taiwanese enterprises was positively mediated by trusting climate. Bradshaw et al. (2015) suggested that transformational leadership behaviours are keys to a KM process and KS in particular. Mittal and Dhar (2015) found that the relationship between transformational leadership and employee creativity was mediated by creative self-efficacy. Han et al. (2016) highlighted the indirect influence of transformational leadership on employee's knowledge-sharing intention. In the higher education context, Hussein and Elbeltagi (2016) found that transformational leadership had a significant impact on both the donating and collecting of knowledge, which, in turn, promote KS within higher education in developing countries, particularly Iraq.

Transformational leadership was considered as a critical factor for KSBs in many previous empirical studies (e.g. Srivastava et al., 2006; Lee et al., 2010; Shih et al., 2012; Hussein and Elbeltagi, 2016). Moreover, the literature suggests a complicated relationship between KS factors and KSB. However, the literature typically hypothesises and examines a simple main-effect model. Drawing upon the role of transformational leadership, this study will focus on the moderating effect of transformational leadership on the relationship between KS factors and KSB. Consequently, this research is intended to address the following research question:

RQ3: What are the joint effects of transformational leadership and the critical factors on KSB in Vietnamese university settings?

2.6 Transactive memory systems and KSB

A transactive memory system (TMS) is a collective memory system that consists of the location and distribution of expertise/knowledge among team members (Austin, 2003; Ariff, 2013). The concept of TMS developed through observing that members of a team may not memorise all information about each other (Ariff, 2013). Alternatively, team members may memorise who are interviewees in their team or, in other words, "who knows what" (Wegner, 1987; Wegner, 1995). Thus, a team's members can retrieve detailed information without actually owning this information in their own personal memory (Wegner, 1987; Ariff, 2013). TMS can be understood by three dimensions: specialisation, credibility and cooperation (Lewis, 2003). Specialisation explains "who knows what" within the organisation. Credibility examines the reliability of other people's knowledge. Cooperation indicates the ability to work efficiently and smoothly in a team (Lewis, 2003).

TMS is also deemed to be a practical integrated memory in a person's minds that produces mental maps of "who knows what" and "who does what" (Choi et al., 2010; Simeonova, 2014). This memory can be richer, more accurate and deeply rooted in the social interactions and dialogue between individuals (Brandon and Hollingshead, 2004). Brandon and Hollingshead (2004) found that the presence of interpersonal relationships and interactions leads to the development of a TMS identified as a collective process in which transactions between team members generate a link to other people's expertise (Nevo and Wand, 2005). Consequently, team members build a link to others' knowledge without knowing it themselves. Finally, a team member's expertise is only valuable to the team when other members are aware of its existence (Ariff, 2013). It is highlighted that individuals should know "who knows what" and "who does what" to get help when performing a certain task that helps organisations to effectively utilise their intellectual assets (Wegner, 1987; Brandon and Hollingshead, 2004).

Several studies have suggested that TMS can improve knowledge contributions and facilitate KS in organisations (Simeonova, 2014). The results also indicated that a developed TMS could effectively facilitate KS (Choi et al., 2010; Davison et al., 2013). Previous studies on TMS has been limited and focused on the relationship between TMS and team performance (Choi et al., 2010; Simeonova, 2014). Moreover, according to Choi et al. (2010) and Davison et al. (2013), there has been little research on the relationship between KS and TMS. This study assumes that a fully developed TMS is positive for KS because it supports a team member easily to utilise the diverse knowledge and promote KSB fully is the individual willingness to share knowledge with others.

This section (2.6) has shown that TMS is required for KSB. This study explores how TMS affects KSB, which then affects the individual's innovative work behaviour. Consequently, this research is intended to address the following research question:

RQ4: What is the joint effect of the quality of transactive memory systems and KSB on innovative work behaviour in Vietnamese university settings?

2.7 Gaps in the literature

Synthesis of key empirical previous research elaborates some observations. First, measuring and explaining KSB is a difficult task. Many studies have investigated KS factors and KSB through intention. In these studies, it is not easy to capture the actual behaviour. Intention is thereby considered as a proxy for actual behaviour. However, according to Kuo and Young (2008), the possible impacts of self-presentation effects recommend that people may feign a willingness to, but fail actually to share their knowledge. Self-presentation effects postulate an economic payoff to claiming that a person has an intention to share knowledge but not actually sharing (a behaviour) (Ridley, 1997). Also, Bock and Kim (2002) reported that even when intentions were high, behaviour might not take place if specific preconditions of a certain situation (e.g. accessibility) made the behaviour impossible. Thus, there is a need to contribute to a limited number of researches to examine individuals' actual KSB (Bock et al., 2005; Henttonen et al., 2016). It is therefore necessary to develop a research model, which more directly measures KSB.

Second, the findings on relationships between KS factors and KSB are inconsistent (Table 2.3). For example, some studies found that intention to share knowledge has a positive and significant influence on KSB (Bock and Kim, 2002; Lin and Lee, 2004; Jeon et al., 2011; Ramayah et al. 2013), whereas others showed that intention did not impact KSB (Kuo and Young, 2008; Chatzoglou and Vraimaki, 2009). Some studies indicated that expected rewards did not facilitate KSB (Bock et al., 2005; Lin, 2007a; Hsu et al., 2007;), while some other revealed that these factors have a significant impact on individual KSB (Kankanhalli et al., 2005; Liou et al., 2016; Fullwood and Rowley, 2017). Therefore, the challenge is to clarify the effect of factors influencing KS on KSB.

Third, a comprehensive-integrative model is still missing. A large number of investigations have employed the TRA and TPB theories to investigate KSB. Tangaraja (2015) noted that TRA and TPB are well-established theories, which provide pre-determined factors (i.e. subjective norms, attitude, intention, and behavioural control) that impact actual behaviour through behavioural intention. Thus, in TRA and TPB, KSB has been investigated solely focusing on salient beliefs as a very individualistic behaviour (Bock and Kim, 2002). However, TRA and TPB do not explain other factors that may facilitate or impede KSB such as culture (e.g. trust) (Chatzoglout, 2009) and

other individual-related factors (e.g. knowledge self-efficacy, enjoyment in helping other, reciprocal benefits) (Lin, 2007b). Furthermore, KSBs are likely to be influenced not only by personal motivations but also by social influences (e.g. trust, subjective norms) (Yoo and Torrey, 2002). Therefore, there is a lack of a comprehensive combination of environmental (social influence) and personal factors to explain the human behaviour. There is also little evidence about how the actual KSB eventually influences the performance of individuals who share their knowledge. Drawing upon the role of transformational leadership and transactive memory systems, this study proposes a research model based on SCT and other theories that comprises environmental-related factors (subjective norms, trust), personal-related factors (knowledge self-efficacy, expected organisational rewards, reciprocal benefits, and psychological ownership of knowledge), KSB and innovative work behaviour. In this mode, transformational leadership acts as the moderator of the relationship between KS factors and KSB, while transactive memory systems play an important moderating role of the relationship between KSB and innovative work behaviour. This study will help to explore the relationships between environmental-personal factors, transformational leadership, the quality of transactive memory systems, KSB, and innovative work behaviour simultaneously. If managers understand these relationships in an integrative fashion, they can stand a better opportunity of enhancing their organisation's performance (Lee and Choi, 2003).

Fourth, there has been a lack of research into KM in university settings (Fullwood et al., 2013; Fullwood and Rowley, 2017). Researchers have attempted to conduct KS research in general, KS in particular in commercial environments and growing concern in public organisations (Fullwood and Rowley, 2017). Additionally, prior research have mostly paid attention on Western, developed countries with more advanced and mature strategies of KM. There has been little research investigating developing countries in which strategies of KM in universities are less mature and low performing, leaving a notable performance gap between strategies in developing countries and developed countries. To date, far few studies have paid attention to KS in higher education in non-Western context, particularly in a developing country such as Vietnam (Tohidinia and Mosakhani, 2010; Shanker et al., 2017; Phung et al., 2018).

Finally, KM is still new in Vietnam for both academia and practitioners (Dong et al., 2010). KM is included in very little official national policies and documents. Moreover,

there has been a lack of research into KS in emerging nations transitioning from centrally planned to market economies, such as Vietnam (Dong et al., 2010; Ta, 2014). Dong et al. (2010) portrayed that the Vietnamese profile is one of collectivism, unequal power distribution, and long-term orientation affected by Confucian values and ideals. The authors argued that as an initial thought, such a cultural imprint would necessarily mean a greater propensity towards KSB. Thus, to implement KM initiatives within a Vietnamese organisational environment, there are some key unique aspects that involve some formidable challenges. Obviously, traditional cultural aspects alone are not enough to account for all of individual behaviours in such complex settings as modern-day Vietnam (Dong et al., 2010). Accordingly, to better understand the knowledge-sharing culture in Vietnam, it is vital to examine salient factors that have affected the KSB such as environmental factors (trust, subjective norms) and personal factors (knowledge self-efficacy, individual expectations, and psychological ownership). Few studies have made serious attempts to explore and develop a new KS model of public universities for modern Vietnam.

The preceding empirical literature review has also pointed out that individuals' KSB leads to the promotion of their innovative work behaviour. However, most prior researches have discussed support for the effect of KSB in one of the following: (1) KS process and innovation capacity in organisations (Lin, 2007a); (2) KSB and community loyalty, community participation in virtual communities in Taiwan (Lin et al., 2009; Liou et al., 2016); (3) KSB and innovative behaviour in financial and insurance companies in Taiwan (Yu et al., 2013); (4) KSB and innovative behaviour in healthcare sector in Italy (Radaelli et al., 2014); (5) KSB and work performance in city-based organisation in Finland. The review of the literature has also revealed that there have not been any empirical studies that have examined the relationship between KSB and innovative work behaviour in university settings.

To sum up, this present study is situated in the Vietnamese public university context and indicates that there is a problem concerning KS inside Vietnam. This study has endeavoured to fill the identified gaps by addressing the below research questions:

1. What are the critical factors that influence KSB in Vietnamese university settings?
2. How does KSB influence innovative work behaviour in Vietnamese university settings?

3. What are the joint effects of transformational leadership and the critical factors on KSB in Vietnamese university settings?
4. What is the joint effect of the quality of transactive memory systems and KSB on innovative work behaviour in Vietnamese university settings?

2.8 Environmental and personal factors as critical factors influencing KSB

The review of the literature (Section 2.4.4, see Table 2.3) suggests that holistic factors are influencing KSB consist of varied dimensions such as technology, social influence (environment) and individual. This highlights the need for an integrated model that explores the effect of environmental and personal factors on KSB, and far few studies have examined the relationships among these factors, KSB and innovative behaviour. This is because technology alone is not sufficient to create a knowledge-sharing culture and to improve individual work behaviour (Cabrera et al., 2006).

Hawryszkiewicz (2010) stated that KS is not given in any situation that needs the willingness of individuals to share their knowledge. Moreover, it must be recognised that there are some reasons for individuals to be uncertain of sharing knowledge, while at the same time building the environment that mitigates these inhibitions (Hawryszkiewicz, 2010). For example, many people believe that their knowledge is powerful, valuable, and connected to their security of employment and why they give away their knowledge as it will make more valuable (Davenport and Prusak, 1998; Hawryszkiewicz, 2010). Thus, people tend to think there may be a loss of ownership of knowledge that others may use their knowledge to their detriment and job security (Hawryszkiewicz, 2010). Therefore, sharing knowledge is generally unusual (Davenport and Prusak, 1998); hoarding knowledge is the real propensity (Hsu et al., 2007; Lin et al., 2009).

Moreover, KM has only focused on the technology aspect of many organisations, in particular technology infrastructures (Hawryszkiewicz, 2017). It is not surprising that KS is a problem for organisations with the existing information systems (Bakker et al., 2006; Lin et al., 2009; Hawryszkiewicz, 2017). Canbrera's research (2006) supported this claim that technology alone is not able to guarantee that knowledge would be volunteered and exchanged, although various information systems have been adopted to facilitate such knowledge exchanges. Thus, it could be hypothesised that the use of technology alone is unable to solve the KS problem in organisations.

Undoubtedly, the great challenge in promoting KS is the personal willingness of sharing knowledge between or among colleagues. Previous studies have asserted that two aspects are involved in this respect: personal factors and social influences (Hsu et al., 2007; Wang and Noe, 2010). With respect to personal factors, which have often been conceptualised as personal-related factors – previous studies have examined knowledge self-efficacy (personal perception, intrinsic motivation); enjoyment in helping others (intrinsic motivation), expected organisational rewards (extrinsic motivation), reciprocal benefits (extrinsic motivation) or psychological ownership (e.g. Bock et al., 2005; Hsu et al., 2007; Lin, 2007b; Wang and Noe, 2010; Han et al., 2010). Along with many researchers (Bandura, 1986; Bock and Kim, 2002; Bock et al., 2005; Hsu et al., 2007; Lin, 2007b; Henttonen et al., 2016), this study supposes that KSB is mainly influenced by individual-related factors. Another aspect (social influences) championed by environmental-related factors, which focus on more social influences, researchers have investigated the effect of trust (Lin, 2007a; Hsu et al., 2007; Lin et al., 2009) or subjective norms (Bock et al. 2005) on KSB. The current research assumes that positive social influences would encourage greater sharing of knowledge (Nahapiet and Shoshal, 1998; Hawryszkiewicz, 2010).

The extent to which a person performs KS activities lies in his or her action that has personal perceptions, goals, expectations, and beliefs in a social environment (Bandura, 1986; Hsu et al., 2007, Ta, 2014). This explanation is known as Social Cognitive Theory (SCT) (Bandura, 1986). Based upon the integration of SCT with other theories (i.e. Theory of Planned Behaviour, Economic Exchange Theory, Social Exchange Theory, Psychological Ownership Theory, Transformational Leadership Theory, and Transactive Memory Systems), this study develops an integrated research model that link environmental-personal factors, KSB, and innovative work behaviour and two moderators transformational leadership and the quality of transactive memory systems. As shown in Figure 2.9, the structure guidelines for the development of the research model and hypothesis of this study is proposed to account for academics' behaviours. It includes the below factors:

- Environmental-related factors: Subjective norms (SN), Trust.
- Personal-related factors: Knowledge self-efficacy (KSE), Enjoyment in helping others (EHO), Expected organisational rewards (REW), Reciprocal benefits (RB), and Psychological ownership of knowledge (POK).

- Moderators: Transformational leadership (TL) and Transactive memory systems quality (TMS).

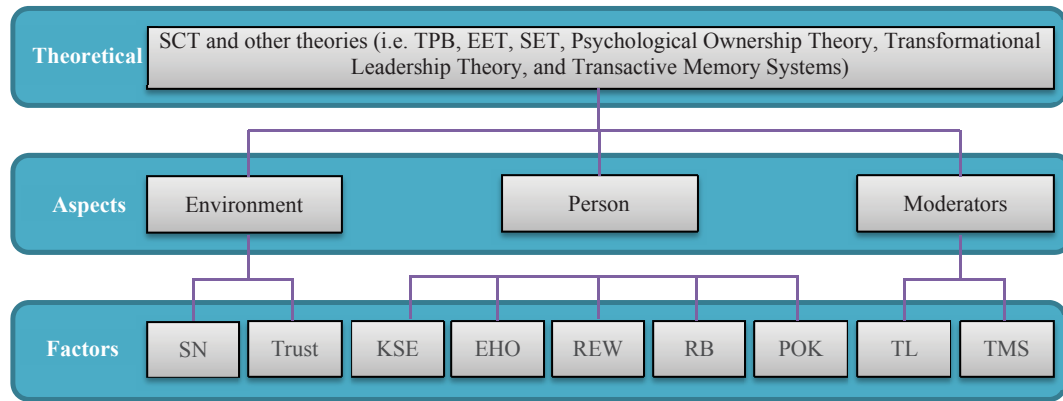


Figure 2.9. Structure guidelines for the development of the research model and hypothesis for this study.

The detailed analysis of theoretical foundations for each factor will be discussed in the next chapter (Chapter 3) for the development of the research model and hypotheses.

2.9 Summary of Chapter 2

Chapter 2 provided a framework for initiating the importance of the current study as well as a guideline for comparing the findings with other results. Moreover, the major findings from this chapter have pointed out the main themes and proposed how the current study further adds to the existing literature of research field. First, the literature associated to KS was reviewed: data, information, and knowledge; KM; KS and KSB; and the importance of KSB in knowledge management systems was also outlined. This chapter also provided an overview of innovative work behaviour and the relationships between KSB and this concept. Chapter 2 then highlighted the previous empirical studies on KSB. These studies are classified into different important aspects: topic, source, theoretical foundation, research context, research methodology, relationships among KS factors. These studies also provided support for the view that there are relationships between environmental factors (trust, subjective norms) and personal factors (knowledge self-efficacy, enjoyment in helping others, expected organisational rewards, reciprocal benefits, and psychological ownership of knowledge) on KSB, and individuals' KSB positively influences their innovative work behaviour. Moreover, overall reviews of transformational leadership and transactive memory systems, and the relationships between them and KSB were reviewed in this chapter. Finally, the

synthesis of prior studies helps to identify the gaps in the literature: (1) measuring and explaining KSB is a difficult task; (2) the findings on relationships between KS factors and KSB are inconsistent; (3) a comprehensive-integrative model is still missing; (4) lack of research into KM in university settings; and (5) knowledge management (KM) is still new in Vietnam for both academia and practitioners. Overall, Chapter 2 provided a foundation for the development of the research model and hypotheses in Chapter 3 that helps the researcher to address the above-identified gaps.

CHAPTER 3 : RESEARCH MODEL AND HYPOTHESIS

3.1 Introduction

This chapter aims to provide a theoretical basis for the specification and development of the research model and hypotheses to achieve the research goal. The chapter begins by presenting the development of the conceptual research model, which is based on the integration of Social Cognitive Theory (SCT) with a set of critical variables from several theories derived from literature such as Theory of Planned Behaviour (TPB), Economic Exchange Theory (EET), Social Exchange Theory (SET), Psychological Ownership, Transformational Leadership, and Transactive Memory Systems. This is followed by explaining and justifying the relationships between the model constructs and the proposed research hypotheses. Finally, the summary of hypotheses and chapter summary are presented in Section 3.4 and 3.5. The chapter's outline is presented in Figure 3.1.

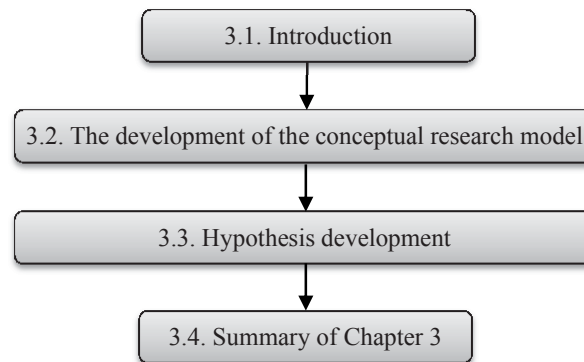


Figure 3.1. Chapter outline

3.2 The development of the conceptual research model

Towards an integrated knowledge-sharing behaviour model

Literature suggests that KSB is related to the employees' willingness to share their knowledge with others in the organisation (Hsu et al., 2007). There is a growing body of research that indicates that personal work behaviour is more innovative if successful conditions for encouraging KSBs are created (Yu et al., 2013; Radaelli et al., 2014; Akhavan et al., 2015). Previous empirical investigations of these conditions have focused on the critical role of environmental-related factors and personal-related factors believed to influence KSBs. These are trust (Lee and Choi, 2003; Hsu et al., 2007),

subjective norms (Brock et al., 2005), knowledge self-efficacy (Hsu et al., 2007; Lin 2007b), enjoyment in helping others, expected organisational rewards and reciprocity (Lin 2007b), and psychological ownership (Han et al., 2010). However, in spite of such attempts, studies have not tried to test such factors in an integrative research model that explores the effect of KSB from perspectives of both personal and environmental factors. At the same time, the question of why does a person take a particular behaviour could be explained by these two perspectives (Bandura, 1997, 1986). Accordingly, this study could rationally believe that a personal KSB would be guided by environmental and personal factors. In addition, far few studies have tested the relationships between the above factors, KSB and innovative work behaviour. Consequently, this investigation mainly focuses on examination of the influence of the above critical factors, which are conceptualised as personal-related factors (i.e. perception, motivation and psychology) and environmental-related factors (social influences), on KSB leading to innovative work behaviour.

A personal perception to behave in a certain way consists of cognitive factors. One is self-efficacy or personal belief, which is a potentially significant factor influencing the decision of sharing knowledge (Brock & Kim, 2002). Engaging in KS may require the sense of the self-confidence and ability of individuals (Lin, 2007a). Other important factors which have a significant influence on individual KS decisions are motivations associated with enjoyment in helping others, expected organisational rewards and reciprocal benefits (Hsu et al., 2007; Wang and Noe, 2010). For example, Lin (2007a) indicates that people who find enjoyment in KS and consequently helping others are more likely to be inspired to share their knowledge with others. Wang and Noe (2010) found that a person's beliefs, with regards to psychological ownership of knowledge, is fundamental, as when people perceived that they owned knowledge instead of the organisation they would engage in KS.

Having said that, environmental factors involve subjective norms and trust. Subjective norms show an employee's feelings regarding the social pressure which they perceive in a given behaviour surrounding them. Employees with positive subjective norms lead to given behaviours than the concerned behaviour intentions would be more positive in KS. Finally, trust has also been recognised as an essential determinant influencing KS (Hsu et al., 2007; Wang and Noe, 2010).

Conceptual model design

The proposed research model uses Social Cognitive Theory (SCT) as a theoretical framework and augments it with salient factors from the Theory of Planned Behaviour, Economic Exchange Theory, and Social Exchange Theory. It also considers the two moderators, transformational leadership and transactive memory systems quality, on the relationships between constructs of the model. The model aims to provide a way to examine the effects of environmental and personal factors on KSB leading to innovative work behaviour. Thus, the conceptual scope of the present research first began to investigate the relationships of environmental-related factors (subjective norms, trust) and personal-related factors (knowledge self-efficacy, enjoyment in helping others, expected organisational rewards, reciprocal benefits, and psychological ownership of knowledge) on KSB. This was followed by investigating the effect of KSB on innovative work behaviour. The moderating effect of transformational leadership on the relationships among environmental-personal factors and KSB and the moderating effect of transactive memory systems quality on the relationship between KSB on innovative work behaviour were also examined as the rationales discussed in Chapter 2.

The model is conceptualised by eleven main constructs: two environmental factors, five personal factors, KSB, IWB, transformational leadership, and the quality of transactive memory systems (Figure 3.3). The definitions of these constructs are explained as follows.

Environmental-related factors:

- Subjective norms: The extent to which a person perceives whether social pressures will influence the performance of KSB (Ajzen, 1991).
- Trust: The degree to which a member has a mutual faith in their colleagues' intentions, behaviours, and skills towards organisational goals (Lee and Choi, 2003).

Personal-related factors:

- Knowledge self-efficacy: The extent of confidence in an employee's ability to KS (Lin et al., 2009).
- Enjoyment in helping others: The extent to which a person believes psychological benefits prior to being engaged in KS activities (Lin, 2007b).

- Expected organisational rewards: The extent to which a person believes they can receive organisational rewards by offering his or her knowledge in the organisation (Lin, 2007b).
- Reciprocal benefits: The extent to which a person expects future benefits from their present KS with others (Hung et al., 2011).
- Psychological ownership of knowledge: The extent to which an individual believes in the possession and is responsible towards knowledge he or she possesses” (Pierce et al., 2001).

Moderators:

- Transformational leadership: “The transformational leader motivates followers to work for transcendental goals and for higher level self-actualising needs instead of immediate self-interests” (Bass, 1996, p.740 as cited in Rezvani et al., 2017).
- The quality of transactive memory system: The extent to which a member is able to recognise and utilise the knowledge and expertise of other team members in a group in the organisation (Ariff, 2013; Brandon and Hollingshead, 2004).

Knowledge sharing behaviour:

- The extent to which an employee performs KS activities in the organisation (Davenport and Prusak, 1998; Lin et al., 2009).

Innovative work behaviour:

- The extent to which a member behaves to create, promote, and implement new ideas in a group or organisation (Janssen, 2000).

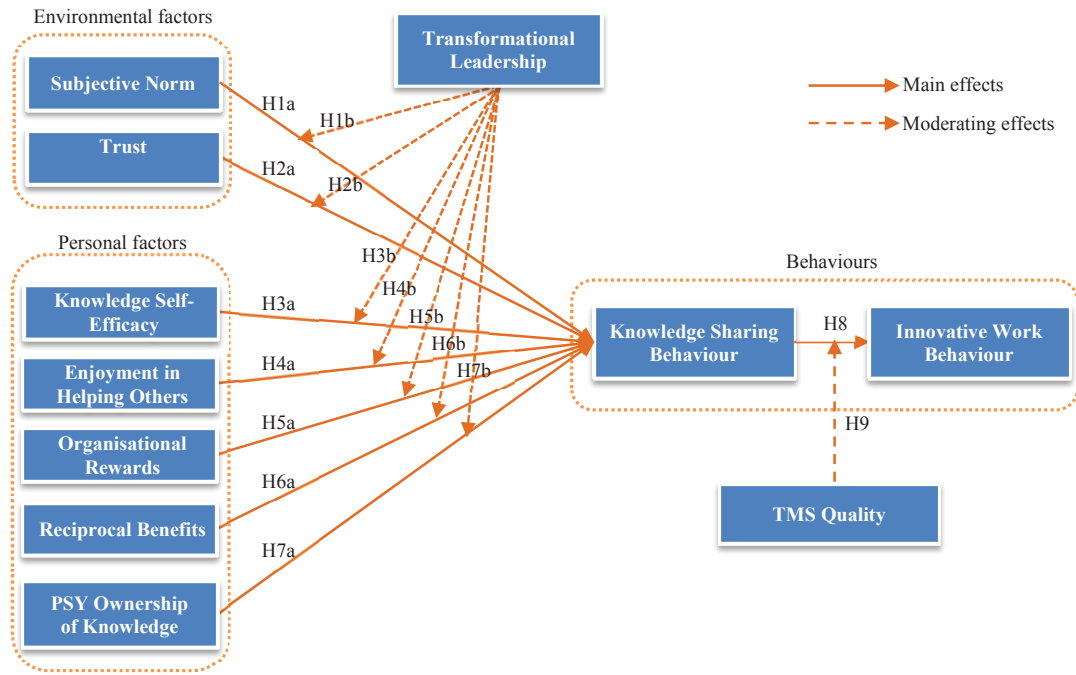


Figure 3.2. The initial research model

3.3 Hypothesis development

3.3.1 Main effects

In the following sections, this research will postulate and propose a set of hypotheses on the influence of environmental factors and personal factors on KSB, and the impact of KSB on innovative work behaviour. The elaboration for these factors is based on several theories as follows: Subjective norms (Theory of Planned Behaviour), Trust and Reciprocal benefits (Social Exchange Theory), Knowledge self-efficacy (SCT), Enjoyment in helping others (SCT), Expected organisational rewards (SCT, Economic Exchange Theory), Psychological ownership of knowledge, Transformational Leadership Theory, and the Quality of Transactive Memory Systems.

3.3.1.1 Environmental factors

In the current study, the environmental-related factors are represented by subjective norms and trust (see Figure 3.3).

3.3.1.1.1 Subjective norms (Theory of Planned Behaviour)

In the Theory of Planned Behaviour (TPB), subjective norm is the antecedent most closely related to social pressure (Lin and Lee, 2004). Subjective norms can be described as the extent to which a person perceives social pressure to perform or not to

perform specific behaviour (Ajzen, 1991). It is usually measured directly by asking participants to show whether “important others” (that is, self-selected referents) may approve or disapprove of their fulfilling a certain behaviour (Ajzen, 1991; Lin and Lee, 2004). It means, “The person’s perception that most people who are important to him or her think he should or should not perform the behaviour in question” (Dong et al., 2010, p7). Park (2000) emphasised the impact of others who are important to the employee such as “close friends, relatives, colleagues, or business partners”. In general, subjective norms show personal emotion regarding the social pressure they perceive about given behaviours surrounding them.

By applying Theory of Reasoned Action (TRA) and TPB, several studies have found that subjective norms have a significant influence on predicting behavioural intention to share knowledge (e.g. Bock et al., 2005; Kuo and Young, 2008; Dong et al., 2010; Fullwood and Rowley, 2017). For instance, Bock et al. (2005) conducted a study to propose an integrative understanding of the factors facilitating or impeding individuals’ KS intentions. The findings indicated that subjective norms acquired significant practical support as an import antecedent to behavioural intentions to share knowledge. These authors also confirmed that subjective norms influenced personal knowledge-sharing intentions. Moreover, Dong et al. (2010) conducted a survey to better understand the factors affecting the intent to share knowledge within the Vietnamese organisational context. The result showed that subjective norms significantly influenced attitude towards KS behaviours. In the higher education sector, Fullwood and Rowley (2017) conducted an online questionnaire survey with a sample of academics in different universities and disciplines in the United Kingdom. The results from the respondents of 367 academics concerning their attitude and intention towards KS confirmed that subjective norms had a positive impact on attitudes to share knowledge. Hsu et al. (2007) suggested that subjective norms could affect KSB because employees with positive subjective norms lead to given behaviours than the concerned behaviour intentions would be more positive in KS. In the current study, subject norms about KS refer to social pressures established by leaders of universities and departments and colleagues to encourage or discourage KSB of academic staff. Therefore, it can be hypothesised that:

H_{1a}: Subjective norms have a positive effect on KSB.

3.3.1.1.2 Trust (Social Exchange Theory)

Trust, a primary construct in the Social Exchange Theory (Luo, 2002), has been essential to both interpersonal and commercial relationships (Hsu et al., 2007). Trust becomes the most valuable asset in businesses (Luo, 2002). There are several relevant definitions of trust. Mayer et al. (1995) defined trust as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (p. 5). This definition refers to a relationship between a party with another identifiable party who is perceived to behave and re-behave with volition toward the trustor (Mayer et al., 1995). Having vulnerability means that a person is willing to take risks and lose something of importance. Similarly, Nahapiet and Ghoshal (1998) defined trust as the extent to which a person is willing to be vulnerable to the actions of others. According to Brooke et al. (2017) trust is deemed as a critical factor for the long-term sustainable development of organisations and their members’ well-being. In the research effort on KM, Lee and Choi (2003) defined trust as “maintaining reciprocal faith in each other in terms of intention and behaviour” (p. 14). It may encourage the exchange of knowledge to be substantive, influential, and open (Lee and Choi, 2003).

Previous studies have shown that trust is an essential factor influencing KS (Chowdhury, 2005; Liao, 2008; Chow and Chan, 2008; Dong et al., 2010). According to Nonaka (1994), interpersonal trust is a critical factor in teams, groups and organisations to establish an environment for KS. Davenport and Prusak (1998) found that trust affects KS decisions and without trust, a person becomes less willing to share knowledge with others (Davenport and Prusak, 1998). Szulanski (1996) revealed that the lack of trust among people is one of the major barriers to the exchange of knowledge (Lee and Choi, 2003). Additionally, Riege (2005) asserted that without a feeling of trust, most people are not likely to share their knowledge. Trust here is that individuals do not misapply their knowledge or knowledge is accurate and reliable because of the source of information. However, employees are more willing to engage into KS when they have a high level of trust in their relationships (Lee and Choi, 2003; Abrams et al., 2003; Lucas, 2005; Lin et al., 2009). Lee and Choi (2003) added the mutual trust results in knowledge creation, which, in turn leads to improved knowledge exchange.

Several empirical studies support the importance of trust in KS. Hsu et al. (2007) studied the impact of trust on KSB in virtual communities. The results revealed that members of virtual communities would be more willing to share their knowledge with other members if they feel that they will strengthen and expand their relationships between existing members in the future. Hence, trust among members will lead to the success of KS. Liao (2008) studied managers' social power influencing R&D employees' KSB in both direct and indirect effects using the mediated variable of trust. The findings showed that trust has a positive impact on KSB. Lin et al. (2009) applied SCT to examine KSB in virtual communities. The results of the study showed that trust has a positive influence on KSB, which is consistent with Hsu et al. (2007). Furthermore, within the Vietnamese organisational context, Dong et al. (2010) attempted to better understand the factors affecting intentions to share knowledge. The findings showed that social trust significantly influences attitude towards KSB. Recently, Brooke et al. (2017) carried out one of the newest works on KS. The results from this study showed that trust has a significant impact on KSB. The study also found that the relationship between trust (environmental factor) and KSB is mediated by knowledge self-efficacy. Brooke et al. (2017) also revealed that people who have a higher level of trust were more likely to possess higher knowledge self-efficacy to lead to increased KSB.

This research used Lee and Choi' (2003) definition of trust. This study believed that interpersonal trust increases individuals' tendency to participate in knowledge-sharing practices (Fukuyama, 1995). Trust can create a good environment in the university settings, which can improve successful academic staff's belief in their colleagues' ability to knowledge. Trust is deemed as a pre-condition of KSB (Brooke et al., 2017). Accordingly, it can be hypothesised that:

H_{2a}: Trust has a positive effect on KSB.

3.3.1.2 Personal factors

In the current study, the environmental-related factors are represented by knowledge self-efficacy, enjoyment in helping others, expected organisational rewards, reciprocal benefits, and psychological ownership of knowledge (see Figure 3.3).

3.3.1.2.1 Knowledge self-efficacy (Social Cognitive Theory)

In the SCT model (Bandura, 1986), self-efficacy represents “a judgment of one’s capability to accomplish a certain level of performance” (p. 391). From this definition, Bandura and many researchers have indicated that an individual’s inclination to participate in a certain action is affected to a high degree by the individual’s sense of self-efficacy (Gist and Mitchell, 1992; Bandura, 1997; Cabrera et al., 2006). The individual’s sense of self-efficacy affects the tendency of people to take actions such as level of problems, expressed interest, persistence and task effort (Hsu et al., 2007). Overall, people’s motivation and behaviour are significantly influenced by the perceived self-efficacy (Bandura, 1986). A person who has low self-efficacy will be more unlikely to accomplish related behaviour than those with high self-efficacy (Hsu et al., 2007).

Researchers have applied self-efficacy in many ways. A review of the literature in the IS field conducted by Hsu et al. (2007) found that the effect of computer self-efficacy has been focused on computer training performance (e.g., Compeau and Higgins, 1995, 1999; Johnson and Marakas, 2000) and on the usage of IT (e.g., Easley et al., 2003; Venkatesh et al., 2003), and on the construct of Internet self-efficacy. In KM, self-efficacy has been used to examine the influence of individual efficacy belief in KS – also known as knowledge self-efficacy (Hsu et al., 2007). According to Lin (2007a), knowledge self-efficacy is an individual’s judgment of his or her ability to organise and execute successful performance in everyday tasks. A person is more likely to perform a particular work if he or she has a high confidence of ability to contribute valuable knowledge to others (Constant et al., 1994; Bock and Kim, 2002; Lin 2007b). In other words, knowledge self-efficacy is often expressed by a person who has high confidence that his or her knowledge can help to deal with job-related problems and better work efficacy (Lin 2007b). Moreover, knowledge self-efficacy has been found to be able to encourage employees to share knowledge with colleagues (Wasko and Faraj, 2005; Kankanhalli et al., 2005; Bock and Kim, 2002; Lin, 2007b).

Social cognitive theory (SCT) can help to provide a strong foundation to support studies related to knowledge self-efficacy in KSB (Brooke et al., 2017). As discussed in the above section, in SCT, a personal behaviour is affected by two factors: environmental influence and personal perception (Bandura, 1997, 1986). Self-efficacy is a critical element of personal perception along with expected outcomes that govern human motivation and action. In summary, this study used the definition of knowledge self-

efficacy describing by Lin et al. (2009). This study also believed that knowledge self-efficacy is a critical antecedent of employees' KSB in a university context. Furthermore, knowledge self-efficacy facilitates academic staff to share knowledge with colleagues with their departments and their universities. Therefore, it can be hypothesised that:

H_{3a}: Knowledge self-efficacy has a positive effect on KSB.

3.3.1.2.2 Enjoyment in helping others (Social Cognitive Theory)

KS is not automatically given in any situation, as it involves the willingness of individuals to share their knowledge with others in organisations (Hawryszkiewicz, 2010). However, it is vital to realise that there are various reasons why people may determine to share or not share their knowledge (Wang and Noe, 2010). Previous studies have indicated that people may share knowledge because they enjoy helping others (or altruism) (e.g. Kankanhalli et al., 2005). Enjoyment in helping others is considered to be extracted from the concept of altruism (Kankanhalli et al., 2005; Lin 2007b; Brooke et al., 2017). Altruism evolved from Social Cognitive Theory (SCT), in which people often consider the psychological benefits prior to getting engaged in knowledge-sharing activities (Okyere-Kwakye and Nor, 2011). Altruistic people are more likely to give their knowledge to others without seeking any return. Moreover, knowledge owners may be stimulated by relative altruism through their wish to help others (Davenport and Prusak, 1998; Constant et al., 1994; Constant et al., 1996; Lin, 2007b). Indeed, Jeon et al. (2011) indicated that enjoyment in helping others includes the feeling of enjoyment in donating a help without anything in return. Supporting for this comes from other researchers who assert that people who enjoy helping others rely on personal motivational forces - the pleasure of helping others without any reciprocal expectation (Osterloh and Frey, 2000; Brooke et al., 2017).

Many previous empirical studies have examined the relationship between enjoyment in helping others and KS. Wasko and Faraj (2005) found that people are intrinsically encouraged to contribute their knowledge because involvement in solving problems is challenging or pleasurable. Moreover, these authors also revealed that people are inherently interested in giving knowledge because of the enjoyment acquired from helping others. Lin (2007a) found that enjoyment in helping others positively impacts both knowledge giving and knowledge receiving. Additionally, Lin (2007b) also confirmed that enjoyment in helping others was positively and significantly associated with individual KS attitudes and intentions. Lin (2007a, 2007b) concluded that people

who feel enjoyment from helping others are more likely to be favourably oriented toward sharing their knowledge regarding both giving and receiving. Recently, Brooke et al. (2017) pointed out that enjoyment in helping others has a significant effect on KSB. This result implies that people who feel pleasure in helping others are inclined to be more likely to share their knowledge with each other.

From the prior empirical studies discussed above, this study believed that there is a positive relationship between enjoyment in helping others and KSB (Wasko and Faraj, 2005; Kankanhalli et al., 2005; Lin, 2007a, 2007b; Brooke et al., 2017) among academic staff in university settings. Therefore, it can be hypothesised that:

H_{4a}: Enjoyment in helping others has a positive effect on KSB.

3.3.1.2.3 Expected organisational rewards (Social Cognitive Theory, Economic Exchange Theory)

Bock and Kim (2002) described KS as a type of social interaction among individuals. In SCT, social effect (e.g. monetary rewards) is one of three main types of outcome expectations which refer to the consequence expectations of individuals' own behaviour (Bandura, 1997; Hsu et al., 2007). The more people perceive the positive outcomes associated with a given action, the more inclined people are to perform that action (Cabrera et al., 2006). Thus, KS may partly be influenced by the rewards a person perceives are related to such behaviour (Cabrera et al., 2006). Economic Exchange Theory (EET) and Social Exchange Theory (SET) have been used to account for the social interaction of people. According to Bock and Kim (2002), in Economic Exchange Theory, people will behave by rational self-interest that may lead to a positive outcome (Hsu et al., 2007). Consequently, KS will happen when costs are lower than rewards (Bock and Kim, 2002; Hsu et al., 2007). This is the reason why several researchers have recognised the importance of incentive systems for the success of knowledge management (Bock and Kim, 2002; Kankanhalli et al., 2005; Hsu et al., 2007). Giving incentives and rewards to motivate staff to contribute to KS adoption are recommended (Wong, 2005). Employees who share their knowledge may improve team performance and consequently increase the personal rewards received. Incentives and rewards encourage staff to share knowledge (Bock et al., 2005). Expected organisational rewards point out what the organisational values form individual behaviours (Lin, 2007a). It can vary according to the organisation policies from monetary incentives (e.g. better pay) to non-monetary awards (e.g. promotion, job security) (Davenport and Prusak, 1998).

Thus, expected rewards mean that if employees believe they will receive these above extrinsic benefits, they will be more likely to have positive attitudes towards KS (Bock and Kim, 2002).

While some research found that extrinsic rewards did not have an effect on the attitude toward KSB (Bock and Kim, 2002; Bock et al., 2005), some others indicated that this factor had a significant impact on individual KSB (Kankanhalli et al., 2005; Liou et al., 2016). From the above discussion, this study believed that academic staff in their universities would share their knowledge only if they perceive to receive some personal benefits in turn. Therefore, it can be hypothesised that:

H_{5a}: Expected organisational rewards have a positive effect on KSB.

3.3.1.2.4 Reciprocal benefits (Social Exchange Theory)

While Economic Exchange Theory is used for explaining extrinsic benefits, Social Exchange Theory can account for intrinsic rewards (Blau, 1967; Bock and Kim, 2002). The difference from these theories is that the benefits involved in social exchange are challenging to measure regarding a single quantitative medium of exchange, and the nature of the return cannot be negotiated (Bock and Kim, 2002). This is because social exchange is the only one that inclines to yield the feeling of individual obligation, gratitude, and trust. For instance, if new members feel that they will receive reciprocity, they would show their trustworthiness, and exchange relationship will be initiated (Blau, 1967; Bock and Kim, 2002).

Reciprocal benefit is considered as a form of conditional interest. That is a person expects future benefits from his or her present actions (Hung et al., 2011). It means that an act is done in response to prior friendly behaviours (Hung et al., 2011). Many researchers have conducted detailed analyses of reciprocity and indicated that it could be valuable to knowledge contributors as they anticipate future help from others (Hung et al., 2011). Also, studies have investigated that reciprocity can yield a sufficient motivation to encourage KS and consequently establish long-term mutual cooperation (Lin, 2007b). Thus, people who expect reciprocity from other members through sharing their knowledge will share more useful and creative ideas, and their satisfaction with the meeting will be higher knowledge-sharing intentions (Hung et al., 2011; Lin, 2007b). Therefore, it can be hypothesised that:

H_{6a}: Reciprocal benefit has a positive effect on KSB.

3.3.1.2.5 Psychological ownership of knowledge (POK)

Pierce et al. (2001) defined psychological ownership as “As a state of the mind, psychological ownership is that state in which individuals feel as though the target of ownership (material or immaterial in nature) or a piece of it is “theirs” (i.e., “It is MINE!”)” (p.3). These authors then explained that the key of psychological ownership is the feeling of possessing and being psychologically connected to a specific object. Scholars have asserted that ownership can involve even toward nonphysical entities (e.g., ideas, thoughts and relationships) (Issacs, 1933; Pierce et al., 2001; Asatryan and Oh, 2008). Psychological ownership has been identified as a catalyst in the development of human-goods relationships (Lee et al., 2013).

Previous studies have investigated the effect of psychological ownership in organisations, in particular with regards to sharing knowledge among employees. This research used Pierce et al.’ (2001) definition of POK. That is, POK explains the feeling of possession linking to knowledge in a psychological sense that makes persons regard intangible/tangible objectives as the addition of themselves (Han et al., 2010). Van Dyne and Pierce (2004) found that POK can stimulate an altruistic spirit, supporting extra-role behaviour such as KSB and individuals who have a sense of POK may display a sense of belonging which impacts altruistic spirit and which influences KSB. Thereby, POK is conducive to KSB on the part of individuals. Therefore, it can be hypothesised that:

H_{7a}: Psychological ownership of knowledge has a positive effect on KSB.

3.3.1.3 KSB and innovative work behaviour

Recall that innovative work behaviour (IWB) in this study refers to the extent to which employees behave to create, promote, and implement new ideas in a group or organisation (Janssen, 2000). The relationship between KSB and IWB has been the central question that scholars have been focussed on answering since the construct was introduced by Jansen (2000). Previous empirical studies have yielded good evidence for the relationship between KSB and IWB.

Yu et al. (2013) examined the individual-level KS and innovative behaviour of employees and interactions between the individual level of KS and the climate of innovation in finance and insurance industries in Taiwan. The findings showed that KS

and interactive behaviour among staff enhanced innovative behaviour and the ability to innovate and there was a positive association between KS and IWB.

Radaelli et al. (2014) conducted a study, which investigated how employees' KS impacts their IWB in healthcare organisations. The results indicated that individuals who share knowledge also engage more in generating, promoting and implementing innovations. It recommended that it is the act of knowledge recombination and translation embedded in KS that utilises the most positive impact on IWB.

Akhavan et al. (2015) examined the influence of socio-psychological factors from different theoretical perspectives and whether it led to superior individual IWB in high-tech companies in Iran. The results supported that individuals' KSBs improved their IWB.

One's capability in transferring and utilising knowledge may encourage his or her level of individual innovation, for example, quick problem-solving capacity and improved faster reaction to novel challenges. Several academics highlighted the essential role of KS to enhance individual IWB (Yu et al., 2013; Akhavan et al., 2015). Effective knowledge processes can create significant organisational intellectual capital and intangible resources to improve performance (Nold III, 2012). For example, when an employee transfers tacit knowledge into explicit knowledge, the entire organisation will benefit from it (Han et al., 2010). This shows that when organisations manage their knowledge assets better, they will then have a higher chance of better performance in both organisational and individual levels (Han et al., 2010; Kowal and Fortier, 1999). This research expects that personal willingness of sharing knowledge with others is likely to sustain IWB. Therefore, it can be hypothesised that.

H₈: Knowledge-sharing behaviour positively affects innovative work behaviour.

3.3.2 Moderating effects

In the following sections, this research will review the literature, postulate, and propose a set of hypotheses on the moderating influence of transformational leadership on the relationships between environmental factors and personal factors on KSB, and the moderating effect of transactive memory system on the relationship between KSB and innovative work behaviour. The explanation and discussion are based on transformational leadership theory and transactive memory systems theory.

3.3.2.1 Transformational leadership theory

Transformational leadership (TL) is defined as “a process by which leaders inspire their followers to perform at a higher level than expected and to potentially exceed the followers’ own self-interests for a high-level of shared vision” (Bass, 1999 as cited in Han et al., 2016, p.4). It motivates individuals to feel empowered, which enhances individuals’ engagement (Han et al., 2016). Bass and Avolio (1997) conceptualised TL by three distinct dimensions: charisma, intellectual stimulation and individualised consideration. Charisma refers to the extent to which the leader promotes pride and trust in subordinates by dealing with obstacles and being confident (Tepper, 1994). Intellectual stimulation is defined as the degree to which the leader articulates new ideas that motivate subordinates to reconsider conventional practice and thinking (Tepper, 1994). Individualised consideration refers to the extent to which the leader communicates individually to followers by providing them with specialised recognition and by identifying each one’s unique requirements (Tepper, 1994). This study focused on these three dimensions to account for TL as a moderator of the relationships between environmental-personal factors and KSB.

Based on TL, many modern organisations have taken an active interest in KM to increase creativity and innovation through more effective KS among employees which has been considered as one of the vital “success factors” in KM (Han et al., 2016). As discussed in Section 2.5 (Chapter 2), several studies have been conducted to examine the influence of TL on KSB. The results have revealed that transformational leader behaviours can significantly influence followers’ attitude, norms, trust, motivation and KS behaviours (Podsakoff et al., 1990; Shih et al., 2012; Mittal and Dhar, 2015; Husseini and Elbeltagi, 2016; Han et al., 2016). Thus, this study rationally believed that TL would have moderating impacts on individual KSB. This is because TL was considered as an enabler for KS activities in the previous empirical studies (e.g. Srivastava et al., 2006; Lee et al., 2010; Shih et al., 2012; Husseini and Elbeltagi, 2016). This study expected that academics who had perceptions and motivations to share their knowledge in a social environment and were strongly supported by transformational leaders, would be more willing to share their knowledge with their colleagues. Specifically, this study proposed that TL positively moderated the relationships of two environmental factors (subjective norms, trust), and five personal factors (knowledge

self-efficacy, enjoyment in helping others, expected rewards, reciprocity, and psychological ownership of knowledge) and KSB.

Transformational leadership, subjective norms and KSB

Through charismatic role modelling, transformational leaders stimulate followers and appeal to them by articulating compelling visions and providing an appropriate model (Podsakoff et al., 1990; Bass, 1985; Jung et al., 2008). As a role model, the leader persuades his or her employees that they are capable, and empowers them to contribute to the organisation's vision through KS (Zhang et al., 2017). Transformational leaders may create positive subjective norms by empowering members that indirectly pressurises them to be more willing to participate in KS activities to meet the leaders' expectations. Therefore, this study could assume that a team with a high level of TL might be more willing to respond to subjective norms with KSB. Thus, it can be hypothesised that:

H_{1b}: TL positively moderates the relationship between subjective norms and KSB. In teams with high TL, subjective norms will have a stronger positive impact on KSB than in teams with low TL.

Transformational leadership, trust and KSB

Through charisma or idealised influence, transformational leaders also instil pride and faith in followers so that “followers feel trust and respect toward the leader and they are motivated to do more than they are expected to do” (Yukl, 1989, p. 272 as cited in Zhang et al., 2017). In turn, members are encouraged to contribute more to the group or organisation - i.e. sharing their knowledge (Zhang et al., 2017). Moreover, transformational leaders stimulate followers' willingness relying on mutual trust, which in turn improves KS among members (Lee et al., 2010). Bradshaw et al. (2015) revealed that leaders' charismatic behaviour also facilitates KS (donating and collecting knowledge) among followers through inspiration, energising and a clear sense of goals. In addition, the charisma dimension of TL helps employees to be more willing to collaborate with their colleagues with the belief that their benefits would not be misused by others (Shih et al., 2012). Shih et al. (2012) suggested that TL might nurture a trusting climate among members, thus, encouraging them to be more engaged in KS. Therefore, it can be hypothesised that:

H_{2b}: TL positively moderates the relationship between trust and KSB. In teams with high TL, trust will have a stronger positive impact on KSB than in teams with low TL.

Transformational leadership, knowledge self-efficacy and KSB

As discussed for H_{1b} above, through charisma transformational leaders inspire followers, and this underpins their willingness to improve individual sharing behaviour (Zhang et al., 2017). Zhang et al. (2017) stated that motivation (i.e. high-performance expectations) inspired by leaders could strengthen employees' self-efficacy. Transformational leaders can trigger their followers' creative and independent thinking skills by promoting their self-efficacy (Mittal and Dhar, 2015). Moreover, through intellectual stimulation, the leader encourages followers to rethink problems in new and innovative ways. He or she supports them to deal with issues on their own, motivates employees' efforts and self-confidence, which, in turn, engages them in KS activities (Bass, 1985; Bradshaw et al., 2015). Thus, the current research believed that members in a team with a high level of TL might be more willing to respond to knowledge self-efficacy with KSB. That is to suppose that:

H_{3b}: TL positively moderates the relationship between knowledge self-efficacy and KSB. In teams with high TL, knowledge self-efficacy will have a stronger positive impact on KSB than in teams with low TL.

Transformational leadership, enjoyment in helping others and KSB

Through individualised consideration, the leader communicates individually to followers by attending to their needs and listening to their concerns (Shih et al., 2012). Blau (1964) stated that individuals tend to give back favours that they receive from others. Thus, employees may have feelings of enjoyment in devoting more efforts in participating in obtaining common goals (i.e. successful KS) that they received through individual considerations from their leaders (Whitener et al. 1998). The individualised consideration of transformational leadership also enhances the devotion that encourages followers' willingness to collaborate with their colleagues (Shih et al., 2012), which in turn, can make them enjoy sharing knowledge with others. Thus, this study supposes that:

H_{4b}: TL positively moderates the relationship between enjoyment in helping others and KSB. In teams with high TL, enjoyment in helping others will have a stronger positive impact on KSB than in teams with low TL.

Transformational leadership, expected organisational rewards and KSB

As discussed above, transformational leader behaviours can influence followers' attitude. From the Social Exchange Theory perspective, rewards are defined as extrinsic motivation that can influence KS. Consequently, studies in the literature have indicated that the more rewards employees expect to receive from their KS activities, the more they tend to think it is vital to share their knowledge with each other (Zhang et al., 2017). As a result, transformational leaders are believed to significantly affect this kind of attitude because they can develop and highlight common goals of attaining organisational rewards by fostering the acceptance of these goals (Zhang et al., 2017). Thus, this study supposed that in a high level of TL, the more rewards offered to employees, the more KSB could take place. It can be hypothesised that:

H_{5b}: TL positively moderates the relationship between expected organisational rewards and KSB. In teams with high TL, expected organisational rewards will have a stronger positive impact on KSB than in teams with low TL

Transformational leadership, expected reciprocal benefits and KSB

From the perspective of Social Exchange Theory, reciprocal benefits can be accounted as intrinsic rewards (Blau, 1967; Bock and Kim, 2002). Social exchange yields the feeling of individual gratitude. If new members feel that they will receive reciprocity, they will show their trustworthiness, and exchange relationships will be initiated (Blau, 1967; Bock and Kim, 2002). Thus, based on the argument for the effect of TL on the relationship between expected organisational rewards and KSB discussed for H_{5b}, this research could rationally suppose that there is a positive impact of TL on the relationship between reciprocal benefits and KSB. It can be hypothesised that:

H_{6b}: TL positively moderates the relationship between reciprocal benefits and KSB. In teams with high TL, reciprocal benefits will have a stronger positive impact on KSB than in teams with low TL.

Transformational leadership, psychological ownership of knowledge and KSB

According to Park et al. (2013), TL is considered as a process that acts to transform followers emotionally and psychologically. Consequently, the psychological and emotional influence of TL might increase followers' feelings of possessions in their organisation. Indeed, Avey et al. (2009) examined the relationship between TL and psychological ownership and found that a positive relationship existed between them,

which implied that transformational leaders would be able to stimulate conditions to enhance their employees' psychological ownership. These authors suggested that TL would be a critical factor that contributes to followers' psychological ownership. Moreover, as in the above discussion regarding the relationship between psychological ownership of knowledge and KSB, Van Dyne and Pierce (2004), found that psychological ownership of knowledge could stimulate an altruistic spirit, supporting extra-role behaviour such as KSB. Individuals who have a sense of psychological ownership of knowledge may display a sense of belonging which impacts an altruistic spirit and which influences KSB. Thus, this study supposes that:

H_{7b}: TL positively moderates the relationship between psychological ownership of knowledge and KSB. In teams with high TL, psychological ownership of knowledge will have a stronger positive impact on KSB than in teams with low TL.

3.3.2.2 The quality of transactive memory system

The definition of transactive memory system (TMS) is that it is a team's shared understanding of "who does what" (Ariff et al., 2011; Brandon and Hollingshead, 2004) and "who knows what" (Wegner and Raymond, 1991; Ariff et al., 2011) in the team. Prior studies have provided support for the claim that TMS has a positive impact on KSB and thus, its impact on innovative behaviour. Chen et al. (2013) proposed a model to explore the relationships among TMS, KS and technical achievement of open source software teams. Their study found that the effects of the TMS dimensions on KSB in teams were "heterogeneous". Accordingly, these authors recommended that research on the TMS dimensions should be further studied. However, Simeonova (2014) investigated the research to explore how individuals interact and share knowledge in Bulgarian organisations to encourage them to be more individual innovatively. The author indicated that TMS was critical driver for KS, which, in turn helps individuals be more innovative. Recently, Tsai et al. (2016) conducted a study that advanced a model based on TMS to examine team performance, using team personnel in banking, insurance, and financing firms. The results from their research indicated that TMS and KS indirectly and directly impact on team performance.

In this study, TMS quality refers to the extent to which a member is able to identify and employ the expertise and knowledge of other members in a group in the university (Brandon and Hollingshead, 2004). In teams with high TMS quality, members actively share and acquire their knowledge, information and resources from others (Ariff, 2013).

However, in teams where TMS quality is low, tasks can be easily divided, and members can complete their duties independently, which impedes individuals sharing their knowledge with each other. Therefore, it can be hypothesised that:

H₉: TMS quality positively moderates the relationship between KSB and innovative work behaviour. In teams with high TMS quality, KSB will have a stronger positive impact on innovative work behaviour than in teams with low TL.

3.4 Summary of hypotheses

Table 3.1 summarises the alignment among research questions, relationships and hypotheses. The results of testing these hypotheses are presented in Chapter 5.

Table 3.1. The alignment among research questions, relationships and hypotheses.

Relationships	Hypotheses
<i>RQ1: What are the critical factors that influence KSB in Vietnamese university settings?</i>	
SN → KSB	H_{1a}: Subjective norms (SN) have a positive effect on KSB.
TRU → KSB	H_{2a}: Trust has a positive effect on KSB.
KSE → KSB	H_{3a}: Knowledge self-efficacy (KSE) has a positive effect on KSB.
EHO → KSB	H_{4a}: Enjoyment in helping others (EHO) has a positive effect on KSB.
REW → KSB	H_{5a}: Expected organisational rewards (REW) have a positive effect on KSB.
RB → KSB	H_{6a}: Reciprocal benefits (RB) have a positive effect on KSB.
POK → KSB	H_{7a}: Psychological ownership of knowledge (POK) has a positive effect on KSB
<i>RQ2: How does KSB influence innovative work behaviour (IWB) in Vietnamese university settings?</i>	
KSB → IWB	H₈: Knowledge-sharing behaviour positively impacts IWB
<i>RQ3: What are the joint effects of transformational leadership (TL) and the critical factors on KSB in Vietnamese university settings?</i>	
TL → (SN → KSB)	H_{1b}: TL positively moderates the relationship between SN and KSB. In teams with high TL, SN will have a stronger positive impact on KSB than in teams with low TL.
TL → (TRU → KSB)	H_{2b}: TL positively moderates the relationship between trust and KSB. In teams with high TL, Trust will have a stronger positive impact on KSB than in teams with low TL.
TL → (KSE → KSB)	H_{3b}: TL positively moderates the relationship between KSE and KSB. In teams with high TL, KSE will have a stronger positive impact on KSB than in teams with low TL.
TL → (EHO → KSB)	H_{4b}: TL positively moderates the relationship between EHO and KSB. In teams with high TL, EHO will have a stronger positive impact on KSB than in teams with low TL.
TL → (REW → KSB)	H_{5b}: TL positively moderates the relationship between REW and KSB. In teams with high TL, REW will have a stronger positive impact on KSB than in teams with low TL.

TL \rightarrow (RB \rightarrow KSB)	H_{6b} : TL positively moderates the relationship between RB and KSB. In teams with high TL, RB will have a stronger positive impact on KSB than in teams with low TL.
TL \rightarrow (POK \rightarrow KSB)	H_{7b} : TL positively moderates the relationship between POK and KSB. In teams with high TL, POK will have a stronger positive impact on KSB than in teams with low TL.
<i>RQ4: What is the joint effect of TMS quality and KSB on IWB in Vietnamese university settings?</i>	
TMS \rightarrow (KSB \rightarrow IWB)	H₉ : TMS quality positively moderates the relationship between KSB and IWB. In teams with high TMS quality, KSB will have a stronger positive impact on IWB than in teams with low TL.

3.5 Summary of Chapter 3

This chapter presented the development of the research model and hypotheses based on the theoretical foundations derived from literature related to this research. The chapter first reviewed the theoretical foundations for developing the conceptual research model. This was followed by an explanation of the relationships between the constructs used in the model, using prior research in the literature. The hypotheses, then, have been proposed to reflect the causal relationships between the constructs that helped to seek the answers for the research questions. The next chapter will discuss the research methodology used to carry out the empirical test of this study.

CHAPTER 4 : RESEARCH METHODOLOGY

4.1 Introduction

This chapter, as the prerequisite for Chapter 5, presents and justifies the research methodology used in this study. The chapter begins with the explanation and justification of the selection of the research design and methods for this study (Section 4.2 and 4.3). Then, the quantitative method is presented with regards to the development of the survey instrument, data collection, and data analysis techniques (Section 4.4). This is followed by the presentation of qualitative method including data collection method and analysis strategy (Section 4.5). Next, this chapter discusses the ethical considerations (Section 4.6). Finally, this chapter concludes with an overview of the central points of the methodological considerations for the current study. The chapter's outline is displayed in Figure 4.1.

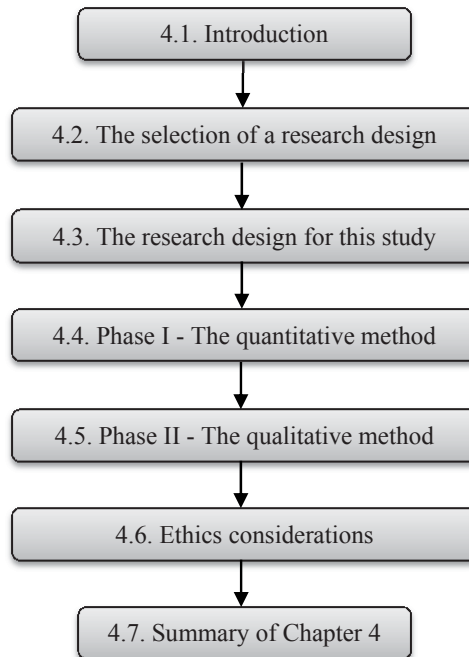


Figure 4.1. Chapter outline

4.2 The selection of a research design

A research design provides a plan and procedures to conduct research (Creswell, 2009). The plan helps researchers (i) to decide which paradigm (worldview) should be used to bring to the research (ii) to select the procedures of inquiry (research methodologies or strategies); and (iii) to adopt specific methods or procedures of data collection and

analysis. The following sections will help explain the decisions of research paradigm, methodology and methods for this study.

Research paradigms are frameworks or a basic set of beliefs that guide the action that researchers need to identify the relationships between variables and to specify appropriate methods for conducting particular research (Guba and Lincoln, 1994; Creswell, 2009; Nguyen, 2010). The qualitative (constructivist/interpretive) and quantitative (positivist/post-positivist) research are commonly used research paradigms in science research (Easterby-Smith et al. 2002; Collis and Hussey, 2003; Creswell, 2009; Nguyen, 2010; Alharbi, 2016). Creswell (2009) explained the qualitative (constructivist) approach is the determination of how individuals attempt to find understanding of the world where they live and work. A quantitative (post-positivist) approach can be defined as using available theoretical explanations to establish hypotheses, then assessing them via empirical observation of the conduct of people (Neuman, 2005; Alharbi, 2016).

Research methodology (also known as strategies of inquiry) refers to the overarching approach to research with a close connection to the selected paradigm that yields specific direction for procedures in a research design (Mackenzie and Knipe, 2006; Creswell, 2009; Dang, 2013). In contrast, research methods are specific procedures or forms of data collection and analysis which inquirers advocate for their research (Creswell, 2009; Mackenzie and Knipe 2006; Dang, 2013).

After consideration of the research problem and questions (with regards to factors influencing KSBs at university settings in Vietnam), both post-positivist (quantitative) and constructivist (qualitative) approaches have been chosen and used as a sequential mix-method approach for this research. This combination was used in a complementary manner (Neuman, 2006; Alharbi, 2016) which applied the quantitative (post-positivist) approach as the main approach, followed by qualitative (constructivist) approach as a complementary need. It is able to help researchers gain the highest level of understanding and investigating the research problem (Neuman, 2005). Figure 4.2 portrays the sequential explanatory mixed methods design suggested by Creswell (2009). This approach has been widely used for mixed methods design, in which researchers often strongly focus on quantitative phase.

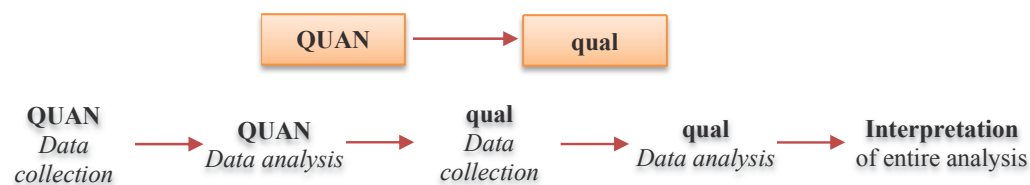


Figure 4.2. The sequential explanatory mixed methods design (Creswell, 2009)

Following this approach, this study collected and analysed the quantitative data at first, and then collected and analysed the qualitative data in the second phase based on the findings from the initial quantitative results. In most cases, the weight is set to the quantitative data, and then the mixing of the data happen when the initial quantitative finding is given to the second qualitative phase (Creswell, 2009). Accordingly, the two phases of data collection and analysis are separate but connected. The advantage of this strategy is that it helps researchers easily describe and report the process of data collection and results. However, this approach also has a disadvantage when the two forms of data are given equal priority (Creswell, 2009).

The selection was made because of the three main reasons. The first important reason was due to the nature the research problem, which has called for exploring factors influence KSBs and understanding the best predictors of outcomes as innovative work behaviours. It can be done by either quantitative or qualitative approach. However, as Creswell (2009) suggested, the quantitative approach is the best choice for this study. Moreover, this approach is also the best one used to test a theory and explanation by developing a conceptual model and hypotheses, and measuring the model's construct via the survey method. Another important reason was that the current research topic has been novel and little done on it with a sample of academic staff in higher education institutions in an Asia developing country (Shanker et al., 2017). Accordingly, then, it required a qualitative approach to perform semi-structured expert interviews as a complementary need to better understand the factors affecting KSB from experts' perspective in Vietnam (Creswell, 2009). Furthermore, this approach was obtain statistical results from quantitative data analysis and then followed up with a few participants to help the study to explain those findings in more depth (Creswell, 2009). The third reason was that this study wished to make sure the reliability and validity that is necessary for any research project (Thanasegaran, 2009).

In summary, a sequential explanatory mix-method approach has been selected for this study, which first conducted a survey in a large number of participants, followed by semi-structured interviews with a few experts to achieve their specific justification and suggestions about the research. In these cases, gathering both closed-ended quantitative data and open-ended qualitative data demonstrated advantageous (Creswell, 2009).

4.3 The research design for this study

The research design for this study is described in Figure 4.3, which mainly involved three stages. First, an intensive and extensive literature review was conducted to identify the knowledge gaps and research questions. To fill the knowledge gaps and find the answers to research questions, this study developed a research model, hypotheses and the research instrument relied on the existing theories and the literature review. Second, the quantitative method (Phase I), then, was implemented. A pilot study was conducted to validate the survey questionnaire, followed by the main quantitative data collection. The main purpose of this stage was finally conducted to validate measurement scales, access the model validity and reliability, and test hypotheses. Finally, this study conducted the qualitative data collection and analysis (Phase II) to validate the quantitative findings through the semi-structured interviews. This stage also helped the researcher acquire experts' suggestions to refine the model and propose the future works.

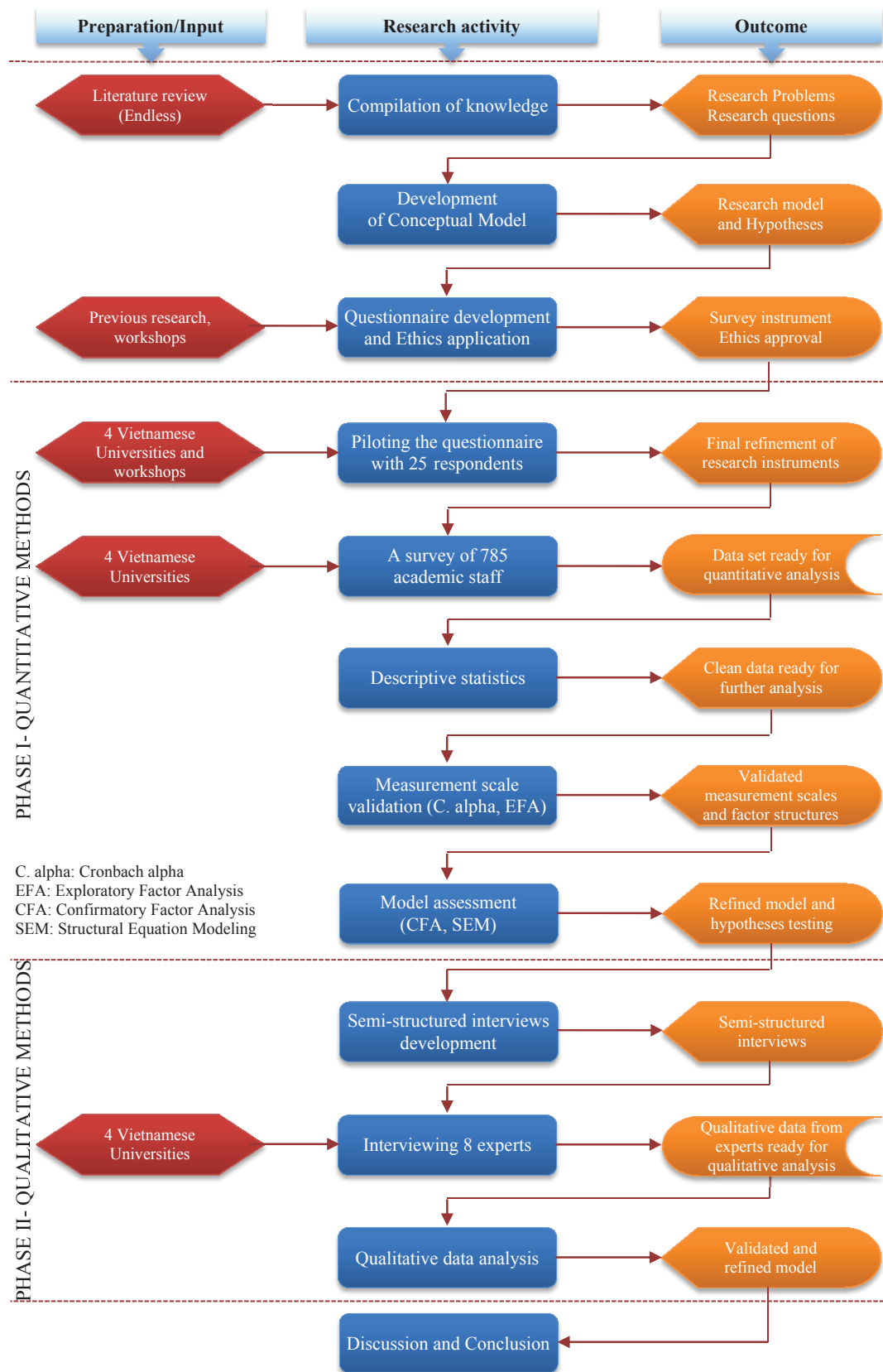


Figure 4.3. Research design process

4.4 Phase I - The quantitative method

This section presents the quantitative data collection and analysis used for this study. The section starts with the development of the survey instrument. It provides the details of how to operationalise the measures, translate the instrument, and pilot the questionnaire. This is followed by the data collection which reports the development of sampling frame and the data collection administration and discusses the techniques for data analysis that is the prerequisite for Chapter 5.

4.4.1 The development of the research instrument

The final questionnaire was developed in order to measure the constructs in the proposed conceptual model in Chapter 3. The survey questionnaire, with a total of sixty-six items, was divided into two main parts (see Appendix 2). The first part had sixty-two items which aimed to identify the relationships between constructs by asking participants to rate the statements (questions) using a five-point Likert-like scale. Each of the questions was designed to represent an indicator or observed variable to measure the corresponding conceptual constructs. The second part, with four questions, sought the demographic information of the survey sample: gender, age, qualification, and working experience. To help the respondents express their opinions openly, the researcher intentionally placed this part at the end of the questionnaire and excluded the sensitive questions. The following sections provide the process to generate and operationalise measurement items according to the reviewed literature.

4.4.1.1 Survey design workshop series for this study

Once the initial questionnaire has been prepared by the researcher with support from the supervisors, the research held the 5-week workshop series to strengthen the content and face validity of the instruments for this study. The workshop series took place in the School of Systems, Management and Leadership (SML) at the University of Technology Sydney (UTS) during a consecutive 5-week period. The workshop series was held once per week. The profiles of nine experts participated in these workshops presented in Table 4.1. In the first workshop, the research presented the research questions, research model, initial questionnaire version and data analysis techniques. These relevant documents were sent to all participants before each of all workshops. The experts discussed and gave their comments on each part of the questionnaire. The expert 6, expert 7, and expert 8 were participated online because of time and distance limit. Based on that, the questionnaire was weekly improved. After the fifth week of the

workshop series, the questionnaire was finalised from all aspects of content and format, and ready for the pilot study.

Table 4.1: The profiles of the experts at the survey design workshop series

No.	Expertise	Location	Experience and strength
1	Professor	SML, UTS	Qualitative method in information systems and knowledge management
2	PhD - Senior lecturer	SML, UTS	Quantitative method in information systems and knowledge management
3	Professor	SML, UTS	Qualitative methods in information systems; Statistical expert
4	PhD-Senior lecturer	SML, UTS	Quantitative method in information systems and knowledge management
5	PhD	SML, UTS	Quantitative method in information systems
6	PhD	University of New South Wales	Qualitative and quantitative method in education; higher education expert; Vietnamese and English language expert
7	PhD	Deakin University	Qualitative and quantitative method in education; higher education expert; Vietnamese and English language expert
8	PhD	School of Education, UTS	Qualitative and quantitative method in education; Vietnamese and English language expert
9	PhD	University of Vienna	Qualitative method in information systems; Expert in developing research models

4.4.1.2 Operationalisation of constructs

All constructs of the conceptual model are the latent constructs, including Subjective norm (SN), Trust (TRU), Knowledge self-efficacy (KSE), Enjoyment in helping others (EHO), Expected organisational rewards (REW), Reciprocal benefits (RB), Psychological ownership of knowledge (POK), Transformational leadership (TL), Knowledge sharing behaviour (KSB), the quality of transactive memory systems (TMS) and Innovative work behaviour (IWB). Two of these constructs, TMS and IWB were considered to be second-order constructs, extracted from two sub-dimensions (who knows what, who does what) and three sub-dimensions (idea generation, idea promotion and idea implementation) respectively. As Hair et al. (2010) suggested, each of these construct should be measured by at least three items (indicators/observed variables).

With this rule of thumb, all eleven constructs were measured by multi-items to better the validity and reliability of the measurement scales.

4.4.1.3 Scaling and measurement

In this study, the existing measures from prior studies were used for the questionnaire. All items were adapted for use in the KS context in university settings in Vietnam. All indicator variables were measured using a five-point Likert-type scale with two types of anchors, behaviourally and perceptually anchors. Behavioural anchors were ranging from 1=Never to 5=Always, while perceptual anchors ranged from 1=Strongly Disagree (SD) to 5=Strongly Agree (SA). The study employed the Likert-type scales as the recommendation for research involving behavioural and perceptual measurement (Sharma et al., 2009). Another reason is the implementation of Structural Equation Modelling (SEM) as a data-calculated method (Hair et al., 2010; Tabachnick and Fidell, 2007). The rationale that the researcher used these types of anchors for the measurement scale was based on the suggestions of Sharma et al. (2009). He recommended that researchers utilise the behavioural anchors when items refer to specific actions that individuals have taken, such as “Never–Always”. Moreover, his research also revealed that perceptual anchors are employed when items that capture responses generally on “Agree–Disagree” Likert scales or on semantic differential scales. Therefore, scales and anchors were used provide advantage of standardising and quantifying relative effects.

4.4.1.4 Item development

Tables 4.2 to 4.12 present the item measures for each construct of interest.

Subjective norms (SN) refer to the extent to which a person perceives whether social pressures will influence the performance of KSB (Ajzen, 1991). Subjective norms were measured through three items adapted from Bock et al. (2005) and Ajzen (1991).

Table 4.2: Item measures of subjective norms

Item code	Description
SN1	My president thinks that I should share my knowledge with other members in the university.
SN2	My department’s leader thinks that I should share my knowledge with other members in the university.
SN3	My colleagues think that I should share my knowledge with other members in the university.

Type of anchor: 1=Strongly Disagree to 5=Strongly Agree

Trust (TRU) refers to the degree to which a member has a mutual faith in their colleagues' intentions, behaviours, and skills towards organisational goals (Lee and Choi, 2003). A six-item scale adapted from Lee and Choi (2003) were used to measure trust.

Table 4.3: Item measures of trust

Item code	Description
<i>Our university members ...</i>	
TRU1	are generally trustworthy.
TRU2	have reciprocal faith in other members' behaviours.
TRU3	have reciprocal faith in others' ability.
TRU4	have reciprocal faith in others' behaviours to work toward organisational goals.
TRU5	have reciprocal faith in others' decision toward organisational interests than individual interests.
TRU6	have relationships based on reciprocal faith.

Type of anchor: 1=Strongly Disagree to 5=Strongly Agree

Knowledge self-efficacy (KSE) refers to the extent of confidence in an employee's ability to KS (Lin et al., 2009). A four-item scale was adapted to measure knowledge self-efficacy based on Lin (2007b).

Table 4.4: Item measures of knowledge self-efficacy

Item code	Description
KSE1	I am confident that I possess knowledge that others in my university would consider valuable.
KSE2	I have the expertise required to provide valuable knowledge for my university.
KSE3	Most other employees can provide more valuable knowledge than I can.
KSE4	It does not really make any difference whether I share my knowledge with colleagues.

Type of anchor: 1=Strongly Disagree to 5=Strongly Agree

Enjoyment in helping others (EHO) refers to the extent to which a person believes psychological benefits prior to being engaged in KS activities (Lin, 2007b). A four-item scale adapted from Lin (2007b) was used to measure enjoyment in helping others.

Table 4.5: Item measures of enjoyment in helping others

Item code	Description
EHO1	I enjoy sharing my knowledge with colleagues.
EHO2	I enjoy helping colleagues by sharing my knowledge.
EHO3	It makes me feel good by helping someone by sharing my knowledge.
EHO4	Sharing my knowledge with colleagues is pleasurable.

Type of anchor: 1=Strongly Disagree to 5=Strongly Agree

Expected organisational rewards (REW) refers to the extent to which a member believes they can receive organisational rewards by offering his or her knowledge in the organisation (Lin, 2007b). REW was measured by four items adapted from Lin (2007b).

Table 4.6: Item measures of organisational rewards

Item code	Description
REW1	I will receive a higher salary in return for my KS.
REW2	I will receive a higher bonus in return for my KS.
REW3	I will receive increased promotion opportunities in return for my KS.
REW4	I will receive increased job security in return for my KS.

Type of anchor: 1=Strongly Disagree to 5=Strongly Agree

Reciprocal benefits (RB) refers to the extent to which a person expects future benefits from their present KS with others (Hung et al., 2011). Reciprocal benefits were measured using three items adapted from Lin (2007b).

Table 4.7: Item measures of reciprocal benefits

Item code	Description
RB1	I strengthen ties between existing members of the university and myself.
RB2	I expand the scope of my association with other university members.
RB3	I expect to receive knowledge in return when necessary.

Type of anchor: 1=Strongly Disagree to 5=Strongly Agree

Psychological ownership of knowledge (POK) refers to the extent to which an employee performs KS activities in the organisation (Davenport and Prusak, 1998; Lin et al., 2009). A five-item scale measuring psychological ownership of knowledge was adapted from Dyne and Pierce (2004) and Han et al. (2010).

Table 4.8: Item measures of psychological ownership of knowledge

Item code	Description
POK1	I feel that the knowledge I have is mine.
POK2	I am willing to treat my own knowledge as if it belongs to every member in the university.
POK3	I feel a very high degree of personal ownership for the knowledge that I possess.
POK4	I believe that the knowledge I have acquired during the course of my job is my personal intellectual property.
POK5	Most of the people that work for this organisation feel as though they own the university.

Type of anchor: 1=Strongly Disagree to 5=Strongly Agree

Transformational leadership (TL) refers to “The transformational leader motivates followers to work for transcendental goals and for higher level self-actualising needs instead of immediate self-interests” (Bass, 1996, p.740 as cited in Rezvani et al., 2017). TL was measured using 13 items adapted from the Multifactor Leadership Questionnaire (Bass and Avolio, 1997). The scale included seven items for charisma, three items for intellectual stimulation, and three items for individualised consideration.

Table 4.9: Item measures of transformational leadership

Item code	Description
TL1	My supervisor instils pride in me for being associated with him/her.
TL2	My supervisor acts in ways that build other’s respect for him/her.
TL3	My supervisor talks about his/her most important values and beliefs.
TL4	My supervisor considers the moral and ethical consequences of decisions.
TL5	My supervisor emphasises the importance of having a collective sense of mission.
TL6	My supervisor talks optimistically about the future.
TL7	My supervisor expresses confidence that goals will be achieved.
TL8	My supervisor seeks differing perspectives when solving problems.
TL9	My supervisor suggests new ways of looking at how to complete assignments.
TL10	My supervisor gets me to look at problems from many different angles.
TL11	My supervisor considers me as having different needs from others.
TL12	My supervisor helps me to develop my strengths.
TL13	My supervisor spends time coaching me.

Type of anchor: 1= Never to 5= Always

Knowledge sharing behaviour (KSB) refers to the extent to which an employee performs KS activities in the organisation (Davenport and Prusak, 1998; Lin et al., 2009). KSB was measured by five items adapted from examinations of Davenport and Prusak (1998) and Hsu et al. (2007).

Table 4.10: Item measures of knowledge sharing behaviour

Item code	Description
KSB1	I frequently participate in KS activities in my department or/and the university.
KSB2	I usually spend a lot of time conducting KS activities in my department or/and the university.
KSB3	When participating in my department or/and the university, I usually actively share my knowledge with others.
KSB4	When discussing a complicated issue, I am usually involved in the subsequent interactions.
KSB5	I usually involve myself in discussions of various topics rather than specific topics.

Type of anchor: 1= Never to 5= Always

The quality of transactive memory systems (TMS) refers to the extent to which team members are able to recognise and utilise the knowledge and expertise of other team members in a group in the organisation (Ariff, 2013; Brandon and Hollingshead, 2004). The quality of TMS was measured using six items taken from Ariff's research (2013).

Table 4.11: Item measures of transactive memory systems quality

Item code	Description
<i>Who knows what (WKW)</i>	
WKW1	I have a good understanding of the skills that my colleagues possess.
WKW2	I know the specific expertise that my colleagues possess.
WKW3	I have a good understanding of the knowledge that my colleagues possess.
<i>Who does what (WDK)</i>	
WDW1	I know the task responsibilities of my colleagues.
WDW2	I know my task responsibilities.
WDW3	When I need some tasks to be performed, I know which colleague to ask for help/guidance.

Type of anchor: 1= Never to 5= Always

Innovative work behaviour (IWB) refers to the degree to which a member behaves to create, promote, and implement new ideas in a group or organisation (Janssen, 2000). Finally, nine items adapted from Janssen (2000) were used to measure IWB.

Table 4.12: Item measures of innovative work behaviour

Item code	Description
Idea generation (IGE)	
IGE1	I create new ideas for difficult issues.
IGE2	I search out new working methods.
IGE3	I generate original solutions for problems.
Idea promotion (IPR)	
IPR1	I mobilise support for my new ideas.
IPR2	I make important organisational members enthusiastic for my new ideas.
IPR3	I acquire approval for my new ideas.
Idea implementation (IIM)	
IIM1	I transform my new ideas into useful applications.
IIM2	I introduce my new ideas into the work environment in a systematic way.
IIM3	I evaluate the utility of my new ideas.

Type of anchor: 1= Never to 5= Always

The summarisation of the operationalisation of constructs and their items is presented Tables 4.13.

Table 4.13: Codes and measurement scales of constructs and questionnaire items

Latent variable	Item code	No.	Scale type
Subjective norm (SN)	SN1, SN2, SN3	1-3	1. SD → 5. SA
Trust (TRU)	TRU1 to TRU6	4-9	1. SD → 5. SA
Knowledge self-efficacy (KSE)	KSE1 to KSE4	10-13	1. SD → 5. SA
Enjoyment in helping others (EHO)	EHO1 to EHO4	14-17	1. SD → 5. SA
Expected organisational rewards (REW)	REW1 to REW4	18-21	1. SD → 5. SA
Reciprocal benefits (RB)	RB1, RB2, RB3	22-24	1. SD → 5. SA
Psychological ownership of knowledge (POK)	POK1 to POK5	25-29	1. SD → 5. SA
Transformational leadership (TL)	TL1 to TL13	30-42	1. Never → 5. Always
Knowledge sharing behaviour (KSB)	KSB1 to KSB5	43-47	1. Never

Latent variable	Item code	No.	Scale type
			→ 5.Always
Quality of transactive memory systems		48-53	1. Never → 5.Always
• <i>Who knows what (WKW)</i>	<i>WKW1, WKW2, WKW3</i>		
• <i>Who does what (WDK)</i>	<i>WDK1, WDK2, WDK3</i>		
Innovative work behaviour		54-62	1. Never → 5.Always
• <i>Idea generation (IGE)</i>	<i>IGE1, IGE2, IGE3</i>		
• <i>Idea promotion (IPR)</i>	<i>IPR1, IPR2, IPR3</i>		
• <i>Idea implementation (IIM)</i>	<i>IIM1, IIM2, IIM3</i>		

Note: No. is the number of item in the questionnaire; Strongly Disagree (SD); Strongly Agree (SA)

4.4.1.5 Piloting the questionnaire

The aim of this step is to avoid potential biases and improve the accuracy and validity of the data through two objectives. The first objective is to verify the questionnaire and instructions whether they could be well understood (Bourque and Fielder, 2003). Additionally, it is to ensure that the wording and content are free of problems which may help the respondent completing the survey more easily (Bourque and Fielder, 2003).

With regards to the content and length of the survey questionnaire, except for the questions used for measuring relevant constructs in the model, only four questions of demographics section was included such as gender, age, qualification, and working experience. Sensitive questions such as place of work, revenue, and name were avoided. Furthermore, to help the respondents express their opinions openly, the researcher intentionally placed this part at the end of the questionnaire. The information about place of work (department/unit/university) of each participant was collected by the administrative staff at each departments of within the selected university.

Regarding to the wording and language used, after being developed from the reviewed literature and finalised from the workshop series, the questionnaires (both Vietnamese and English versions) were piloted in two steps. Firstly, a draft questionnaire in English was tested by professors and experts to verify that the wording and content are free of problems. The comparability of the English and Vietnamese versions of the questionnaire was double checked by two language experts (NAATI - the National Accreditation Authority for Translators and Interpreters), and revised where necessary (Craig and Douglas, 2000). Secondly, a total of 25 teachers (volunteers) from four public universities in Vietnam were given the questionnaires and asked to examine it for

relevance, meaningfulness and clarity (Lin, 2007a). The participants examined the revised questionnaires including both those from English speaking backgrounds and non-English speaking backgrounds. The questionnaires were also structured as clear as possible.

4.4.2 Data collection

This section presents the processes of data collection for Phase I - quantitative method. As discussed earlier, this study applied the sequential mix-method approach, so that quantitative and qualitative data collections were separated.

4.4.2.1 Research participant sampling

This research carried out an empirical investigation in the context of Vietnamese universities in Vietnam to examine the relationships between factors influencing KSB leads to innovative work behaviour. This study, therefore, limited the research participants (survey population) to the pre-determined category, namely, academic staff working in the respective public universities in Vietnam. The rationale of this selection is uncomplicated and fairly simple. Adams (1993) recommended that the way to figure out what is happening is asking those who are making it happen as well as those to whom it is happening. As discussed earlier, the objectives of research have provided a fascinating insight into what is happening at the individual levels (KSBs: responses or actions) of the public university settings and how key factors of the research model are perceived by academic staff. Thus, the research asked academic staff who are directly involved in KS activities with their colleagues in the four public universities under investigation. Additionally, Vietnamese academic staff often have a strong background, years of experience in IT, and their daily work involved in KS activities.

Identifying the sampling strategies and the approaches are necessary that help the research to establish validity of the data (Creswell, 2009). Random sampling is most commonly used for quantitative data method. It helps each participant has an equal probability of being selected, and the sample is enable to be generalised to the larger population (Creswell, 2009). Consequently, a collection of sampling units chose for the present research was identified from the Ministry of Education and Training (MOET), Vietnam. Four public universities were randomly selected from the list of 37 public universities in the North of Vietnam published by MOET, Vietnam.

Regarding sample size, a sample size in the 200 or greater offered as a benchmark, widely utilised by researchers in Structural Equation Modelling (SEM), was selected for this study (Kline, 2005; Hair et al., 2010). This selection ensured the adequacy of statistical analysis results. The rule of thumb suggested by researchers that sample size is minimum 5:1 ratio of observations to variables (Hair et al., 2010; Schumacker and Lomax, 2010). In this study, the selected sample size of 785 for 66 variables (questions) of the questionnaire presents a sufficient basis for the intended data analysis techniques.

4.4.2.2 Survey implementation procedure

The main data collection procedure is presented in Figure 4.4. The steps below discuss each of the processes.

Step 1 (Approval letters): To gain access to the research sites, before the survey implementation, four emails were written to the leaders of four selected universities. These emails included the information sheet and questionnaires to provide an overview of the research and to seek approval from the universities for the data collection at the four selected universities. In response, the Presidents or Vice Presidents of these universities granted permission in the letters expressing strong support and explicitly calling on all their departments (faculties, centres) to participate in this research (see Appendix 4). The approval letters were significant for the next stage of data collection. These letters were then delivered to the heads of departments requesting their supports.

Step 2 (Determining potential participants): In order to get high response rate of the survey, the researcher met all heads (vice dean/dean/director) of respective departments at the selected universities to introduce the research (i.e. information sheet, consent form and the questionnaire) and determine the possible number of participants of their faculties.

Step 3 (Delivering questionnaires to coordinators): Previously, the researcher worked as IT expert at the Ministry of Education and Training (MOET), and held a manager position at a famous university in Vietnam. Therefore, to keep away from any possible impact of prior administrative relationships between the respondents and the researcher, the questionnaires with the cover letter were distributed to and gathered via the administrative staff as the coordinators of the respective departments before being returned in closed envelopes to ensure voluntary participation and the anonymity of the respondents.

Step 4 (Collecting data): In Vietnam, departments or faculties in the university often held the research workshops, conferences, or year-end staff meetings from October to December. To facilitate the highest response rate, the coordinators delivered the questionnaires at those meetings with a large presence of staff. Respondents could either complete and returned the questionnaire at the meeting or could complete it later within the deadline in the questionnaire. In appreciation of respondents' time and effort of completing the survey, some Australian special cakes were served at the meetings. Follow-up reminders were also made to ensure maximum response rates. The coordinators categorised the returned questionnaires by place of work (department and university).

Finally, at the end of December 2016, of the 785 questionnaires has been distributed, 588 questionnaires were returned, representing a high response rate of 74 per cent. The response rate exceeded the required minimum sample size, allowing the conclusion of the data collection.

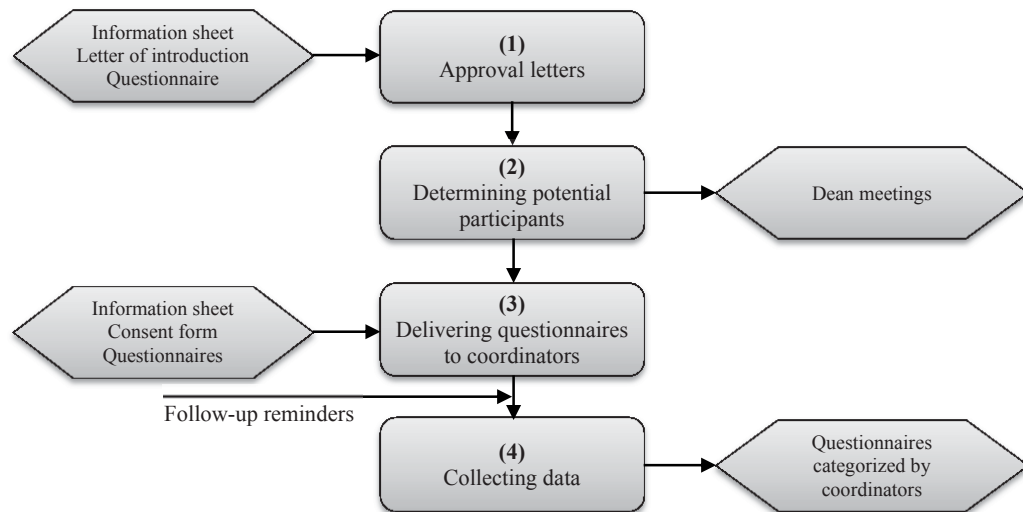


Figure 4.4. Main data collection process

4.4.3 Data analysis techniques

This study applied three sets of quantitative analysis. Firstly, descriptive statistics was conducted to find out if the data was ready to continue to the multivariate data analyses step (participants' profiles and data preparation by missing value, studying normality, means, standard deviations and standard error of the mean); measurement scale analysis was used to capture the meaning of each model construct through an assessment of reliability and validity (Cronbach's alpha). In addition, item-total correlations were used

to assess the extent to which a particular item belonged to its scale. Secondly, the validity of the measurement using an Explanatory Factor Analysis (EFA) was applied to uncover underlying factors of latent constructs as well as to eliminate items with a poor contribution over associative factors. Finally, this study utilised a two-step approach of Structural Equation Modelling (SEM) to confirm and validate the results of EFA through Confirmatory Factor Analysis (CFA) and examine the causal relationships of the model. The IBM Statistical Package for the Social Sciences (SPSS) 22.0 and Analysis of Moment Structure (AMOS) 22.0 were used to perform Cronbach's alpha, EFA, CFA and SEM in this study.

The following sections elaborate on steps towards conducting factor analysis and SEM.

4.4.3.1 Factor analysis

Factor analysis primarily aims to investigate relations between sets of observed and latent variables. In using this technique to analyse data, the researcher ascertains which sets of indicators share common variance–covariance characteristics that define covariance characteristics that define underlying latent variables (i.e. factors) (Schumacker and Lomax, 2010; Byrne, 2016). Factor analysis is still a common and primary technique for many researchers to carry out measurements-related investigations (Kline, 2015). There are two basic kinds of factor analyses: Explanatory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). EFA is used to discover the underlying structure of a relatively large set of variables. On the other hand, CFA confirms and validates the results of EFA (that structure). Consequently, these factor analyses (EFA and CFA) to SEM, then, were thought of as a complementary choice for this study. This combination of EFA and CFA is effective in testing a better measurement scale (Gerbing and Anderson, 1988).

4.4.3.1.1 Exploratory Factor Analysis (EFA)

The researcher conducted an EFA prior to doing a SEM (including CFA) in this study because of the following reasons:

- As discussed above, all items of the current research instrument were adapted from prior studies and an extensive literature review into the knowledge-sharing behaviour context in an Asia developing country. In this context of study, the current sample substantially differs from that previous research as well as these measured variables had not been operated extensively.

- Although the proposed research model was developed based on previously tested empirical research, it has not been tested (Bates et al., 2007).
- It is essential to conduct an EFA so that the researcher can be assured that the measures are valid and reliable prior to doing an SEM. Otherwise the researcher will not know if it can be relied on the findings from SEM. In general, an EFA prepares the data set to be used for cleaner SEM.
- EFA is widely utilised in empirical IS research to detect multivariate data structures (Treiblmaier and Filzmoser, 2010).

Exploratory Factor Analysis (EFA) procedure

This study has applied the 3-step approach in carrying out factor analysis (Pallant 2010). The first step is to assess the suitability of the data for factor analysis. The second step concerns the factor extraction. The third is to rotate and interpret the factors formed in the second step (Hair et al. 2010). Details of each step are discussed below:

Step 1: Assessing the suitability of the data for factor analysis

This step involves two main issues to examine whether a specific dataset is appropriate for factor analysis: sample size and the strength of the relationship among the variables (or items) (Pallant, 2010). The factor analysis assumes that at least some correlations exist among the variables which coherent factors are able to be identified. The researcher must examine the factorability of the correlation matrix. There are three criteria to test the data factorability. The first criterion is the values of the anti-image correlation matrix recommended by Tabachnick and Fidell (2007). The next two criteria are the most of common ways to examine the factorability of the correlation matrix: Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity. KMO estimates sampling adequacy for each variable while Bartlett's test examines the overall significance of the correlation matrix (Hair et al., 2010; Tabachnick and Fidell, 2007). The acceptable threshold value of KMO is 0.5. Additionally, the statistical significant Bartlett's test (sig. < .05) shows that sufficient correlations exist among variables to proceed. The sample size employed in the current study is the desired ratio of 5 observations per variable, with the minimum of 100 observations.

Step 2: Selecting the factor extraction method

The purpose of factor extraction is to determine the smallest number of factors that are able to be employed to best represent the interrelationships between the set of variables

(Pallant, 2010). There are several approaches to executing factor extraction. According to Hair et al. (2010), researchers can select the extraction method based on two criteria: (1) the objective of the research and (2) the amount of prior knowledge about the variances in the indicators. Component analysis (Principal Components Analysis - PCA) is recommended to be utilised when the study aims to summarise most of the original data (variance) in a minimum number of factors for prediction purposes. By contrast, when the objective is primarily to identify underlying factors that reflect what the variables share in common, the common factor analysis, also known as Principal Axis Factoring (PAF) is recommended. Given the benefits of the PCA and the common use of it in empirical IS studies, this study has utilised the PCA extraction method (Treiblmaier and Filzmoser, 2010).

Determining the number of factors to be extracted

It is important to any researcher to decide how many factors should be retained after extraction. Hair et al. (2010, 2013) recommended the following criteria for the number of factors to be extracted.

- Latent root criterion (eigenvalues): It is the most widely used technique as it is easy to utilise for both PCA and PCF. The rationale is that any single factor should explain for the variance of at least a unique variable if it is to be kept for interpretation. The factors with eigenvalues higher than 1.0 are considered significant.
- A priori criterion: It is a simple, reasonable criterion that allows the investigator to determine the number of factors to extract before performing the factor analysis. If the desired amount of factors has been found, the investigator can stop the analysis by the computer software. This method is helpful when testing a theory or hypothesis regarding the number of factors to be extracted. It is also useful in seeking for replication of previous research findings through extracting the same number of constructs. Based on that, the researcher can decide the appropriate number of factors.
- Percentage of variance criterion: The aim is to guarantee practical significance for the extracted constructs by guaranteeing that they account for at least a particular portion of variance. There are no absolute thresholds for all applications. However, enough constructs to satisfy a specific percentage of variance explained, must be usually 60% or higher.

- Scree test criterion: It incorporates evaluating the graph of the eigenvalues and scanning for the bend in the dataset where the curve flattens out. The amount of data points above the “break” is commonly the number of constructs to keep.

This study adopted the latent root criterion (eigenvalues) and the percentage of variance criterion because they are the most widely used technique in EFA.

Step 3: Factor rotation and interpretation

After all factors have been analysed, the investigator then focuses on interpreting the factors. Interpreting the results of factor extraction addresses two issues: rotation of factors and interpreting the factor matrix.

Factor rotation is the most important tool in interpreting factors (Hair et al., 2010). It enables the researcher to interpret a factor structure and choose a final factor solution. There are two primary techniques to rotation: either orthogonal (uncorrelated) or oblique (correlated) factor solutions. Orthogonal techniques results in solutions that easier to interpret and report, however, realistically there are a small number of constructs in the real world that are uncorrelated (Pallant, 2010). In contrast, oblique rotations allow for the factors to be correlated, which often produces more accurate results for research involving human behaviours (Williams et al., 2012). Thus, the Promax rotation method (an oblique technique) was adopted as this research assumed that the factors were correlated with each other, and Promax helps to examine the extent of correlation between factors (Pallant, 2010).

The next task is interpreting the factor-loading matrix to identify the structure among indicators which at first is immense. The researcher followed the 5-step procedure to interpret the complex interrelationships represented in the factor matrix (Hair et al., 2010):

1. Examine the factor matrix of loadings: Each indicator has a factor loading value represent in a factor-loading matrix.
2. Identify the significant loadings for each variable: A decision must then be made with regards to the factor loadings worth examination and attention. This research set a threshold value of 0.50 or higher for practically significant. Indicators that double-loaded (a cross-loading) or contributed less than 0.5 to the factor were removed.

3. Access the communalities of the items: Once the researcher has identified the significant loadings of all variables based on the threshold, it is necessary to evaluate all of them with communalities less than 0.5 that are not adequately accounted for by the factor solution.
4. Re-specify the factor model if needed: After the above steps, research may face some problems such as: (i) an item has no significant loadings; (ii) the communality is deemed too low; or (iii) an indicator has a cross-loading. To deal with these problems, the researcher can (a) ignore those problematic variables; (b) delete them; (c) deploy an alternative rotation method; (d) decrease or increase the number of factors retained; and (e) modify the type of factor model used (component versus common factoring).
5. Label the factors: Labelling factors is a subjective, theoretical, and inductive process in which “the meaningfulness of latent factors is ultimately dependent on researcher definition” (Henson and Roberts, 2006). An acceptable factor solution had been derived in which all items had a significant loading value on the number of factors. The researcher next named the factors that accurately reflect the variables loading on those factors.

4.4.3.1.2 Confirmatory Factor Analysis (CFA)

Recalling the primary aim of using EFA is to determine the factors of the measurement scales and their structure by which the model constructs are deemed to be measured. Nevertheless, assessing constructs' validity and unidimensionality is indispensable in measurement theory and requires a more complicated technique than EFA (Hair et al., 2010). The emergence of CFA through SEM has been commonly used by researchers because it has the ability to examine the validity and unidimensionality of the constructs (Byrne, 2001). In this study, CFA, used as the first step of the two-step SEM approach, represents what has been termed a measurement model, will be discussed in the next section.

4.4.3.2 Structural Equation Modelling (SEM)

4.4.3.2.1 The selection of an SEM approach

In this study, SEM was used to test the proposed research model and hypotheses (Hair et al. 2010). SEM, as a second generation approach of regression analysis, is a family of statistical models that attempt to account for the relationships among multi-variables. In the regression approach, the researcher can only analyse the relationship of one or

more independent constructs with one dependent construct. By contrast, SEM enables researchers to simultaneously estimate the interrelation among multiple dependent and independent constructs (Haenlein and Kaplan, 2004). SEM is known as a covariance structure analysis or a covariance-based SEM as it uses a variance-covariance matrix among observed variables to estimate latent variables (Gefen et al. 2000; Kline, 2005; Schumacker and Lomax, 2010; Hair et al., 2010). This covariance-based technique supports the estimation of multi-dependence factors and also formulates the relationships among latent constructs and indicators through the measurement model and structural model (Kline, 2015).

This study chose SEM because of its powerful advantages as follows:

1. Its ability to estimates multiple and interrelated dependence relationships; and the power to involve and represent unobserved constructs in these relationships and ability to correct for measurement errors in the estimation process (Hair et al., 2010).
2. Its ability to deal with multiple observed variables to better understand their field of research enquiry which is impossible to tackle with the basic statistical methods that only utilise a limited number of variables (Schumacker and Lomax, 2010).
3. Its ability to define a model to explain the entire set of relationships with an increased capability to simultaneously estimate the interrelation between multiple independent (exogenous) and dependent (endogenous) variables in one operation (Hair et al., 2010; Schumacker and Lomax, 2010; Kline, 2015).
4. SEM performs multi-group analysis to compare the different models (Kline, 2015) from transformational leadership and the quality of transactive memory systems levels of this study.
5. It provides a number of indices to evaluate the model fit (Kline, 2015; Schumacker and, Lomax 2010).

4.4.3.2.2 Basic concepts of SEM

Observed variables and latent variables

In SEM, there are two main types of variables: latent (construct) variables and observed (indicator) variables (Schumacker and Lomax, 2010). The latent variables are also known as unobserved variables, unmeasured variables or factors. Latent variables cannot be observed or measured directly, and thus they can be inferred from a set of observed variables that researchers choose to define those latent variables (Schumacker and Lomax, 2010). For example, a latent variable in knowledge-sharing behaviour research is expected organisational rewards which represent a motivation construct. Expected organisational rewards cannot be directly observed. However, it can be indirectly measured through observed variables or indicators, such as a monetary return. Unlike latent variables, observed variables, also known as measured or manifest variables, can be measured directly by using means such as items in a survey questionnaire (Byrne, 2016). In the context of SEM, observed variables also serve as indicators of the underlying construct that they are presumed to represent (Byrne, 2016). For example, the items from 18-21 in the survey questionnaire of this study were used to measure the expected organisational rewards construct (extrinsic motivation).

Exogenous versus endogenous latent variables

In using SEM models, it is the benefit of distinguishing between latent variables that are exogenous and those that are endogenous (Byrne, 2016). Exogenous latent variables are synonymous with independent variables. These variables “result in” fluctuations in the values of other latent variables in the model (Byrne, 2016). The model does not account for the changes in the values of exogenous variables; rather, they are said to be predicted by other factors external to the model. Endogenous latent variables are dependent variables and, thus, are predicted by the exogenous variables in the model, either directly or indirectly (Byrne, 2016). Fluctuation in the values of endogenous variables is considered to be accounted for by the model.

Measurement errors

Measurement error is the extent to which the variables researchers can measure do not absolutely represent the latent construct(s) of interest (Hair et al., 2010). Measurement error can be caused by simple data entry errors or definition of constructs that are not completely defined by any set of observed variables. In practice, having no

measurement errors is not real to all constructs, even they defined by the best indicators (Hair et al., 2010). Thus, minimising the amount of measurement error is a major objective of any researcher. SEM can take measurement error into account to yield more exact estimations of the relationships between constructs.

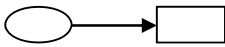



Residual

Unlike measurement errors that represent errors related to unobserved variables, residuals represent the differences between the observed and estimated covariance matrices (Hair et al., 2010). In other words, residuals are the reference between estimated and actual values for any relationship.

Symbol notation

There are four geometric symbols used to portray SEM models: a circle (or ellipse), a square (or rectangle), a single-headed arrow, and a double-headed arrow. By convention, unobserved latent factors are represented by circles (or ellipses), indicator variables are depicted by squares (or rectangles), the influence of one variable on another is represented by single-headed arrows, and double-headed arrows are used to portray the covariance or correlation between two variables (Byrne, 2016). These symbols are used to build a SEM model within the framework of four basic configurations which are described in Table 4.14 (Byrne, 2016).






Table 4.14: The framework of basic configurations in SEM model

Configuration	Description
	Path coefficient for regression of an observed variable onto an unobserved latent variable (or factor)
	Path coefficient for regression of one factor onto another factor
	Measurement error associated with an observed variable
	Residual error in the prediction of an unobserved factor

The path diagram

According to Byrne (2016), the path diagram is used to visually depict the relations that are assumed to be existed among the variables under study. Table 4.15 summarises the general path notations.

Table 4.15: Summary of path diagram notations

Configuration	Description
	Measured variable, observed variable, indicator
	Latent variable, construct, unobserved variable, factor
	Causal relationship
	Correlation, Covariance
	Residual to a variable

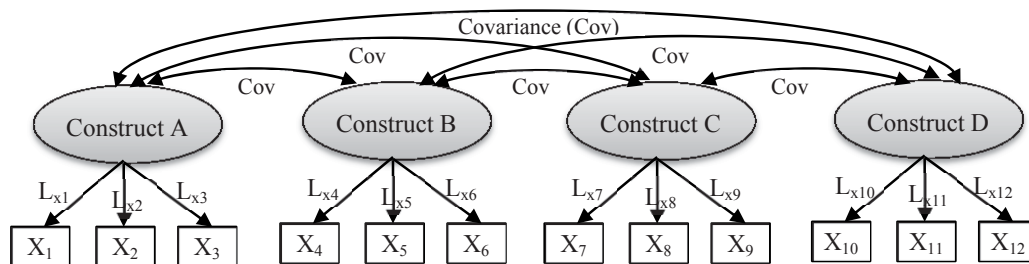
Measurement model

A measurement model is an SEM model that (a) specifies the observed variables for each the latent variable and (b) provides an assessment of convergent and discriminant validity (Hair et al., 2010). In other words, the specification of the measurement model is to define the relationships between indicators and constructs (Schumacker and Lomax, 2010). In SEM, the measurement model is a confirmatory factor model (CFA) (see Figure 4.5.a). This is the first step of a two-step SEM approach in a complete structural model analysis.

Structural model

If the constructs are measured well, the researcher then specifies the structural model to point out how these constructs (independent and dependent latent variables) are related (Schumacker and Lomax, 2010). The structural model (see Figure 4.5.b) involves a number of one or more dependent relationships linking the hypothesised model's constructs together which benefits in depicting the inter-relationships of variables between constructs in a theoretical model (Hair et al., 2010). The structural model enables an assessment of nomological validity (Schumacker and Lomax, 2010).

(a) Measurement model



X_1, X_2, \dots, X_{12} : Observed (indicator) variables; Construct A..., Construct D (exogenous): Latent (construct) variables.
 L_1, L_2, \dots, L_{12} : Relationships between the latent constructs and respective measured variables (Factor loadings)
Cov: The correlational between constructs

(b) Structural model

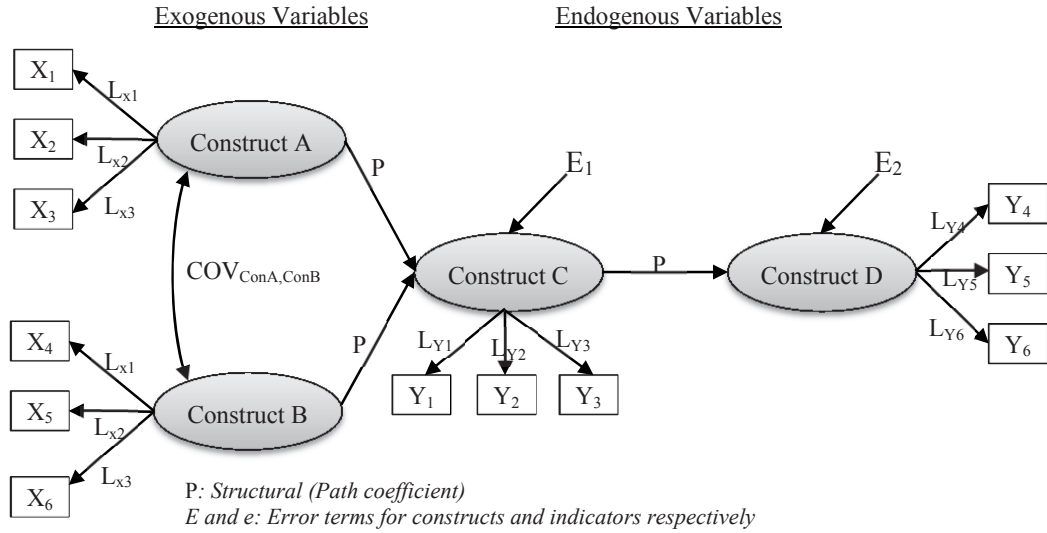


Figure 4.5. Measurement model and structural model of structural equation models

Note: The error variance terms for the loadings are omitted from the diagram for simplicity. However, in SEM path diagrams, each error term is included.

4.4.3.2.3 The selection of an SEM approach

This study used the two-step approach to SEM proposed by (Gerbing and Anderson, 1988) which combines the analysis of two conceptually distinct models: a measurement model (CFA), followed by the structural model (regression model). This approach was chosen as it is simpler, and does not require four or more indicators per construct (Kline, 2015). Using this approach, the researcher first tested the fit and construct validity of the initial measurement model (Stage 1 to 4 of six stages in SEM, see Figure 4.6). Once a satisfactory measurement model is secured, then researchers test the structural theory (Stage 5 and 6). Hence, both of measurement and structural model totally assess fit and validity (Hair et al., 2010). The following sections discuss the assessments of measurement and structural model that makeup SEM applied in this study. Figure 4.6 shows the two-step SEM approach (Gerbing and Anderson, 1988) based on six stages of SEM (Hair et al., 2010) selected for this study.

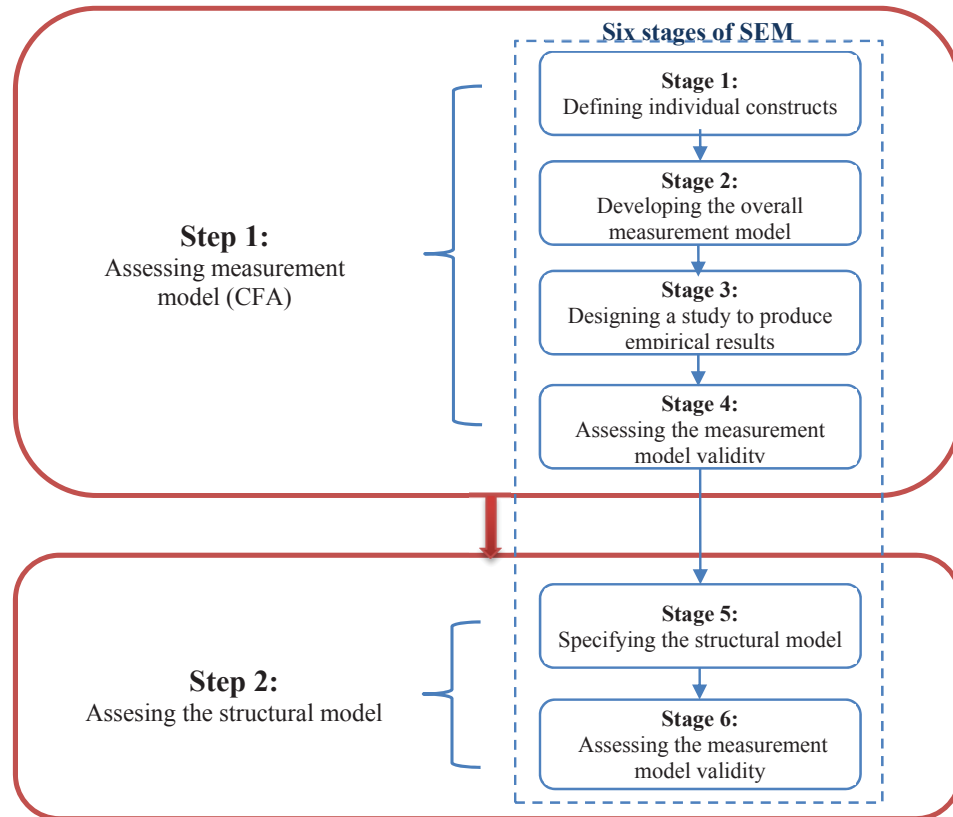


Figure 4.6. The two-step SEM approach based on six stages of SEM

4.4.3.2.4 The basics of Goodness-of-Fit

Once researchers have estimated the specified model, model fit, then, compares the theory to reality by assessing the similarity of the estimated covariance matrix (theory) to reality (Hair et al., 2010). In other words, the model fit examines the extent to which the theoretical model fits the observed data. To do this, a mathematical comparison of these two matrices is conducted. The closer values of any Goodness-of-Fit (GOF) result from this comparison are to each other, the better a model is deemed to fit (Hair et al., 2010). The criteria below are used to assess the fit for both the measurement model and the structural model.

Types of Model-Fit Criteria

There are three commonly used types of model indices for assessing model fit: Absolute fit indices, Incremental fit indices and Parsimony fit indices (Hair et al., 2010; Schumacker and Lomax, 2010; Kline, 2015).

- **Absolute fit indices:** Absolute fit is a direct measure of how well an a priori model explains the observed data (Kline, 2015; Hair et al., 2010). Given that,

absolute fit indices provide the most fundamental examination of how well a researcher's theory fits the sample data. Absolute fit commonly used is chi-square (χ^2), the difference in the observed and estimated covariance matrices, which is the primary value in assessing the model fit of any SEM model (Hair et al., 2010). The chi-square is also known as the generalised likelihood ratio statistic.

Three values related to assess the absolute fit of a model are: the value of χ^2 , degree of freedom (*df*), and *p*-value compared with the significance level. A model is deemed to have a good fit if the value of χ^2 is non-significant ($p > 0.05$). By contrast, if the value of χ^2 is significant ($p < 0.05$) then the model does not fit the sample data (Hair et al., 2010). There have been many alternative measures of fit impacted by the χ^2 issues to correct for the bias against large sample size and increased model complexity such as goodness-of-fit indices (GFI), adjusted goodness-of-fit indices (AGFI), root mean square error of approximation (RMSEA), and the root mean square residual (RMR), and normed chi-square (χ^2/df), (Hair et al., 2010; Gefen et al., 2000; Schumacker and Lomax, 2010). The GFI and AGFI indices are used to compare the fit of two different models with the same data or compare the fit of a single model using different data. The possible ranges of GFI and AGFI values are between 0 and 1, with the higher value indicating well-fitting models (Hooper et al., 2008; Hair et al., 2010). RMSEA is the most commonly used to correct for the tendency of the χ^2 to reject models with a large sample or a large set of indicator variables (Hair et al. 2010). The lower RMSEA values show the better fit. This study used the cut-off value of 0.80 to assess RMSEA index (Hair et al., 2010; Byrne, 2001). RMR is used to evaluate the degree of discrepancy between the hypothesised model covariance matrix and the sample covariance matrix. RMR with a value of 0.05 or less is indicative of a well-fitting model (Hair et al. 2010). Normed chi-square (χ^2/df) in the order of 3:1 or less indicates the better-fitting models (Hair et al., 2010).

- **Incremental (relative or comparative) fit indices:** They assess how well the researcher's model fits relative to some alternative baseline models (known as independence or null model). Three incremental indices have emerged as variants for comparing alternative models: the Tucker–Lewis index (TLI) or Bentler–Bonett nonnormed fit index (NNFI), the Bentler–Bonett normed fit

index (NFI), and the comparative fit index (CFI) (Schumacker and Lomax, 2010). The TLI index is used in comparing alternative models or a proposed model against a null model. It ranges from 0 to 1, and the model with good fit has a value that approach 1, the higher value a model has, the better the fit suggested. One of the original incremental fit indices is the NFI which is a measure that rescales chi-square into a 0 (no fit) to 1.0 (perfect fit) range (Schumacker and Lomax, 2010). A model with perfect fit would generate an NFI of 1, and with a good-fit when NFI is greater than 0.90 (Byrne, 2001; Hair et al., 2010). The CFI is an improved version of the NFI. The CFI is normed so that values range from 0 to 1, with higher values showing better fit. The CFI values of above 0.90 are commonly related to a model that fits well (Hair et al., 2010).

- **Parsimony fit indices:** The purpose of parsimony fit indices is specifically to provide information about which model among a set of competing models is best, considering its fit relative to its complexity. This study used two parsimony indices developed by Mulaik et al. (1989): Parsimony Goodness-of-Fit Index (PGFI) and Parsimonious Normed Fit Index (PNFI). The PGFI is based on the GFI through adjusting for the loss of degree of freedom, while the PNFI is based upon the NFI which also adjusts for degree of freedom (Hooper et al., 2008). The values of PGFI and PNFI range from 0 to 1. It is acceptable to achieve the parsimony fit indices with the cut-off value of 0.50 (Mulaik et al., 1989).

Table 4.16 summarises the model-fit criteria and acceptable thresholds of fit indices applied in this study.

Table 4.16: Model-fit criteria and acceptable level

Measures of fit	Acceptable value	Reference
Chi-square (χ^2)	Non-significant (χ^2) at least p -value >0.05	
Degrees of freedom (df)		Mulaik et al. (1989), Chau and Hu (2001), Byrne (2001), Hooper et al. (2008), Hair et al. (2006, 2010, 2013)
Absolute Fit Measures		
GFI	> 0.90	
AGFI	> 0.80	
RMSEA	< 0.80	
RMR	< 0.05	
χ^2/df	< 3	

Measures of fit	Acceptable value	Reference
Incremental Fit Indices		
NFI	> 0.90	
TLI (NNFI)	> 0.90	
CFI	> 0.90	
Parsimony Fit Indices		
PGFI	> 0.50	
PNFI	> 0.50	

4.4.3.2.5 The selection of the estimation method

In order to calculate estimates for parameters in the SEM models, researchers have to select the estimation method to use. The choice of the estimation method for this study is Maximum Likelihood (ML). ML, also known as the most widely used technique, has been adopted to estimate regression parameters to generate rigorous results for the model parameters and fit indices (Shah and Goldstein, 2006).

4.4.3.2.6 Assessment of Measurement Model

In the two-step SEM approach, the first step is to test the measurement model. Hair et al. (2010) suggested that it is essential to test the measurement model separately via the two-step SEM approach as structural theory tests cannot be carried out with bad measures. This first step uses Confirmatory Factor Analysis (CFA) to validate the hypothesised measurement models that define the relationships between the measured variables and latent variables (constructs). By doing this, the researcher can empirically examine the proposed theoretical model. In CFA, the researcher is required to specify the number of factors that exist for a set of variables and which factor each variable will load on before computing the results. In the next sections, the researcher focuses on four stages covered in the CFA analysis from identifying model constructs to evaluating the measurement model validity suggested by Hair et al. (2010).

Stage 1: Defining individual constructs

The first stage is to define the individual constructs. In this step, the researcher lists all constructs that will constitute the measurement model.

Stage 2: Developing the overall measurement model

The second is to develop the overall measurement model. Following this step, it is necessarily required to carefully assess how all of these listed constructs will come together to form an overall measurement model. In this model, each indicator will be

allocated to each factor. According to Hair et al. (2010), in practice, each factor should have at least three items (measured variables or indicators).

Stage 3: Designing a study to provide empirical results

Hair et al. (2010) recommended that the next step involves considering two issues including sample size and model specification. In this study, the rule of thumb of a sample size of 100-150 would be acceptable which will be presented further in Chapter 4. Finally, by using the graphical interface, the researcher uses software programs to draw the model ready to run the assessment of validity.

Stage 4: Accessing measurement model validity

The fourth stage is to assess the measurement model validity. After specifying correctly the measurement model, the researcher estimates an SEM model that allows examining how well the pre-specified theory fits the reality as represented by the empirical data. This estimation involves some key issues which are discussed below:

Assessing fit:

Assessing the model fit allows examining all aspects of construct validity throughout the varied empirical measures (Hair et al., 2010). The researcher applied the guidelines for model fit presented in the previous section.

Assessing construct validity:

Assessing construct validity means that the researcher examines the degree to which a set of measured items reflects the theoretical latent constructs. It can be assessed through convergent validity and discriminant validity.

- Convergent validity is the extent to which indicators of a specific construct converge or share a high proportion of variance in common (Urbach and Ahlemann, 2010). It can be estimated in three ways: factor loadings, average variance extracted (AVE), and reliability. The rule of thumb is that the factor loading values should be at least 0.50, and preferably 0.7 to be considered significant. Moreover, AVE is a summary indicator of convergence which has the value of 50 per cent or higher will be recommended as adequate convergence. The cut-off value for construct reliability should be at least 0.70, and the value between 0.60 and 0.70 is acceptable.

- The discriminant validity is the degree to which a construct is clearly separate and different from other constructs in the measurement model (Hair et al., 2010). Fornell and Larcker (1981) proposed an approach to assess the discriminant validity. The criterion requires that a latent construct accounts for its measured items more than it does for other constructs. The discriminant validity can be ensured if each construct's AVE value is greater than the construct's highest squared correlation with any other construct (Urbach and Ahlemann, 2010; Hair et al., 2010).

Another important consideration in accessing measurement model validity is the construct unidimensionality. It refers to the ability of a set of indicator variables to measure the only one construct (Gerbing and Anderson, 1988). The unidimensionality can be achieved if the model fit indices is satisfied (Koufteros, 1999). Byrne (2001) recommended that a model has GFI and CFI values of 0.90 and above is considered adequate to represent unidimensionality (Byrne, 2001).

Table 4.17: Acceptable thresholds of convergent and discriminant validity

Used to test	Acceptable cut-off value	Reference
<i>Convergent validity</i>		
Factor loadings	≥ 0.50 (preferably 0.70)	Hair et al. (2006, 2010), Urbach and Ahlemann (2010)
AVE	$\geq 50\%$	
Construct (Composite) reliability (CR)	≥ 0.70	
<i>Discriminant validity</i>		
AVE	Square root of AVE greater than inter-construct correlations Maximum Shared Variance (MSV) < AVE	

4.4.3.2.7 Assessment of Structural Model

The second step of the two-step SEM approach involves the assessments of the measurement and structural modes. Once the measurement model has been considered sufficiently valid, researchers, then, tests a theoretical or structural model composed of these measures in which the major focus is to examine the relationship between latent constructs (Hair et al., 2010). In order to test the structural model, this study discusses two issues: specifying the structural model and assessing its validity. These are also known as stage 5 and 6 of the six-SEM stages process suggested by Hair et al. (2010).

Stage 5: Specifying the structural model

In this process, the researcher first examines how the theory is depicted by visual diagrams in which paths indicate the relationships from one construct to another based on the proposed research hypotheses. Then, the researcher clarifies which constructs are exogenous and endogenous. Finally, the structural model specification is accomplished by the transformation from the measurement model as the results found from the CFA model. The transformation involves a series of changes such as changing from exogenous to endogenous constructs.

Stage 6: Assessing the structural model

The researcher conducts the assessment of the structural model by assessing the structural model fit and examining the path coefficients and loading estimates. Although model fit is examined in the measurement model, it is needed to be done again in the structural model, in order to demonstrate sufficient exploration of alternative models (Hair et al., 2010). The criteria for evaluating structural model fit are still the same in assessing model fit of the measurement model presented above (Hair et al., 2010). Moreover, the value of path coefficients should exceed 0.10 at the significance level of 0.05 to account for a certain impact within the model (Urbach and Ahlemann, 2010).

4.5 Phase II - The qualitative method

As discussed in Section 4.2, this study chose the sequential explanatory design for its methodology. Following this approach, this study collected and analysed the quantitative data first, then collected and analysed the qualitative data in the second phase based on the findings from the initial quantitative results. Typically, a sequential explanatory strategy is applied to explain and interpret quantitative findings by gathering and analysing follow-up qualitative data (Creswell, 2009). Thus, this qualitative phase was used for further explanation of the important findings acquired from the quantitative data analysis in more detail. This research used the semi-structured interview data collection approach to collect data for the qualitative phase.

4.5.1 Qualitative data collection

This section discusses several parts to be considered for interview data collection encouraged by Creswell (2016). These parts range from the selection of participants to developing the interview protocol for recording information as follows:

- The rationale for using qualitative phase

- Study sites
- Permission obtained to research sites and participants
- Recruitment approach for motivating the participation of individuals
- Purposeful sampling of participants
- Demographics of participants
- Reciprocal benefits of the involvement
- Types of data collected
- The development of protocols

The rationale for using qualitative phase

As discussed above, the reasoning of using this qualitative phase was to explain and interpret important quantitative findings from the quantitative phase. This helped the researcher to understand more deeply the central phenomena of the current research topic (Creswell, 2016). According to Creswell (2016), the qualitative approach occurs in a particular context, usually the context where the research problems takes place. The context could be considered as the setting, context, or environments surrounding the study that are most important. The qualitative phase also provided several different perspectives from the current research sites that people could have on this research topic. The qualitative phase ensured that the central phenomena within Vietnamese university settings context could be adequately represented by the research model.

Study sites

This qualitative phase was connected to the quantitative phase through the intermediate point in the research process. Thus, the selection of the research sites for the qualitative data collection was the one in the quantitative phase. The study context for the qualitative phase was public universities in the North of Vietnam (see Section 4.5.2.1).

Permission obtained to research site and participants

The qualitative data collection takes permissions seriously because it takes place in the homes and workplaces of participants (Creswell, 2016). Thus, to gain access to the research sites and participants, this study needs to have permissions from both organisations and individuals. As discussed in Section 4.4.2.2 four emails were written to the leaders of four selected universities. The approval letters from these universities were significant for the next stage of qualitative data collection. Regarding individual permission, the researcher provided participants with the university approval letters, an

information sheet, a consent form, and an interview protocol. As requested by UTS Human Research Ethics Committee (HREC), the consent form for the interview contained important information such as the purpose of the study, the procedure used in the interviews, risks/inconvenience, the right of participants to voluntarily withdraw from the interviews and the confidentiality of provided information (see Appendix 4).

Purposeful sampling and recruitment strategy

Purposeful sampling refers to the process of selecting participants by recruiting individuals who are able to help inform the central phenomenon of this study. According to Creswell (2016), it is crucial to select participants for the qualitative research who have experienced the phenomenon that the study is investigating. Thus, the preferable participants (experts) selected for this study had a strong academic background, and/or work experience associated with the current research. They were recruited from four public universities in the quantitative data collection phase of this study. These criteria for the selection of participants were useful for quality assurance. The invitation letters were sent to seven participants via email with the information documents described above. Finally, seven interviewees (experts) were selected for Internet interviews via Skype or e-mails. The rationale for these selections was based on three reasons. First, it was challenging to find the experts with strong academic records, sufficient experience and knowledge in an emerging country context, such as Vietnam. Second, as presented above, this study used the mixed methods approach, in which the quantitative phase was mainly focused with limited the time devoted to the qualitative section. Finally, the Internet interview could be held “live” with participants by using software program (Skype) that allows interviewer and interviewees to have video conversations (face-to-face) on the Internet, and record the information directly on the computer (Free Video Call Recorder software).

Demographics of participants

It is important to include a detailed personal profile of the participants in the qualitative phase as it actually involves individuals in this research (Creswell, 2016). The participants’ profiles of this qualitative phase included the gender, age, educational level, and year of experience, position, and strengthen/experience. This profile provided a detailed understanding of the demographic characteristics of the participants (Creswell, 2016).

Reciprocal benefit for the participation

Reciprocal benefit refers to the researcher's giving back to the interviewees for their time, sharing information about their lives, or being observed in their homes or workplaces (Creswell, 2016). Since, the participations were in different locations at the time of interviews, the researcher thanked them with minor gifts (such as t-shirt, USB or Australian souvenir) or "Acknowledgement" letters.

Types of data collected

The next major concern of qualitative data collection was the decision of which type(s) are best for this study. The decision was made based on the purpose of this study discussed above and the advantages and limitations of types of data collection. This study used semi-structured interviews with prompted questions to explain and interpret important quantitative results of quantitative data analysis about different aspects associated with the central phenomenon of the study. The semi-structured interview also helped the researcher to gain insight into the current research issues (Hennink et al., 2011). The data was collected by using Internet interviews via Skype and e-mails. The advantages of online interviews were to encourage open exchanges and save cost and time for the researcher efficiently (Creswell, 2016).

The development of protocols for semi-structured interview

The interview protocol was used for collecting and recording data. It was developed based on the findings from the quantitative data analysis (see Appendix 3). The protocol was prepared in advance and used consistently for all of the interviews (Creswell, 2016). As show in Appendix 3, it is about two pages in length and includes some space between each question for taking notes. These important components of the protocol are briefly described as follows:

- Basic information about the interview: Recording the necessary information such as the names of both the researcher and interviewee, time, date.
- Introduction: Introducing the researcher; discussing the aim of the research; getting informed consent signature; providing the structure of interview (audio recording, taking notes); asking if the interviewee has questions; defining any terms necessary.
- Opening questions: Setting the interviewees at ease by providing the chance for them to talk about themselves (e.g. jobs, roles)

- Content questions with probes: Asking the interviewees to rate (1: Strongly Disagree to 5: Strongly Agree) the obtained findings of the quantitative phase. Each of these questions also included probes by using some open-ended questions begin with the word “what” or “how”. The probes encouraged interviewees to talk more and expanded the time of the interview to receive useful information.
- Closing instructions: The researcher gave “thank you” recognition to the interviewees and assured the confidentiality of the interviews. Moreover, the researcher asked the interviewee to follow-up with another interviews or explanations if one were necessary.

4.5.2 Pilot study

According to Hennink et al. (2011), it is not easy to predict how participants will interpret the questions they are asked in the interview protocol (see Appendix 3). Accordingly, the interview protocol was pilot-tested. The interviews were held in the Vietnamese language. Therefore, before being tested, the interview protocol was first translated into a Vietnamese version. The pilot-testing was conducted in two steps. First, a draft interview guide was tested by supervisors and two experts who had been selected from the research context of the quantitative phase. The below important aspects, as suggested by Hennink et al. (2011), were focused on:

- Was the interview protocol understandable to participants?
- How did the words, sentences and concepts adapt to the context of the participants?
- Could the research questions be answered with the information collected through the interview guide?

Second, the comparability of the English and Vietnamese versions of the interview protocol was double checked by two language experts (NAATI - the National Accreditation Authority for Translators and Interpreters), and revised where necessary (Craig and Douglas, 2000).

As a result of the pilot-testing the interview protocol was revised so that the wording and content were free of problems and the protocol was also structured to be as clear as possible.

4.5.3 Administering the interviews

This study adopted several steps mentioned by Creswell (2016) to conduct good interviews. In the total of seven interviews, six interviews were conducted via Skype software and Emails; each of these was approximately 30 minutes long. One interview was conducted via email only. Prior to the interviews, the researcher provided information sheets, consent forms, and interview guides (in Vietnamese) to the participants to give an overview of the research.

Arrange Skype and Audio recording software.

Before the interview, the researcher and the interviewee needed to set up Skype and audio recording software. The Internet connection and Skype were tested including the quality of Internet connection speed, the video, the audio, and the recorded audio file. The researcher only recorded the interviews into audio format file because the video was not necessary.

Arrange the setting for the interview

The researcher and interviewees tried to find quiet, comfortable locations that helped to minimise all audio distractions. The privacy of the venues was also considered for both ethical reasons and for motivating the interviewees to talk (Creswell, 2016). These locations were in the participants' homes or workplaces. A schedule was also made with a clear time slot for each interview according to the convenience of the interviewee.

Conduct the interviews

As discussed above, the researcher sent the invitation letters to participants via email. They spent one or two weeks to review them and sign prior to the interviews. They also answered all the questions in the interview protocol. Then, they returned the answered-interview guide to the researcher at least one day before the interviews. The researcher read the answers thoroughly from the interviewees and took notes the important ideas/sentences to probe in the interviews. It helped the interviews to have more time to obtain thoughtful insight from the participants. Therefore, the interviews were about 30 minutes long to respect the time of the participants. The interviews were conducted in the Vietnamese language.

First of all, the interview established rapport (a trust relationship) between the researcher and participants by self-introduction or small talk (Hennink et al., 2011).

The interviews often began with necessary information about the conversation such as the names of the researcher and interviewee, time, date. Then, the researcher introduced the aim of the research, asked if the interviewee had questions and defined any terms necessary. The interviews also set up the interviewees at ease by providing a chance for them to talk about themselves (e.g. jobs, roles).

During the interviews, the researcher asked questions in an open, plain language, and empathic ways; this was designed to motivate the participants to tell their story by probing. The audio software (Free Video Call Recorder) was checked all the time to ensure it worked well throughout the interviews.

The interviews applied two types of probing questions: asking for more information and asking for an explanation of the ideas, e.g. “Tell me more; I need more details; What is an example of that?” or “Could you explain your response more? What does ‘not much’ mean?” (Creswell, 2016). These probing questions allowed getting thoughtful insights from the interviewees on the different aspects of KSB of academic staff at public universities in Vietnam. The interviews also asked the interviewees about: (a) their recommendations for the contributions of these research outcomes in practices? (b) their suggestions, modifications, and recommendations for future work? (c) what work, from the technology aspect, is needed to develop and promote KSB? and (d) reasons for promoting KSB?

Follow-up after the interview

At the end of the interviews, the researcher checked to ensure that the quality of audio recording of the interview was good. The researcher thanked to the interviewees and honoured the follow-up with the interviewee as needed (e.g. a copy of summary results of the study). Finally, the researchers asked some useful questions such as “Who should I contact next to learn more?” or “Is there any further information you would like to share that I have not covered?” (Creswell, 2016). These questions were necessary to provide closure for the interview. The follow-up questions also expressed the curiosity of the researcher in learning more about the research topic.

4.5.4 Data analysis and interpretation

Data analysis and interpretation helped to move from the data to understanding, explaining and interpreting the central phenomena of the current research (Cohen, 2018). It involved several steps that were taken in transferring from description to

understanding to explanation, interpretation and conclusions (Cohen, 2018). The interpretation must be transparent and show reliability and validity.

To do this, this study firstly transcribed and translated the interviews into English (when necessary). The transcriptions were stored in Word documents for further analysis. The interviewees' knowledge and experience of KS and KM were explored to account for the results obtained from the quantitative phase. The analysis could be holistic in the whole interviews or embedded in a particular aspect of each interviewee.

According to Creswell (2009) the data analysis in qualitative research involves 6 steps.

- Step 1: Organising and preparing the data which includes the transcribing of interviews. Qualitative researchers check the accuracy by listening to the audio recording file line by line and comparing it to the transcriptions.
- Step 2: Reading thoroughly data: This helps to obtain an overall sense of the information and to reflect on its general meaning. The researchers should answer the following questions: "What general ideas are participants saying? What is the tone of the ideas? What is the impression of the overall depth, credibility, and use of the information?". The qualitative researchers may take notes in margins in order to have an overall understanding of the data (Creswell, 2016).
- Step 3: Starting the process of coding data. "Coding is taking transcribed text data and making sense of them" (Creswell, 2016, p.152). Coding data can be performed by hand (using coloured pens and highlighters) or computer software. It indicates what is being said and giving a code label to a text passage. Then, themes can be generated by grouping similar codes together. These themes can be explained by these codes, and used as the headings in the findings of the qualitative report (Creswell, 2016).
- Step 4: Using the coding process to create the description or themes for further data analysis. Researchers sometimes use themes to build further layers of complex analysis such as the interconnection of themes into a story line.
- Step 5: Advancing how the description and themes will be represented in the qualitative narrative. Narrative passage is a common approach used to reveal the findings of the qualitative data analysis. Narrative passage reveals the detailed discussion of various themes or a discussion with interrelating themes.
- Step 6: Making an interpretation or meaning of the data: It can be done by asking questions like "What were the lessons learned?". These lessons could be

inquirer's interpretation or the comparison of the results with information from prior empirical studies in the literature or theories. It is recommended that researchers should come up with the new questions to be asked.

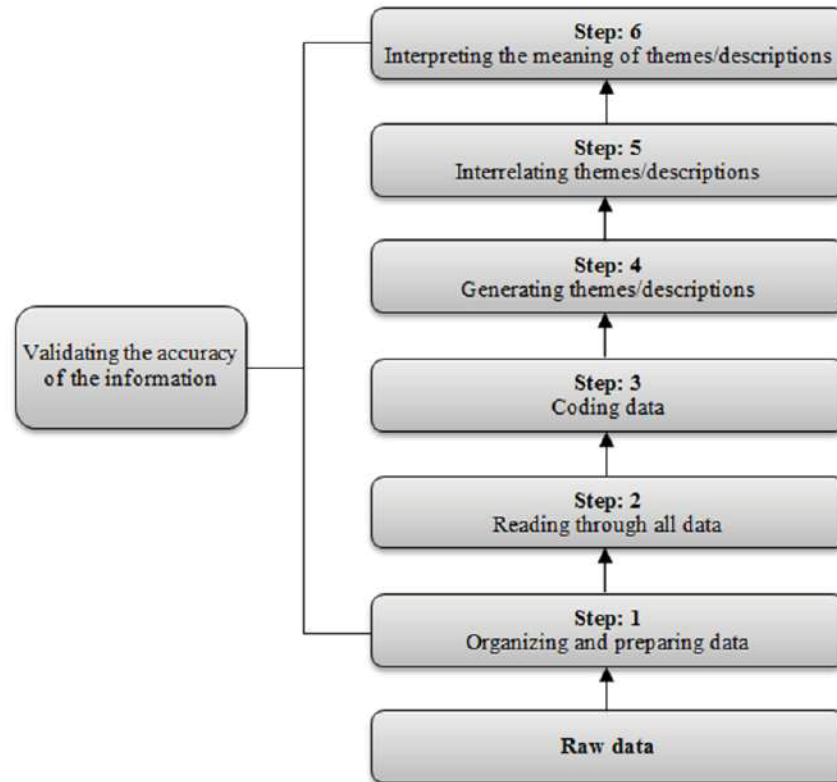


Figure 4.7. Data analysis in the qualitative approach. Adapted from Creswell (2009)

4.5.5 Reliability and validity

Validity is to check the accuracy of the findings, while the reliability means that the study's approach consists of different inquirers and projects (Creswell, 2009). These implementations helped the researcher reported that results honestly. In this study, triangulation, member checking and external audit were used to validate the findings and interpretations of qualitative data analysis (Creswell, 2009, 2016).

- Triangulation: It refers to building evidence by using different data sources of information to establish the themes (Creswell, 2009, 2016). The sources of information relevant to this research were government reports, legislation documents, follow-up emails, interview notes, and transcripts, etc. It also uses the questionnaire responses from quantitative phase to validate the results

obtained in the interviews. By applying such triangulation, this study enhanced its credibility and accuracy.

- Member checking: It was used to check the accuracy of the results by giving themes or entire stories back to interviewees and checking whether these interviewees agree that they were correct and precise (Creswell, 2016). In this study, the initial findings were taken back to two interviewees to get feedback about the fairness of the description and justifications, and the accuracy of the interpretations. If interviewees found the account was not accurate, the researcher revised the description to describe the view of interviewees better.
- External audit: This way of providing validity can be used if the reviewers or readers felt that the results from the interviews were inaccurate. The transcripts of the interviews were double checked by two Vietnamese-English language experts who are also translators and interpreters for the accuracy of transcription (see Appendix 4). Several parts of the findings were used to publish in peer-reviewed journals and conferences. They have been blended in this writing as showed at the beginning of the thesis. Reviewers have helped to decide that the information is accurate and that the qualitative data analysis has been done rigorously.

4.6 Ethics considerations

This study has used the data collected from human participants, about people, and their time and efforts. The study acknowledged that the researcher has been responsible for the ethical responsibility. Thus, the ethical issues have been considered before, during, and after the investigation. In this research, the most common ethical issues have been considered such as physical harms, psychological harms, social harms, legal harms, privacy and confidentiality. These considerations were guided by the Human Research Ethics Committee (HREC) – the University of Technology Sydney. The guidelines were designed to make sure the researcher understand what the risks are; that these risks are justified about the outcome and benefits of the research; and that the researcher has minimised the likelihood of risks where possible. The followings discuss the steps the researcher has been taken to deal with the ethical issues.

First of all, the researcher carefully considered and acknowledged the risks and address ways to mitigate the risks. For example, the psychological harms may involve the feeling self-conscious about being interviewed (by the researcher)/audio recorded/video

recorded. The research next categorised the magnitude and the likelihood of potential risk that helped him to evaluate and lead to the solutions to minimise and manage the risks. Finally, several solutions were made to deal with each potential threat. For instance, to mitigate the privacy and confidentiality risks, the participants did not have to write their name, date of birth, on the questionnaire. Also, they were not forced to answer any questions. The information they provided in the interview has been kept confidential throughout the study as well as after the study has been completed. All hard-copy data (e.g. completed questionnaires, interview notes) has been stored in a safely locked drawer in the office of the researcher at Faculty of Engineering and Information Technology, University of Technology, Sydney, Australia. The soft-copy data (e.g. audio files, interview transcripts, data entry) was password protected and kept in the computer of the researcher.

In consultation with his supervisors and UST ethical experts, all the ethics approval requirements had been met. UTS Human Research Ethics Committee granted to the researcher an Ethics Approval Certificate. The approval number is UTS HREC REF NO. ETH16-0351 (see Appendix 4).

4.7 Summary of Chapter 4

This chapter discussed the research design and method that this study used to empirically examine the research model and hypotheses developed in prior chapter. The selection of the sequential explanatory approach for this study was explained, e.g. the rationale why the sequential explanatory strategy was chose. Also, based on this approach, the quantitative survey questionnaire (N=588) and qualitative semi-structured interview protocol (N=7) can supplement each other to provide a more in-depth insight into the central phenomenon of this research topic in the university settings. Furthermore, the data analysis methods were also discussed for both the quantitative and qualitative phases. Finally, the chapter highlighted the ethical considerations to make sure the respect for the anonymity of the participants and their responses. The next two chapters (Chapter 5 and 6) will present the data analysis and the results of both quantitative and qualitative phases.

CHAPTER 5: PHASE I - QUANTITATIVE DATA ANALYSIS

5.1 Introduction

This chapter presents the results of quantitative data analysis collected from a survey in four public universities in Vietnam. The main objectives of the chapter are to (i) provide a descriptive statistics of the survey to secure that the collected data has suitable characteristics for subsequent analysis, (ii) validate measurement scale: scale reliability and exploratory factor analysis (EFA), (iii) assess the model validity in terms of overall model fit, construct validity as well as the reliability of the constructs, and (iv) test the research hypotheses in Section 5.4.2. As the main outcome of this chapter, the summary of hypothesis testing is presented to answer the research questions. The chapter's outline is presented in Figure 5.1.

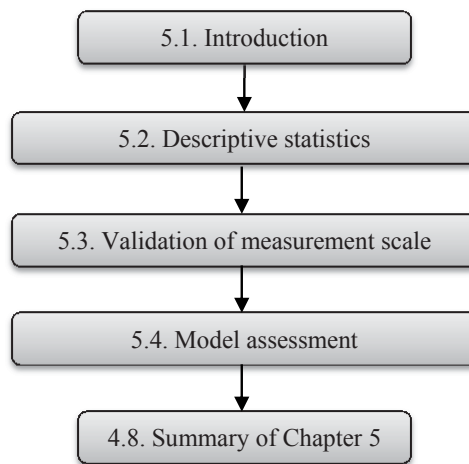


Figure 5.1. Chapter outline

5.2 Descriptive statistics

This section provides a descriptive statistics of the quantitative data using the Statistical Package for Social Science (SPSS) software, version 22.0. The section mainly aims to secure that the collected data has suitable characteristics for subsequent analysis. It helps the researcher can avoid failure of the model estimation and crashing of fitting programs (Kline, 2005). The section first presents the characteristics of the sample (Section 5.2.1). Then, the section provides data cleaning and preparation by examining outliers, the normality of the dataset, and the standard deviation and standard error of the mean (Section 5.2.2).

5.2.1 Survey responses

5.2.1.1 Questionnaire survey

Of the 785 paper questionnaire surveys distributed, the researcher received 588 responses from academic staff of 31 departments of four public universities in the North of Vietnam, representing a high response rate of 74%. It is crucial to note that incomplete responses were discarded or excluded from the study. Only 30 out of 588 attempted responses had missing values, as some substantial sections were incomplete. The exclusion of these 30 responses was acceptable as they accounted for only 5% of the total, and did not significantly affect the sample size. The final number of useable returned questionnaire was, therefore, 558 ($N = 558$), demonstrating a reasonable sample size needed for the data analysis method implemented in this study (Kline, 2005; Tabachnick and Fidell, 2007; Hair et al., 2010).

5.2.1.2 Characteristics of the sample

It is vital that the characteristics of the sample data be adequately presented in a Structural Equation Modelling (SEM) report (Ockey and Choi, 2015). For the assessment of the research model, this included relevant information about test takers, including their gender, age, education, years of experience, and working areas. As can be seen in the demographic data (see Appendix 5 and Figure 5.2 to 5.5), most survey respondents were female, under the age of 40, with a Master's degree of level of education, and fewer than ten years working experience in their field.

The key features relating to the demographic characteristics of the sample (see Appendix 5) are listed as below:

- Females (63.6%) were approximately twice as common as males (36.4%);
- 80% of the survey respondents were under 40 years of age;
- About two-thirds of the respondents had a Master's degree level of education.
- The majority of the survey respondents (69.9%) had fewer than 10 years working experience.
- The working areas of participants grouped by Ministry of Education and Training Vietnam (MOET, 2018b), fell into four areas: language studies (27.1%), economics (20.6%), social science (28.0%), and technology and engineering (24.4%).

The following section details the demographics of the data sample based on the frequency analysis of the data (see Appendix 5). Pie charts, the visual representation of data, were used to present complex information.

First, regarding the gender of respondents, as shown in Figure 5.2, most survey respondents were females (63.6%), while only 36.4% male. It is reasonable as discussed above three main groups of participants belong to language studies (27.1%), economics (20.6%) and social science (28.0%), in which the majority of lecturers are female. Moreover, according to MOET (2018b), more half lecturers of Vietnamese public universities are female (32.690) in the total of both male and female lecturers (55.401).

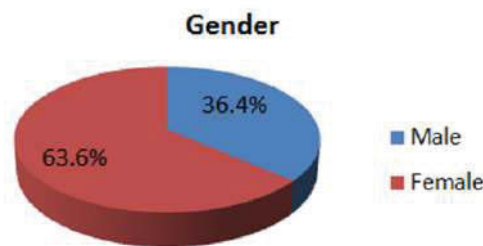


Figure 5.2. Gender of participants

Regarding the age of participants (see Figure 5.3), 52.0% of the usable samples were 30-39 years old, followed by below 30 years, then 40-49 years old with 28.0% and 14.7% respectively. The lowest numbers of participants were above 50 years old with 5.4%.

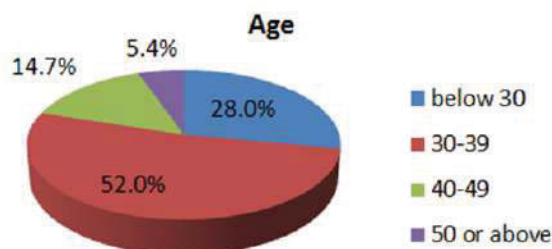


Figure 5.3. Age of participants

Furthermore, as shown in Figure 5.4, the majority of respondents had a Master's degree with 67.6%. About twenty-one per cent of them had a Bachelor's degree, while only 11.3% of participants had a Doctoral degree (the highest level of education). This distribution of the qualification is relatively representative of the population of academic staff in Vietnamese higher education sector (MOET, 2018b).



Figure 5.4. Education level of participants

With respect to the years of experience (see Figure 5.5), 45.3% of respondents had 5-10 years of working experience. The numbers of participants had five years and 11-15 years were quite equal with 24.6% and 21.5% respectively. Only 8.6% was the percentage of respondents had 15 years working experience and above.

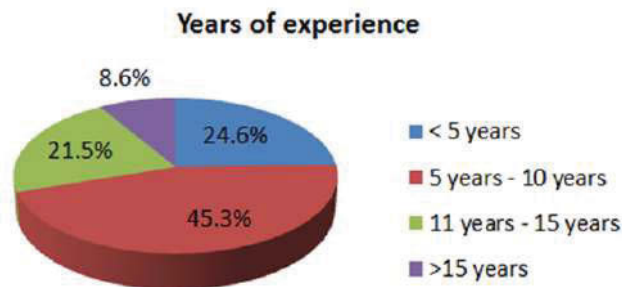


Figure 5.5. Years of experience of participants

Finally, figure 5.6 presents the major working areas of participants, most of them were working in the Language studies and Social science with 27.1% and 28.0% respectively. There were 24.4% of respondents working in the Technology and Engineering field, followed by 20.6% of participants who worked in the Economics areas.

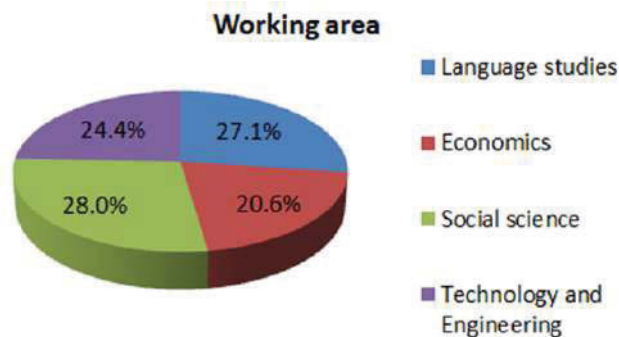


Figure 5.6. Major working areas of participants

5.2.2 Data cleaning and preparation

Prior to conduct further data analysis, this study screened for missing values and outliers and tested for normality, which can avoid the failure of model estimation and crash fitting programs (Kline, 2005). As discussed earlier, this study used SEM to test the research model. Just like many other statistical analysis methods, data preparation is critical in SEM for the following reasons (Kline, 2015). Firstly, mistakes are very likely at the data entry stage. Moreover, the most common estimation method used (e.g. maximum likelihood) in SEM make specific distributional assumptions on the data. Another important reason is to analyse based on datasets that seriously violate assumptions or contain errors, inconsistencies in responses or measurements results in misleading results. Finally, data-related issues can make computer tools used in SEM fail to provide a logical solution.

5.2.2.1 Organising the data

Coding was first prepared to guide computerised data entry (Pallant, 2010). Coding is a process which converts the answers of respondents in the questionnaires into a form that can be easily handled by computer software. The information about variables' names, labels and values are displayed in a codebook which was used during the data analysis process. Table 5.1 gives some examples of the codebook.

Table 5.1: An example of the codebook

Latent variable	Item code & name/ No. in questionnaire	Answer code & name
Enjoyment in helping others (EHO)	<u>EHO1</u> : I enjoy sharing my knowledge with colleagues (14)	1-Strongly Disagree
	<u>EHO2</u> : I enjoy helping colleagues by sharing my knowledge (15)	2-Disagree
	<u>EHO3</u> : Sharing my knowledge with colleagues is pleasurable (16)	3-Undecided
		4-Agree
		5-Strongly Agree

Just as important to coding, the next important preliminary step in statistical analysis was to enter raw data into a computer program (SPSS). Data entered in SPSS is stored in the form of a matrix that is data matrix. In the data matrix (see Table 5.2), the case records (numbers of responses) are displayed across the rows, while the variable names (observed variables) are put at the tops of the columns which store the value for that variable. In this study, the data matrix was formed by n=588 rows (responses) and m=66 columns (variables).

Table 5.2: An illustration for the form of data matrix in SPSS

		Variables (No. of columns: 1 to m (66))											
Sample size (No. of rows: 1 to n (588))		SN1	SN2	SN3	EHO1	EHO2	EHO3	EHO4	REW1	...	VAR.66		
	1	4	4	4	4	4	5	4	3		4		
	2	3	3	4	4	4	4	4	4		3		
	3	4	4	4	4	4	5	4	3		4		
	4	5	5	5	3	4	4	4	3	→	4		
	5	4	4	4	4	4	5	3	2		3		
	6	4	4	4	4	4	4	5	4		5		
	7	4	3	4	4	4	5	3	5		3		
	8	4	4	4	5	5	5	1	3		3		
	...					↓							
	588	4	4	5	4	4	5	4	1		4		

5.2.2.2 Measurement scale

In 1946, Stevens originated the terms nominal, ordinal, interval, and ratio to describe a hierarchy of measurement scales used in classified statistical procedures. It helped the researcher understands the permissible mathematical operations for different variables, especially in SEM, where variance-covariance (correlation) matrices are used with means and standard deviations of variables (Schumacker and Lomax, 2010). Schumacker and Lomax (2010) have indicated that all of these types of variables can be implemented in SEM. Hence, the measurement scales for the data set of this study was based on 5-point Likert scales which met the requirement of SEM for multivariate analysis.

5.2.2.3 Missing data analysis

There are several reasons why data could be missing such as hardware failure, missed appointments, and item nonresponse (Kline, 2015). It is possible to challenge researchers to deal with the issues raised by missing data that influence the generalisability of the results (Hair et al., 2010). Several methods have been used to address missing values such as replacing the missing data values or using robust statistical procedures. However, according to Kline (2015), a few missing data under 5% of the total should be of little concern. Also, Hair et al. (2010) stated that missing data under 10% for an individual case can be ignored. As discussed earlier, all the missing data (only 5% of the total) in this study were dropped before going into further analyses.

5.2.2.4 Outlier screening

Kline (2015) described outliers as scores that are distinctly different from the rest of dataset. Outliers may arise as a result of observation errors, data-entry errors, and instrument errors, or actual extreme values from self-report data (Schumacker and Lomax, 2010). As they can impact the mean, the standard deviation, and correlation-coefficient values, outliers must be explained, excluded, or adjusted. Accordingly, outlier detection is the vital step of data screening. There are several ways to detect outliers such as univariate, bivariate and multivariate methods (Hair et al., 2010). This study adopted the univariate methods using standardised values (z-scores). To do this, all of the values from variables were converted to standardised values. According to Tabachnick and Fidell (2007), the case with an absolute value of z-scores ($|z|$) larger than 3.29 was treated as outlier. As shown in Appendix 6, the 558-case dataset was free of outliers continued to the further analysis stage.

5.2.2.5 Assessing normality

The earlier sections of missing data and detecting outliers aimed to clean the data to a format most appropriate for multivariate analysis. The final step of data examination is to test for the statistical assumptions. It is because (1) the complexity of the relationships may lead to the potential biases, (2) and the complexity of the analyses and results may veil the indicators of assumption violations apparent in univariate analyses (Hair et al., 2010).

According to Hair et al. (2010) normality is the most basic assumption in multivariate analysis. Furthermore, the maximum likelihood estimation in SEM assumes multinormality for continuous outcomes variables. The assessment of normality of the data is based on two measures: skewness and kurtosis (Kline, 2015; Hair et al., 2010; Tabachnick and Fidell, 2007). While skewness refers to the balance of the distribution, the kurtosis is used to describe the “peakedness” or “flatness” of the distribution compared with the normal distribution (Hair et al., 2010). There have been different rules of thumb given for these indexes based on computer simulation studies for SEM. However, Kline (2005) and Hair et al. (2010) suggested the most widely used critical values of skewness and kurtosis of a variable should be between +2.58 and -2.58 to consider it as having a normal distribution. For this study, the skewness and kurtosis values for all measurement items were acceptable within this average predicted value

range (see Appendix 6). Therefore, it could be indicated that the dataset of this research seems to be normally distributed.

5.2.2.6 Impacts owing to sample size

It is important to consider the impact of sample size as it has the effect of improving statistical power by minimising the sampling error (Hair et al., 2010). For sample sizes of 50 or less, remarkable departures from normality are likely to have a considerable effect on the results. However, in large samples sizes of 200 or above, the effects may be insignificant. Hence, it can be a little of concern about nonnormal variables if the researcher has the large sample sizes. Furthermore, In SEM, a much larger sample size is required to maintain power and acquire stable parameter estimates and standard errors (Schumacker and Lomax, 2010). It is also due in part to the program preconditions and the multi-observed variables applied to define latent variables. Nevertheless, there has been a question about how large a sample should be taken for a quantitative research. For example, a critical sample size in the 200-400 range (for 10-15 indicators) offered as a benchmark is widely utilized by researchers in SEM (Hair et al., 2013). Hence, this dataset of 588 observations was more than sufficient in comparison to these benchmarks.

5.3 Validation of measurement scale

This section aims to validate the measurement scale involves two issues. The first is to obtain reliability coefficients for all the constructs (Section 5.3.1). The larger the reliability coefficient, the more repeatable or reliable the test scores researcher obtain over different periods of time to the same sample. Secondly, Section 5.3.2 discusses the procedures of the Exploratory Factor Analysis (EFA) technique used to explore and guarantee the structure of the model factors used in this study. This is essential to help researchers can be assured that the measures are valid and reliable prior to doing an SEM. Otherwise researchers will not know if it can be relied on the findings from SEM.

5.3.1 Scale reliability assessment

Hair et al. (2010) defined reliability as the degree to which a variable or set of variables is consistent with what it is expected to measure. Here the nature of reliability is that researchers obtain the same results from a measure conducted over different periods of time to the same sample or the equivalence of sets of variables from the same test (internal consistency) (Kimberlin and Winterstein, 2008). In other words, reliable

measures should be consistent in their values if multiple measurements are conducted (Hair et al., 2010). According to Hair et al. (2006), the examination of reliability is to assess the extent of consistency between multiple measurements of a variable in order to minimising measurement errors. There are several means of evaluating the reliability of any measurement instrument. The current research evaluated the instrument reliability for all constructs of the questionnaire through *internal consistency* and *item-total correlations*. The following sections present each assessment process and its results based on the Reliability function of SPSS 22.

5.3.1.1 Internal consistency

Internal consistency provides an evaluation of the items from the same test (Kimberlin and Winterstein, 2008). Moreover, the nature of internal consistency is the extent to which responses are consistent across the items of a measurement scale (Kline, 2015). Cronbach's alpha is most widely used to estimate internal consistency reliability. The higher value of Cronbach's alpha coefficient indicates a higher degree of reliability or internal consistency between the items being tested (Kimberlin and Winterstein, 2008). This value ranges from 0 to 1, with values of 0.6 to 0.7 considered the lower limit of acceptability (Hair et al., 2010). Table 5.3 presents the most widely acceptable rule of thumb of Cronbach's alpha coefficients for considering internal consistency. A high level of internal consistency is desirable; however, the items with very high reliabilities (0.95 or higher) may be redundant (Streiner, 2003).

Table 5.3: The acceptable rule of thumb for considering internal consistency

Cronbach's alpha (α)	Internal consistency	Source
$\alpha \geq 0.9$	Excellent	Hair et al. (2010), Kline (2011), George and Mallery (2003)
$0.9 > \alpha \geq 0.8$	Very good	
$0.8 > \alpha \geq 0.7$	Adequate	
$0.7 > \alpha \geq 0.6$	Acceptable	
$0.6 > \alpha \geq 0.5$	Poor	
$0.5 > \alpha$	Unacceptable	

Table 5.4 shows the value of Cronbach's alpha for each scale used in the current research. All scales had Cronbach's alpha values ranging between 0.761 and 0.905 except for two factors of TMS with 0.690 (WKW) and 0.412 (WDW) respectively. Therefore, the measurement scales were higher than the lower limit of acceptability suggested by Hair et al. (2010), except that WDW was deleted. Moreover, it is noted

that although the original Cronbach's alpha value of EHO and TL were above the threshold of 0.7 with 0.743 and 0.784 respectively, two items EHO3 and POK2 were removed because their item-total correlation values were less than the cut-off value 0.30 that will be discussed in the next section.

Table 5.4: The Cronbach's alphas of the measurement scales

Measurement scale	N of Items	Cronbach's Alpha (α)	Original value of (α)	Deleted Items
subjective norm (SN)	3	0.775		
Trust (TRU)	6	0.862		
Knowledge self-efficacy (KSE)	4	0.799		
Enjoyment in helping others (EHO)	3=4-1	0.828	0.743	EHO3
Expected organisational rewards (REW)	4	0.836		
Reciprocal benefits (RB)	3	0.761		
Psychological ownership of knowledge (POK)	4=5-1	0.870	0.784	POK2
Transformational leadership (TL)	13	0.905		
Transactive memory system (TMS)				
<i>Who knows who (WKW)</i>	2	0.690	0.557	WKW1
<i>Who does what (WDW)</i>	3	0.412		
Knowledge sharing behaviour (KSB)	5	0.893		
Innovative work behaviour (IWB)				
<i>Ideal generation</i>	3	0.807		
<i>Ideal promotion</i>	3	0.802		
<i>Ideal implementation</i>	3	0.785		

5.3.1.2 Item-total correlation

Item-Total Correlation is the correlation of the item designated with the summated score for all other items indicating the correlation of the construct (Gliem and Gliem, 2003). Analysing item-total correlation is to filter a measurement instrument by eliminating items that are to be considered redundant 'garbage items' (Churchill, 1979). A rule-of-thumb is that item-total correlation values should be at least 0.3 because a value which is less than 0.3 provides evidence that the item is measuring a different construct measured by the other items (Gliem and Gliem, 2003; Pallant, 2010). A small item-correlation value of an item less than 0.3 indicates that this item does not have a good correlation with the scale overall and, hence, it should be discarded (Everitt, 2002; Field, 2005). Tables 5.5 to 5.15 show the item-total correlations for all factors of

constructs in this study. The results revealed that the values of the item-total correlations for item EHO3, POK2, and WKW1 were 0.249, 0.238, and 0.217 respectively (less than 0.3). This suggested that these items and factor WKW, WDW were eliminated. Furthermore, the Cronbach's value for WDW was less than the cut-off value of 0.60, while WKW had only two items left less than the threshold of at least three items for each factor. This also suggested that two sub-factors WKW and WDW of TMS were eliminated before continuing further analysis steps.

Table 5.5: The Item-Total Statistics of the SN scale

Item	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
SN1	.635	.669
SN2	.696	.606
SN3	.513	.810

Table 5.6: The Item-Total Statistics of the TRU scale

Item	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
TRU1	.739	.825
TRU2	.765	.821
TRU3	.745	.824
TRU4	.569	.858
TRU5	.466	.879
TRU6	.743	.824

Table 5.7: The Item-Total Statistics of the KSE scale

Item	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
KSE1	.679	.717
KSE2	.669	.726
KSE3	.477	.838
KSE4	.683	.718

Table 5.8: The Item-Total Statistics of the EHO scale

Item	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
EHO1	.610	.643
EHO2	.705	.581
EHO3	.249	.828
EHO4	.622	.634

Table 5.9: The Item-Total Statistics of the REW scale

Item	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
REW1	.629	.808
REW2	.651	.800
REW3	.638	.805
REW4	.755	.755

Table 5.10: The Item-Total Statistics of the RB scale

Item	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
RB1	.715	.543
RB2	.489	.810
RB3	.594	.679

Note: RB2 was not removed because the Cronbach value of 0.761 greater than the threshold of 0.60.

Table 5.11: The Item-Total Statistics of the POK scale

Item	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
POK1	.645	.717
POK2	.238	.870
POK3	.679	.705
POK4	.692	.702
POK5	.687	.708

Table 5.12: The Item-Total Statistics of the TL scale

Item	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
TL1	.468	.905
TL2	.384	.906
TL3	.465	.905
TL4	.608	.898
TL5	.630	.897
TL6	.620	.897
TL7	.691	.894
TL8	.644	.896
TL9	.775	.890
TL10	.840	.891
TL11	.805	.893
TL12	.594	.898
TL13	.669	.895

Table 5.13: The Item-Total Statistics of the TMS scale

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
WKW		
WKW1	.217	.690
WKW2	.522	.217
WKW3	.394	.414
WDW		
WDW1	.409	.013
WDW2	.097	.595
WDW3	.268	.277

Table 5.14: The Item-Total Statistics of the KSB scale

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
KSB1	.783	.859
KSB2	.685	.881
KSB3	.698	.879
KSB4	.731	.871
KSB5	.798	.855

Table 5.15: The Item-Total Statistics of the IWB scale

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
IGE		
IGE1	.705	.682
IGE2	.668	.725
IGE3	.598	.794
IPR		
IPR1	.664	.714
IPR2	.662	.718
IPR3	.623	.760
IIM		
IIM1	.626	.710
IIM2	.618	.719
IIM3	.645	.700

5.3.2 Exploratory Factor Analysis

The SPSS 22.0 was used to perform Exploratory Factor Analysis (EFA). Table 5.16 summarises the EFA process (see Chapter 4) including methods and criteria used for this study.

Table 5.16: The process of EFA for this study: methods and criteria

Step	Task	Methods or Criterion
1	Assessing the suitability of the data for factor analysis	<ul style="list-style-type: none"> The factorability of the data <ul style="list-style-type: none"> Kaiser-Meyer-Olkin (KMO): ≥ 0.5 Bartlett's Test of Sphericity (sig. $< .05$). Anti-image correlation matrix Sample size: 100 or larger; 5:1 ratio (observations per variable)
2	Selecting the Factor Extraction	<ul style="list-style-type: none"> Extraction methods: <ul style="list-style-type: none"> Principal Components Analysis (PCA). Determining the number of factors to be retained: <ul style="list-style-type: none"> Eigenvalues greater than 1.0 Percentage variance explained: 60% or higher
3	Factor rotation and interpretation	<ul style="list-style-type: none"> Factor rotation method: Promax (Kappa: 4) Factor interpretation: <ul style="list-style-type: none"> Examine the factor matrix of loading Identify the significant loading(s): ≥ 0.50 Access the communalities of the variables: Communalities greater than 0.50 Respecify the factor model, if needed Label the factors

The below presents the findings of the EFA analysis performed with all factors together: Subjective norm (SN), Trust (TRU), Knowledge self-efficacy (KSE), Enjoyment in helping others (EHO), Expected organisational rewards (REW), Reciprocal benefits (RB), Psychological ownership of knowledge (POK), Transformational leadership (TL), Knowledge sharing behaviour (KSB) and Innovative work behaviour (IWB). The usable 558-case sample size of this research was well above the recommended sample size of 100 for EFA (Tabachnick and Fidell, 2007).

Examining data factorability

As shown in Table 5.17, the overall measure of sampling adequacy (KMO) of 0.893 was greater than the acceptable threshold of 0.5. Additionally, Bartlett's test was deemed to be statistically significant at $p < 0.001$ and shows that sufficient correlations exist among the variables to proceed. Furthermore, the values in the anti-image correlation matrix (see Appendix 7) were all above 0.5 (Pallant, 2010). Finally, the sample size of this research was an 8:1 ratio of observations to variables that fell in the acceptable limits (5:1). The sample size of 558 presented a sufficient basis for calculating the correlations among variables (Tabachnick and Fidell 2007).

Table 5.17: Data factorability

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.893
Bartlett's Test of Sphericity	Approx. Chi-Square	15570.257
	df	1431
	Sig.	.000

(*) Kaiser-Meyer-Olkin Measure of Sampling Adequacy

Principal Component Analysis (PCA) with oblique (Promax) rotation was employed with all factors together comprising 54 items. Table 5.18 shows the values of total variance which indicates that the total amount of variance explained by the scale with 67.685% is higher than the threshold of 60% or higher (Hair et al., 2010). These results reveal that that doing an EFA for all items produced 13 extracted components (factors or constructs) in representing the scale.

Interpreting the factors

With thirteen factors to be analysed, the researcher then turned to interpreting these factors. The rotated factor solution (see Table 5.19) revealed that each of the items had a significant loading value (.50 or above) on only one factor, except for TL2, TRU4, and KSE3 with the value of 0.305, 0.357, and 0.470 respectively. Moreover, TL2, TRU4, and KSE3 had cross-loading on two factors (1 and 12, 3 and 13, 6 and 13 respectively). Most of the loadings were above 0.70, meaning that more than half of the variance was explained by the loading on a single factor. In addition, all communalities were above 0.50 (and most much higher) which guarantee inclusion, apart from TL1, TL2 with 0.403 and 0.441 respectively. Therefore, TL1 was removed. The remaining decision was to determine how to deal with TL2, TRU4, and KSE3. The researcher decided to

delete these three items from the analysis to eliminate the cross-loadings as they had several high loadings on multi-factors.

Table 5.18: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.664	17.895	17.895	9.664	17.895	17.895	6.646
2	6.749	12.498	30.393	6.749	12.498	30.393	6.658
3	3.902	7.226	37.619	3.902	7.226	37.619	5.476
4	2.710	5.018	42.638	2.710	5.018	42.638	4.954
5	2.398	4.442	47.079	2.398	4.442	47.079	5.039
6	1.917	3.551	50.630	1.917	3.551	50.630	4.306
7	1.819	3.368	53.998	1.819	3.368	53.998	2.790
8	1.477	2.735	56.732	1.477	2.735	56.732	3.354
9	1.424	2.637	59.370	1.424	2.637	59.370	3.345
10	1.240	2.296	61.665	1.240	2.296	61.665	4.514
11	1.124	2.081	63.746	1.124	2.081	63.746	3.532
12	1.091	2.020	65.766	1.091	2.020	65.766	4.028
13	1.036	1.919	67.685	1.036	1.919	67.685	3.574
14	.893	1.653	69.338				
15	.855	1.584	70.922				
16	.773	1.432	72.354				
...				
53	.189	.350	99.687				
54	.169	.313	100.000				

Extraction Method: Principal Component Analysis.

Conducted EFA again with 50 items after removing TL1, TL2, TRU4, and KSE3

The results of the KMO and Bartlett's Test, Anti-image correlation matrix, Communalities, Total Variance Explained, and rotated factor matrix for the reduced sets of the now 50 items are shown in Appendix 7 (see Table 1b, Table 2, Table 3, and Table 4). The results show the KMO of 0.890 was still greater than the acceptable threshold of 0.5. Bartlett's test was still considered to be statistically significant at $p < 0.001$. Furthermore, factor loadings for all items remain almost identical, exhibiting both the same pattern and almost the same values for the loadings. With the total explained variance of 68.350% and all communalities above 50% and higher, the 50-items/12 factors solution was acceptable, with the final step being to describe the factors.

Table 5.19: Promax-Rotated Component Analysis Factor Matrix: Full sets of variables

	Promax-Rotated loadings factor													Communality
	1	2	3	4	5	6	7	8	9	10	11	12	13	
TL1	.612													.403
TL2	.305											.334		.441
TL3	.579													.514
TL4	.718													.524
TL5	.745													.520
TL6	.716													.502
TL7	.755													.584
TL8	.734													.532
TL9	.829													.690
TL10	.874													.787
TL11	.842													.731
TL12	.565													.534
TL13	.746													.564
KSB1		.873												.763
KSB2		.691												.650
KSB3		.826												.660
KSB4		.767												.704
KSB5		.860												.775
TRU1			.871											.780
TRU2			.846											.803
TRU3			.840											.791
TRU4			.357										.633	.630
TRU5			.826											.704
TRU6			.840											.774
POK1				.785										.692
POK3				.854										.736
POK4				.843										.744
POK5				.851										.752
REW1					.730									.634
REW2					.850									.679
REW3					.736									.627
REW4					.844									.775
KSE1						.820								.713
KSE2						.841								.741
KSE3						.470							.535	.653
KSE4						.859								.761
IGE1							.860							.778
IGE2							.822							.741
IGE3							.784							.655
IPR1								.841						.739
IPR2								.880						.746
IPR3								.791						.704
IIM1									.818					.704
IIM2									.822					.680
IIM3									.763					.692
EHO1										.862				.735
EHO2										.828				.791
EHO4										.764				.692
RB1											.852			.767
RB2											.642			.553
RB3											.804			.702
SN1												.793		.717
SN2												.790		.740
SN3												.828		.647

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations. *Factor loadings less than 0.30 have not printed.*

An acceptable factor solution had been derived in which all items had a significant loading value on 12 factors. The researcher next named the factors that accurately reflected the variables loading on those factors (Hair et al., 2010). Here variables having high loading values were determined more important and significantly impacted on the label named to represent a factor. Each factor was named based on the variables with significant loadings:

- Factor 1 (Subjective norms): SN1, SN2, SN3
- Factor 2 (Trust): TRU1, TRU2, TRU3, TRU5, TRU6
- Factor 3 (Knowledge self-efficacy): KSE1, KSE2, KSE4
- Factor 4 (Enjoyment in helping others): EHO1, EHO2, EHO4
- Factor 5 (Expected organisational rewards): REW1, REW2, REW3, REW4
- Factor 6 (Reciprocal benefits): RB1, RB2, RB3
- Factor 7 (Psychological ownership of knowledge): POK1, POK3, POK4, POK5
- Factor 8 (Knowledge sharing behaviour): KSB1, KSB2, KSB3, KSB4, KSB5
- Factor 9-11 (Innovative work behaviour): IEG, IPR, and IIM
 - Factor 9: Idea generation (IGE): IGE1, IGE2, IGE3
 - Factor 10: Idea promotion (IPR): IPR1, IPR2, IPR3
 - Factor 11: Idea implementation (IIM): IIM1, IIM2, IIM3
- Factor 12 (Transformational leadership): TL3, TL4, TL5, TL6, TL7, TL8, TL9, TL10, TL11, TL12, TL13

Table 5.20 presents the summary of the final sets of factors and their items to be used in the further analysis based on the result from Section 5.3.1 (Scale reliability assessment) and EFA. In the next section, a measurement model will be established and tested in order to examine the constructs' validity and unidimensionality through Confirmatory Factor Analysis (CFA).

Table 5.20: Final reduced sets of variables to be used in further analysis

Latent variable	Item code	Item deleted
Subjective norm (SN)	SN1, SN2, SN3	
Trust (TRU)	TRU1, TRU2, TRU3, TRU5, TRU6	TRU4
Knowledge self-efficacy (KSE)	KSE1, KSE2, KSE4	KSE3
Enjoyment in helping others (EHO)	EHO1, EHO2, EHO4	EHO3
Organization rewards (REW)	REW1, REW2, REW3, REW4	
Reciprocal benefits (RB)	RB1, RB2, RB3	
Psychological ownership of knowledge (POK)	POK1, POK3, POK4, POK5	
Transformational leadership (TL)	TL3, TL4, TL5, TL6, TL7, TL8, TL9, TL10, TL11, TL12, TL13	
Quality of Transactive Memory Systems (TMS)	Who Knows Who (WKW) Who Does What (WDW)	Removed
Knowledge sharing behaviour (KSB)	KSB1, KSB2, KSB3, KSB4, KSB5	
Innovative work behaviour (IWB)	Idea generation (IGE): IGE1: IGE2: IGE3 Idea promotion (IPR): IPR1, IPR2, IPR3 Idea implementation (IIM): IIM1, IIM2, IIM3	

5.4 Model assessment

This study used Amos 22.0 to assess the SEM model including measurement model and structural model. This section presents the results of the assessment of measurement and structural models as guided in Chapter 4.

5.4.1 Assessment of measurement model

As introduced in the beginning of this chapter, the primary objectives of this section are to assess the model validity regarding overall model fit, construct validity as well as the reliability of the constructs, and test the research hypotheses. To do this, the researcher considered four stages covered the Confirmatory Factor Analysis (CFA) analysis which has been presented in Chapter 4 to assess measurement model: (1) Defining individual constructs; (2) Developing the overall measurement model; (3) Designing a study to provide empirical results; and (4) Accessing measurement model validity.

Stage 1: Defining individual constructs

Given the research questions defined (see Chapter 1), the researcher specifies constructs that represent the theoretical framework to be tested. Table 5.21 presents the constructs that have been reduced from EFA results to be used in CFA.

Table 5.21: Final reduced sets of variables to be used in further analysis

Construct	Description
Subjective norm (SN)	See Chapter 4
Trust (TRU)	
Knowledge self-efficacy (KSE)	
Enjoyment in helping others (EHO)	
Expected organisational rewards (REW)	
Reciprocal benefits (RB)	
Psychological ownership of knowledge (POK)	
Transformational leadership (TL)	
Knowledge sharing behaviour (KSB)	
Innovative work behaviour (IWB)	

The indicators used to operationalise the constructs were adapted from previous studies (see Chapter 4). These items have been reduced in EFA analysis (see Table 5.20). There are at least three items of each construct. The complete questionnaire is shown in Appendix 2. These items have been described in Chapter 4.

Stage 2: Developing the overall measurement model

Based on the constructs specified, the next step was to specify the measurement model to be tested. Figure 5.7 depicts the measurement model through a visual diagram. The model shows 12 constructs and 50 measured items based on the EFA results. All constructs are enabled to correlate with all other constructs, while each indicator is enabled to load on only one construct. The ovals represent constructs. A causal path from a construct to a measured indicator (L) is specified by one-headed connectors, whilst two-headed connections specify covariance (Cov) between constructs. In this model, IWB is the second-order factor which has three first-order factors (sub-factors or sub-constructs). Each of these sub-constructs also has a residual term (not shown in Figure 5.7 for simplicity) in the CFA model.

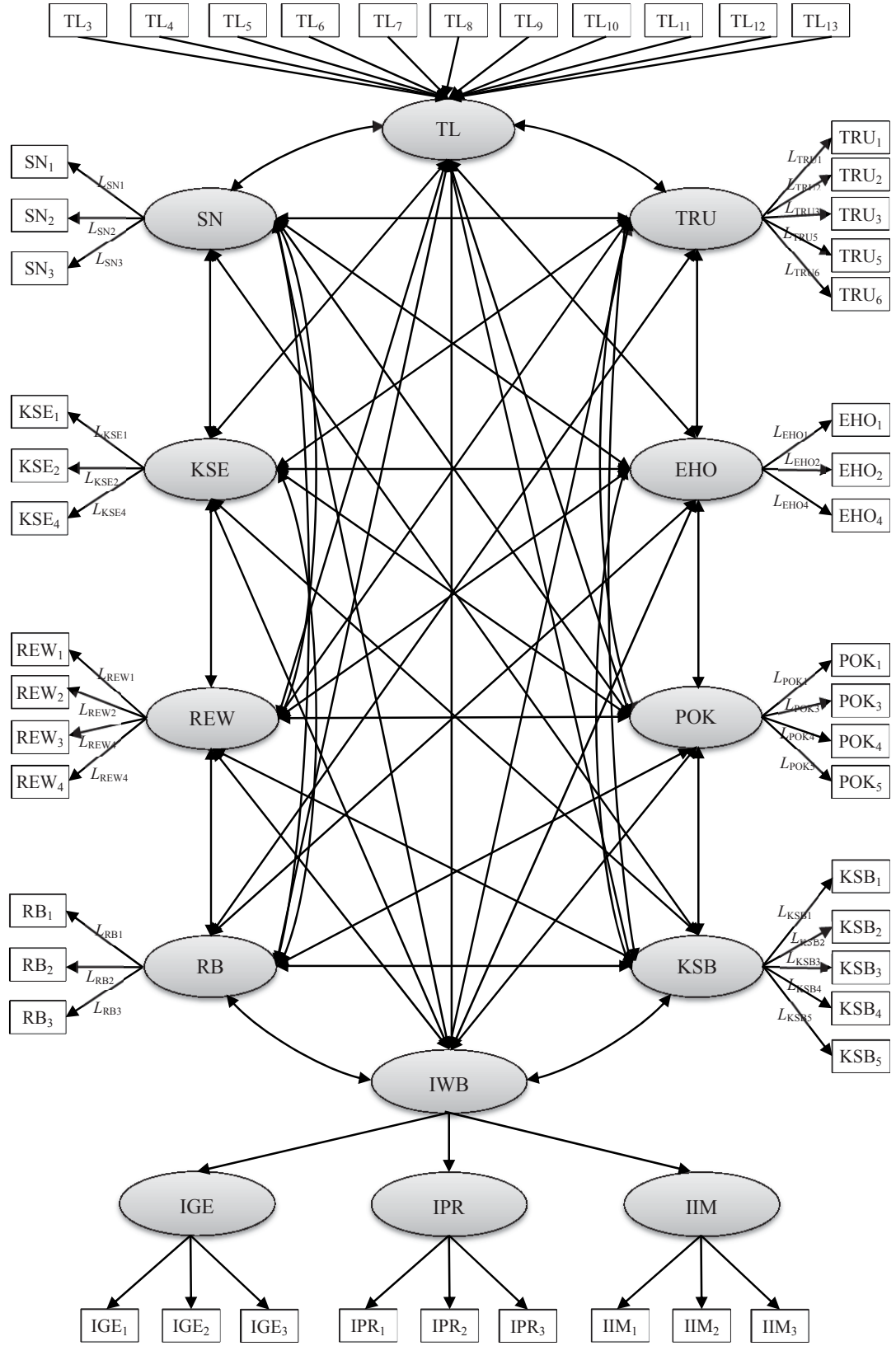


Figure 5.7. The measurement theory model based on the EFA results

Note: Measured items displayed in the boxes correspond to those in the questionnaire. Each of them has an error term (e), however they are not displayed in the model for simplicity.

Stage 3: Designing a study to provide empirical results

In this stage, the researcher considered two major issues: sample size and model specification. As presented in Section 5.2, of 785 paper questionnaires were distributed and 588 responses were obtained. After data screening step, the final usable 558-case sample size (N=558) of this study was well above the recommended thumb-rule of a sample size of 100-150 which would be acceptable for conducting CFA. To specify the model, the researcher then transferred the overall measurement model (see Figure 5.7) into AMOS software program by using the graphical interface. The model specification was completed (see Figure 5.8) by dragging the measured items into the model and ready to run the software to test it.

Stage 4: Assessing measurement model validity

In this step, the researcher examined both the overall model fit and the criteria for construct validity. The section below reviews key fit statistics and the parameter estimates using the rules of thumb presented in Chapter 4. The results of testing the initial measurement model are presented in Table 5.22.

Table 5.22: The CFA Goodness-of-Fit statistics for the initial measurement model

Test	Acceptable cut-off value	Tested value
Chi-square (χ^2)	Non-significant (χ^2) at least p -value>0.05	1615.804 (p : 0.000)
Degrees of freedom (df)		1127
Absolute Fit Measures		
GFI	> 0.90	0.898
AGFI	> 0.80	0.885
RMSEA	< 0.08	0.028
RMR	< 0.05	0.039
χ^2/df	< 3	1.434
Incremental Fit Indices		
NFI	> 0.90	0.893
TLI (NNFI)	> 0.90	0.962
CFI	> 0.90	0.965
Parsimony Fit Indices		
PGFI	> 0.50	0.794
PNFI	> 0.50	0.822

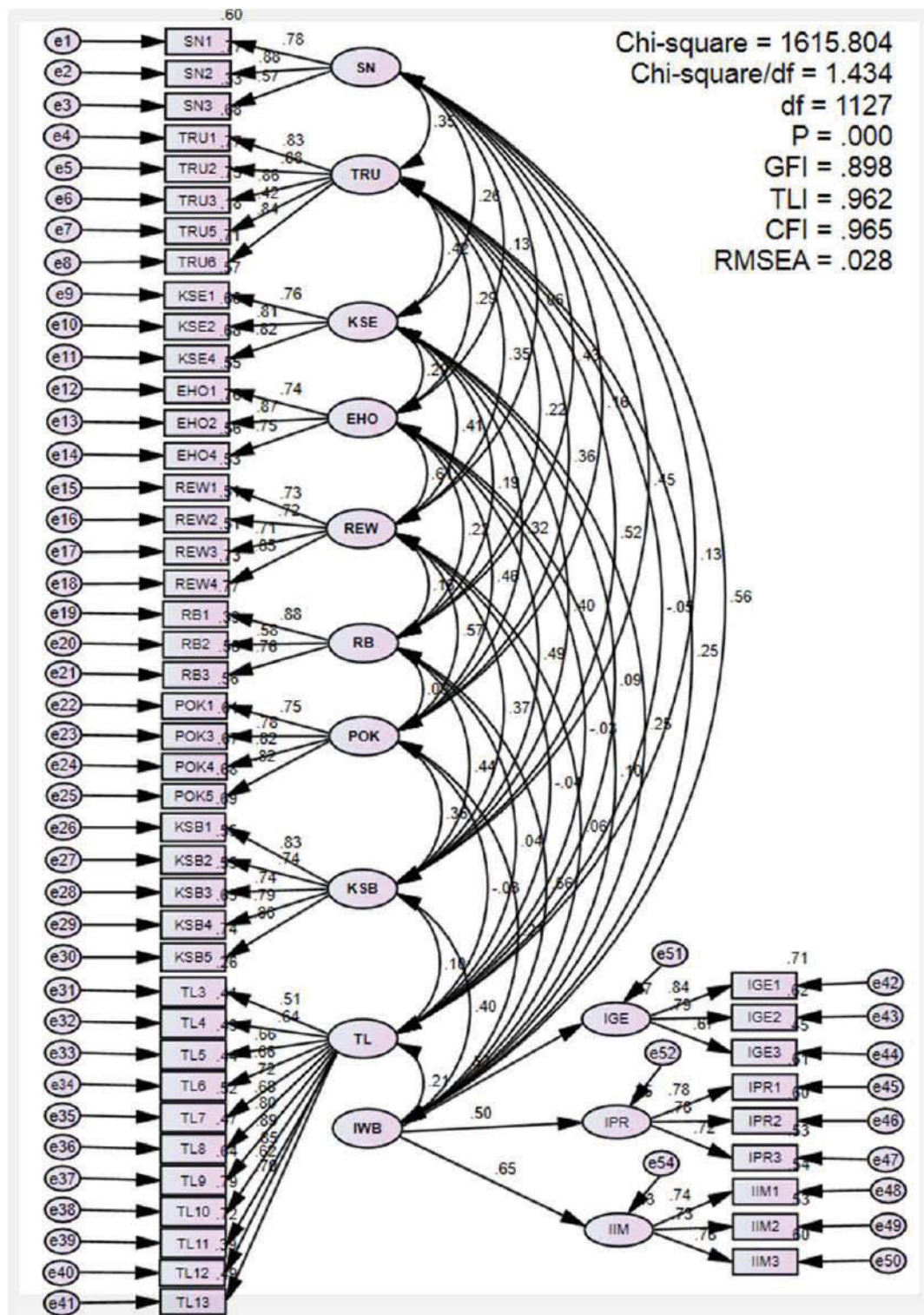


Figure 5.8. The initial measurement model for this research in AMOS software

Overall fit: The results (see Table 5.22) show that the overall fit χ^2 is 1615.804 with 1127 degrees of freedom which is significant at p -value of 0.000. Consequently, the χ^2 indicates that the observed covariance matrix (reality) does not match the estimated covariance matrix (theory) within sampling variance (Hair et al., 2010). The researcher next looked at several other fit indices (see Table 4.16, Chapter 4) because of the problems related to using the generalised likelihood ratio statistic alone, and the effective sample size of 558 (Hair et al., 2010). The parsimony fit indices supported the good model fit with PGFI=0.794 and PNFI=0.822. However, the absolute (GFI, AGFI, RMR, RMSEA) and incremental fit indices (CFI, NFI, TLI) indicated a not very good fit to the data as: **GFI=0.898**, AGFI=0.885, RMR=0.039, RMSEA=0.028, CFI=0.965, **NFI=0.893**, TLI=0.962. Therefore, in addition to assessing model fit statistics, it is necessary to improve the model fit by checking some model diagnostics. In doing so, this study used the following diagnostics measures suggested by Hair et al. (2010); path estimates, standardised residuals, and modification indices.

Path estimates (Factor loadings): The loadings below the threshold values should be evaluated to decide on removal. One loading estimate – the 0.422 associated with TRU5 was noted because it fell below the loading cut-off of 0.50 (see Table 1, Appendix 8).

Standardised residuals: The next diagnostic measures were conducted by visual examination of the residual matrix, which was not displayed all here. The results showed that no standardized residuals were exceeding the threshold value of $|4|$ that may indicate a problem with one of the measures.

Modification indices (MIs): MIs are associated with the covariance between the variables. This study looked at the largest modification index for the error term between items.

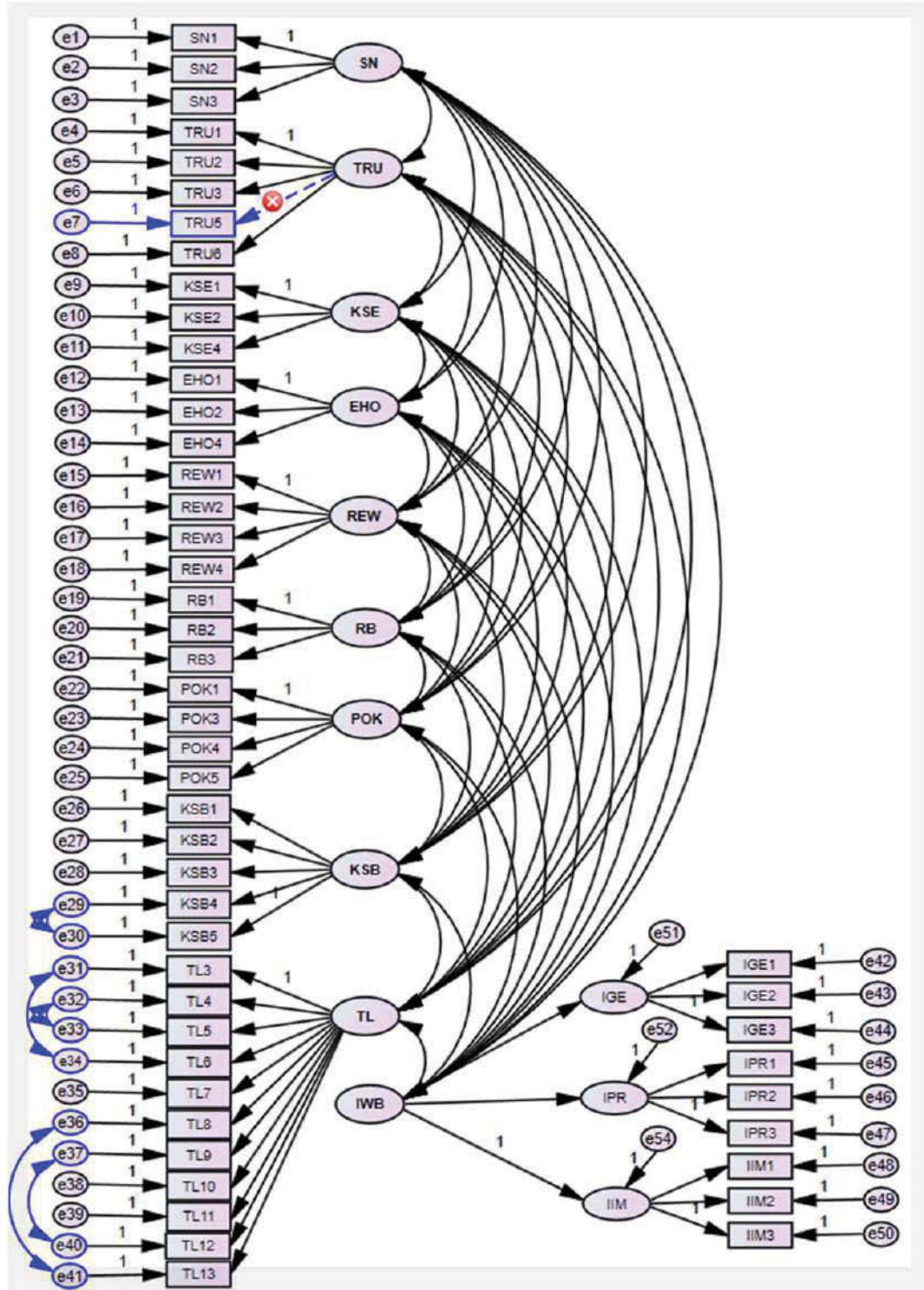


Figure 5.9. The final measurement model for this research in AMOS software

The CFA goodness-of-fit statistics for both initial and final measurement model are presented in Table 5.23. The resultss for the final model will now be discussed. First, the value for normed χ^2 , an absolute fit index, was 1.382 ($\chi^2/df = 1484.490/1074$)

which was smaller than 3.0 suggesting an acceptable fit for the CFA model (Bagozzi and Yi, 1988). Moreover, the value of RMSEA was 0.026, which exceeded the acceptable fit threshold level of 0.08 (Hooper et al., 2008). Accordingly, this absolute fit index provides additional support for model fit. Other absolute fit indices (GFI=0.904, AGFI=0.891, and RMR=0.038) exceeded acceptable fit threshold levels supporting a good fit for the CFA model. Moving on to look at the incremental fit indices, the CFI is the most commonly used measure (Hair et al., 2010). The value for CFI was 0.970, which exceeded the recommended cut-off value of 0.90 for a model of complexity and large sample size. Other incremental fit indices (NFI=0.901, TLI=0.967) also exceeded acceptable fit threshold levels. Finally, even though this model has not compared to other models at this stage, the parsimony fit indices PGFI and PNFI had values of 0.793 and 0.823 respectively, which reflects a good model fit (Mulaik et al., 1989).

Taken together, the CFA results of the final model suggested that the measurement model exhibited a reasonably good fit. Hence, the researcher further examined the model results such as construct validity and model diagnostics aimed at modifying the model.

Table 5.23: The fit indices for the initial and final measurement model

Measures of fit	Cut-off value	The initial model	The final model
Chi-square (χ^2)		1615.804 (<i>p</i> : 0.000)	1484.490 (<i>p</i> : 0.000)
Degrees of freedom (<i>df</i>)		1127	1074
Absolute Fit Measures			
GFI	> 0.90	0.898	0.904
AGFI	> 0.80	0.885	0.891
RMSEA	< 0.08	0.028	0.026
RMR	< 0.05	0.039	0.038
χ^2/df	< 3	1.434	1.382
Incremental Fit Indices			
NFI	> 0.90	0.893	0.901
TLI (NNFI)	> 0.90	0.962	0.967
CFI	> 0.90	0.965	0.970
Parsimony Fit Indices			
PGFI	> 0.50	0.794	0.793
PNFI	> 0.50	0.822	0.823

Construct validity: Convergent validity and discriminant validity were examined to assess construct validity with the rules of thumb presented in Table 5.24.

Table 5.24: Acceptable thresholds of convergent and discriminant validity

Used to test	Acceptable cut-off value
Convergent Validity	
Factor loadings	≥ 0.50 (preferably 0.70)
Average Variance Extracted (AVE)	$\geq 50\%$
Construct (Composite) reliability (CR)	≥ 0.70 (0.60 and 0.70 is acceptable)
Discriminant Validity	
	Square root of AVE greater than inter-construct correlations
	Maximum Shared Variance (MSV) < AVE

To examine convergent validity, the researcher examined unstandardized factor loading estimates. From the results (see Appendix 8), all loading estimates were significant as required for convergent validity. Furthermore, the study examined the standardized loadings, which are needed for calculating discriminant validity, and reliability estimates (Hair et al., 2010). The results (see Table 5.25) show that all loading estimates (standardized value) exceed the threshold of 0.50. The Average Variance Extracted (AVE) values range between 50.9% and 72.7%, which exceed the 50% rule of thumb. Construct reliability range from 0.791 to 0.918 which again exceed 0.70, indicating adequate reliability. The combination of these results provides sufficient evidence of convergent validity and unidimensionality of the measurement model.

To test for discriminant validity, the researcher adopted a conservative technique by comparing the square root of AVE estimates for each factor with the inter-construct correlations associated with other factors (Hair et al., 2006). The results from Table 5.26 provide the evidence of construct validity, reliability, and unidimensionality. It is clearly seen that square root of all AVE values are higher than the corresponding inter-construct correlation estimates (below the diagonal line). It also shows that AVEs > MSVs (maximum shared variance). This is significantly higher than their MSV. Moreover, the congeneric measurement model, in which each measure was associated with only one latent construct, did not have any cross-loading among either the error terms or the indicators. This model provided a good fit and presented little evidence of

significant cross-loadings. Taken together, these results supported the discriminant validity of the measurement model.

Table 5.25: Standardized factor loadings, Average Variance Extracted, and Reliability Estimates

	IWB	TRU	SN	KSE	KSB	TL	EHO	REW	RB	POK
IGE	.817									
IPR	.805									
IIM	.754									
TRU1		0.828								
TRU2		0.876								
TRU3		0.865								
TRU6		0.841								
SN1			0.775							
SN2			0.878							
SN3			0.773							
KSE1				0.755						
KSE2				0.814						
KSE4				0.824						
KSB1					0.842					
KSB2					0.750					
KSB3					0.745					
KSB4					0.768					
KSB5					0.838					
TL3						0.619				
TL4						0.623				
TL5						0.650				
TL6						0.663				
TL7						0.718				
TL8										
TL9						0.672				
TL10						0.791				
TL11						0.895				
TL12						0.853				
TL13						0.627				
TL13						0.671				
EHO1							0.744			
EHO2							0.870			
EHO4							0.750			
REW1								0.728		
REW2								0.717		
REW3								0.714		
REW4								0.852		
RB1									0.879	
RB2									0.579	
RB3									0.764	
POK1										0.749
POK3										0.781
POK4										0.817
POK5										0.822
AVE	0.628	0.727	0.656	0.637	0.624	0.509	0.624	0.570	0.564	0.629
CR	0.835	0.914	0.851	0.840	0.892	0.918	0.832	0.841	0.791	0.871

This study also computed the composite reliability (CR) for each construct. Table 5.26 shows that CR values are all above the minimum cut-off value of 0.70. These results indicate that this study has reliability in its constructs.

At this point, this study can proceed with confidence that the observed variables represented by the final measurement model measured these key construct well.

Table 5.26: Average variance extracted (AVE), Maximum shared variance (MSV) and Composite reliability (CR)

	CR	AVE	MSV	IWB	TRU	SN	KSE	KSB	TL	EHO	REW	RB	POK
IWB	0.835	0.628	0.312	0.792									
TRU	0.914	0.727	0.268	0.247	0.853								
SN	0.851	0.656	0.312	0.559	0.344	0.810							
KSE	0.840	0.637	0.173	0.247	0.416	0.263	0.798						
KSB	0.892	0.624	0.268	0.402	0.518	0.449	0.410	0.790					
TL	0.918	0.509	0.046	0.215	-0.046	0.136	0.100	0.107	0.713				
EHO	0.832	0.624	0.368	0.101	0.285	0.129	0.290	0.485	-0.024	0.790			
REW	0.841	0.570	0.368	0.057	0.343	0.057	0.407	0.364	-0.039	0.607	0.755		
RB	0.791	0.564	0.312	0.559	0.213	0.432	0.187	0.438	0.038	0.215	0.162	0.751	
POK	0.871	0.629	0.324	0.214	0.355	0.156	0.316	0.358	-0.031	0.461	0.569	0.086	0.793

5.4.2 Assessment of structural model and hypotheses testing

The measurement model, the first step of two-step SEM approach, has been tested using CFA in the previous section. The end of CFA's result was the validation of a set of construct indicators that allowed the researcher to examine the relationship between the constructs of the proposed research model (see Figure 3.3). This study has endeavoured to find the answers to the research questions presented in Chapter 1 and 2. In this section, the results of assessing the structural model involved two issues (also known as stage 5 and 6) are presented.

Stage 5: Specifying the structural model

Given the construct measures, the researcher established the structural relationships among the constructs and depicted them in an appropriate form for SEM analysis. In this step, the study tested main effects of the following hypotheses. The moderate effects will be tested and discussed later.

- H_{1a}: Subjective norms have a positive effect on KSB
H_{2a}: Trust has a positive effect on KSB
H_{3a}: Knowledge self-efficacy has a positive effect on KSB
H_{4a}: Enjoyment in helping others has a positive effect on KSB
H_{5a}: Expected organisational rewards have a positive effect on KSB
H_{6a}: Reciprocal benefits have a positive effect on KSB
H_{7a}: Psychological ownership of knowledge has a positive effect on KSB
H_{8a}: KSB positively impacts innovative work behaviour

The visual diagram was used to depict the theory (see Figure 5.10). The structural model was specified based on the measurement model by removing the double-headed arrows between exogenous variables and endogenous variables. They were then replaced by single-headed arrows which represent the causal relationships between the constructs. The full structural model is depicted in Figure 5.10 in which SN, TRU, KSE, EHO, REW, RB and POK are exogenous variables, while KSB and IWB are endogenous variables. Moreover, each hypothesis and the corresponding path are listed in the legend at the bottom right of Figure 5.10. For example, H_{1a} hypothesises a positive SN-KSB relationship. A parameter estimate linking an exogenous construct to an endogenous construct is named by the symbol P.

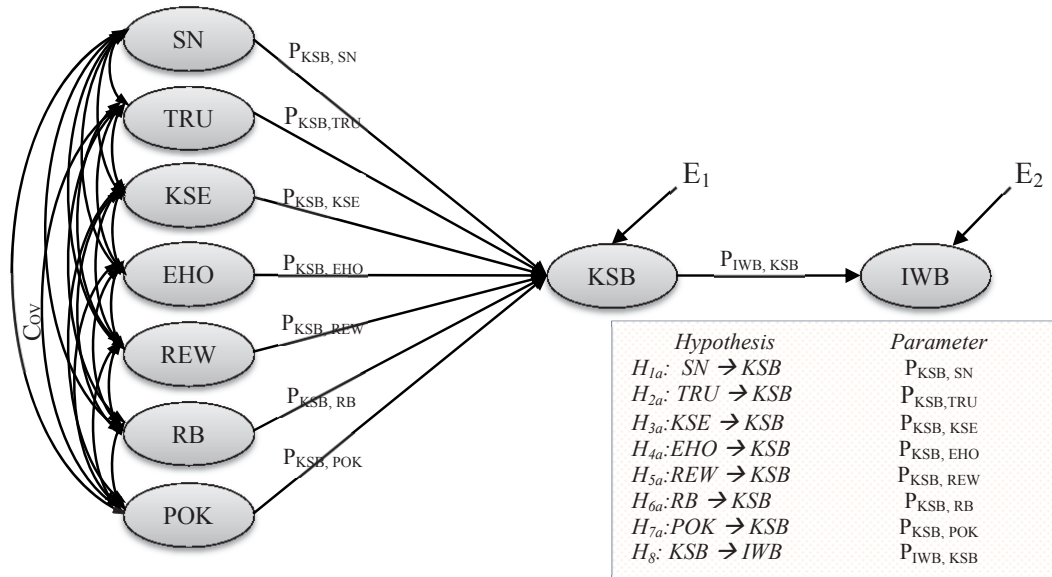


Figure 5.10. The original structural model based on EFA and CFA results

Note: For simplicity, this diagram does not show the measured variables and their corresponding paths and errors. However, they must be shown in the SEM program.

Stage 6: Accessing the structural model

The structural model displayed in the path diagram (see Figure 5.10) was then estimated and accessed by using AMOS 22.0, which also used the same criteria to assess the model fit indices in CFA. In addition to the assessment of model fit, the researcher examined the individual parameter estimates against the corresponding hypotheses, which determined whether the hypotheses were accepted or rejected. To do this, the study used the standardized path coefficients (also known as critical ratio). The threshold of t -value ($CR < -1.96$, $CR > +1.96$) was used to achieve a significant level with $p < 0.05$ (Byrne, 2001). Moreover, the parameter estimates should be statistically significant, and in the predicted direction that means these estimate values are >0 and <0 for positive and negative relationship respectively.

The model fit statistics and the standardised path coefficients of the structural model are presented in Figure 5.11 and Appendix 9. All of the goodness-of-fit measures were within a range that would be associated with strong acceptability of fit: $\chi^2=1020.242$, $df=633$, GFI=0.913, AGFI=0.898, RMSEA=0.33, RMR=0.42, $\chi^2/df=1.612$, NFI=0.909, TLI=0.959, CFI=0.963, PGFI=0.780, and PNFI=0.818.

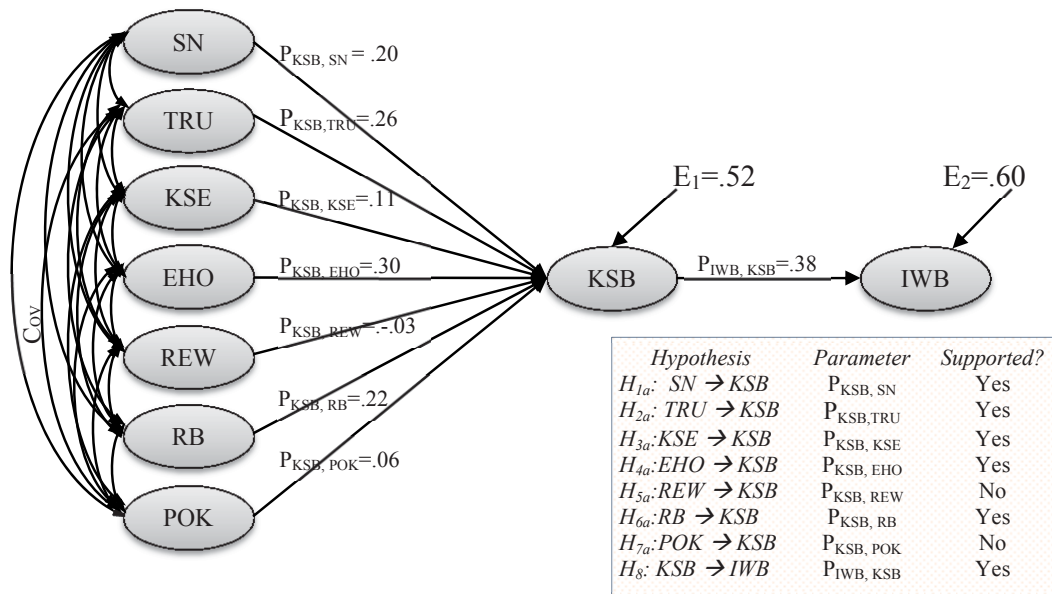


Figure 5.11. Standardised path estimates for the structural model (main effects)

Note: For simplicity, this diagram does not show the covariance values (Cov) between constructs (see Appendix 9)

Hypothesis testing

The researcher next examined the individual parameter estimates (e.g. path coefficient, *t*-value, *p*-value). The structural path estimates of the hypotheses H_{1a}, H_{2a}, H_{3a}, H_{4a}, H_{6a}, and H₈ were significant and in the expected direction (positive relationships). Thus, these hypotheses were supported. However, the exceptions were the estimates between REW and KSB, and between POK and KSB. Both these estimates were not significant although they were in the hypothesized direction. Therefore, the hypotheses H_{5a} and H_{7a} were rejected. Overall, six of the eight estimates were consistent with the hypotheses. The model data confirms significant and positive associations between Subjective norms (SN), Trust (TRU), Knowledge self-efficacy (KSE), Enjoyment in helping others (EHO), Reciprocal benefits (RB) and Knowledge sharing behaviour (KSB), and between KSB and Innovative work behaviour (IWB). These results supported the theoretical model, with a caveat for the two paths (H_{5a}: REW → KSB and H_{7a}: POK → KSB) that were not supported.

In summary, the study has tested its original structural model. The results revealed a reasonably good overall model fit and the hypothesised relationships were generally supported. Therefore, the researcher can continue to interpret the precise nature of the relationships with an acceptable extent of confidence.

Table 5.27: The goodness-of-fit measures and structural parameter estimates for structural model

Structural relationship (Hypothesis)	Unstandardized parameter estimate (PC)	Standard error	C.R (t-value)	P value	Supported?
H _{1a} : SN → KSB	.240	.056	4.246	***	Yes
H _{2a} : TRU → KSB	.356	.060	5.960	***	Yes
H _{3a} : KSE → KSB	.164	.066	2.478	.013*	Yes
H _{4a} : EHO → KSB	.276	.049	5.617	***	Yes
H _{5a} : REW → KSB	-.037	.067	-.548	.584	No
H _{6a} : RB → KSB	.287	.058	4.929	***	Yes
H _{7a} : POK → KSB	.080	.062	1.277	.201	No
H ₈ : KSB → IWB	.202	.035	5.838	***	Yes

Note: *: significant when $p < 0.05$ (two-tailed); ***: significant when $p < 0.001$ (two-tailed)

5.4.3 Analysis of moderate effects

A moderator can be defined as a qualitative (e.g. gender, age) or quantitative (e.g. level of transformational leadership) variable that can affect the relationships between an independent variable or predictor variable and a dependent or criterion variable (Baron and Kenny, 1986). For example (see Figure 5.12), let assumes that Z is the moderator variable on the relationship between X (independent variable) and Y (dependent variable). Then the moderation effect of Z is “to alter” the effect of X on Y. A moderation effect could either strengthen or weaken the influence of X on Y. In other words, the effects of X on Y would rely on the levels of moderator variable. In order to test moderation effects, Baron and Kenny (1986) described that “the levels of the moderator variable are treated as different groups” (p.1175).

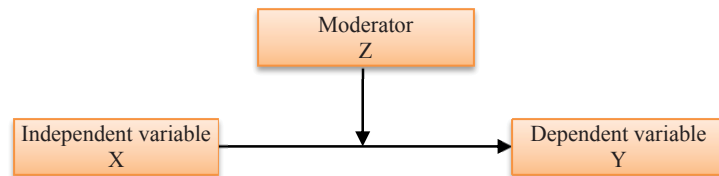


Figure 5.12. The conceptual model of a moderate effect

To investigate moderating effects, this study utilised a multi-group analysis with the low and high group approach suggested by Dabholkar and Bagozzi (2002). The analysis of moderation effects were tested as the followings steps.

Step 1: Determined the moderate hypotheses to be tested. The researcher started with the proposed research model based on Chapter 3 and the results from the analysis of main effects (see Figure 5.13). The initial research model proposed the moderating influence of Transformational leadership (TL) on eight relationships including H_{1a} , H_{2a} , H_{3a} , H_{4a} , H_{5a} , H_{6a} , and H_{7a} , and the moderating effect of the quality of TMS on the relationship between KSB and IWB (H_8).

However, the hypotheses H_{5a} , H_{7a} were not supported, while H_9 was removed from EFA results. In other words, the relationships between Expected organisational rewards (REW) and Knowledge sharing behaviour (KSB) (H_{5a}), Psychological ownership of knowledge (POK) and KSB (H_{7a}), and a joint relationship between Transactive memory systems (TMS) and KSB on Innovative work behaviour (IWB) (H_9) did not exist. Moreover, before testing the moderator in the model, the researcher must ensure that the effects of an independent variable on its dependent variable exists and is significant

(Awang, 2015). Therefore, the study determined not to test the hypotheses H_{5b}, H_{7b} and H₉ that influence on the main hypotheses H_{5a}, H_{7a}, and H₈ respectively.

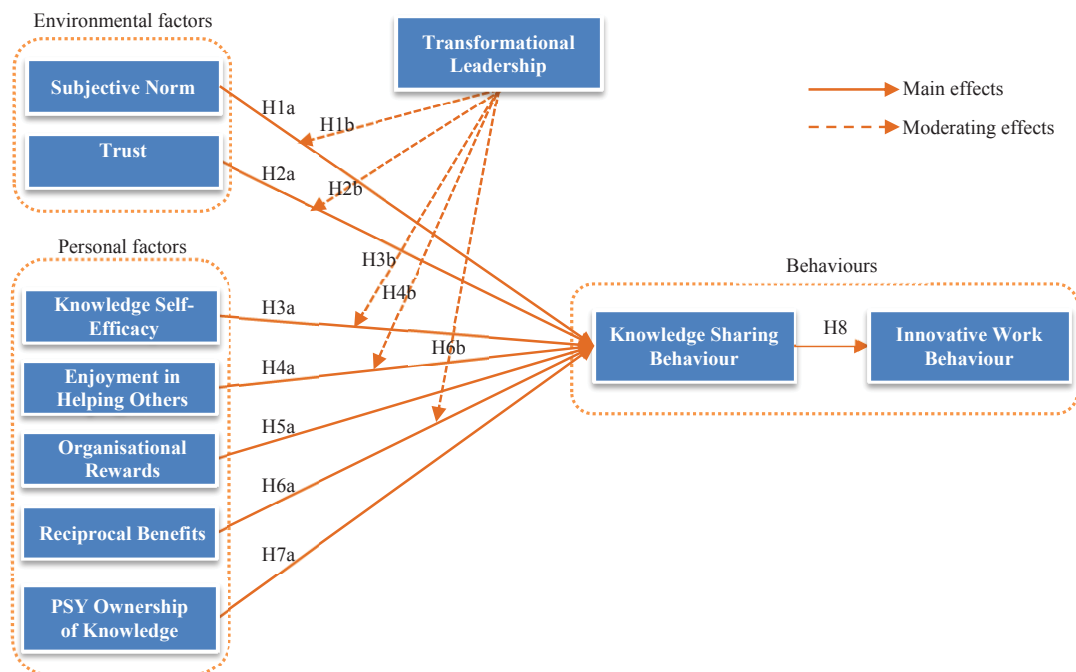
H_{1b}: TL positively moderates the relationship between subjective norms (SN) and KSB. In teams with high TL, SN will have a stronger positive impact on KSB than in teams with low TL.

H_{2b}: TL positively moderates the relationship between trust and KSB. In teams with high TL, Trust will have a stronger positive impact on KSB than in teams with low TL.

H_{3b}: TL positively moderates the relationship between knowledge self-efficacy (KSE) and KSB. In teams with high TL, KSE will have a stronger positive impact on KSB than in teams with low TL.

H_{4b}: TL positively moderates the relationship between enjoyment in helping others (EHO) and KSB. In teams with high TL, EHO will have a stronger positive impact on KSB than in teams with low TL.

H_{6b}: TL positively moderates the relationship between reciprocal benefits (RB) and KSB. In teams with high TL, RB will have a stronger positive impact on KSB than in teams with low TL.



Note: H_{5b}, H_{7b} were not tested because H_{5a} and H_{7a} were not supported from main effects' results. H₉ was removed from EFA results

Figure 5.13. The conceptual model of the moderator transformational leadership

Step 2: Categorised the moderating variable (TL) into two high and low groups in the dataset. TL was measured by thirteen items using a five-point Likert scale (1 never to 5 always). This factor was first computed into one continuous value followed by converted to two high and low groups using a median split method. This study utilised a median split method because it provided two adequate sample size groups (Ping, 1996). These statistics were conducted in the SPSS 22.0. The results show in Appendix 9.

Step 3: Developed four models: Each model was tested for low and high groups using structural equations modelling (SEM).

- Model A: all factor loadings constrained across the groups, and error variances of the items for endogenous variables also constrained
- Model B: the factor loadings free but error variances constrained.
- Model C: both factor loadings and error variances free.
- Model D: factor loadings constrained across the groups but error variances free.

Step 4: Accessed the presence of moderate effects. To achieve this purpose, this study conducted two tests based on four models that had been developed in step 3. All models were run comparing the high and low groups. The researcher first compared model A to model D (and model B to model C). The results showed that the change of χ^2 of model A and B were non-significant, which indicated that model A and B were not significantly different. The result for the comparison of model B and C were similar. Consequently, according to Dabholkar and Bagozzi (2002), error variances caused non-significant differences across the high and low groups. The study then took the second test for the comparison between model A and B (or model C and D). The results found that the change of χ^2 of model A and B were significantly different (see Table 5.28) (The possible identification for model D and C was similar). Therefore, there were significant moderate effects across the high and low groups. Moreover, this difference resulted from factor loading because the model fit indices for model A and B were sufficiently different (see Table 5.28). Taken together, groups were different at the model level. The researcher could then check path differences.

Step 5: Determined moderating effects' direction and significance. Table 5.29 presents the proposed moderate hypotheses (H_{1a} , H_{2a} , H_{3a} , H_{4a} , and H_{6a}), including the changes of standardized β coefficients (from low to high level of groups). It can be clearly seen from the results that the hypotheses H_{1a} , H_{2a} , H_{3a} were supported with a median split.

This means that a higher level of TL in a team strengthens the relationships between Subjective norms (SN), Trust (TRU), Knowledge self-efficacy (KSE) and Knowledge sharing behaviour (KSB) leading to Innovative work behaviour (IWB) in the organisation. By contrast, a low level of TL will attenuate these relationships. However, unlike the strengthening hypothesised, hypotheses H_{4a} and H_{6a} were not supported. The relationships between EHO and KSB, and RB and KSB were not significantly changed with a higher level of TL. The implication of the results will be discussed in Chapter 7.

Table 5.28: Structural equations results for moderating effects models

Model	χ^2	df	RMSEA	RMR	TLI	CFI	$\Delta\chi^2/\Delta df$	Sig
Model A	514.623	405	0.028	0.31	0.969	0.970	4.20	p<0.05
Model B	430.524	385	0.027	0.33	0.972	0.974		

Table 5.29: Structural equations results for hypotheses in moderating effects model.

Relationship	Transformational leadership (TL)		Note	Supported?
	Low	High		
SN → KSB	0.058	to 0.257	Significant: change is in correct direction (strengthen) and ≥ 0.1	Yes
TRU → KSB	0.129	to 0.314	Significant: change is in correct direction (strengthen) and ≥ 0.1	Yes
KSE → KSB	0.079	to 0.214	Significant: change is in correct direction (strengthen) and ≥ 0.1	Yes
EHO → KSB	0.265	to 0.299	Not significant: change is < 0.05 , not supporting hypothesis	No
REW → KSB			Path removed from the main effects	Not tested
RB → KSB	0.222	to 0.199	Not significant: change is < 0.05 , not supporting hypothesis	No
POK → KSB			Path removed from the main effects	Not tested

5.4.4 Overall findings of hypotheses testing

Table 5.30 presents the overall findings of hypotheses testing for both main and moderate effects in the present study.

Table 5.30: The summary of results of hypotheses testing

	Hypothesis	Supported?
Main effects	H_{1a} : Subjective norms have a positive effect on KSB	Yes
	H_{2a} : Trust has a positive effect on KSB	Yes
	H_{3a} : Knowledge self-efficacy has a positive effect on KSB.	Yes
	H_{4a} : Enjoyment in helping others has a positive effect on KSB.	Yes
	H_{5a} : Expected organisational rewards have a positive effect on KSB.	No
	H_{6a} : Reciprocal benefits have a positive effect on KSB.	Yes
	H_{7a} : Psychological ownership of knowledge has a positive effect on KSB.	No
	H₈ : KSB positively impacts innovative work behaviour.	Yes
Moderate effects	H_{1b} : TL positively moderates the relationship between subjective norms and KSB.	Yes
	H_{2b} : TL positively moderates the relationship between trust and KSB.	Yes
	H_{3b} : TL positively moderates the relationship between KSE and KSB.	Yes
	H_{4b} : TL positively moderates the relationship between enjoyment in helping others and KSB.	No
	H_{5b} : TL positively moderates the relationship between expected organisational rewards and KSB	Not tested ^a
	H_{6b} : TL positively moderates the relationship between reciprocal benefits and KSB.	No
	H_{7b} : TL positively moderates the relationship between psychological ownership of knowledge and KSB.	Not tested ^a
	H₉ : TMS quality positively moderates the relationship between KSB and IWB	Not tested ^b

Not: ^a: Path removed from the main effect testing. ^b: Path removed from the EFA results

5.5 Summary of Chapter 5

Chapter five presented the procedures and results of the empirical data analysis of this study. The analysis was conducted with a combination of statistics software including SPSS 22.0 and AMOS 22.0. Firstly, Section 5.2 presented descriptive statistics using SPSS 22.0. The results showed that this study received a high response rate of 74% through the paper survey. Moreover, the data screening (e.g. missing value, normal distribution, outliers) revealed that the dataset met the requirement of normal distribution without extreme outliers. The result of the examination of the standard deviation and standard error showed that the 558 respondents acquired from the data collection represented the population. Secondly, Section 5.3 performed the validation of the measurement scale including scale reliability and exploratory factor analysis (EFA). The assessment of scale reliability involved internal consistency and item-total correlation which showed that the measurement scales of this research were considered reliable; it relied on the high values of Cronbach's alpha for each construct. Furthermore, the item-total correlations of all measured items for each construct were acceptable except five items (EHO3, POK2, WKW1, WDW1, WDW2, and WDW3). The results indicated that each item adequately measured its underlying construct apart from factor WDW. This chapter then performed the EFA to discover the underlying structure of a set of variables. The results derived a final model construct comprising of 12 factors with 54 items except two items TRU4 and KSE3 which had cross-loadings on two different factors. Next, the research model and hypotheses were tested via the two-step SEM approach. The first step was to test the measurement model (CFA) based on the factor structures derived from EFA. The results from CFA analysis indicated that the measurement model had an acceptable level of model fit after eliminating one item (TRU5) with the loading estimate below the loading cut-off of 0.50. The results also confirmed that the measurement model had adequate construct validity (convergent validity and discriminant validity), reliability, and unidimensionality. The second step was to assess the structural model which indicated an acceptable model fit. The hypotheses (main effects) were tested by assessing the path estimates for each relationship in the research model. The results show that all hypotheses were supported except H_{5a} and H_{7a}. This chapter was concluded by assessing the moderate effects using multi-group approach with a mean split in AMOS. The results indicated that there were only three moderate effects H1b, H2b and H3b were supported. Implications of the findings, conclusions and limitations of the research are discussed in Chapter 7 and 8.

Taken together, the results from quantitative analysis appeared to present a satisfactory answer the research questions. Finally, the researcher proceeded to evaluate the model and enrich the future work by conducting semi-structured interviews with a group of experts. The process and results of qualitative approach will be discussed in the next chapter.

CHAPTER 6 : PHASE II - QUALITATIVE DATA ANALYSIS

6.1 Introduction

Chapter 5 presented the results of the quantitative data collection and analysis. This chapter discusses the results from the follow-up qualitative phase. This phase was used to explain and interpret the important findings acquired from the quantitative data analysis in more detail. The selection of interviewees and designing the interview protocol for the qualitative phase were based on what had been found in the quantitative phase. The results of both quantitative and qualitative phases will be integrated for the discussion and interpretation of the final findings of the whole research (see Chapter 7). This chapter begins with the description of the participants' profiles. The chapter will then discuss the results of the semi-structured interviews including: (1) a brief review of the semi-structured interviews (data collection and analysis); (2) the reasons that the interviewees believe Vietnamese universities need to promote Knowledge Sharing (KS) amongst academics; and (3) the comparisons of quantitative and qualitative findings for the explanation of each hypothesis. The chapter's outline is presented in Figure 6.1.

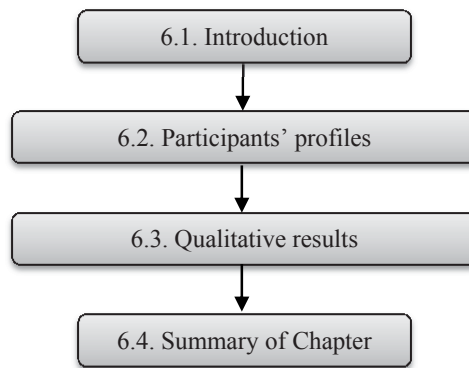


Figure 6.1. Chapter's outline

6.2 Participants' profiles

Concerning the content of the interview protocol, except for the questions used for explaining and interpreting significant quantitative findings from quantitative phase, only five demographic questions were included: gender, age, qualification, position and year of experience. Sensitive questions (e.g. place of work, salary, or name) were avoided. Table 6.1 shows the demographics of the participants for the qualitative section of this study.

Table 6.1. The demographics of the participants

No.	Gender	Age	Education degree	Year	Current position	Profile
Intvee1	Female	41-50	Doctoral degree	> 15	Head of a Department of Science and Technology	The expert graduated with PhD in management information systems from a high-ranking university in the world (top 100). The expert has had many years of working on information and knowledge to support academics in a university environment. The expert has been working on applying information and communication technology in teaching and research, including Management Information Systems (MIS), Enterprise resource planning (ERP) and E-Commerce/E-Business.
Intvee2	Female	31-40	PhD candidate Master's degree	> 15	Senior lecturers of a Department of Management Information System	Master of Information Systems Design in a high-ranking European university. Currently, the expert is in the final year of their PhD in Information Systems in a high-ranking university (top 500). The expert has substantial experience in KM and Knowledge Management Systems in higher education. The expert has also been teaching and applying quantitative methods including many statistical skills such as designing questionnaire surveys, quantitative data analysis, Explanatory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Structural Equation Modelling (SEM).
Intvee3	Male	31-40	PhD candidate Master's degree	> 15	Deputy Director of a University Library	The expert has worked for over 15 years in Library in a top university in Vietnam. The expert had responsibility for the development and application of information technology in Library. The expert is one of the founders of a knowledge-sharing forum for the librarian community in Vietnam. Currently, the expert is a PhD candidate in information technology in a foreign country.

Intvee4	Male	31-40	Master's degree	11-15	Deputy director of a Center for Information Technology	The expert has a master's degree in software engineering and has had over ten years of professional software development experience in higher education. Specifically, the expert has been working on software development for universities, cryptography and security system; wavelet and their scientific applications, personnel management information system. He has participated in teaching IT skills to students for eight years.
Intvee5	Male	41-50	Doctoral degree	> 15	Deputy Director of a Graduate Research School	The expert graduated with PhD in education management from a high-ranking university in the world (top 500). Currently, the expert is doing the postdoc in a high-ranking foreign university in the world (top 300). The expert has the strength in the combination of pedagogy-before-technology approach and effective application of technologies to transform the quality of teaching, learning and research. The expert is interested in joint research projects with like-minded researchers all over the world. The expert is a very active researcher who always helps and feels enjoyments in helping others. The expert has many years of working experience in higher education management.
Intvee6	Female	31-40	Master's degree	11-15	Library and information literacy expert of a University Library	<p>The expert has over ten years of working in a university library in supporting students and academic staff for teaching, learning and research. The expert was also involved in building a digital library and teaching the information literacy subject for students, lecturers and researchers. The expert has the following expertise:</p> <ul style="list-style-type: none"> - Analyse and evaluate library and information services, technology and media service requirements. - Incorporate the essential knowledge and skills of Information Literacy into teaching and learning

Intvee7	Male	31-40	Master's degree	11-15	Library and information literacy expert of a University Library	<p>The expert has over ten years of working in a university library in supporting students and academic staff for teaching, learning and research. The expert also involves in building a digital library and teaching the information literacy subject for students, lecturers and researchers. The expert has the below skills and expertise:</p> <ul style="list-style-type: none"> - Incorporating the essential knowledge and skills of information literacy into teaching and learning - Training students, lecturers and researchers about statistics in doing research: SPSS - Guiding students and providing them with essential academic support skills including Endnotes, questionnaire survey designs, use of SPSS, etc.
----------------	------	-------	-----------------	-------	---	--

6.3 Qualitative results

6.3.1 Review of qualitative interviews: data collection and analysis

This section presents the results of the qualitative data analysis to explain and interpret significant quantitative findings from the quantitative phase (hypothesis testing). As discussed in Chapter 4, the qualitative analysis and interpretation help to move from an analysis of data to understanding, explaining and interpreting the central phenomena of the current research. The present study applied steps (see Section 4.6.4, Chapter 4) to analyse the interview data for each interviewee. The interviews were conducted through Skype and E-mails with each interviewee. They were asked to rate their agreement (1: Strongly Agree to 5: Strongly Disagree) for the obtained findings (tested hypotheses) of the quantitative phase. Each of these questions also included “probes” by using some open-ended questions beginning with the word “How” or “Why” to encourage interviewees to talk more and expand the time of the interview to receive useful information. Below is an example of the questions in the interview protocol.

Please indicate the extent to which you disagree or agree with the following results, and give your comments for each result.					
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	
1	2	3	4	5	
H1a: Subjective norms have a positive effect on knowledge-sharing behaviour					
1	2	3	4	5	
Please explain further how and why you give the above rate:					

Then, the researcher transcribed and translated the interviews into English (when necessary). The transcriptions were stored in Word documents for the further analysis. The transcripts of the interviews were double checked by two Vietnamese-English language experts who are also translators and interpreters for the accuracy of transcription (see Statement of Audit Trail, Appendix 4). The interviewees’ knowledge and experience of KS and KM were explored to account for the results obtained from the quantitative phase. The analysis could be holistic in the whole interviews or embedded in a particular aspect of each expert. The analysis coded the text passages (transcribed and translated from interview recordings) and generated description and themes from these codes. The codes and themes related to each interviewee’s knowledge and experience of KS in university settings. This study thoroughly checked

other documents to validate and enrich the information provided by each participant – e.g. reflections, follow-up emails, chats, and legislation documents.

The following sections present: (1) the interviewees' explanations for why Vietnamese universities should promote KS (2) and the description and themes that were generated to represent constructs of the research model. The presentation of these sections endeavoured to make it compact and comprehensive.

6.3.2 Reasons for promoting knowledge sharing in universities

Most of the interviewees emphasised the importance of improving KS in universities as a key role in creating and transferring knowledge through their core activities such as teaching and learning, research, dissemination, and working with other organisations to promote innovation.

Firstly, many interviewees reported that the university environment is an academic environment, in which KS naturally exists in some simple forms. At the personal level, KS is learning and teaching that is the daily work of every lecturer. Collectively, also to colleagues, since the characteristics of academia involve research, discussion, exchange of knowledge through these activities, academics share their expertise and knowledge – for example, to conduct research projects or improve their lecturers. It can be said that KS is compulsory for the existence of a university. It is part of everyone's daily routine. It is also a non-stop learning process for every academic staff member to continually learn to improve their level of professional qualification, their teaching content and method, and themselves. The process is not just sharing but also learning from colleagues and researchers. Here are some statements from interviewees:

"..., I share my knowledge with my students. Moreover, when I prepare my lectures, work with Master or PhD students, I also learn from them. To me, sharing my knowledge with others also helps me to learn new things..." (Intvee1)

"The university is the place where the main task is teaching, research and transferring science and technology. Thus, promoting KS between academics is necessary and automatic..." (Intvee4)

"A university aims to promote KS. KS must become mandatory requirements specified by specific mechanisms. This will promote KS in each university." (Intvee5)

“This is because KS motivates people to be creative in learning, teaching, and research. It also increases connectivity and interactivity in the community. For example, I join a research group of the faculty of information technology. We have five people who work from different units but have the same research interests. We often share interesting ideas, articles or books together that help us work together to produce publications...” (Intvee7)

Secondly, interviewees commented on the mission of the university to the society. Most of them reported that the university is the most important contributor to the invention and technology for the development of the society. Many technologies and innovations have been commercialised in the market, contributing significantly to improving the competitiveness of enterprises and the research, and innovative activities of research institutes and universities for economic and social development. Here is an example:

“The reasons for the university’s existence are not teaching and learning, but what products, its teaching and learning produce to serve the development of social development. In other words, universities must play a key role in providing potential labour resources for the development of society.” (Intvee2)

Some interview participants illustrated that Vietnam had undergone three stages of socio-economic development: backwards agriculture, cottage industries and an industrial economy. Even in the initial stage, KS exists in the form of word of mouth by sharing experience. However, without it, Vietnam could not have achieved its relatively proud achievements in the world. For example, Vietnam experienced a food crisis in the 1980s (Hoa et al., 2012), but now it has become the third largest rice exporting country in the world (Statista, 2018); and Vietnam has developed short-term industrial crops such as rubber. At present, Vietnam’s agricultural economy is affected by advanced science and technology that requires knowledge in a new form of both quality and quantity. In the modern period of development, Vietnam chooses the model of socio-economic development based first on the technology, and then on knowledge, so the demand for knowledge and sharing knowledge has become more pressing. This is because it is the best way that Vietnam can achieve the goals of socio-economic development in the new era to integrate into the global knowledge-based economy.

“Sharing knowledge helps the development of the community. Higher education is a high-level with a large amount of knowledge. Thus, the dissemination of knowledge can

have a dramatic impact on improving the development of the national education system as well as the development of the socio-economic society in Vietnam...” (Intvee6)

Thirdly, for many interviewees, knowledge management and sharing were believed to play a decisive role in strategising, planning and operation of the university. For instance, to have a good strategy and plan, (1) the university must be based on its development with data providing accurate information and relied on the development trend of the society to build the demand for labour and knowledge of the society; (2) the university offers training courses to provide human resources with enough knowledge and skills to serve that economy and society. Some of the interviewees reported that for consistency in strategising, planning, and operation, there must be enough data, information and knowledge.

“At present, KS in universities is clogged at all levels: internal and external and the communication amongst the units/ departments. For example, information is not even shared among members of the university board. Between the university board and department level, KS is insufficient. Especially, sharing information on strategies from all levels is still difficult.” (Intvee2)

Two interviewees suggested that if KS and KM are successfully built at the university, it might help to create an excellent intellectual database. It also helps to provide input for strategic planning, provide precise information, and avoid unnecessary assumptions. In strategy, planning and operation, KS is an indispensable part of a university if it wants to have a high quality of management. When we have successful KM initiatives, we will ask about KS – e.g. What and how do tools, channels, and factors affect KS? How to promote KS among colleagues? Moreover, a few participants said that knowledge must be filtered to suit the new requirements. It is not just about sharing experiences. However, Vietnam’s problem is a lack of knowledge management systems, which makes it impossible for Vietnam to have precise results. That is the reason why we always face seasonal solutions in policy-making. Here are some statements from the interviewees:

“We always ask why we cannot plan long-term vision, strategy, and plan. Since we do not have a database of information, experience and knowledge, how can we have a long-term vision?” (Intvee4).

“KS should be promoted in the university because it facilitates the application of intellectual asset efficiently in the university that contributes to the development of the university in the long-term.” (Intvee7).

Fourthly, most of the interviewees believed that KS supports the designing and building of teaching programs, curriculums, and innovations. KS is crucial for activities such as developing curriculums. Here are some statements of informants:

“...we are currently rebuilding our teaching programs and curriculums for the information system subject. The construction of a new curriculum in English is very demanding... People have to discuss face-to-face with each other, but after only a few meetings, we have produced results that everyone is happy with. Knowledge is shared from different areas to complement one another because only one person cannot cover all the knowledge content. Our curriculum has been built upon the relevance, interdependence, and complementary subjects in an effective way.” (Intvee1).

“KS brings the power of collective intelligence and help people collaborate to create innovations lead to growing together.” (Intvee6)

Furthermore, some of the interview participants reported that in the university the knowledge-sharing model would help learners and teachers to have a spirit of innovation.

“If there is no sharing, rare knowledge and its value of senior lectures, professors, excellent young academics, and even new students exists in a distributed form. Therefore, KS is the driving force for innovation of individuals and organisations.” (Intvee2)

“This is because KS motivates people to be creative in learning, teaching, and research.” (Intvee7)

Finally, many interviewees reported that KS helps to expand the boundary of knowledge and avoid copyright infringement and plagiarism. Here is an example:

“... I believe that knowledge needs to be shared with others rather than to be kept to oneself because: (1) KS facilitates the creation of new knowledge; (2) It helps eliminate re-inventing the wheel, and expand the boundary of knowledge; and (3) KS mutually benefits both knowledge sharers and knowledge receivers.” (Intvee5)

Three interviewees supported the transparent mechanism of information which may avoid copyright infringement and plagiarism. Especially in Vietnam, piracy and plagiarism have been a painful problem that has been denounced by the whole society. One interviewee gave an example during the interview:

“...the recent evidence that in Feb 2018, there were 97 applications of associate professor and professor candidatures have been re-examined after the recognition when some of these candidatures were found to be involved in plagiarism. At the moment these applications have been suspended for the national investigation requested by the Prime minister.” (Intvee2)

The following are some other statements of interviewees supported for this view:

“Most of the shared documents are feared for losing copyright or plagiarised... if we have a transparent mechanism of information, we will avoid copyright infringement and plagiarism...” (Intvee1)

“KS helps to avoid plagiarism (with community supervision) and duplication of research resulting in the waste of intellectual assets of the society.” (Intvee6)

“KS also protects copyrights and disseminates knowledge to students and lecturers. KS leads to enrich knowledge and finally avoid the pragmatism.” (Intvee4)

6.3.3 Overall findings

This section briefly reviews the summary of the qualitative data analysis. Overall, as presented in Table 6.2, most of the results from the quantitative phase were supported by the seven interviewees, except for hypothesis H_{4b} . The interviewees agreed with all of main effects in the research model. However, two of the hypotheses, H_{5a} and H_{7a} were not strongly supported by the interviewees who had further explanations for their given ratings. While four of five moderating relationships got strong support from the interviewees (three above 4.0, one of 3.86), hypothesis H_{4b} did not receive strong agreement from them with the mean of 2.86. The next sections will discuss more details about the validations of each hypothesis and especially the significant comments from the interviewees.

Table 6.2. The findings from qualitative phase for validation of quantitative results

Hypotheses (Quantitative findings) <i>S: Supported; NS: Not supported</i>	Qualitative results			
	Agreed?	Min	Max	Mean
Main effects				
H _{1a} : Subjective norms (SN) have a positive effect on KSB. (S)	Yes	4	5	4.29
H _{2a} : Trust has a positive effect on KSB (S)	Yes	4	5	4.71
H _{3a} : Knowledge self-efficacy (KSE) has a positive effect on KSB (S)	Yes	4	5	4.57
H _{4a} : Enjoyment in helping others (EHO) has a positive effect on KSB (S)	Yes	4	5	4.57
H _{5a} : Expected organisational rewards have a positive effect on KSB (NS)	Yes	2	5	3.57
H _{6a} : Reciprocal benefits (RB) have a positive effect on KSB (S)	Yes	4	5	4.29
H _{7a} : Psychological ownership of knowledge has a positive effect on KSB (NS)	Yes	2	5	4.14
H ₈ : KSB positively impacts innovative work behaviour (IWB) (S)	Yes	4	5	4.86
Moderating effects of transformational leadership (TL)				
H _{1b} : TL positively moderates the relationship between SN and KSB. In teams with high TL, SN will have a stronger positive impact on KSB than in teams with low TL. (S)	Yes	4	5	4.71
H _{2b} : TL positively moderates the relationship between trust and KSB. In teams with high TL, Trust will have a stronger positive impact on KSB than in teams with low TL. (S)	Yes	4	5	4.43
H _{3b} : TL positively moderates the relationship between KSE and KSB. In teams with high TL, KSE will have a stronger positive impact on KSB than in teams with low TL. (S)	Yes	2	5	4.00
H _{4b} : TL positively moderates the relationship between EHO and KSB. In teams with high TL, EHO will have a stronger positive impact on KSB than in teams with low TL. (NS)	No	1	2	1.57
H _{6b} : TL positively moderates the relationship between RB and KSB. In teams with high TL, RB will have a stronger positive impact on KSB than in teams with low TL. (NS)	Yes	2	4	3.29

6.3.4 Relationship between subjective norms and KSB (H_{1a})

Quantitative result: Supported

Qualitative result: Agreed (average: 4.29)

As presented in Chapter 5, the quantitative data analysis found that subjective norms had a significant impact on KSB (H_{1a}: relationship between subjective norms and KSB). As shown in Table 6.2, H_{1a} was strongly supported by the interviewees with the average of 4.29. All interview participants believed that subjective norms have the important role on KSB of academics in universities in the Vietnam context. Many participants reported that the effect would be very strong in Vietnamese university environments because Vietnamese employees in general, university members, in particular, tend to follow what most of their colleagues and especially their leaders do. Here is an example.

We have a tendency of following the crowd. The power distance between leaders and subordinates although not very high in faculty culture, lectures still tend to follow what the senior staff do...” (Intvee1)

Some interviewees explained that in the workplace, the positive activities or behaviors of leaders and colleagues intended for academic staff (e.g. encouraging creativity, promoting personal ability, creating unity, inspiring and building beliefs) positively encouraged them to be involved in the exchange of knowledge in terms of frequency, variety types of knowledge, and channels of sharing. This is because lecturers feel comfortable and safe in sharing information and knowledge in such an environment that is created from the positive influence of leaders and colleagues. Moreover, they feel that their value and chance to interact with each other are increased. Below are some statements of participants supporting for H_{1a}.

“...some leaders believe that their knowledge is a competitive advantage that helps promote them to the upper position. They also want their subordinates to follow them so they assert their power.” (Intvee2)

“When having positive impacts from leaders or colleagues, lecturers will find that KS is useful, thereby these impacts also positively affect KSB. In my department, people often follow the work styles of our leader because everyone wants to get satisfaction from the leader. Moreover, many people wish to flatter their leaders to be close to them and to get promotions”. (Intvee3)

“Leaders and colleagues have the same research interests as well as relevant daily works. If they regularly motivate, encourage and share their knowledge with others while working, learning and teaching that will help spread their spirit to people around them to share knowledge and create a knowledge-sharing community. For example, if people around me are all willing and open to sharing their knowledge that is not only the pressure on me but it also motivates me to participate in sharing activities”. (Intvee6)

However, a few participants noted that in some workplaces, it would be possible that subjective norms may have a detrimental effect on the culture of KS among individuals. For example, if the leader is autocratic or bureaucratic, he or she may not want the information to be transparent and public. They are only afraid of information being

exposed and wish to share information within a certain group of interests. At the same time, people are scared to share knowledge because it affects their job security.

Overall, the above discussion of the qualitative interviews indicated that subjective norms have a positive impact on KSB of academics in university in Vietnam. Thus, the interviewees supported hypothesis H_{1a} .

6.3.5 Relationship between trust and KSB (H_{2a})

Quantitative result: Supported

Qualitative result: Agreed (average: 4.71)

In the questionnaire survey, trust was found to have a significant impact on KSB (H_{2a}). Based on the findings from semi-structured interviews, this hypothesis (H_{2a}) was also strongly supported by the interviewees with the high average rate of 4.71. All of the interviewees agreed that trust is a critical factor that significantly influences the willingness of academic staff in sharing their knowledge with others in universities in Vietnam. Many participants believed that in Vietnamese higher education, the impact of trust on KSB of academics is quite substantial. They explained that people would not share their knowledge with others that they do not know. It is because they may not trust them, they might think that other people would take advantage of their knowledge and turn it into theirs without giving a suitable acknowledgement. Thus, when sharing knowledge, people want to know that their knowledge will be used for the right purpose, so mutual trust will reduce the fear of sharing knowledge such as job security, misuse, distortion, and lost promotions. Mutual trust will also make the sharers feel more active, free, and comfortable when sharing their knowledge with each other. The following are some comments from interview participants:

"...You will not share your knowledge to the person that you do not know. If you don't trust them, you might think they would take advantage of your knowledge and turn into theirs without giving a good acknowledgement. If someone trusts you and share with you, you are more likely to do in return." (Intvee1)

"When sharing knowledge, people want to know that their knowledge will be used for the right purpose, so mutual trust will reduce the fear of sharing knowledge." (Intvee3)

"Having trust in leaders' and colleagues' ability and knowledge will enable knowledge receivers to actively and freely use information and knowledge. It also promotes KSB leading to widely disseminated knowledge to all people." (Intvee6)

However, two interviewees mentioned the culture of respect for older people and family culture in the workplace. They revealed that older or senior people have less faith in the young. They always think that young people lack experience in life and work. One of the interviewees explained:

“...whenever young people intend to share their knowledge, they may wonder that their knowledge, may be limited in terms of understanding, whether it is valuable or not and positively received or not, because older or senior people always think that young people's knowledge is not much worthwhile.” (Intvee2)

Additionally, a few participants (Intvee4 and Intvee6) discussed two aspects of the family culture in the workplace: respecting older people, and family members and relatives working in the same departments or the university. The family culture has both advantage and disadvantage for sharing-knowledge culture. On the one hand, the family culture makes people feeling they are a team; therefore, they trust each other. On the other hand, it results in separate groups of benefits and leads to a lack of democracy in discussion and the sense of collective interests for the whole university. Furthermore, in the Vietnamese workplace, the young often communicate with older people with personal pronouns such as aunt, uncle even father and mother. This way of communication also affects KS because there is the line/barrier between older and younger academic staff. Two interviewees suggested that:

“In my view, science and technology are growing rapidly, and young people have more chances to access many sources of knowledge, which they learn and absorb very quickly. Even so, many older people have become obsolete by not using technology in their work. Therefore, I think we need to build a culture of democracy, which is ready to welcome the opposite ideas, ready to discuss to develop together. In this environment, people believe in win-win approach and KS amongst individuals would automatically take place.” (Intvee4)

In summary, the result from the qualitative phase about H_{2a} was consistent with that in the quantitative survey study. Trust has a quite high effect on the KSB of academics in university in Vietnam. Thus, hypothesis H_{2a} was strongly supported by the interviewees.

6.3.6 Relationship between knowledge self-efficacy and KSB (H_{3a})

Quantitative result: Supported

Qualitative result: Agreed (average: 4.57)

The quantitative data analysis indicated that knowledge self-efficacy is a vital enabler influencing academics' KSB and was confirmed by the interviews. All of the interviewees strongly agreed with the finding of the survey (H_{3a} was strongly supported) as their given average rate was 4.57 for this hypothesis. The interview participants believed that the confidence of knowledge of a person could play an important role in how he or she involves themselves in knowledge-sharing activities. They explained that people would share their knowledge with others when they are confident in their knowledge. Here is an example of one of the interviewees.

"...if I am not confident in my knowledge I would rather listen and express my willingness to learn. It is better, to be honest than trying to talk about something that I don't know well enough..." (Intvee1)

Additionally, some participants supported the view that academics' belief in their ability and knowledge to succeed in their daily tasks (learning, teaching, and research) makes them confidently share and disseminate their knowledge to their colleagues and students. Self-confidence in knowledge also motivates people to share their knowledge with their colleagues, as they could be sure that this knowledge would usefully affect the receivers and the organisation. The following are some statements of interviewees in the interviews.

"Academics staff can be confident in KS only if they have self-efficacy in their knowledge." (Intvee3)

"Self-confidence in knowledge that has been studied, verified and evaluated that makes academic staff confidently share and disseminate this to their colleagues and students." (Intvee6)

"...If we are not confident in our knowledge, we are motivated to share because we are not sure about the information or knowledge. Sharing uncertain knowledge will affect the receivers, especially the knowledge from the lecturers who influence students and learners." (Intvee4)

“...Sharing expertise and knowledge will obviously require certain knowledge self-efficacy from academic staff. For example, I usually follow the Facebook of an English lecturer in my university in which she shares a lot of useful information and materials for learning and teaching English since she is very confident in her knowledge and expertise...” (Intvee7)

Despite the fact that, most of the interviewees agreed with the view that knowledge self-efficacy positively impacted academics’ KSB, a slightly different perspective is also available. People are willing to share their knowledge with the confidence of knowledge from the listeners or resources. There are some statements of the different perspective:

“I agree although it depends on the situation and the person(s) you share with... However, if I am meeting a senior expert(s)/fellow(s), I am willing to share what I know, make questions and welcome feedback.” (Intvee2)

“Sharing certain knowledge may not be influenced by individual’s self-confidence in knowledge – e.g. employment-related information (recruitment information, preparing for recruiter interview questions and answers, writing CV tips, etc.), scholarships or other useful information are published by social media. People may share this content without any concerns because most of the information would be useful and already public for everyone.” (Intvee7)

From the above discussion, the significant effect of knowledge self-efficacy on KSB of academics was found by both questionnaire survey respondents and in the in-depth interviews with participants. In this study, the H_{3a} was strongly supported.

6.3.7 Relationship between enjoyment in helping others and KSB (H_{4a})

Quantitative result: Supported

Qualitative result: Agreed (average: 4.57)

The survey study found that enjoyment in helping others had a strong influence on KSB. The majority of interviewees were very supportive of this relationship during the interviews. They strongly supposed that people would not share their knowledge with others without of the enjoyment in helping others. Feeling pleasure plays a significant role in engaging in sharing knowledge among individuals. It also makes the sharers feel good and pleasurable by helping someone by sharing their knowledge. Here is an example supporting this finding:

“I have a strong interest in this finding. I enjoy helping others and nurturing the sharing environment. This makes me feel good about myself, and my life becomes more meaningful.” (Intvee2)

Some of the interviewees explained that Vietnamese people are quite friendly and easy-going. Although they are not rich - especially the young staff - but sometimes they work because of feelings. If they are interested in doing something, they do not need to consider economic or personal interests. Therefore, in the workplace, new people will always receive help from older people if they sincerely want to have it. Here are some comments from the participants during the interviews.

“When helping others, people will feel they are valuable in a certain problem. Therefore, enjoyment in helping others will have a positive impact on KS.” (Intvee3)

“To me, I am really open and think that sharing is learning. I do not lose anything when sharing my knowledge. In my mind, knowledge is only the power if it is shared and used. Thus, I am always feeling enjoyment in sharing my knowledge with my colleagues and helping them if they really need my help.” (Intvee4)

Interestingly, two interviewees (Intvee6 and Intvee7) explain their support for this relationship (H_{4a}) through the personal psychology of helping others. They reported that according to psychology, people have the sense of satisfaction when they help others. Helping others has a positive influence on our own behaviours making us feel more valued, optimistic and passionate about our profession. Moreover, sharing culture or the desire to help others will help academics feeling the need to share.

“... Therefore, the enjoyment in helping others will motivate individuals to share their knowledge more often and comfortably without any repayment.” (Intvee6)

“...Obviously, enjoyment in helping others motivate individuals to share their knowledge more easily and actively...For instance, I have information about the copyright software free for one year; I will share it immediately because I feel it would be useful to others when helping them. This also motivates me. A friend of mine, a librarian in a university in the south of Vietnam, set up a closed group to share the username and password to login academic databases for all people in the academic community without any personal and commercial benefit.” (Intvee7)

From the above discussion, H_{4a} was strongly supported by all interviewees from the interviews with the average rate of 4.57. This means that enjoyment in helping others is an essential factor that encourages people to engage more in sharing knowledge.

6.3.8 Relationship between expected organisational rewards and KSB (H_{5a})

Quantitative result: Not supported Qualitative result: Agreed (average: 3.57)

The quantitative finding of this relationship found that H_{5a} was not supported. It means that personal expected organisational rewards did not have an impact on KSB of academics. Although most of the interviewees agreed with this survey finding, the agreement was not strong for this hypothesis finding. Intvee1, Intvee2, Intvee3 and Intvee7 ranked the survey finding of 4, 4, 4 and 5, respectively. Other participants (Intvee4, Intvee5 and Intvee6) ranked the finding of 3, 2 and 3 respectively. Overall, the given average of 3.57 for the support of H_{5a} was not high. The result revealed that some people do not think their primary motivation to share knowledge is to receive rewards or promotion from the organisation; some interviewees explained that in educational environment KS is indispensable for all academic staff. Below are some statements from interviewees supporting this view:

“I don’t think that receiving rewards or promotion is my primary motivation to share knowledge. Sometimes by sharing knowledge, I am more likely to be known by others... However, a lot of times, our sharing actions are not known by anyone, we are still keen on sharing with each other.” (Intvee2)

“KS is a behaviour in oneself that is indispensable, especially in an educational setting where educates knowledge workers, thus knowledge-sharing behaviour is not originated from the needs of receiving awards from the unit/department or organisation.” (Intvee3)

For some participants, the possible reasons for their sharing knowledge were due to the: (1) working with others with the same interests, (2) personal responsibility to the community where they have gained knowledge from, and (3) building their trust, reputation, and cohesive and closer relationships. Here are some comments supporting for these reasons.

“...I, myself, share my knowledge with the aims to help other colleagues, students and others with the same interests...Being in a group or community and receiving information or knowledge from others, I have a responsibility to share my information and knowledge with these groups or communities.” (Intvee4)

“...Sharing knowledge also helps me to be more valuable in the community. When my value is increased, the trust for me and my reputation are strengthened since there are many opportunities for careers, opportunities for exchange and learning new knowledge.” (Intvee6)

“KS helps me increase the chances of finding partners. When sharing my knowledge, I receive invitations to teach, opportunities for cooperation on developing training programs and research”. (Intvee1)

Similarly, one interviewee (Intvee7) highly agreed with the result by the statement:

“Yes, it is true. For me, I never expect any rewards or benefits from my department or university. I simply share my knowledge because helping other colleagues is my pleasure because I have recognised how much I have benefited from sharing information and knowledge from others, this helped me to receive scholarships, books, and learning methods. Thus, sharing my knowledge is my own responsibility to the community... I have strengthened relationships with my colleagues and made many friends from outside my university. I also gain more new knowledge”.

On the other hand, some of the others argued that knowledge sharers expect rewards or promotion, in turn, when they share their knowledge with each other; or they assume that the organisational reward systems might encourage knowledge-sharing culture. Here are some comments of interviewees.

“I think rewards may have a positive effect on KSB for some people; others share knowledge just because they want to share it or because they think it is the right thing to do without expecting any reward. People are different.” (Intvee5)

“Academic staff should be provided with facilities and incentives supporting for sharing activities such as seminars, workshops, or research groups. If the university has reward systems, it will encourage some people getting involved as their contribution is recognised or acknowledged.” (Intvee4)

The above discussion indicates that although the interviewees supported H_{5a} from the qualitative interviews, it was not very strong with only 3.57 for the average score.

6.3.9 Relationship between reciprocal benefits and KSB (H_{6a})

Quantitative result: Supported

Qualitative result: Agreed (average: 4.29)

In the quantitative study, reciprocal benefits were found to have a significant influence on KSB. Consistently, in the qualitative research, all interviewees agreed that there was a positive relationship between reciprocal benefits and KSB amongst academics in Vietnamese university settings. They believed that this quantitative finding is definitely true. The majority of the participants agreed that mutual benefits are important for a long-term relationship with two-way interaction. They explained that academic staff would not continue sharing their knowledge with other colleagues who have never shared with them. Moreover, for many interviewees, a possible reason for why reciprocal benefits have a positive effect on the lecturer's KSB is because when people share their knowledge they not only help others but also increase opportunities for themselves (e.g. opportunities for exchange, career opportunities, teaching, doing research). Below are some statements from interviewees, which illustrate this idea.

"Mutual benefits are important for a long-term partnership. I will not keep sharing with a colleague who never wants to share with me. It is a two-way interaction."
(Intvee1)

"I tend to think that knowledge-sharing is a two-way street; if KS also brings benefits to knowledge sharers, they will be more likely to continue sharing knowledge in the future." (Intvee5)

"It is up to each and specific case, however, when "both sides benefit" will motivate KS." (Intvee4)

During the interview, one interviewee shared the experience to illustrate for the "two-way interaction" of KS between the interviewee and other colleagues.

"...I have recognised that my colleagues and friends those not only receive my knowledge but also donate their knowledge to me and have made a good relationship in our life and work. Thus, we are willing and volunteering to share whatever we have or discover; we think it has benefits for others." (Intvee7)

Even though many participants strongly supported the relationship between reciprocal benefits and KSB, some of them mentioned that mutual benefits do not mean the sharers would receive the same in return. It is because when sharing, people gain an immediate advantage, that is they learn through sharing; even they sometimes find the solution after they share the unsolved problem. A few participants reported that people sometimes get involved in knowledge-sharing activities without the expectation of benefits in return. Below are some statements of interviewees.

“If you always expect to gain and want the same return, you might be disappointed since knowledge cannot be measured in numbers.” (Intvee1)

“...many people share their knowledge because of the desire to develop the community and confirm the importance of knowledge in the research field, rather than their benefits.” (Intvee6)

In conclusion, the majority of interviewees agreed that reciprocity has a strongly positive effect on KSB. Thus, H_{6a} was highly supported by the qualitative study with the average of 4.29 ranked by the interviewees.

6.3.10 Relationship between psychological ownership of knowledge and KSB (H_{7a})

Quantitative result: Not supported Qualitative result: Agreed (average: 4.14)

The relationship between psychological ownership of knowledge (POK) and KSB was hypothesised as a positive effect of POK on KSB. However, the quantitative study found that POK did not have a positive impact on KSB and the qualitative interviews supported the quantitative results. Most of the interviewees highly agreed with this result with a rating of 4 or 5, except for Intvee5 who ranked it as only 2. For most of the participants, this result is not only correct in the context of the university environment but also in other sectors in Vietnam. In particular, for the academic environment, it is highly accurate in practice in Vietnam. Some good lecturers do not want to share; they want to keep their monopoly of knowledge to ensure the “soft power” for themselves. Even the new ideas or methods they have adopted during working at their university are always considered as their own, and they tend to keep them as their personal property. Many people do not want to share with colleagues, leaders, subordinates because of jealousy. Even the appearance of a star disease occurs. Thus, when a person leaves the

university for whatever reason, the organisation will lose his/her knowledge, experience, teaching method and research ideas. Then, newcomers do not inherit anything; it takes time, money and effort to study the problems that have already been studied. The following interviewee statements are details to support that finding.

“...The fact is that not only in the education sector but also in other occupations, people always want to keep knowledge as personal secrets because they tend to think that owning knowledge will bring them more power in their jobs.” (Intvee7)

“In my opinion, with 14 years of experience, this is true in the context of the university settings in Vietnam. Psychological ownership of knowledge is caused by the limited awareness, personal psychology, and the low progress of society.” (Intvee6)

“Definitely! This way of thinking negatively affects the sharing behaviour. It makes a person think that if he shares knowledge, he loses his own property...” (Intvee1)

Some interviewees stated that the perception of keeping knowledge as personal property would be reduced in the sharing environment with the increased transparency of knowledge.

“...When the source of knowledge is increased and transparent, then keeping knowledge may be no longer being worthwhile.” (Intvee7)

“... the university should provide information and knowledge transparently that would help people have more chance to access the knowledge.” (Intvee2)

“...advanced technologies helps people become equal in the acquisition of information, thus, the psychology of owning knowledge as a private intellectual asset has gradually mitigated.” (Intvee6)

However, a slightly different view was also available. A few interviewees disagreed with the quantitative finding for H_{7a}. They argued that people could not share their knowledge without owning it. Also, people who work and use technology tend to share their knowledge rather than keeping it secret because of the availability of knowledge resources. Because they are aware that the source of knowledge is diverse, everyone can easily find and access it through the internet.

“...in the current explosion of information, knowledge changes very fast and always requires everyone to be continuously updated. Therefore, people working in the field of

technology, or young people, tend to share knowledge rather than keeping it private. If one does not share knowledge, the other still can receive it from other people or resources.” (Intvee2)

“I think that psychological owners of knowledge can either share the knowledge or keep it to themselves; I tend to think that you must be the owner of knowledge before you can share it; in other words, it is nearly impossible for you to share what you do not own.” (Intvee5)

Most of the interviewees supposed that POK prevents people from KS. Thus, hypothesis H_{7a} was not supported by both the quantitative respondents and qualitative interviewees.

6.3.11 Knowledge-sharing and innovative work behaviour (H₈)

Quantitative result: Supported

Qualitative result: Agreed (average: 4.86)

This study hypothesised that there is a significant positive relationship between individuals' KSB and innovative work behaviour (H₈). The quantitative finding showed that hypothesis H₈ was supported. All qualitative participants agreed with that finding as they gave a high rate for the result of H₈ with an average of 4.86. Some interviewees reported that when people share their knowledge, they have a chance to learn. This learning process brings them the opportunity to re-think and revitalise what they know, that seemed to make their brain more active in innovative processes. Many of these ideas might lead to incremental innovations such as new teaching methods, new teaching materials or new research publications.

“In my opinion, KS has a significant impact on individual innovative behaviour. For instance, when sharing with colleagues about the challenges of the job, for example, about designing curriculum, I shared my experiences, difficulties, and questions with my colleagues. In the process of sharing, it was similar to the learning process that made me realise that I can have solutions to problems. So, with sharing of knowledge, I activate and stimulate new ideas. When sharing knowledge with others, I feel I am learning.” (Intvee3)

“Yes, absolutely. Sometimes when I share with my colleagues about one of my unsolved problems, I have often discovered the solution. I think the sharing process gives me a

chance to re-think and revitalise what I know, that seemed to make my brain more active.” (Intvee1)

For many interviewees, the positive impact of KSB on innovative behaviour implies that academics seem to be highly motivated to create new ideas, methods or approaches in their daily work through sharing knowledge with their colleagues. Moreover, the interviewees also mentioned that when there is a need to share, lecturers will be motivated to research and expand their knowledge. They will then explore new ideas or methods of teaching or creativity in research. The below are some relevant statements from interviewees.

“...academic staff must learn and be interested in information and knowledge that stimulates sharing behaviour... In addition, when sharing, the community will have ideas and give their feedback about certain problems, from which we can learn new knowledge, stimulate new ideas and create creativity.” (Intvee6)

“...participating in a research team of my faculty has forced me to research and explore new topics with my colleagues. We share new knowledge; we debate and suggest new ideas to apply in teaching. In addition, the seminars help us exchange teaching methods, thereby introducing new ideas to gradually change teaching methods, updating materials and curriculums. Finally, the students will benefit from more creative and quality lessons.” (Intvee2)

Based on the above analysis, the positive relationship between KSB and innovative behaviour is strongly supported by most of the interviewees. This implies that academics are willing to be involved in sharing activities and those academics are also more likely to be innovative in their daily work (e.g. teaching, learning or research).

6.3.12 The moderating effects of transformational leadership

This section presents the results from qualitative interviews for validating and explaining the significant findings of moderating effects (see Table 6.3) in the quantitative phase. As discussed in Chapter 3, the initial model was proposed to examine the moderating effects of transformational leadership on the relationships between two environmental factors (H_{1b} , H_{2b}) and five personal factors on KSB (H_{3b} , H_{4b} , H_{5b} , H_{6b} , H_{7b}), and moderating effects of transactive memory systems quality on the relationship between KSB and IWB (H_9). However, H_{5a} and H_{7a} were not significant in the quantitative phase. According to Awang (2015), testing moderating effects

requires these above hypotheses are significant (see Chapter 5). Thus, H_{5a}, H_{7a} did not meet the requirement of testing moderating effects. Moreover, H₉ was removed from EFA results. Therefore, H_{5a}, H_{7a} and H₉ were not tested in the qualitative phase - the qualitative study was only designed to validate the significant findings from the quantitative phase. Thus, this section presents the results from interviewing participants to confirm hypotheses H_{1b}, H_{2b}, H_{3b}, H_{4b}, and H_{6b} as shown in Table 6.3.

Table 6.3. The findings of qualitative phase for validation of quantitative results

Hypotheses (Quantitative findings): <i>S: Supported; NS: Not supported</i>	Qualitative results			
	Agreed?	Min	Max	Mean
<i>Moderating effects of transformational leadership (TL)</i>				
H _{1b} : TL positively moderates the relationship between subjective norms and KSB.	Yes	4	5	4.71
H _{2b} : TL positively moderates the relationship between trust and KSB.	Yes	4	5	4.43
H _{3b} : TL positively moderates the relationship between knowledge self-efficacy (KSE) and KSB.	Yes	2	5	4.00
H _{4b} : TL positively moderates the relationship between enjoyment in helping others (EHO) and KSB.	No	1	2	1.57
H _{6b} : TL positively moderates the relationship between reciprocal benefits (RB) and KSB.	Yes	2	4	3.29
H _{5b} , H _{7b} , H ₉ : Not tested				

During the interviews, the interviewees were asked to confirm the findings of hypotheses H_{1b}, H_{2b}, H_{3b}, H_{4b}, and H_{6b} and give their explanations for the effects of transformational leadership on the relationships between subjective norms, trust, knowledge self-efficacy, enjoyments in helping others, and reciprocal benefit on KSB. In general, many interviewees said that investigating the role of leadership in KS and KM in Vietnamese higher education is very interesting. This is because leadership is one of the most critical determinants facilitating or impeding the participation of academics in exchange their knowledge in Vietnamese universities, where leaders significantly influence sharing behaviour of their employees. Accordingly, the effect of leadership can be both positive or negative depending on each leadership style or a specific leader. Most of the interviewees admitted that little is known about the relationship between leadership and KS in Vietnam – so being part of this research process was very useful for them. However, to the best of their knowledge, they generally believed that the high level of transformational leadership (TL) could strengthen the influence of environmental and personal factors on KSB. For example,

TL positively moderates the relationship between subjective norm and KSB. This means that in departments with high TL, it is likely that subjective norms will have a stronger positive impact on KSB than in departments with low TL. The interviewees explained that it is because the leader is usually seen as a role model to employees by their admiration, respect and trust. Especially in the university environment, the leaders are often the scientists or professors who are successful and well-known in the academic community and education sector. Transformational leaders inspire the power and pride of their employees by directing their employees to the collective interests rather than their interests. An employee always views the leader as a role model to follow. Consequently, if those leaders are eager to do KS and want their subordinates to be involved in, of course, they will actively follow. It can lead to building a successful knowledge-sharing culture in their departments or the university.

The below discusses results for each moderating effects of TL based on the comments derived from the interviews.

H_{1b}: The positive effect of subjective norms on KSB is positively moderated by TL

Quantitative result: Supported

Qualitative result: Agreed (average: 4.71)

Interviewees' explanations: Transformational leaders inspire employees to direct them beyond their interests and towards collective interests. An employee sees the leader as a role model and wants to follow. In this environment, the leaders and colleagues of an employee tend to think that he or she should be involved in knowledge exchange activities.

“Yes, I totally agreed with the result because, in Vietnam culture, the leaders strongly impact their subordinates' thought and behaviours. For example, in my department, my director is very active; he always works hard and inspires us to be engaged in workgroup towards the collective interests. He is always the first one who shares everything he has and found to us. Thus, the work-group skills and collective interests are naturally established in my department. So, sharing knowledge is our culture.”
(Intvee2)

“A department or university with transformational leaders is the ideal environment to work because employees are always motivated and facilitated to maximise their capacity. The transformational leader can turn stagnant employees into active people

who work to increase productivity as well as activate creativity, stimulate sharing and help each other.” (Intvee6)

“When the lecturers believe that their leaders trust them and inspire their creativity, they will be willing in knowledge-sharing activities. Thereby the effect of transformational leadership style has a positive impact on the relationship between subjective norms and KSB.” (Intvee3)

H_{2b}: The positive effect of trust on KSB is positively moderated by TL

Quantitative result: Supported

Qualitative result: Agreed (average: 4.43)

Interviewees’ explanations: Many interviewees believed that leadership has a significant role to play in creating an environment of trust for KS at all levels of teams, departments or the university.

“When there is mutual trust between leaders and subordinates, and between colleagues, this will mitigate the embarrassment and increase dialogue. Thus, it will positively affect sharing behaviour.” (Intvee3)

“Regarding trust in universities, I believe that leadership has an important role in establishing a trusted environment supporting for KS amongst academics at the university level.” (Intvee5)

H_{3b}: The positive effect of knowledge self-efficacy on KSB is positively moderated by TL

Quantitative result: Supported

Qualitative result: Agreed (average: 4.00)

Interviewees’ explanations: Most of the participants reported that transformational leaders inspire the confidence of their followers by talking with them, expressing their trust in them, mentoring and praising them when they do something good. Especially for the young lectures, they will be more confident in themselves and actively engaging in KS.

“When individuals receive the inspirations from leaders, the self-confidence in their knowledge will increase their self-confidence in sharing knowledge.” (Intvee3)

“When receiving encouragement, inspiration, and trust from the leader, individuals will be united and progress together. Each will also be more mature and confident in the professional knowledge as well as a sense of sharing knowledge in the community will be increased.” (Intvee6)

“In the faculty with its transformational leader, lecturers will have needs to share and that sharing will become culture. As a result, the academic staff will share whatever information they own as long as they feel it is useful for the collective interests.” (Intvee7)

However, there was only one interviewee (Intvee5) who disagreed with that finding and argued that KSB is more related to academic staff than TL and TL did not affect the relationship of knowledge self-efficacy and KSB.

H_{4b}: The positive effect of enjoyments in helping others on KSB is positively moderated by TL

Quantitative result: Not supported Qualitative result: Disagreed (average:1.57)

Interviewees’ explanations: The majority of the interviewees disagreed with the quantitative result. They believed that TL positively affects the influence of enjoyments in helping others on KSB. They explained that in a department with its transformational leader, it often creates a comfortable atmosphere. Employees are inspired to work and supported by leaders and colleagues. Therefore, they are more interested in work. They love work and work for the common goal of the organisation. Team spirit is awakened. Thus, the level of KS with colleagues will be higher.

“...enjoyment in helping others is the psychological aspect of the individual. The more knowledge you share, the more you want to know, the more it will stimulate the sharing. Also, if we have a leader with highly TL, our sharing behaviours are motivated.” (Intvee6)

“In such departments (with transformational leaders), creativity and self-confidence are always appreciated. Consequently, enjoyment in helping others positively affects the knowledge-sharing behaviours of lecturers.” (Intvee3)

However, similar to hypothesis H_{4b} , one participant (Intvee5) agreed with the quantitative result and argued that KSB is more related to academic staff than TL and TL did not affect the relationship between enjoyment in helping others and KSB.

H_{6b}: The positive effect of reciprocal benefits on KSB is positively moderated by TL

Quantitative result: Not supported Qualitative result: Agreed (average: 3.29)

Interviewees' explanations: Hypothesis H_{6b} was supported in the qualitative study with the average of 3.29 (the interviewees' rank) which is acceptable. The interview analysis showed that TL is essential and might positively moderate the impact of reciprocal benefits on KSB. However, during the interviews, most of the interviewees admitted they had no evidence to support that view. Moreover, to the best of the researcher's knowledge, literature has shown that very little is known about the joint relationship of TL and reciprocal benefits on KSB. Some of the participants supposed that KSB is more associated with academics than the leadership styles. Therefore, it was hard for them to answer and give their comments on the result of this hypothesis.

6.4 Critical factors emerged from the interviews

There are four critical factors which emerged from the interviews: Democracy, Publicity and Transparency of knowledge, Knowledge management strategies, and Knowledge management systems. Most of the interviewees indicated that these factors all play a critical role in promoting KS in Vietnamese universities.

First, some interviewees recommended that the democracy may enable academic staff to debate and discuss issues leading to opportunities to exchange their knowledge. In a communist, socialist country like Vietnam, people are not allowed to give their opposite opinions, especially to the leaders. Thus, lack of democracy will prevent employees to from debate and discussion that impedes sharing behaviour in Vietnam in general, in universities in particular.

Second, three interviewees reported that universities should increase the publicity and transparency of information and knowledge. Thus, employees might have equal opportunities to access and use knowledge – e.g. research depository, development plan, statistic data, career opportunities, or financial reports. They explained that when the source of knowledge is public and transparent, then keeping knowledge might be no longer worthwhile. Accordingly, the publicity and transparency can facilitate and

encourage academic staff to share their knowledge with each other in universities. Publicity and transparency also help to protect the intellectual property rights and copyright which are related to knowledge-sharing activities. This is because academic staff fear that their own knowledge asset such as articles, teaching materials, or even ideas published on the websites or information systems in the university could be copied or plagiarised. Thus, lack of publicity and transparency is likely to make people unwilling to share their knowledge.

Third, a few participant interviewees suggested that universities should integrate KM strategies in their development of strategy, plan and actions to achieve their success goals. They believed that the strategy of KM and KS are critical in facilitating or impeding employees sharing knowledge. They also said that the knowledge-sharing success would benefit both individual and organisational levels leading to a learning organisation, which would enable people to learn and improve themselves. Moreover, universities should have a long-term vision, for example, to achieve the international standards, increasing both quantity and quality of research publications, or becoming more competitive and improving growth and welfare through knowledge-index.

Finally, some interviewees advised that even though there are many social media and information technology tools to support sharing knowledge, it is necessary to develop knowledge management systems in universities. This is because the free available tools (e.g. Facebook, emails, and forums) cannot help universities to systematise both tacit and explicit knowledge. Knowledge management systems enable universities to provide a systematic environment for researchers, lecturers to create, store, share and apply knowledge to develop sufficient resources for teaching, learning and research activities. Moreover, the systems also help universities to manage and implement their intellectual property efficiently.

6.5 Summary of Chapter 6

This chapter has presented the qualitative data (semi-structured interviews) analysis. The qualitative phase conducted seven interviews with academic interviewees in the field of information systems or knowledge management in Vietnamese public universities. The primary aim of this phase was to validate and deepen understand the significant findings from the quantitative study. All of the interviewees rated each of the substantial results from the questionnaire survey analysis and gave their explanation and comments. The interviewees discussed the rationales for promoting KS in Vietnamese universities. Notably, the results showed that the interviewees agreed with all hypothesised relationships proposed in the final research model in Chapter 5, except for only one hypothesis, H_{4b} . It is suggested that this hypothesised relationship should be re-examined in the future. During the interviews, the interviewees revealed some critical factors (democracy, publicity and transparency, knowledge management strategies, and knowledge management systems.) as influencing personal sharing behaviour in Vietnamese higher education, which is needed to be considered in any future research model. The combination of the findings from both quantitative and qualitative phase will be discussed in the next chapter to provide insightful guidance for universities to promote KSBs of their academic staff.

CHAPTER 7 : RESULTS AND DISCUSSION

7.1 Introduction

In this chapter, the results from both the quantitative and qualitative phases are integrated for the discussion and interpretation of the final findings of the whole research. As discussed in Chapter 4, this combination was used in a complementary manner, which applied the quantitative approach as the primary approach, followed by a qualitative approach as a complementary need. Thus, the quantitative results are more comprehensive than those from the qualitative phase are. However, the qualitative findings help to gain the highest level of understanding and investigating the research problem.

This chapter begins with a brief review of research purposes, questions and objectives, followed by the discussion of findings to responses to research questions and hypotheses. The chapter then proposes an ideal model of Knowledge Sharing (KS) based on the combination of the final model in quantitative phase and emerged factors from the qualitative phase. Finally, a summary of the chapter is given. The chapter's outline is presented in Figure 7.1.

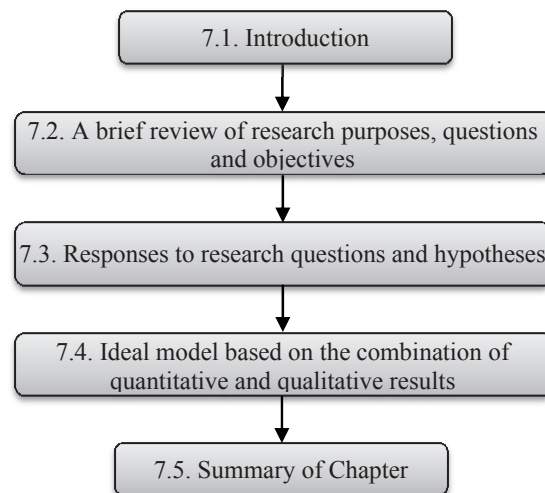


Figure 7.1. Chapter outline

7.2 Review of research purposes, questions and objectives

The focus of this study is to uncover the influence of environmental and personal factors on knowledge-sharing behaviour towards innovative work behaviour and to investigate the moderating roles of transformational leadership and transactive memory systems

(TMS) quality on these relationships at the tertiary education level in a developing country (Vietnam). Accordingly, based on an extensive review of the literature, this study:

- 1) Investigated several potential salient environmental-related factors (subjective norms, trust) and personal-related factors (knowledge self-efficacy, enjoyment in helping others, organisational rewards, reciprocal benefits, and psychological ownership of knowledge). The theoretical underpinnings were based on Social Cognitive Theory (SCT) and other theories such as Theory of Planned Behavior (TPB), Economic Exchange Theory (EET), Social Exchange Theory (SET), Psychological Ownership Theory, Transformational Leadership Theory, and TMS;
- 2) Drew upon the roles of transformational leadership and TMS quality, and proposed a comprehensive research model mainly based on SCT.
- 3) Modified the standard SCT model and augmented it with other theories to account for academics' behaviours and;
- 4) Supported most of the relationships hypothesised in the research model through a questionnaire survey and a qualitative interview.

The study believes that each of these above points represents a significant contribution to the understanding of why and to what extent academics decide whether to engage in knowledge-sharing activities in university settings, in general, in a developing country such as Vietnam.

The initial theoretical research model was applied as a framework to test the hypotheses with the aim of seeking the answers to the research questions below:

RQ1. What are the critical factors that influence KSB in Vietnamese university settings?

RQ2. How does KSB influence innovative work behaviour in Vietnamese university settings?

RQ3. What are the joint effects of transformational leadership and the critical factors on KSB in Vietnamese university settings?

RQ4. What is the joint effect of transactive memory systems quality and KSB on innovative work behaviour in Vietnamese university settings?

Having identified the above research questions and to achieve the major research goal, this study was carried out with the following objectives:

1. To examine the effects of the critical factors on KSB in Vietnamese universities.
2. To examine the effect of KSB on IWB in Vietnamese universities.
3. To examine the joint effects of transformational leadership in the relationships between those critical factors and KSB in Vietnamese universities.
4. To examine the moderating effect of TMS quality in the relationship between KSB and IWB in Vietnamese universities.

Sixteen hypotheses including nine main effects and seven moderating effects were developed based on the above research questions and an extensive literature review. These hypotheses were then tested. The results of these hypothesis testing, as shown in Table 7.1, revealed that H_{1a} , H_{2a} , H_{3a} , H_{4a} , H_{6a} , H_8 (main effects) and H_{1b} , H_{2b} , H_{3b} (moderate effects) were found to be significant and supported in both quantitative and qualitative phases. However, H_{5a} , H_{7a} (main effects) and H_{6b} (moderate effect) were found to be insignificant and not supported in both quantitative and qualitative studies. It is remarkable that H_{4b} was found not supported by survey study, but the qualitative phase supported it (see Chapter 6). Finally, H_{5b} and H_{7b} were removed from main effect testing because these were not significant, while, H_9 was not tested in because the path was excluded from the EFA (Explanatory Factor Analysis) results (see Chapter 5).

Table 7.1: The summary of hypothesis results from quantitative and qualitative phases.

Hypotheses <i>S: Supported; NS: Not supported</i>	Results	
	Quanti	Quali
Main effects		
<i>RQ1. What are the critical factors that influence KSB in Vietnamese university settings?</i>		
H _{1a} : Subjective norms (SN) have a positive effect on KSB	S	S
H _{2a} : Trust has a positive effect on KSB	S	S
H _{3a} : Knowledge self-efficacy (KSE) has a positive effect on KSB	S	S
H _{4a} : Enjoyment in helping others (EHO) has a positive effect on KSB	S	S
H _{5a} : Expected organisational rewards (REW) has a positive effect on KSB	NS	NS
H _{6a} : Reciprocal benefits (RB) has a positive effect on KSB	S	S
H _{7a} : Psychological ownership of knowledge (POK) has a positive effect on KSB	NS	NS
<i>RQ2: How does KSB influence innovative work behaviour (IWB) in Vietnamese university settings?</i>		
H ₈ : Knowledge-sharing behaviour positively impacts IWB	S	S
Moderating effects of transformational leadership		
<i>RQ3. What are the joint effects of transformational leadership and the critical factors on KSB in Vietnamese university settings?</i> TL: Transformational leadership		
H _{1b} : TL positively moderates the relationship between SN and KSB.	S	S
H _{2b} : TL positively moderates the relationship between trust and KSB.	S	S
H _{3b} : TL positively moderates the relationship between KSE and KSB.	S	S
H _{4b} : TL positively moderates the relationship between EHO and KSB.	NS	S
H _{5b} : TL positively moderates the relationship between REW and KSB.	Not tested ^a	Not tested
H _{6b} : TL positively moderates the relationship between RB and KSB.	NS	NS
H _{7b} : TL positively moderates the relationship between POK and KSB.	Not tested ^a	Not tested
<i>RQ4. What is the joint effect of TMS quality and KSB on IWB in Vietnamese university settings?</i>		
H ₉ : TMS quality positively moderates the relationship between KSB and IWB.	Not tested ^b	Not tested

Note: ^a - Path removed from the main effect testing. ^b: Path removed from the EFA results.

The following sections discuss each of these above findings (see Table 7.1) in the responses to each research questions.

7.3 Responses to research questions and hypotheses

7.3.1 H_{1a}-H_{7a}: Impact of environmental and personal factors on KSB (Responses to RQ1)

The findings from both the quantitative and qualitative phases represent the significant contributions to the literature of KS mainly relying on the argument posited by Bandura (1986). In his argumentation, he emphasised that a personal behaviour would be determined by individual's perception and social influences (environment). Furthermore, he elaborated that individual behaviour is affected by social influences, which means a person would take different behaviours in different environments. Personal self-perceptions, beliefs, and expectations influence individuals' behaviours. These elaborations are referred to as personal-related factors and environmental-related factors. Concerning personal perceptions, this study examined the effects of knowledge self-efficacy, enjoyment in helping others, organisational rewards, reciprocal benefits, and psychological ownership of knowledge on KSB. Other championed by this study focused on more social influences: subjective norms and trust. These are important focuses of this study.

Seven hypotheses (H_{1a} to H_{7a}) were developed and tested (see Table 7.1). The following sections discuss each of these hypotheses based on the results from the quantitative and quantitative data analyses to answer research question 1 as below:

RQ1. What are the critical factors that influence KSB in Vietnamese university settings?

7.3.1.1 H_{1a}: The impact of subjective norms on KSB

The results of this research found that subjective norms had a significant association with KSB. The findings of the quantitative phase indicated that subjective norms were strongly positively related to KSB which supported hypothesis H_{1a}. In the Theory of Planned Behaviour (TPB), subjective norms refer to the extent to which an academic staff perceives whether social pressures will influence the performance of KSB (Ajzen, 1991). Subjective norms were measured through three items adapted from Bock et al. (2005). The statistical results supported the validity and reliability of this construct (subjective norms) and its items.

Plausible explanations for why subjective norms had a positive impact on KSB in the context of Vietnam are as follows. First, the finding implies that KSB of academic staff

could be affected by their leaders and colleagues who believe that academics should actively share their knowledge with others in their universities (Ta, 2014). Second, Vietnam, an Asian country, is strongly influenced by Confucian ideals (e.g. social order) and a collectivist orientation (Dong et al., 2010) which are reasonable for explaining this finding. Third, the result was entirely in line with previous studies using TPB (Lin and Lee, 2004; Bock et al., 2005; Kuo and Young, 2008; Chatzoglou and Vraimaki, 2009; Dong et al., 2010; Tohidinia and Mosakhani, 2010; Fullwood and Rowley, 2017). These studies revealed that subjective norms are likely to predict knowledge-sharing intentions and indirectly influenced the behaviour of knowledge sharers. Finally, hypothesis H_{1a} was also supported by the qualitative study. All of the interview participants confirmed and supported that the significant increase in sharing knowledge of academics with others results from subjective norms in a higher education environment in such a developing Asian country (Vietnam). Moreover, the power distance between leaders and subordinates although not very high in faculty culture, lectures still tend to follow what the senior staff do.

Taken together, both phases of this study supported hypothesis H_{1a}: Subjective norms have a positive impact on KSB of academic staff in a university environment.

7.3.1.2 H_{2a}: The impact of trust on KSB

The findings from both phases (quantitative and qualitative) of this study revealed that trust was found to have a strong and significant impact on KSB. The results of the survey study indicated that trust was strongly positively associated with KSB which supported hypothesis H_{2a}. In this study, trust is defined as the degree of reciprocal faith in others' knowledge-sharing intentions, knowledge-sharing behaviours, and skills towards organisational goals (Lee and Choi, 2003). A six-item scale adapted from Lin et al. (2009) was used to measure trust. The measurement model (see Chapter 5) confirmed the validity and reliability of trust and its items.

It is unsurprising that trust was found to be the most important predictor of academics' behaviour to share knowledge in the context of Vietnamese higher education institutions. The first possible explanation is that academic staff are more willing to engage in KS when they have a high level of trust in the relationships with their colleagues. Moreover, the mutual trust between academics results in knowledge creation, which, in turn, leads to improved knowledge exchange. This explanation is supported by some empirical studies (e.g. Lee and Choi (2003), Abrams et al. (2003),

Lucas (2005), Lin et al. (2009). By contrast, without the feeling of trust or having little trust, people might not want to share anything which they may have to spend a lot of time and effort attaining and giving it to others (Riege, 2005; Ta, 2014). Another plausible reasoning supporting hypothesis H_{2a} is that the quantitative data analysis showed the positive effect of subjective norms (a social influence) on KSB. Abrams et al. (2003) and Choi et al. (2008) believed that higher social ties increase the high level of trust among people, which, in turn, leads to improved knowledge exchange.

A plausible explanation for this finding (H_{2a}) is that the results from qualitative data analysis which agreed that trust had an important role in the deciding whether or not to engage in knowledge-sharing activities in universities. Many interviewees believed that the impact of trust on KSB of academics is very strong. They also explained that people would not share their knowledge with others whom they do not trust, they might think that other people would take advantage of their knowledge and turn it into their own without acknowledgement. Thus, mutual trust will reduce the fear of sharing knowledge such as job security, misuse, distortion, and lost promotions. Mutual trust will also make the sharers feeling more active, free, and comfortable when sharing their knowledge with each other. Here is an example:

“The university should build mutual trust not only amongst individuals at the same level, but it should also build trust amongst individuals at different levels.” (Intvee2)

Prior studies also indicated that trust is a critical factor in teams, groups and organisations in establishing an environment for KS (Nonaka, 1994; Davenport and Prusak, 1998; Lee and Choi, 2003; Lin et al., 2009). While the finding of trust was in line with the results of several prior empirical studies (Hsu et al., 2007; Al-Alawi et al., 2007; Liao, 2008; Lin et al., 2009; Dong et al., 2010; Brooke et al., 2017), this was inconsistent with the finding from Pham et al.’s (2015) research. They indicated that culture values including trust do not have a direct effect on the employees’ KSB in the higher education environment.

In conclusion, the results of this research supported the view that trust had a strongly positive effect on KSB of academics in the university context.

7.3.1.3 H_{3a}: The impact of knowledge self-efficacy on KSB

The findings from the quantitative and qualitative data analyses of this study found that the impact of knowledge self-efficacy (KSE) on KSB was supported. The results of the quantitative data analysis revealed that KSE was positively associated with KSB which supported hypothesis H_{3a}. In this study, KSE referred to the extent of confidence in an academic staff's ability to sharing knowledge (Lin et al., 2009). This construct (KSE) was measured using a four-item scale (2007b). It went through the assessments of content adequacy for the construct's validity and reliability.

The finding (H_{3a}) is understandable when considering it in the context of university settings, including Vietnam because of the following plausible explanations. Firstly, lecturers' knowledge not only affects the reputation of the faculty or the whole university but also influences the knowledge of the students; so only when feeling confident in their knowledge, they will want to share knowledge with others. This reason is supported by Hsu et al. (2007) and Lin (2007b) who claimed that people who have low self-efficacy would be less likely to accomplish related behaviours than those with high self-efficacy. Secondly, according to Social Cognitive Theory (Bandura, 1986), self-efficacy shows the ability of a person to make considered decisions to achieve a specific level of performance. Bandura and many researchers (e.g. Hsu et al., 2007; Lin, 2007a, 2007b;) may have supported that academics' tendency to participate in sharing behaviours is strongly impacted by their sense of KSE.

Thirdly, the qualitative data analysis also confirmed and supported that KSE is a critical antecedent of academic staff's KSB in the university context. Most of the interviewees strongly agreed with the finding of the survey (H_{3a} was strongly supported). They supposed that KSE could play an important role in how a person involves himself/herself in knowledge-sharing activities. They explained that academics have beliefs in their ability and knowledge to succeed in their daily tasks (learning, teaching, and research), and that this would help them confidently share and disseminate their knowledge to their colleagues and students. For example,

“Academics staff can be confident in KS only if they have self-efficacy in their knowledge.” (Intvee3) and “...It is better, to be honest than trying to talk about something that I don't know well enough...” (Intvee1)

Moreover, the finding is consistent with many previous studies conducted in other contexts. For example, Lin (2007a, 2007b) found that KSE is an important antecedent to employee's intentions and behaviours to KS. Similar findings were also reported by Hsu et al. (2007) and Lin et al. (2009) in which they found that self-efficacy had direct and indirect effects on KSB of members in virtual communities. This result means that self-efficacy had a critical role in guiding personal behaviour.

Taken together, the results of this research supported the view that there is a positive relationship between KSE and KSB. In other words, KSE is an important enabler influencing academics' KSB.

7.3.1.4 *H_{4a}: The impact of enjoyment in helping others on KSB*

The results of this research found that enjoyment in helping others (EHO) had a significant association with KSB. The findings of the survey study revealed that EHO was positively associated with KSB which supported hypothesis H_{4a}. In this study, EHO is considered to be extracted from the concept of "altruism", which is evolved from Social Cognitive Theory (SCT). In this perspective, people often believe there will be psychological benefits prior to being engaged in knowledge-sharing activities (Okyere-Kwakye and Nor, 2011). A four-item scale adapted from Lin (2007b) was used to measure EHO. The assessments of measurement model indicated that these items met the construct's validity and reliability.

A plausible explanation for the positive relationship between EHO and KSB in the context of Vietnam may be due to the knowledge sharers (academics) feeling good and pleasurable by helping their student or colleagues by sharing their knowledge. From a theoretical perspective, an altruistic person is more likely to give his/her knowledge to others without seeking any return. Moreover, the knowledge owner may be stimulated by relative altruism through his/her wish to help others (Davenport and L. Prusak, 1998; Constant et al., 1994; Constant et al., 1996; Lin, 2007b).

The interviewees also supported this finding from the qualitative interviews. They reported that academics who enjoy sharing their knowledge with others are likely to be engaged in knowledge-sharing activities, and be more willing to share their knowledge with each other. Some interviewees explained that Vietnamese people are quite friendly and easy-going. Even though they have low income, especially the young, but

sometimes they might work by their feelings, which implies that if they are interested in doing something, they may not need to consider economic or personal interests.

Finally, the findings, a positive relationship between EHO and KSB, were in line with results from previous empirical studies (Lin 2007a, 2007b; Brooke et al., 2017). Lin's (2007a) research found that EHO had a significant impact on the knowledge-sharing process for both donating and receiving knowledge among employees. Lin's finding implies that staff who have a feeling of pleasure in sharing knowledge tend to be more willing to give and receive knowledge with others. Similar results were supported by Lin (2007b), who indicated that EHO was also significantly related to attitudes and intentions to KS of employees. Recently, a research conducted by Brooke et al. (2017) also supported hypothesis H_{4a} when finding that successful farmers who enjoy helping others tend to be more willing to be involved in sharing knowledge with their colleagues.

In summary, the above possible explanations for this finding support the view that EHO had a positive effect on KSB among academics.

7.3.1.5 H_{5a}: The impact of expected organisational rewards on KSB

The findings from quantitative and qualitative data analyses of this study pointed out that expected organisational rewards (REW) were found to have an insignificant association with KSB. The quantitative results indicated that REW was not positively related to KSB and did not, therefore, support hypothesis H_{5a}. In this study, REW is defined as the extent to which an academic staff believes they can receive organisational rewards by offering his or her knowledge (Lin 2007a). REW was measured by four items adapted from Lin (2007b). The assessments for the validity and reliability of these items went through the CFA model (see Chapter 5). This finding for hypothesis H_{5a} was quite interesting because many empirical studies have insisted on the positive influence of expected rewards on KSB among individuals (Cabrera et al., 2006; Liao, 2008; Cheng et al., 2009; Liou et al., 2016; Fullwood and Rowley, 2017). In the same context of higher education, two studies found that rewards have a positive impact on and encourage KSB amongst academics in Malaysia (Cheng et al., 2009) and UK (Fullwood and Rowley, 2017).

This research may have found the plausible explanations for this insignificant relationship associated with REW in the qualitative study and previous studies. First of

all, the results from the qualitative data analysis supported this survey finding although the agreement was not very strong - there was not a positive relationship between REW and KSB. Many interviewees argued that motivation to share knowledge is not to receive rewards or promotion from the organisation. Some interviewees reported that in universities, KS could be seen as the nature of academic-related jobs as each lecturer is often involved in many knowledge-sharing activities through his/her daily work such as teaching (sharing with learners), participating in seminars, workshops, and researching with others.

Second, it could be explained through previous studies. For example, Lin (2007a, 2007b) stated that it is necessary to recognise that organisational rewards only obtain temporary compliance. Moreover, Masterson et al. (2000) explained that KS takes place mostly in informal interactions, and because of the difficulty of quantifying KSBs, it is difficult to make organisational rewards contingent on KSBs. Next, as Bock and Kim (2002) explained, rewards might harm personal relations. For instance, when a staff member wins an award, indirectly, it may cause many others feelings of loss or failure; when a person competes for small or little incentives, he/ she might be very likely to look at others as competitors to his/ her own success. In addition, Osterloh and Frey (2000) found that the creation and dissemination of tacit knowledge are more relied on as an intrinsic motivation of individuals, rather than an extrinsic motivation such as monetary compensation.

Taken together, the above reasonable explanations for this finding support the view that there was not a positive relationship between REW and KSB among academics. However, the results may still not be strongly consistent in the literature and the findings from this study. Consequently, it is necessary to examine the interaction between REW and KSB in greater depth in future work.

7.3.1.6 H_{6a} : The impact of reciprocal benefits on KSB

The influence of reciprocal benefits on KSB, hypothesis H_{6a} , was supported by both the quantitative and qualitative data analyses in this study. The findings revealed that reciprocal benefits were positively associated with KSB. In this study, reciprocal benefit is the extent to which an academic staff expects future benefits from his or her present KS with others (Hung et al. 2011). Reciprocal benefit was measured using three items adapted from Lin (2007b).

The possible explanations for why reciprocity positively affected KSB were: firstly, from a theory perspective, Social Exchange Theory suggests that if new employees feel that they will receive reciprocal benefits, they might show their trustworthiness, and exchange relationship would be initiated (Blau, 1967; Bock and Kim, 2002). Hung et al. (2011) claimed that a particular action is undertaken in responding to prior friendly behaviours.

Secondly, the hypothesised relationship between reciprocity and KS also confirmed results from prior studies into KS. One of those, Bock et al. (2005) found that the greater anticipated-reciprocity relationships amongst individuals, the more favourable individual's attitude to KS would be. Similar findings were revealed by Lin (2007b), who insisted that reciprocity would better personal motivation to promote KS, which, in turn, establish long-term cooperation. Therefore, expecting reciprocity from other members through sharing knowledge will motivate people to share their useful and creative ideas, and satisfaction with others, which would significantly increase knowledge-sharing intentions (Hung et al., 2011).

Finally, in this study, the finding of the quantitative data analysis was also strongly supported by the majority of the qualitative participants. Many interviewees explained that mutual benefits are very important for a long-term relationship that is also a two-way interaction amongst academics (e.g. Intvee1, Intvee5). If knowledge sharers believe that sharing knowledge with someone also brings benefits to them, they would be more likely to share their knowledge in the future. However, some of the interviewees (e.g. Intvee1, Intvee6, Intvee7) noticed that reciprocal benefits do not mean the knowledge sharer would gain the same in return because reciprocity itself, sometimes, the sharers automatically receive the immediate benefit, in turn, that is they learn through sharing.

To conclude, the above reasonable explanations for this finding support the view that reciprocity had a positive impact on KSB among academics.

7.3.1.7 H_{7a} : The impact of psychological ownership on KSB

The relationship between psychological ownership of knowledge (POK) and KSB was found to be insignificant from both the quantitative and qualitative data analyses. Contrary to research expectations, the findings indicated that POK was not associated with KSB, and this did not support hypothesis H_{7a} . POK is the extent to which an employee believes in the possession and is responsible for the knowledge he or she

possesses (Pierce et al., 2001). It was measured using a five-item scale. Three of the five items met the adequacy assessments to validate the construct validity and reliability in the measurement model. The finding of H_{7a} appears to show that ownership of knowledge does not encourage an individual's KSB. This result was somewhat surprising because previous empirical studies found that psychological ownership had a positive impact on KSB (Vandewalle et al., 1995; Han et al., 2010). Those studies argued that individuals who have psychological ownership are more likely to share their knowledge with others.

The results of the qualitative interviews of this study support the argument that this could be understandable in the context of Vietnam. The discussion in the qualitative phase revealed that this finding does not only occur in the context of the higher institutions but also take places in other sectors in Vietnam. Senior lecturers or excellent researchers might not want to share, but instead, want to keep their monopoly of knowledge to have the “soft power” for themselves. Even academics tend to keep everything that they produce during working at their workplace as their own intellectual property. Another possible reason is that academic staff may feel vulnerable in a non-transparent and hostile environment; accordingly, they tend to keep their knowledge to protect themselves from many threats (i.e. lost power, job security, etc.) (Ta, 2014). Sometimes, they share things they feel safe and not influence any others. In Vietnamese workplaces, people often think that “knowledge is power”, which means owning knowledge is better than sharing it. From a psychological perspective, this finding may be explained by many reasons why individuals might not be so willing to share their knowledge. For example, they may have views such as (Hawryszkiewicz, 2010):

- Why give away my experience because it would yield more valuable?
- Losing ownership of knowledge, which may be used by others to my detriment.
- Should an employee share his/her knowledge with a group, in which there are some organisational and individual conflicts?
- Donating away your knowledge may lead to loss of your standing.

Based on the discussion above, this study supported the view that POK does not have a significant impact on KSB among academics. However, an argument emerged from the interviews that sharers must be the owner of knowledge before they can share it (Intvee5). Hence, it is necessary to examine the interaction between POK and KSB in greater depth in future work.

7.3.2 H₈: Effect of KSB on innovative work behaviour (Response to RQ2)

This section discusses the findings of hypothesis H₈ associated with the relationship between KSB and innovative work behaviour (IWB). In this study, KSB is defined as the extent to which a person performs KS activities in the organisation (Davenport and Prusak, 1998; Lin et al., 2009). IWB is the extent to which employees behave to create, promote, and implement new ideas in a group or organisation (Janssen, 2000). For the questionnaire survey, KSB was measured by a five-item scale adapted from the literature, while IWB was measured using three dimensions: (1) idea generation, (2) idea promotion, and idea implementation. The items for measuring IWB were adapted from prior research and met the requirements of the assessments of construct validity and reliability through measurement model (CFA). The discussion below aimed to answer research question 2:

RQ2. How does KSB influence IWB in Vietnamese university settings?

Hypothesis H₈ was strongly supported by both the quantitative and qualitative data analyses. The findings of the survey found that KSB was strongly positively associated with IWB which was measured as one of the outcomes of KS. A plausible explanation for why KSB was significantly related to IWB was that KSB positively influences IWB by encouraging each academic staff with eagerness and willingness for sharing activities (donating and receiving) with others. When academics are actively involved in activities to exchange knowledge and expertise, they can perform better in creating, promoting and applying innovation (e.g. new ideas, methods in teaching, doing research), which, in turn, leads to better their behaviours of innovation (Radaelli et al., 2014). The above results provide possible explanations based on a theoretical perspective of the individual innovation process: the first step of this process is the generation of new and valuable ideas, followed by the promotion of these ideas to potential allies (Amabile et al., 1996; Janssen, 2000). These above steps could only occur through engaging in social interactions – e.g. sharing knowledge to find novel and useful ideas, and then mobilise supporters to apply these ideas in practice (Janssen, 2000). Thus, it could be said that the higher the willingness to share knowledge employees have, the better their innovation capacity can be.

Finally, this study might have found plausible reasoning for this finding in the context of Vietnam in the qualitative research. The qualitative interviews strongly supported the

positive impact of KSB on IWB. For example, they argued that when academic staff share their knowledge, they also have a chance to learn. This automatic learning process provides them with an opportunity to re-think and revitalise what they know, which, in turn, stimulates their brain more active in innovative processes. He is an example:

“I think the sharing process gives me a chance to re-think and revitalise what I know, that seemed to make my brain more active.” (Intveel)

These new and useful ideas obtained from this learning process may lead to incremental innovations such as new teaching methods, new teaching materials or new research publications.

The above analysis for the finding of hypothesis H₈ supports the view that individual willingness to exchange (giving and receiving) knowledge positively affects academics’ IWB.

7.3.3 H_{1b}-H_{7b}: Transformational leadership (TL) as a moderator (Responses to RQ3)

Studying the literature of TL has revealed that transformational leader behaviours can significantly affect followers’ norms, trust, motivations and behaviours (Podsakoff et al., 1990; Shih et al., 2012; Mittal and Dhar, 2015; Hussein and Elbeltagi, 2016; Han et al., 2016). Thus, this study rationally believed that transformational leadership would have moderating impacts on individual KSB. This is because TL was deemed as an enabler for KS in previous empirical studies (e.g. Srivastava et al., 2006; Lee et al., 2010; Shih et al., 2012; Bradshaw et al., 2015; Hussein and Elbeltagi, 2016). The current study expected that academics who are socially influenced, have personal perceptions in sharing knowledge, and are strongly inspired by transformational leaders would be more willing to share their knowledge with their colleagues. Specifically, this study explored to what extent TL moderated the effects of two environmental factors (subjective norms, trust), and five personal factors (knowledge self-efficacy, enjoyment in helping others, expected rewards, reciprocity, and psychological ownership of knowledge) on academics’ KSB. These impacts were tested in hypotheses H_{1b}, H_{2b}, H_{3b}, H_{4b} and H_{5b} (H_{5a}, H_{7a}, H₉ were not tested – see section 7.2), respectively to answer research question 3:

RQ3. What are the joint effects of transformational leadership and the critical factors on KSB in Vietnamese university settings?

In general, the findings from both the quantitative and qualitative data analyses found that - to the best of the researcher's knowledge - for the first time within an SCT-based model, TL positioned in a focal behaviour also affected KSB. The following sections discuss each of these findings.

7.3.3.1 *H_{1b}: Moderating effect of TL on the relationship between subjective norms and KSB*

H_{1b}: TL positively moderates the relationship between subjective norms (SN) and KSB. In teams with high TL, SN will have a stronger positive impact on KSB than in teams with low TL.

As predicted, the impact of subjective norms on KSB was found to be positively moderated by TL from both the statistical analysis and the qualitative data phases, which supported hypothesis H_{1b}. This finding means that a higher level of TL strengthened the impact of subjective norms on KSB.

There were some possible explanations why this joint relationship was significant. Firstly, from a theoretical perspective, through charismatic role modelling, transformational leaders stimulate followers and appeal to them by articulating compelling visions and providing an appropriate model (Podsakoff et al., 1990; Bass, 1985; Jung et al., 2008). The leader, as a role model, persuades followers that they are capable, and empowers them to contribute to the organisation's vision by sharing their knowledge (Zhang et al., 2017). Furthermore, through charisma, transformational leaders may enhance subjective norms by empowering members that indirectly pressurises them to be more willing to participate in knowledge-sharing activities to meet the leaders' expectations. Therefore, a team with a high level of TL might be more willing to respond to subjective norms with KSB.

Secondly, the interviews found that this result was very high in Vietnamese institutions of higher education. Many interviewees explained that in the Vietnamese culture, the leader has a very significant influence on the thought and behaviours of their staff. The transformational leaders could also establish an ideal workplace because members are usually stimulated and facilitated to work as efficiently as they can. The leaders can turn stagnant members into active ones who work to increase productivity as well as activate creativity, stimulate sharing and help each other.

Taken together, the finding of hypothesis H_{1b} supports the view that a high level of TL can strengthen the impact of subjective norms on KSB. However, as discussed above, little is known about the examination of the moderating effect of TL on the relationship between subjective norms and KSB. Thus, it is necessary to further investigate this joint effect in greater depth in future research.

7.3.3.2 H_{2b}: Moderating effect of TL on the relationship between trust and KSB

H_{2b}: TL positively moderates the relationship between trust and KSB. In teams with high TL, trust will have a stronger positive impact on KSB than in teams with low TL.

In this study, both the quantitative and qualitative data showed that TL positively moderated the impact of trust on KSB, which supported hypothesis H_{2b}. This result implies that a higher level of TL strengthened the impact of trust on KSB.

This study may provide a plausible explanation related to the theory of TL. Through charisma or idealised influence, transformational leaders also instil pride and faith in followers so that “followers feel trust and respect toward the leader and they are motivated to do more than they are expected to do” (Yukl, 1989, p. 272). In turn, members are encouraged to contribute more to the group or organisation - i.e. sharing their knowledge (Zhang et al., 2017). Another potential explanation for why TL moderated the impact of trust on KSB may be due to transformational leaders promoting followers’ willingness to rely on mutual trust, which in turn improves knowledge-sharing activities among members (Lee et al., 2010). Moreover, Bradshaw et al. (2015) revealed that leaders’ charismatic behaviour also facilitates KS (donating and collecting knowledge) among followers through inspiration, energising and a clear sense of goals. Shih et al. (2012) suggested that transformational leadership might nurture a trusting climate among members, thus, leading to encouraging them to share their knowledge with each other.

Finally, this qualitative study found that the moderating effect of TL on the relationship between trust and KSB was strongly supported by interviewees. The qualitative finding indicated that when there is mutual trust between leaders and followers, and between colleagues, this may mitigate the embarrassment (e.g. about being mistaken, speaking out about job secrets) and increase dialogue between members. Thus, it will positively affect the individual behaviour of sharing knowledge. Interviewees also believed that

regarding trust in universities that transformational leadership has an important role to play to establish an environment of trust on KS at the university level.

To conclude, the above plausible explanations provide support for the view that the impact of trust on KSB among academics was positively moderated by TL (H_{2b}). However, as discussed above, little is known about the investigation of the moderating effect of TL on the relationship between trust and KSB. Thus, it is necessary to further investigate this joint effect in greater depth in future research.

7.3.3.3 H_{3b}: Moderating effect of TL on the relationship between knowledge self-efficacy and KSB

H_{3b}: TL positively moderates the relationship between knowledge self-efficacy (KSE) and KSB. In teams with high TL, KSE will have a stronger positive impact on KSB than in teams with low TL.

The quantitative data found that this hypothesis H_{3b} was supported, which means that when a level of TL is higher, the impact of KSE on KSB will be strengthened. This result was understandable because transformational leaders can motivate followers to be confident in engaging and producing new ideas and knowledge, which, in turn, helps employees to develop their KSE (Mittal and Dhar, 2015). It is also necessary for followers to have a high level of KSE, which is deemed as an essential enabler to KSB. The results also revealed that strengthening KSE could promote individual's willingness to share knowledge towards completing a given sharing behaviour successfully.

Another reasonable explanation is associated with a theoretical perspective. As explained for H_{1b} above, through charismatic role modelling, transformational leaders stimulate followers and appeal to them by articulating compelling visions and providing an appropriate role model (Podsakoff et al., 1990; Bass, 1985; Jung et al., 2008). The leader, as a role model, persuades followers that they are capable, and empowers them to contribute to the organisation's vision through sharing their knowledge (Zhang et al, 2017). By inspiring followers, the leaders underpin the willingness of members to improve individual sharing behaviour. Moreover, through intellectual stimulation, the leader encourages followers to rethink problems in new and innovative ways. It supports them to deal with issues on their own, motivates employees' efforts and self-confidence, which, in turn, engages them in sharing-knowledge activities (Bass, 1985;

Bradshaw et al., 2015). Thus, employees in a team with a high level of TL might be more willing to respond to KSE with KSB.

Finally, the interviews confirmed the findings of quantitative data analysis for hypothesis H_{3b}. All interviewees agreed that TL had a moderating effect on the relationship between KSE and KSB amongst academics. This result was not consistent with the literature (Zhang et al., 2017), in which it was found that the level of TL might not have the ability to strengthen or lower the effect of KSE on KSB. Zhang et al. (2017) explained that this might have been because their study context was set in the online environment, where the relationship between leaders and followers was likely to be different from the traditional work environment.

Taken together, the above explanations provide support for the point of view that the impact of KSE on KSB was positively moderated by TL.

7.3.3.4 H_{4b}: Moderating effect of TL on the relationship between enjoyment in helping others and KSB

H_{4b}: TL positively moderates the relationship between enjoyment in helping others (EHO) and KSB. In teams with high TL, EHO will have a stronger positive impact on KSB than in teams with low TL.

This study also suggested that the TL style of a leader would have a moderating effect on the relationship between EHO and KSB. However, the results from statistical data analysis and interview analysis were contradictory. While hypothesis H_{4b} was not significant in the survey study, it was supported by most interviewees from the qualitative interviews. These findings contradicted what this study has argued. This study may find a possible explanation for why the TL style may not have the ability to affect how EHO influences the individual behaviour of sharing knowledge. Since the data sample for the questionnaire survey was academic staff, they may believe that their feeling of enjoyment in helping others is more related to themselves than the leaders. On the other hand, most of the interviewees were the leaders of departments and faculties. Consequently, the interviewees may have believed that their TL style could inspire followers and help them to find the enjoyment in helping their colleagues, which, in turn, lead them being more willing to share their knowledge with each other.

As discussed above, to the best of the researcher's knowledge, this is the first study to examine the moderating effect of TL on the relationship between EHO and KSB in the

context of the university. Thus, before concluding, it is necessary to further investigate this joint effect in greater depth in future research.

7.3.3.5 *H_{5b}: Moderating effect of TL on the relationship between expected organisational rewards and KSB*

This study expected TL to have a moderating influence on the relationship between expected organisational rewards (REW) and KSB (H_{5b}). However, the relationship between REW and KSB (H_{5a}) was not significant in quantitative data analysis. According to Awang (2015), testing the moderating effect of TL on the relationship between REW and KSB requires this relationship (H_{5a}) is significant (see Chapter 5). Thus, hypothesis H_{5b} was not tested in this study.

7.3.3.6 *H_{6b}: Moderating effect of TL on the relationship between reciprocal benefits and KSB*

H_{6b}: TL positively moderates the relationship between reciprocal benefits and KSB. In teams with high TL, reciprocal benefits will have a stronger positive impact on KSB than in teams with low TL.

The moderating impact of TL was found to have an insignificant association with the impact of reciprocal benefits on KSB (H_{6b}) from both the quantitative and qualitative phases. Hypothesis H_{6b} was not supported which contradicts the prediction of the study. A possible explanation for the why TL did not moderate the effect of reciprocal benefits on KSB might be because most of the interviewees from the qualitative interviews admitted they had no evidence to support this view. Moreover, the literature has shown that very little is known about the joint relationship of TL and reciprocal benefits on KSB. One of the interviewees said that sharing behaviour is more associated with academics themselves than their leaders' leadership styles. Therefore, it was hard for them to explain and interpret their comments for this finding. Thus, before reaching a conclusion, it is suggested that further research should re-examine TL as a moderator of the relationship between reciprocal benefits and KSB.

7.3.3.7 *H_{7b}: Moderating effect of TL on the relationship between POK and KSB*

This study expected TL to have a moderating impact on the relationship between psychological ownership of knowledge (POK) and KSB (H_{7b}). However, the relationship between POK and KSB (H_{7a}) was not significant in quantitative data

analysis. According to Awang (2015), testing the moderating effect of TL on the relationship between REW and KSB requires this relationship (H_{7a}) is significant (see Chapter 5). Thus, hypothesis H_{7b} was not tested in this study.

7.3.4 H_9 : Joint effect of transactive memory systems quality and KSB (Response to RQ4)

RQ4. What is the joint effect of transactive memory systems (TMS) quality and KSB on IWB in Vietnamese university settings?

Finally, the quality of TMS was expected to have a moderating effect on the relationship between KSB and innovative work behaviour (H_9). However, the latent construct of TMS quality was excluded because of Explanatory Factor Analysis (EFA) results as discussed in Chapter 5. Thus, hypothesis H_9 was not tested, which means that research question 4 has not been answered in the scope of this study.

7.4 Ideal model based on the combination of quantitative and qualitative results

This study has emphasised the importance of improving KS in universities as a key role in creating and transferring knowledge through their core activities such as teaching and learning, research, dissemination, and working with other organisations to promote innovation. Based on the findings from both the quantitative and qualitative phases, this study has proposed an ideal model of KS (see Figure 7.2) that could be useful for universities in Vietnam.

The model includes factors from four aspects: environment, individual, organisation and technology. The orange arrows represent the relationships between the factors that have been confirmed by both the quantitative and qualitative studies. These factors (subjective norms, trust, knowledge self-efficacy, enjoyment in helping others, reciprocal benefits, transformational leadership) were found to have substantial impacts on KSB leading to superior innovative work behaviour.

Four new factors emerged from the qualitative interviews. Three of them are related to organisational aspect (e.g. Democracy, Publicity and Transparency of knowledge, Knowledge management strategies), while the other one is associated with technology (Knowledge management systems). These factors were believed to have significant effects on KS in university environments (see Section 6.4, Chapter 6). For example, many interview participants reported that the democracy might enable academic staff to

debate and discuss leading to opportunities to exchange their knowledge. The blue arrows represent the relationships of these emerged factors and KSB, which have not been tested in the scope of this study.

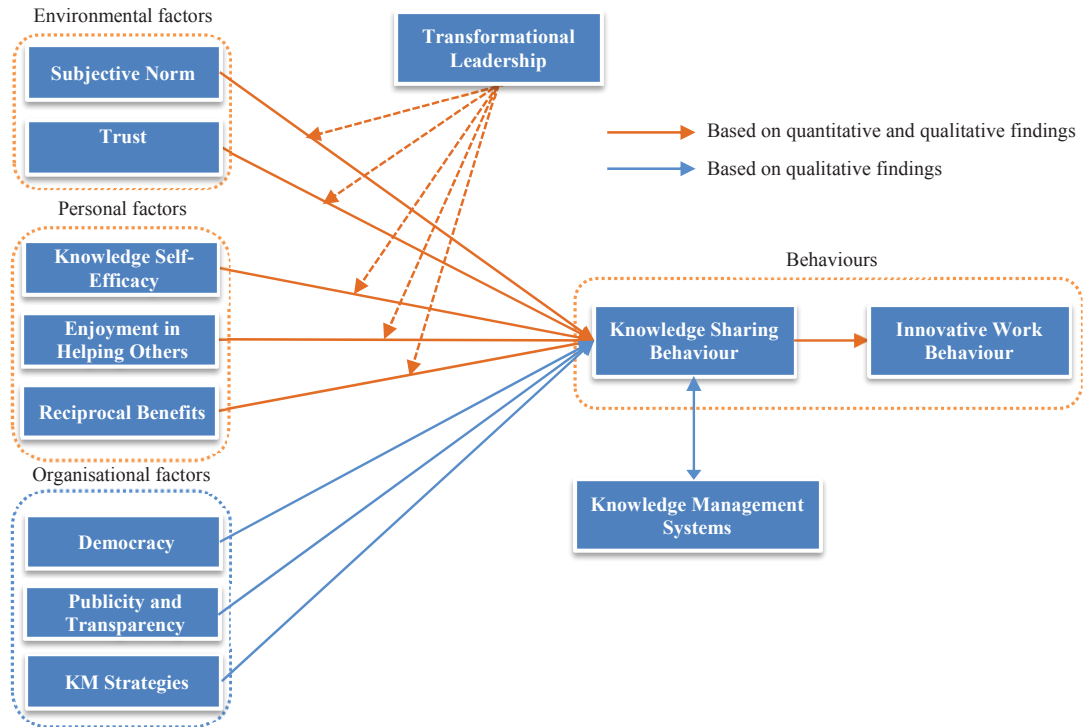


Figure 7.2. Model of knowledge sharing for universities in Vietnam

7.5 Summary of Chapter 7

Based on the findings of the quantitative and qualitative phases and within the research's theoretical boundaries, this chapter has discussed the results gained in response to the research questions and hypotheses of this study. Each of these findings was discussed and explained, to answer the research questions and hypotheses, based on theoretical perspectives, previous empirical studies and the combination of results from both phases of this study. The survey questionnaires guided the exploration of KSB amongst academics in the context of Vietnam. The qualitative protocol was then developed to explain and interpret the significant findings obtained from statistical data analysis. Finally, the development of an ideal model of KS for universities in Vietnam was advanced based on the combination of the findings from both the quantitative and qualitative phases. The next chapter (final) will summarise and conclude this study by providing the overview of research, implications, contributions and recommendations for further works.

CHAPTER 8: CONCLUSIONS

8.1 Introduction

Chapter 5 and Chapter 6 presented the results from the quantitative and qualitative data analyses respectively. Chapter 7 discussed the whole findings of this study based on the interpretations of both quantitative and qualitative findings. This chapter summarises and concludes the research. The chapter's outline is presented in Figure 8.1.

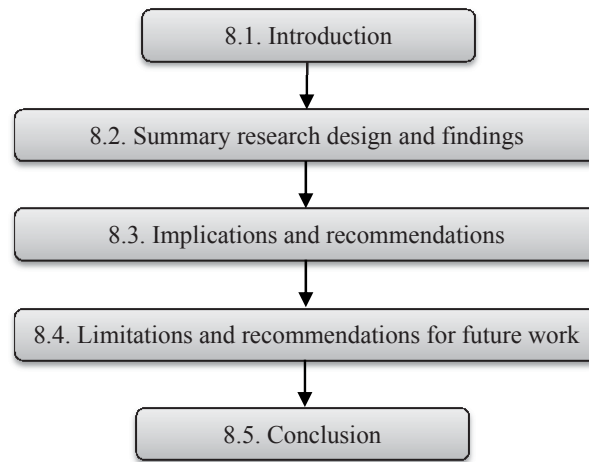


Figure 8.1. Chapter outline

8.2 Summary of research design and findings

The extant literature on KM has highlighted the critical roles of influential factors on KSB among individuals in organisations. A large number of previous studies have examined the influence of limited factors (i.e. attitude, subjective norms and perceived behavioural control) on knowledge-sharing behaviours indirectly through knowledge-sharing intentions based on Theory of Reasoned Action (TRA) or Theory of Planned Behaviour (TPB). However, individuals may feign a willingness to, but fail to actually share their knowledge (Kuo and Young, 2008). Thus, there is a need to contribute to the limited research to examine individuals' *actual* KSB (Bock et al., 2005; Henttonen et al., 2016). Moreover, there has been limited research on KS in university settings. This research, therefore, aimed to fill these research gaps by investigating the impacts of environmental and personal factors on KSB towards individual innovative behaviour and the moderating roles of transformational leadership and transactive memory systems quality on these relationships, in higher education in a developing country (Vietnam).

This study first conducted an extensive literature review associated with the research problem to develop the research model and hypotheses (see Chapter 2 and Chapter 3). The initial research model (see Figure 8.2) was proposed with eleven constructs based on Social Cognitive Theory (SCT) and augmented with other theories of KSB, including:

- Two environmental-related factors: Subjective norms and Trust;
- Five personal-related factors: Knowledge self-efficacy, Enjoyment in helping others, Expected organisational rewards, Reciprocal benefits, and Psychological ownership of knowledge;
- Two moderators: Transformational leadership and Transactive memory systems (TMS) quality and;
- Knowledge sharing behaviour and Innovative work behaviour.

This study postulated and proposed a set of hypotheses (see Figure 8.2) on: the influence of environmental factors and personal factors on KSB (H_{1a} - H_{7a}), the impact of KSB on innovative work behaviour (H_8), the moderating effect of transformational leadership on the relationships between the critical factors on KSB (H_{1b} - H_{7b}), and the moderating effect of TMS quality on the relationship between KSB and IWB.

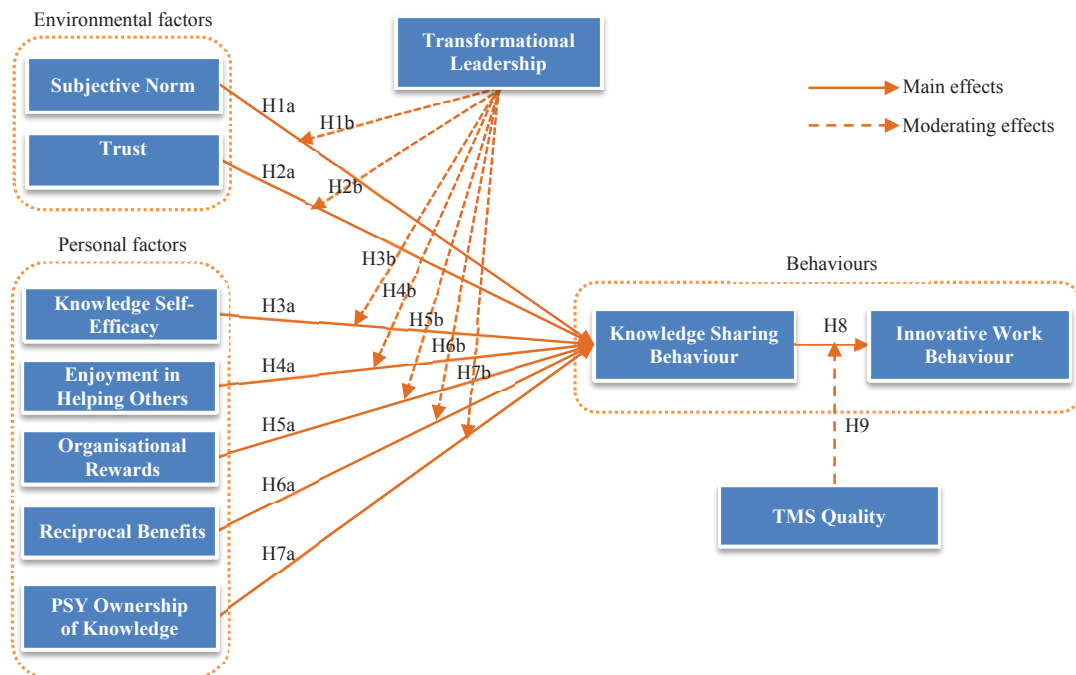


Figure 8.2. The initial research model (Recall from Chapter 3)

A sequential mix-method approach (see Figure 8.3) was applied for this research (Chapter 4). This combination was used in a complementary manner, which applied the quantitative approach as the primary approach (Phase I), followed by a qualitative approach (Phase II) as a complementary need. It was able to help this study gain the highest level of understanding and investigating the research problem (Neuman 2005).

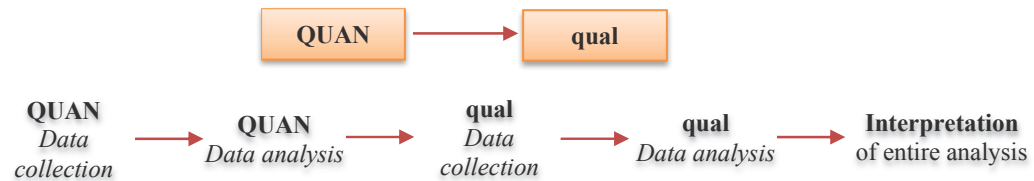


Figure 8.3. The sequential explanatory mixed methods design (Creswell, 2009)

Following this approach, the current study collected and analysed the quantitative data in the first phase (I). To do this, a survey questionnaire was designed and pre-tested through a pilot study and a five-week seminar series. This study then administered a paper questionnaire survey (main data collection) with academic staff of 31 departments of four public universities in the North of Vietnam. Of the 785 questionnaires distributed, the researcher received 588 responses, representing a high response rate of 74%.

After cleaning data, the final number of the useable returned questionnaires was 558 ($N = 558$), demonstrating a reasonable sample size needed for the data analysis method implemented in this study. To analyse quantitative data, this study applied rigorous techniques including simple descriptive statistics and multivariate data analysis (e.g. EFA, CFA, and SEM), using SPSS 22.0 and AMOS 22.0 software programs (see Chapter 4 & 5). These techniques ultimately aimed to test the proposed hypotheses to answers the research questions of this study. The quantitative results, as shown in Chapter 5, have revealed that (1) subjective norms, trust, knowledge self-efficacy, enjoyment in helping others and reciprocal benefits had positive impacts on knowledge-sharing behavior (KSB); (2) KSB was found to have a strongly positive effect on individual innovative behavior and; (3) transformational leadership moderated the relationship between subjective norms, trust and knowledge self-efficacy on KSB. Interestingly, the expected organisational rewards and psychological ownership of knowledge were found to have insignificant associations with KSB.

In the qualitative research (Phase II), a semi-structured interview protocol was used for collecting and recording data. The protocol was developed based on the significant findings of the quantitative data analysis (Phase I) and pre-tested by a pilot study. There were seven participants selected as the interviewees to interview via Skype software and Emails (see Table 6.1, Chapter 6). In each interview, the interviewees were asked to validate the obtained findings of the statistical analysis and give their comments (“how” and “why”). Each of the questions in the protocol also included “probes” to encourage the interviewees to talk more and expand the time of the interview to receive useful information. This study then applied several rigorous steps (see Chapter 4) to transcribe, analyse and validate the results from the interviews. In general, as presented in Chapter 6 and 7, most of the findings from the quantitative data were supported by the seven interviewees, except for hypothesis H_{4b} . Moreover, two of hypotheses, H_{5a} and H_{7a} were not strongly supported by the interviewees who had further explanations for their given ratings.

In summary, an integration of the results from both the quantitative and qualitative phases has indicated that (1) subjective norms, trust, knowledge self-efficacy, enjoyment in helping others, reciprocal benefits had positive impacts on knowledge-sharing behavior (KSB); (2) KSB was found to have a strongly positive effect on individual innovative behavior and; (3) transformational leadership positively moderated the relationships between subjective norms, trust and knowledge self-efficacy on KSB. Interestingly, the expected organisational rewards and psychological ownership of knowledge were similarly found to have insignificant associations with KSB.

The below relationships were not strongly supported or consistent from both phases. Consequently, they should be re-examined in the future works:

- Expected organisational rewards and KSB (H_{5a});
- Psychological ownership of knowledge and KSB (H_{7a}) and;
- Transformational leadership on enjoyment in helping others and KSB (H_{4b}).
- Transactive memory systems quality on KSB and innovative behaviour (H_9).

8.3 Implications and recommendations

This study's implications make several substantial contributions to both theory and practice, and to the specific country of context study. The sections below first discuss the theoretical implications, followed by the practical and country-specific implications.

8.3.1 Theoretical implications

This research has attempted to contribute to the existing literature of knowledge management by making several theoretical implications:

- Firstly, this study adds to a lack of empirical studies (field study) by investigating KS in a new context, i.e. at university settings in developing countries. As found in the literature review (see Chapter 2), there has been a lack of research into KS in university settings (Fullwood et al., 2013; Fullwood and Rowley, 2017). Also, only two empirical studies adopted the SCT-based model to examine the determinants of KSB (Hsu et al., 2007; Lin et al., 2009). However, these two studies only addressed KSB in virtual communities that could have limitations on the generalisability of the results to other sorts of organisations (Chang et al., 2015). Until now, to the best of the researcher's knowledge, no studies have applied SCT as a primary lens to investigate research on KSB in organisations, especially in institutions of higher education that are different from virtual communities. Unlike virtual communities, an organisation has formal policies and procedures to guide the individual's KSB with the common interests of reaching organisational goals. As such, the current research is the first field study and has taken a proactive approach using SCT theory to quantitatively and qualitatively examine KSB in organisations in general, and university settings in particular. Thus, this study contributes to the literature of knowledge management by investigating the KSB in higher education (field study). Finally, the study has attempted to address the urgent needs recommended by researchers (see Chapter 2) (e.g. Pham et al. (2015), Rahman et al. (2015), Fullwood and Rowley (2017)) for further investigation of KS in universities, especially in developing countries.
- Secondly, this study attempts to propose a new integrated model mainly based on Social Cognitive Theory (SCT), which provides new insight into KSB. It comprehensively examined KSB using SCT and integrated with other theories in the context of higher education. The SCT holds that the study would expect to

better explain the impacts of environmental and personal factors on individual behaviours because the theory indicates that an individual's behaviour is affected by social influences and personal perceptions and expectations. This study also enriches the literature of KSB by examining the effect of individual's KSB on innovative behaviour. The findings of this study provided support for two environmental-related factors (subjective norms, trust) and three personal-related factors (knowledge self-efficacy, enjoyment in helping others, and reciprocity). Interestingly, two personal factors (expected organisational rewards, and psychological ownership of knowledge) were not supported, which was not consistent with previous studies (as discussed in Chapter 7). The results offered by this research also contribute to the literature by highlighting the need to focus on the environmental and personal factors rather than technological factors. Consequently, it also enables future research to better comprehend individual KSB by using SCT theory as a new lens and thus drawing conclusions from the personal and environmental aspects, which are more practical. Moreover, a large number of previous studies have examined the influence of limited factors on knowledge-sharing behaviours indirectly through knowledge-sharing intentions based on Theory of Reasoned Action (TRA) or Theory of Planned Behaviour (TPB). However, TRA and TPB have limitations in explaining the direct effects of influential factors on individual's *actual* behaviour; that is people may feign a willingness to, but fail to actually share their knowledge (Kuo and Young, 2008). Thus, this study contributes to a limited number of research to examine individuals' actual KSB, not only their behavioural intention and attitudes to share knowledge (Bock and Kim, 2002; Bock et al., 2005; Chatzoglou, 2009; Henttonen et al., 2016). Overall, the study has attempted to address the unsolved needs recommended by several earlier researchers (see Chapter 2).

- Thirdly, this study extends the knowledge-sharing research model by investigating the joint effect of transformational leadership and factors influencing KS. Studies in the literature of transformational leadership have mainly highlighted that transformational leader behaviours can positively affect followers' social influences, personal perceptions and behaviours (e.g. Podsakoff et al. (1990), Mittal and Dhar (2015), Han et al. (2016)). However, far fewer attempts have known about the effect that transformational leadership has

on the relationships between social influences, personal perceptions and KSB. The current research provides an explanation through which transformational leadership is believed to have a moderating impact on the relationships between environmental factors, personal factors and KSB. The research found that transformational leadership positively moderated the relationships between subjective norms, trust and knowledge self-efficacy on KSB. These findings make important theoretical contributions by providing a new understanding of the moderating role of transformational leadership in examining the impacts of influential factors on KSB. These findings also deepen the existing theories of KSB (e.g. TRA, TPB, and SCT) on the moderating effect of transformational leadership that affects individual's KSB in turn. This research has shed light on the moderating effect of transformational leadership.

- Fourthly, this study provides a systematic review of the existing literature and a research framework for studying KS (see Chapter 2). It helped this study to identify the research gaps, clearly understand the investigated factors (variables/constructs), develop the research model and hypotheses, and select an appropriate theory and methodology. This study represents one of the first attempts to modify the standard SCT model and augment with other theories (e.g. TPB, Economic Exchange Theory (EET), Social Exchange Theory (SET)) to account for academics' KSB in higher education institutions.
- Fifthly, this study makes three important implications associated with methodological aspects. (i) As found in the literature review (Chapter 2), most of the studies investigated KS using a single quantitative approach (e.g. Bock and Kim, 2002; Bock et al., 2005; Lin, 2007a, 2007b; Hsu et al., 2007; Dong et al., 2010; Tohidinia and Mosakhani, 2010; Fullwood et al., 2013; Rahman et al., 2015; Akhavan et al., 2015; Liou et al., 2016; Fullwood and Rowley, 2017; Brooke et al., 2017). This research used a mixed methods approach, which helps gain the highest level of understanding about the research problem (Neuman, 2005). This attempt therefore addressed the need earlier suggested by researchers (e.g. Rahman et al., 2015; Brooke et al., 2017). (ii) A research instrument was rigorously designed and validated that provided the valid and reliable measurement scales. The well-defined constructs were adapted from empirical studies that were conducted in developed or industrialized countries, i.e. the United States (Bass and Avolio, 1997; Davenport and Prusak, 1998;

Dyne and Pierce, 2004; Brandon and Hollingshead, 2004), Korea (Lee and Choi 2003; Bock et al., 2005), Taiwan (Lin, 2007b; Han et al., 2010). This research contributes to the literature by examining and adapting the measurement scales in a new context of higher education in a developing country (Vietnam). The instrument was thoroughly designed and validated through a seminar series and a pilot study. Although some items were excluded from the assessment of the model, the results confirm its validity and reliability in an emerging and developing country. This research instrument is expected to be used or adapted in other contexts or developing countries in which future researchers wish to test this model. (iii) This study applied a two-step SEM (Structural Equation Modeling) approach to analyse quantitative data. SEM provides many powerful advantages to better understand the research problem, which is impossible to tackle with the basic statistical methods (e.g. multiple regression can only test a single relationship with a limited number of variables). This is because of SEM's ability to: (1) define a model to explain the entire set of relationships (Hair et al., 2010); (2) estimate multiple and interrelated dependence relationships; (3) involve and represent unobserved constructs in these relationships (Hair et al., 2010); (4) perform multi-group analysis to compare the different models (e.g. from transformational leadership level of this study) (Kline, 2015); and (5) provide a number of indices to evaluate the model fit (Kline, 2015; Schumacker and Lomax, 2010).

- Finally, the interpretation of the current research recommends that there is a need for future work to investigate the impacts of democracy, publicity and transparency of knowledge, and knowledge management systems on academics' KSB. These issues have also been raised in a prior study (Ta, 2014). Moreover, the interpretation of quantitative and qualitative data analysis findings also leads to an ideal research model for studying KS in university settings, which should be further tested in other contexts in the future.

8.3.2 Practical implications

The findings from this research have a significant impact on different stakeholders (e.g. university policymakers, managers of the Ministry of Education and Training) who lead KM initiatives or desire to promote KS within their universities. Overall, the findings imply that improving KS can encourage individual innovative behaviour (IWB) to facilitate curriculum development and research, which, in turn, positively affects the quality of teaching, learning, and research. This study provides universities with (1) a better comprehension of the influence of environmental and personal factors on KSB; (2) a more in-depth understanding about how transformational leadership affects KSB, thus promoting innovative behaviour and (3) evidence that KSB leads to better innovative behaviour. University leaders should understand and develop a holistic approach to supporting KSB which is composed of the two perspectives of the environment and the personal as technology alone cannot ensure that knowledge will indeed be volunteered and exchanged. On the other hand, they need to keep in mind that social influences and personal perceptions are of the most important to create a knowledge-sharing culture that would lead to improving trust-building, self-efficacy, enjoyment in helping others, and reciprocal benefits. Thus, these factors should receive more attention to better ensure that individual innovative behaviour leads to superior innovation for their organisations.

A clear understanding of the critical factors influence KSB towards promoting IWB may help university leaders to develop suitable and evolving strategies to address the challenges of KS. The following sections provide specific suggestions based on each finding for university policymakers and managers of the Ministry of Education and Training to develop knowledge-sharing strategies more effectively in their organisations. Below this study uses the term “Leaders” to imply those stakeholders.

- First, the results confirm that subjective norms and trust are associated with KSB. Since subjective norms positively influenced employee KSB, university leaders need to increase the level of positive social influence that employees perceive as they involve themselves in social interactions through the exchange of knowledge, skills, and experiences. As Bock et al. (2005) suggested, prior to introducing knowledge-sharing initiatives, university leaders should attempt to nourish the targeted social relationships and interactions of staff. Especially, leaders should establish an environment, characterised by high levels of positive

social pressure, that are apparently important in driving knowledge-sharing intentions (Bock et al., 2005) and encourage the willingness of employees to exchange knowledge with others.

It is also recommended that leaders' perceptions are one of the key antecedents of creating such a knowledge-sharing culture in organisations (Lin and Lee, 2004). This research suggests that leaders should focus on strengthening trust between colleagues because when they have a high level of trust in their relationships, they are more willing to engage in sharing knowledge. Leaders should mitigate interest groups because it results in the low level of trust amongst the university's members. Moreover, Ta (2014) suggested that the higher the level of transparency and publicity of knowledge and information, the higher the level of mutual trust among colleagues that can be established. It implies that leaders should provide chances to access information and knowledge equally to all members to nurture interpersonal trust leading to feelings of safety and comfort in sharing activities. Also, this study also suggests some activities that could be taken to improve trust among academics in Vietnamese universities. For example, (1) holding conferences and seminars to exchange knowledge more frequently; (2) having social-collective exchange activities between lecturers, staff and leaders such as cultural and sports activities. These collective activities can be useful in creating a cohesive relationship within the university.

- Second, the findings show that knowledge self-efficacy, enjoyment in helping others, and reciprocal benefits have a positive impact on KSB. Leaders should concentrate on improving the positive mood state of individuals concerning social exchange, which foregoes knowledge-sharing activities. The results indicated that self-efficacy of knowledge positively guided employees' behaviour. Thus, it is necessary for leaders to pay more attention to providing helpful feedback to enhance the knowledge self-efficacy of employees. Furthermore, to improve an individual's self-efficacy, leaders should recruit and select members who are proactive and have high self-esteem (Lin 2007b). Leaders also need to support staff by providing some strategies such as training or support mechanism (Hsu et al., 2007). These supports can help members become more confident in their knowledge, which, in turn, leads them to share their knowledge with others. Also, individuals may improve their self-efficacy if

leaders often acknowledge that their knowledge has brought important contributions to the organisation.

The findings also imply that people who feel enjoyment in sharing knowledge and consequently help their colleagues tend to be more motivated to share knowledge. Thus, leaders should create an environment in which members can feel high levels of enjoyment while helping others through sharing their knowledge. For example, improving the positive mood state of individuals regarding social exchange such as enjoyment in helping others promotes KSB (Lin, 2007b). Regarding reciprocal benefits, an employee expects reciprocity from their colleagues when they share their knowledge. However, if employees expect to receive benefits before giving knowledge it will impede KS; but if they perceive that donating knowledge before receiving benefits, it will promote sharing knowledge. Thus, university leaders should develop policies that encourage KS by relying on mutual benefits amongst staff. Universities should build a knowledge-sharing culture towards enhancing the individuals' sense of "The more you share, the more you get back", which will contribute to facilitating KS within the organisation.

In addition, the results also show that psychological ownership of knowledge does not have a significant influence on KSB as people who have a high level of knowledge ownership may not be willing to share their knowledge with others. Expected rewards are not related to KSB. Therefore, managers should not emphasise organisational rewards with salary incentive, bonuses, promotion incentive, or job security as a major KS mechanism, as extrinsic rewards ensure temporary compliance (Lin, 2007a). In other words, extrinsic motivation may bring temporary incentives for KS, but it is not the primary driver shaping an individual's KSBs (Lin, 2007a).

- Thirdly, the findings have also shown the significant positive impacts of transformational leadership on subjective norms, trust and knowledge self-efficacy, which in turn influence KSB. This implies that a high level of KSB can be gained by having high levels of transformational leadership or subjective norms, trust and knowledge self-efficacy. These findings also suggest that university leaders should explain the connections between subjective norms, trust, knowledge self-efficacy and KSB before deciding on how a university should obtain the desired objectives, consequently promoting their employees'

KSB. It can be inferred that, if in a department or university with the high level of transformational leadership, the leaders and managers might benefit from endeavouring to enhance positive subjective norms, establish mutual trust and encourage individual self-efficacy of knowledge; these, in turn, lead to better individuals' KSBs.

- Fourthly, the current research also provides the evidence that higher KSB leads to superior personal innovative work behaviour. The findings suggest that leaders should focus on promoting innovative behaviours of employees during their daily work (e.g. teaching, research, publication). This can be done by enabling them to better generate, promote, and apply new ideas, methods, techniques or instruments (ideas) obtained from knowledge-sharing activities. If employees can not entirely transform their innovative ideas into useful applications in the work environment, then these new ideas are still being idle (Ariff, 2013). This study specifically learnt that in Vietnamese university environments, innovative behaviours have positive influences on novel ideas or products in teaching and learning methods, teaching programs, curriculums, and publications. The findings indicate that academics should look for ways to create new knowledge for the university. It also shows that because of the crisis in Vietnamese higher education, academics see innovation arising from the nature of sharing in their daily activities (e.g. teaching, seminar, workshop, publication) and should be required to be innovative at all times.
- Finally, future researchers or practitioners can adapt the current research instrument to collect the data about personal and environmental factors, transformational leadership, KSB, and innovative work behaviour. This data can be used to support organisations to investigate the potential issues such as the role of transformational leaders in promoting KS. Organisations should assess the willingness of members in sharing knowledge before launching any knowledge-sharing initiatives or knowledge management systems.

8.3.3 Country-specific implications

This study also makes significant country-specific implications for Vietnam as follows:

- Firstly, many studies have paid attention to KM in organisations in general, and higher education in particular in developed countries (e.g. the UK); but little is known about this research topic in Vietnam. Consequently, this research provides an updated view of knowledge-sharing practices for the development of successful KM strategies as well as key factors influencing the design and usage of knowledge management systems at the higher education level in Vietnam (known as a less studied country).
- Secondly, as a developing country, the reform of universities in Vietnam requested by “Doi Moi” (Renovation) in the 1990s has primarily relied on knowledge-based human resources. Thus, the findings of this study could be valuable for many stakeholders in Vietnam such as policymakers of the Ministry of Education and Training and university policymakers. These empirical findings could benefit them in developing suitable policies and strategies for the enhancement of intellectual assets, which can contribute to the transformational and international integration process in general and teaching, learning and research in particular. This will help Vietnamese universities meet the socio-economic demands, which have been required from Vietnam’s higher education system. The following are some suggestions for the leader in developing suitable policies and strategies: (1) developing specific mechanisms and procedures for the implementation of KM to better manage and exploit knowledge resources. This mechanism will make information more transparent and avoid copyright infringement and plagiarism. Moreover, knowledge sharing will prevent the waste of knowledge. Knowledge sharing must become mandatory requirements that are specified by specific mechanisms such as reward, salary, and promotion; (2) Leaders need to be trained in knowledge of KM to understand to build a KS culture; (3) Increase the publicity and transparency of information and knowledge and (4) Universities should build knowledge sharing systems that facilitate employees easily to share, retrieve and apply knowledge in their daily work (e.g. developing teaching materials, learning, and research).

- Thirdly, this knowledge contributes to the development of the national “Digital Vietnamese Knowledge System” project launched by the Vietnamese government in Jan 2018. This project is now at an early stage. The government has called upon all Vietnamese people and organisations to engage in sharing knowledge to build this nation’s knowledge management systems successfully. Thus, a better understanding of KSB will help the Vietnamese government to design and implement appropriate knowledge management systems that are compatible with Vietnamese behaviours and culture. It ultimately can better meet the needs of the nation’s socio-economic development.
- Finally, this thesis contributes knowledge to the existing body of knowledge about KM within the university context in Vietnam. As discussed above, KM is still new in Vietnam. There has been a lack of research into KS in emerging nations transitioning from centrally planned to market economies, such as Vietnam (Dong et al., 2010). Thus, this study instils the motivation into Vietnamese researchers and practitioners to explore and embark on KM research that can exploit the vast potential knowledge resources of the Vietnamese people. Ultimately, this research has contributed to bringing Vietnam into the world map of KM research.

8.4 Limitations and recommendations for future work

Although having a rigorous research design, this study also has its limitations within the scope of a PhD research. This section discusses the possible limitations of this study and provides suggestions that could be taken for future work.

- The study context was limited to the set boundary within the public universities in Vietnam (not for non-public university sector). Thus, a holistic picture of KS in all institutes of higher education in Vietnam is not provided. Consequently, the findings of this research cannot be generalised beyond the public university settings because the features of public and non-public universities have differences (i.e. salary, financial mechanisms). Also, as data collection was conducted within a country with a highly collectivist national culture (Dong et al., 2010), so the findings may not be able to be generalised to universities or organisations in different cultures. However, given the previous studies on KS in both developed and developing countries (Van den Hooff and Van Weenen, 2004; Lin, 2007a), it could be expected that the results of this study may be

taken forward by university leadership, academic staff and researchers in other contexts as well. Furthermore, future work should examine the research model beyond the boundaries of public universities in Vietnam and other countries with similar characteristics in the region (i.e. Southeastern Asia countries).

- This research investigated the influence of environmental and personal factors on KSB mainly based on Social Cognitive Theory (SCT) (Bandura, 1986). In SCT's model, environmental influences, individual factors, and behaviours act as interactive relationships. Moreover, the data of this study is cross-sectional, the posited causal relationships might only be deduced rather than proven (Bock et al., 2005). Hence, future research should investigate the bidirectional relationships among three types of variables of an SCT-based model by gathering longitudinal data.
- Another limitation of this study is related to the sampling method. The sample selection of the participants for the quantitative and qualitative phases was limited to only four public universities in the North of Vietnam. It is because of the limitation of time and resources. This study suggests that future research should employ a random sampling method and expand the number of interviewees, which may help the findings be more generalisable.
- The focus of this study is investigating the most salient environmental factors of Social Cognitive Theory (i.e. trust, subjective norms). Future work should extend the research model by examining other environmental-related factors that can impact KSB, which in turn may influence innovative behaviour, such as mutual influence (Hsu et al., 2007).
- This study is limited to investigate KSB of academic staff only. The study also omitted from the list of control variables to the quantitative data analysis, which might yield different quantitative findings, e.g. gender, age, level of education and working areas. Thus, future research may be needed to (1) investigate the differences among staff roles or disciplines regarding innovative initiative experience, such as leaders of divisions, leaders of departments and leaders of the organisation or staff from social and technical areas and; (2) examine the impacts of these control variables.
- There are some factors (i.e. democracy, publicity and transparency of knowledge, KM strategies, and knowledge management systems) emerging from

the qualitative phase of this research. Future research should further quantitatively examine these factors to enable the generalisation of the findings across a broader population.

- Moreover, because of the limitations of time and financial restrictions, no comparative research was attempted for other similar or different contexts in other developed or developing countries. Thus, future work should be undertaken to fill this gap.
- The study suggests future research should focus on (i) investigating the KS of certain sorts of knowledge assets (i.e. tacit or explicit knowledge); (ii) identifying whether employees share their knowledge indirectly through technology and directly with others.
- Finally, a self-report study, including both questionnaire and semi-structured interviews, was used in this research to collect data from participants regarding KSB and factors influencing KSB amongst academics. It is undeniable that this was a fast and easy way to collect data for the researcher. However, it could be possible limitations such as social desirability bias, misunderstanding questions, exaggeration, forgetting pertinent details, or a discrepancy between recall and what happens in reality (Brutus et al., 2013). Accordingly, future research could mitigate these limitations by expanding the scope of a sample size from a variety of universities to collect data for the same research issues.

8.5 Conclusion

The extant literature of KM has highlighted the critical roles of influential factors on KSB among individuals in organisations. Many previous studies have examined the limited factors and KSB indirectly through knowledge-sharing intentions. However, individuals may feign a willingness to, but fail to actually share their knowledge (Kuo and Young, 2008). Thus, there is a need to add to the limited research to examine individuals' actual KSB (Bock et al., 2005; Henttonen et al., 2016). Moreover, there has been limited research on KS in university settings and the context of emerging developing countries such as Vietnam. This research, therefore, aimed to fill these research gaps by investigating the impacts of environmental and personal factors on KSB towards individual innovative behaviour, the moderating roles of transformational leadership, and the quality of transactive memory systems on these relationships, in higher education in a developing country (Vietnam).

The findings from this study revealed that a greater willingness to share knowledge leads to better individual innovative behaviours. This study also confirmed that subjective norms, trust, knowledge self-efficacy, enjoyment in helping others and reciprocal benefits have positive impacts on KSB. Furthermore, transformational leadership was found to have positive moderating effects on the relationships between subjective norms, trust and knowledge self-efficacy and KSB. Interestingly, expected organisational rewards and psychological ownership of knowledge were found to have insignificant associations with KSB. These findings of the study make a variety of significant theoretical and practical implications to both academia and practitioners, especially for those are leading KM initiatives or desiring to promote KS within their universities.

In conclusion, the current investigation has provided a useful resource and a base for future work wishing to examine KSB in higher education contexts. Moreover, the research model is expected to be used in the future by researchers or practitioners who desire to test these factors in other study contexts.

REFERENCES

- Abrams, L. C., Cross, R., Lesser, E., & Levin, D. Z. (2003). Nurturing interpersonal trust in knowledge-sharing networks. *Academy of Management Executive*, 17(4), 64.
- Adams, C. S. (1993). *The Impact of the European Community on Higher Education in Ireland: A Case Study*. Paper presented at the the 18 Annual Meeting of the Association for the Study of Higher Education, Pittsburgh, PA.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. doi:[https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Akhavan, P., Hosseini, S. M., Abbasi, M., & Manteghi, M. (2015). Knowledge-sharing determinants, behaviors, and innovative work behaviors: An integrated theoretical view and empirical examination. *Aslib Journal of Information Management*, 67(5), 562-591. doi:10.1108/AJIM-02-2015-0018
- Al-Alawi, A. I., Al-Marzooqi, N. Y., & Mohammed, Y. F. (2007). Organizational culture and knowledge sharing: Critical success factors. *Journal of Knowledge Management*, 11(2).
- Alavi, M., & Leidner, D. (1999). Knowledge Management Systems: Issues, Challenges, and Benefits. *Communications of the Association for Information Systems*, 1. Retrieved from <http://aisel.aisnet.org/cais/vol1/iss1/7>
- Alavi, M., & Leidner, D. E. (2001). Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues. *MIS Quarterly*, 25(1), 107-136. doi:10.2307/3250961
- Alharbi, A. (2016). *An Investigation of the Impact Factors to Increase Citizens' Engagement in E-participation on Egovernment in Saudi Arabia*. (PhD), University of Technology Sydney.
- Al-husseini, S., & Elbeltagi, I. (2016). Evaluating the effect of transformational leadership on knowledge sharing using structural equation modelling: the case of Iraqi higher education. *International Journal of Leadership in Education*. doi:10.1080/13603124.2016.1142119
- Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the Work Environment for Creativity. *Academy of Management Journal*, 39(5), 1154-1184. doi:10.5465/256995
- Ardichvili, A., Page, V., & Wentling, T. (2003). Motivation and barriers to participation in virtual knowledge-sharing communities of practice. *Journal of Knowledge Management*, 7(1), 64-77. doi:10.1108/13673270310463626
- Ariff, M. I. M. (2013). *Exploring the role of Transactive Memory Systems in Virtual Teams*. (PhD), The University of Melbourne, Victoria, Australia
- Ariff, M. I., Milton, S. K., Bosua, R., & Sharma, R. (2011). *Exploring the role of ICT in the formation of transactive memory systems in virtual teams*. Paper presented at the PACIS 2011 Proceedings.
- Asatryan, V. S., & Oh, H. (2008). Psychological Ownership Theory: An Exploratory Application in the Restaurant Industry. *Journal of Hospitality & Tourism Research*, 32(3), 363-386. doi:10.1177/1096348008317391
- Austin, J. R. (2003). Transactive memory in organizational groups: The effects of content, consensus, specialization, and accuracy on group performance. *Journal of Applied Psychology*, 88(5), 866-878. doi:10.1037/0021-9010.88.5.866

- Avey, J. B., Avolio, B. J., Crossley, C. D., & Luthans, F. (2009). Psychological ownership: theoretical extensions, measurement and relation to work outcomes. *Journal of Organizational Behavior*, 30(2), 173-191. doi:doi:10.1002/job.583
- Avolio, B. J. (1999). *Full leadership development: Building the vital forces in organizations*. CA:Sage: Thousand Oaks.
- Awang, Z. (2015). Analyzing the moderating variable in a model *A Handbook on SEM*: MPWS Publisher. Bangi Selangor.
- Bakker, M., Leenders, R. T. A. J., Gabbay, S. M., Kratzer, J., & Van-Engelen, J. M. L. (2006). Is trust really social capital? Knowledge sharing in product development projects. *The Learning Organization*, 13(6), 594-605. doi:doi:10.1108/09696470610705479
- Bandura, A. (1986). Social foundations of thought and action *Englewood Cliffs, NJ* (Vol. 1986).
- Bandura, A. (2002). Social Cognitive Theory in Cultural Context. *Applied Psychology*, 51(2), 269-290. doi:doi:10.1111/1464-0597.00092
- Baron, R. M., & Kenny, D. A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of personality and social psychology*, 51(6), 1173-1182.
- Bass, B. M. (1985). *Leadership and Perjoornlance Beyond Expectations*: New York: Free Press.
- Bass, B. M. (1990). *Bass and Stogdill's handbook of leadership: Theory, research and management application (3rd ed.)*: New York: Free Press.
- Bass, B. M. (1999). On the taming of charisma: A reply to Janice Beyer. *The Leadership Quarterly*, 10(4), 541-553. doi:10.1016/S1048-9843(99)00030-2
- Bass, B. M., & Avolio, B. J. (1997). *Full range of leadership: Manual for the Multi-factor Leadership Questionnaire*: Mind Garden, Palto Alto, CA.
- Bates, R., Kauffeld, S., & Holton, E. F. (2007). Examining the factor structure and predictive ability of the German-version of the Learning Transfer Systems Inventory. *Journal of European Industrial Training*, 31(3), 195-211. doi:doi:10.1108/03090590710739278
- Bircham-Connolly, H., Corner, J., & Bowden, S. (2005). An Empirical Study of the Impact of Question Structure on Recipient Attitude during Knowledge Sharing *Electronic Journal of Knowledge Management*, 3(1), 1-10.
- Blau, P. M. (1964). *Power and Exchange in Social Life*: New York: Wiley.
- Blau, P.M. (1967). *Exchange and Power in Social Life*: New York : Wiley.
- Bock, G. W., & Kim, Y.-G. (2002). Breaking the myths of rewards: An exploratory study of attitudes about knowledge sharing. *Information Resources Management Journal (IRMJ)*, 15(2), 14-21.
- Bock, G.-W., Zmud, R. W., Kim, Y.-G., & Lee, J.-N. (2005). Behavioral Intention Formation in Knowledge Sharing: Examining the Roles of Extrinsic Motivators, Social-Psychological Forces, and Organizational Climate. *MIS Quarterly*, 29(1), 87-111. doi:10.2307/25148669
- Bourque, L. B., & Fielder, E. P. (2003). *How to Conduct Self-Administered and Mail Survey, 2nd ed.*: Thousand Oaks California: Sage Publications.
- Bradshaw, R., Chebbi, M., & Oztel, H. (2015). Leadership and Knowledge Sharing. *Asian Journal of Business Research*.
- Brandon, D. P., & Hollingshead, A. B. (2004). Transactive Memory Systems in Organizations: Matching Tasks, Expertise, and People. *Organization Science*, 15(6), 633-644. doi:10.1287/orsc.1040.0069

- Brooke, J., Mohd Rasdi, R., & Abu Samah, B. (2017). Modelling knowledge sharing behaviour using self-efficacy as a mediator. *European Journal of Training and Development*, 41(2), 144-159. doi:10.1108/EJTD-04-2016-0021
- Burns, J. M. (1978). *Leadership*: New York: Harper and Row.
- Byrne, B. M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.
- Byrne, B. M. (2016). *Structural equation modeling with Amos: Basic concepts, applications, and programming (3rd edition)*: Taylor & Francis/Routledge.
- Cabrera, Á., Collins, W. C., & Salgado, J. F. (2006). Determinants of individual engagement in knowledge sharing. *The International Journal of Human Resource Management*, 17(2), 245-264. doi:10.1080/09585190500404614
- Chang, C.-M., Hsu, M.-H., & Lee, Y.-J. (2015). Factors Influencing Knowledge-Sharing Behavior in Virtual Communities: A Longitudinal Investigation. *Information Systems Management*, 32(4), 331-340. doi:10.1080/10580530.2015.1080002
- Chatzoglou, P. D., & Vraimaki, E. (2009). Knowledge-sharing behaviour of bank employees in Greece. *Business Process Management Journal*, 15(2), 245-266. doi:doi:10.1108/14637150910949470
- Chau, P. Y. K., & Hu, P. J.-H. (2001). Information Technology Acceptance by Individual Professionals: A Model Comparison Approach*. *Decision Sciences*, 32(4), 699-719. doi:doi:10.1111/j.1540-5915.2001.tb00978.x
- Chen, I. Y., Chen, N.-S., & Kinshuk. (2009). Examining the factors influencing participants' knowledge sharing behavior in virtual learning communities. *Journal of Educational Technology & Society*, 12(1), 134-148.
- Chen, X., Li, X., Clark, J. G., & Dietrich, G. B. (2013). Knowledge sharing in open source software project teams: A transactive memory system perspective. *International Journal of Information Management*, 33(3), 553-563. doi:<https://doi.org/10.1016/j.ijinfomgt.2013.01.008>
- Cheng, M. Y., Ho, J. S. Y., & Lau, P. M. (2009). Knowledge Sharing in Academic Institutions: a Study of Multimedia University Malaysia. *Electronic Journal of Knowledge Management*, 7, 313-324.
- Choi, S. Y., Kang, Y. S., & Lee, H. (2008). The effects of socio-technical enablers on knowledge sharing: an exploratory examination. *Journal of Information Science*, 34(5), 742-754. doi:10.1177/0165551507087710
- Choi, S. Y., Lee, H., & Yoo, Y. (2010). The Impact of Information Technology and Transactive Memory Systems on Knowledge Sharing, Application, and Team Performance: A Field Study. *MIS Quarterly*, 34(4), 855-870. doi:10.2307/25750708
- Chow, W. S., & Chan, L. S. (2008). Social network, social trust and shared goals in organizational knowledge sharing. *Information & Management*, 45(7), 458-465. doi:<https://doi.org/10.1016/j.im.2008.06.007>
- Chowdhury, S. (2005). The Role of Affect- and Cognition-based Trust in Complex Knowledge Sharing. *Journal of Managerial Issues*, 17(3), 310-326.
- Churchill, G. A. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research*, 16(1), 64-73. doi:10.2307/3150876
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research Methods in Education (8th edition)*. London and New York: Routledge: Taylor & Francis Group.

- Collis, J., & Hussey, R. (2003). *Business research: A practical guide for undergraduate and postgraduate students (2nd ed.)*: Houndmills, Basingstoke, Hampshire ; New York: Palgrave Macmillan.
- Compeau, D. R., & Higgins, C. A. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. *MIS Quarterly*, 19(2), 189-211. doi:10.2307/249688
- Connelly, C. E., & Kevin, K. E. (2003). Predictors of employees' perceptions of knowledge sharing cultures. *Leadership & Organization Development Journal*, 24(5), 294-301. doi:doi:10.1108/01437730310485815
- Constant, D., Kiesler, S., & Sproull, L. (1994). What's Mine Is Ours, or Is It? A Study of Attitudes about Information Sharing. *Information Systems Research*, 5(4), 400-421.
- Constant, D., Sproull, L., & Kiesler, S. (1996). The Kindness of Strangers: The Usefulness of Electronic Weak Ties for Technical Advice. *Organization Science*, 7(2), 119-135. doi:10.1287/orsc.7.2.119
- Craig, A. S., & Douglas, S. P. (2000). *International Marketing Research, 2nd edn*: Prentice Hall, New York.
- Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches -3rd ed* (Illustrated ed.). USA: SAGE Publications.
- Creswell, J. W. (2016). *Essential Skills for the Qualitative Researcher*: London SAGE.
- Dabholkar, P. A., & Bagozzi, R. P. (2002). An attitudinal model of technology-based self-service: Moderating effects of consumer traits and situational factors. *Journal of the Academy of Marketing Science*, 30(3), 184. doi:10.1177/0092070302303001
- Dang, Q. A. (2009). Recent Higher Education Reforms in Vietnam: The Role of the World.
- Dang, X. T. (2013). *ICT in foreign language teaching in an innovative university in Vietnam: current practices and factors affecting ict use*. (PhD), La Trobe University.
- Dataware, (1998). *Seven Steps to Implementing Knowledge Management in Your Organization*. Dataware Technologies, Inc.
- Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*: Harvard Business Press.
- Davenport, T. H., & Prusak, L. (2000). *Working Knowledge: How Organizations Manage what They Know*: Harvard Business Press. Boston Massachusetts.
- Davenport, T.H., DeLong D.W, & Beers M.C. (1998). Successful Knowledge Management Projects. *Sloan Management Review*, 39(2).
- Davison, R. M., Ou, C. X. J., & Martinsons, M. G. (2013). Information technology to support informal knowledge sharing. *Information Systems Journal*, 23(1), 89-109. doi:doi:10.1111/j.1365-2575.2012.00400.x
- de-Jong, J. P. J., & Den-Hartog, D. N. (2007). How leaders influence employees' innovative behaviour. *European Journal of Innovation Management*, 10(1), 41-64. doi:doi:10.1108/14601060710720546
- Dong, G., Chau, G. L., & Martin, G. (2010). Knowledge-sharing intention in Vietnamese organizations. *VINE*, 40(3/4), 262-276. doi:doi:10.1108/03055721011071395
- Earl, M. (2001). Knowledge Management Strategies: Toward a Taxonomy. *Journal of Management Information Systems*, 18(1), 215-233. doi:10.1080/07421222.2001.11045670
- Easley, R. F., Devaraj, S., & Crant, J. M. (2003). Relating Collaborative Technology Use to Teamwork Quality and Performance: An Empirical Analysis. *Journal of Management Information Systems*, 19(4), 247-265. doi:10.1080/07421222.2003.11045747

- Easterby-Smith, M., Thorpe, R., & Lowe, A. (2002). *Management Research: An Introduction*. SAGE Publications.
- Everitt, B. S. (2002). *The Cambridge Dictionary of Statistics (2nd ed.)*: CUP. ISBN 0-521-81099-X.
- Fielder, A. (2005). *Discovering Statistics Using SPSS. 2nd ed*: London: Sage.
- Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*: Reading, MA: Addison-Wesley.
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39-50. doi:10.2307/3151312
- Fukuyama, F. (1995). *Trust: The social virtues and the creation of prosperity*: Free Press Paperbacks.
- Fullwood, R., & Rowley, J. (2017). An investigation of factors affecting knowledge sharing amongst UK academics. *Journal of Knowledge Management*, 21(5), 1254-1271. doi:doi:10.1108/JKM-07-2016-0274
- Fullwood, R., Rowley, J., & Delbridge, R. (2013). Knowledge sharing amongst academics in UK universities. *Journal of Knowledge Management*, 17(1), 123-136. doi:doi:10.1108/13673271311300831
- Gefen, D., Straub, D., & Boudreau, M.-C. (2000). Structural Equation Modeling and Regression: Guidelines for Research Practice. *Communications of the Association of Information Systems*, 4.
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.)*: Allyn & Bacon.
- Gerbing, D. W., & Anderson, J. C. (1988). An Updated Paradigm for Scale Development Incorporating Unidimensionality and Its Assessment. *Journal of Marketing Research*, 25(2), 186-192. doi:10.2307/3172650
- Gist, M. E., & Mitchell, T. R. (1992). Self-Efficacy: A Theoretical Analysis of Its Determinants and Malleability. *Academy of Management Review*, 17(2), 183-211. doi:10.5465/amr.1992.4279530
- Gliem, J. A., & Gliem, R. R. (2003). Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales. *Midwest Research to Practice Conference in Adult, Continuing, and Community Education, Columbus*, 82-88.
- Gottschalk, P. (2008). *Knowledge Management*. IGI Global.
- Grotenhuis, F. D. J., & Weggeman, M. P. (2002). Knowledge management in international mergers. *Knowledge and Process Management*, 9(2), 83-89. doi:doi:10.1002/kpm.135
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research *Handbook of qualitative research*. (pp. 105-117). Thousand Oaks, CA, US: Sage Publications, Inc.
- Gupta, J.N.D., Sharma, S.K., & Hsu, J. (2007). An Overview of Knowledge Management. In Knowledge Management: Concepts, Methodologies, Tools and Applications. *Murray E. Jennex (ed), Information Science Reference*, 1-22.
- Haenlein, M., & Kaplan, A. M. (2004). A Beginner's Guide to Partial Least Squares Analysis. *Understanding Statistics*, 3(4), 283-297. doi:10.1207/s15328031us0304_4
- Hair Jr, J., Black, W., Babin, B., & Anderson, R. (2010). Multivariate Data Analysis; a global perspective (ed.): Pearson Education Inc. *New Jersey, USA*, 5.
- Hair, J. F., Black, B., Babin, B., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis, vol. 6*: Pearson Prentice Hall, Upper Saddle River, NJ.

- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2013). *Multivariate Data Analysis*: Pearson Education Limited.
- Han, S. H., Seo, G., Yoon, S. W., & Yoon, D. Y. (2016). Transformational leadership and knowledge sharing: Mediating roles of employee's empowerment, commitment, and citizenship behaviors. *Journal of Workplace Learning*, 28(3), 130-149. doi:10.1108/JWL-09-2015-0066
- Han, T.-S., Chiang, H.-H., & Chang, A. (2010). Employee participation in decision making, psychological ownership and knowledge sharing: mediating role of organizational commitment in Taiwanese high-tech organizations. *The International Journal of Human Resource Management*, 21(12), 2218-2233. doi:10.1080/09585192.2010.509625
- Haron, H., Abas, W. F., & Saleh, S. A. (2017). Incorporating Human Factors into a Knowledge Management System. *International Science Press*, 10(7), 45-52.
- Harrison, D. A., Mykytyn, P. P., & Riemenschneider, C. K. (1997). Executive Decisions About Adoption of Information Technology in Small Business: Theory and Empirical Tests. *Information Systems Research*, 8(2), 171-195.
- Hartog, D. N., Muijen, J. J., & Koopman, P. L. (1997). Transactional versus transformational leadership: An analysis of the MLQ. *Journal of Occupational and Organizational Psychology*, 70(1), 19-34. doi:10.1111/j.2044-8325.1997.tb00628.x
- Hater, J. J., & Bass, B. M. (1988). Superiors' evaluations and subordinates' perceptions of transformational and transactional leadership. *Journal of Applied Psychology*, 73(4), 695-702.
- Hawryszkiewicz, I. (2010). *Knowledge Management: Organising Knowledge Based Enterprises, First*. Palgrave Macmillan, Basingstoke, England.
- Hawryszkiewicz, I. (2017). *Designing Creative Organizations: Tools, Processes and Practice*: Emerald Group Publishing Limited.
- Hendriks, P. (1999). Why share knowledge? The influence of ICT on the motivation for knowledge sharing. *Knowledge and Process Management*, 6(2), 91-100. doi:10.1002/(SICI)1099-1441(199906)6:2<91::AID-KPM54>3.0.CO;2-M
- Hennink, M., Hutter, I., & Bailey, A. (2011). *Qualitative research methods*: London SAGE.
- Henson, R. K., & Roberts, J. K. (2006). Use of Exploratory Factor Analysis in Published Research: Common Errors and Some Comment on Improved Practice. *Educational and Psychological Measurement*, 66(3), 393-416. doi:10.1177/0013164405282485
- Henttonen, K., Kianto, A., & Ritala, P. (2016). Knowledge sharing and individual work performance: an empirical study of a public sector organisation. *Journal of Knowledge Management*, 20(4), 749-768. doi:10.1108/JKM-10-2015-0414
- Hislop, D. (2013). *Knowledge Management in Organizations*. Oxford University Press, Oxford
- Hoa, H. D., Tram, L. T. Q., Pham, D. N., & McPherson, M. F. (2012). Vietnam needs to change the approach to food security? Retrieved from <http://english.vietnamnet.vn/fms/special-reports/52232/vietnam-needs-to-change-the-approach-to-food-security-.html>
- House, R. J. (1971). A Path Goal Theory of Leader Effectiveness. *Administrative Science Quarterly*, 16(3), 321-339. doi:10.2307/2391905
- House, R. J. (1996). Path-goal theory of leadership: Lessons, legacy, and a reformulated theory. *The Leadership Quarterly*, 7(3), 323-352. doi:[https://doi.org/10.1016/S1048-9843\(96\)90024-7](https://doi.org/10.1016/S1048-9843(96)90024-7)
- House, R. J., & Mitchell, T. R. (1974). Path-Goal Theory of Leadership. *Journal of Contemporary Business*, 3, 81-97.

- House, R. J., Woycke, J., & Fodor, E. M. (1988). Charismatic and noncharismatic leaders: Differences in behavior and effectiveness *Charismatic leadership: The elusive factor in organizational effectiveness*. (pp. 98-121). San Francisco, CA, US: Jossey-Bass.
- Howell, K. E., & Annansingh, F. (2013). Knowledge generation and sharing in UK universities: A tale of two cultures? *International Journal of Information Management*, 33(1), 32-39. doi:<https://doi.org/10.1016/j.ijinfomgt.2012.05.003>
- Hsu, M.-H., Ju, T. L., Yen, C.-H., & Chang, C.-M. (2007). Knowledge sharing behavior in virtual communities: The relationship between trust, self-efficacy, and outcome expectations. *International Journal of Human-Computer Studies*, 65(2), 153-169. doi:<https://doi.org/10.1016/j.ijhcs.2006.09.003>
- Hung, S.-Y., Durcikova, A., Lai, H.-M., & Lin, W.-M. (2011). The influence of intrinsic and extrinsic motivation on individuals' knowledge sharing behavior. *International Journal of Human-Computer Studies*, 69(6), 415-427. doi:<https://doi.org/10.1016/j.ijhcs.2011.02.004>
- Issacs, S. (1993). *Social development in young children*: London: Routledge & Kegan Paul.
- Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative work behaviour. *Journal of Occupational and Organizational Psychology*, 73(3), 287-302. doi:10.1348/096317900167038
- Jeon, S., Kim, Y. G., & Koh, J. (2011). An integrative model for knowledge sharing in communities-of-practice. *Journal of Knowledge Management*, 15(2), 251-269. doi:10.1108/13673271111119682
- Johnson, R. D., & Marakas, G. M. (2000). Research Report: The Role of Behavioral Modeling in Computer Skills Acquisition: Toward Refinement of the Model. *Information Systems Research*, 11(4), 402-417. doi:10.1287/isre.11.4.402.11869
- Jung, D., Wu, A., & Chow, C. W. (2008). Towards understanding the direct and indirect effects of CEOs' transformational leadership on firm innovation. *The Leadership Quarterly*, 19(5), 582-594. doi:<https://doi.org/10.1016/j.leaqua.2008.07.007>
- Kankanhalli, A., Tan, B. C. Y., & Wei, K.-K. (2005). Contributing Knowledge to Electronic Knowledge Repositories: An Empirical Investigation. *MIS Quarterly*, 29(1), 113-143. doi:10.2307/25148670
- Kanter, R. M. (1988). When a thousand flowers bloom: Structural, collective and social conditions for innovation in organization. *Research in Organizational Behavior*, eds. Staw BM and Cummings LL, 10.
- Karlsen, J. T., & Gottschalk, P. (2004). Factors Affecting Knowledge Transfer in IT Projects. *Engineering Management Journal*, 16(1), 3-11. doi:10.1080/10429247.2004.11415233
- Kelley, H. H., & Thibaut, J. W. (1978). *Interpersonal Relations: A Theory of Interdependence*: Wiley, New York.
- Kim, S., & Ju, B. (2008). An analysis of faculty perceptions: Attitudes toward knowledge sharing and collaboration in an academic institution. *Library and Information Science Research*, 30, 282-290.
- Kimberlin, C. L., & Winterstein, A. G. (2008). Validity and reliability of measurement instruments used in research. *Am J Health Syst Pharm*, 65(23). doi:10.2146/ajhp070364
- Kirkpatrick, S. A., & Locke, E. A. (1996). Direct and Indirect Effects of Three Core Charismatic Leadership Components on Performance and Attitudes. *Journal of Applied Psychology*, 81(1), 36-51.
- Kline, R. B. (2005). *Principles and Practice of Structural Equation Modeling (2nd edn)*: New York: Guilford.

- Kline, R. B. (2015). *Principles and Practice of Structural Equation Modeling (4th edn)*: New York: Guilford. ProQuest Ebook Central.
- Knoema. (2012). Knowledge Economy Index (The World Bank), 2012. Retrieved from <https://knoema.com/WBKEI2013/knowledge-economy-index-world-bank-2012>
- Konstantinou, E., & Fincham, R. (2011). Not sharing but trading: Applying a Maussian exchange framework to knowledge management. *Human Relations*, 64(6), 823-842. doi:10.1177/0018726710388676
- Koufteros, X. A. (1999). Testing a model of pull production: a paradigm for manufacturing research using structural equation modeling. *Journal of Operations Management*, 17(4), 467-488. doi:[https://doi.org/10.1016/S0272-6963\(99\)00002-9](https://doi.org/10.1016/S0272-6963(99)00002-9)
- Kowal, J., & Fortier, M. S. (1999). Motivational Determinants of Flow: Contributions From Self-Determination Theory. *The Journal of Social Psychology*, 139(3), 355-368. doi:10.1080/00224549909598391
- Kuo, F.-Y., & Young, M.-L. (2008). A study of the intention–action gap in knowledge sharing practices. *Journal of the American Society for Information Science and Technology*, 59(8), 1224-1237. doi:doi:10.1002/asi.20816
- Le, H. (2014). Vietnamese higher education in the context of globalization: Qualitative or quantitative targets? *The International Education Journal: Comparative Perspectives*, 13(1).
- Lee, H., & Choi, B. (2003). Knowledge Management Enablers, Processes, and Organizational Performance: An Integrative View and Empirical Examination. *Journal of Management Information Systems*, 20(1), 179-228. doi:10.1080/07421222.2003.11045756
- Lee, P., Gillespie, N., Mann, L., & Wearing, A. (2010). Leadership and trust: Their effect on knowledge sharing and team performance. *Management Learning*, 41(4), 473-491. doi:10.1177/1350507610362036
- Lee, W. S., Kim, J., Graefe, A. R., & Chi, S.-H. (2013). Valuation of an Eco-Friendly Hiking Trail Using the Contingent Valuation Method: An Application of Psychological Ownership Theory. *Scandinavian Journal of Hospitality and Tourism*, 13(1), 55-69. doi:10.1080/15022250.2013.771902
- Lewis, K. (2003). Measuring transactive memory systems in the field: Scale development and validation. *Journal of Applied Psychology*, 88(4), 587-604.
- Liao, L.-F. (2008). Knowledge-sharing in R&D departments: a social power and social exchange theory perspective. *The International Journal of Human Resource Management*, 19(10), 1881-1895. doi:10.1080/09585190802324072
- Liao, S., Shao, Y. P., Wang, H., & Chen, A. (1999). The adoption of virtual banking: an empirical study. *International Journal of Information Management*, 19(1), 63-74. doi:[https://doi.org/10.1016/S0268-4012\(98\)00047-4](https://doi.org/10.1016/S0268-4012(98)00047-4)
- Lin, H. F., & Lee, G. G. (2004). Perceptions of senior managers toward knowledge-sharing behaviour. *Management Decision*, 42(1), 108-125. doi:doi:10.1108/00251740410510181
- Lin, H.F. (2007a). Knowledge sharing and firm innovation capability: an empirical study. *International Journal of Manpower*, 28(3/4), 315-332. doi:doi:10.1108/01437720710755272
- Lin, H.F. (2007b). Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions. *Journal of Information Science*, 33(2), 135-149. doi:10.1177/0165551506068174

- Lin, M.-J. J., Hung, S.-W., & Chen, C.-J. (2009). Fostering the determinants of knowledge sharing in professional virtual communities. *Computers in Human Behavior*, 25(4), 929-939. doi:<https://doi.org/10.1016/j.chb.2009.03.008>
- Liou, D.-K., Chih, W.-H., Yuan, C.-Y., & Lin, C.-Y. (2016). The study of the antecedents of knowledge sharing behavior: The empirical study of Yambol online test community. *Internet Research*, 26(4), 845-868. doi:doi:10.1108/IntR-10-2014-0256
- Loh, B., Tang, A.-C., Menkhoff, T., & Evers, H.-D. (2010). Applying Knowledge Management in University Research. *Governing and Managing Knowledge in Asia*, 3, 1999-1227.
- Lucas, L. M. (2005). The impact of trust and reputation on the transfer of best practices. *Journal of Knowledge Management*, 9(4), 87-101. doi:doi:10.1108/13673270510610350
- Luo, X. (2002). Trust production and privacy concerns on the Internet: A framework based on relationship marketing and social exchange theory. *Industrial Marketing Management*, 31(2), 111-118. doi:[https://doi.org/10.1016/S0019-8501\(01\)00182-1](https://doi.org/10.1016/S0019-8501(01)00182-1)
- Mackenzie, N., & Knipe, S. (2006). 'Research dilemmas: Paradigms, methods and methodology. *Issues in Educational Research*, 16(2), 193-205.
- Maier, R. (2007). *Knowledge Management Systems: Information and Communication Technologies for Knowledge Management*. Springer, New York, USA.
- Masterson, S. S., Lewis, K., Goldman, B. M., & Taylor, M. S. (2000). Integrating Justice and Social Exchange: The Differing Effects of Fair Procedures and Treatment on Work Relationships. *The Academy of Management Journal*, 43(4), 738-748. doi:10.2307/1556364
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An Integrative Model of Organizational Trust. *The Academy of Management Review*, 20(3), 709-734.
- Michailova, S., & Husted, K. (2003). Knowledge-Sharing Hostility in Russian Firms. *California management review*, 45(3), 59-77. doi:10.2307/41166176
- Mittal, S., & Dhar, R. L. (2015). Transformational leadership and employee creativity: Mediating role of creative self-efficacy and moderating role of knowledge sharing. *Management Decision*, 53(5), 894-910. doi:doi:10.1108/MD-07-2014-0464
- MOET. (2008a). *Điều chỉnh quy hoạch mạng lưới các cơ sở giáo dục đại học đến năm 2025 tầm nhìn 2035 (dự thảo lần 3)*.
- MOET. (2018b). Số liệu thống kê giáo dục đại học năm học 2016 - 2017. Retrieved from <https://www.moet.gov.vn/thong-ke/Pages/thong-ke-giao-duc-dai-hoc.aspx?ItemID=5137>
- Mulaik, S. A., James, L. R., Van Alstine, J., Bennett, N., Lind, S., & Stilwell, C. D. (1989). Evaluation of goodness-of-fit indices for structural equation models. *Psychological bulletin*, 105(3), 430.
- Nahapiet, J., & Ghoshal, S. (1998). Social Capital, Intellectual Capital, and the Organizational Advantage. *The Academy of Management Review*, 23(2), 242-266. doi:10.2307/259373
- Neuman, W. L. (2005). *Social research methods: Quantitative and qualitative approaches*: Allyn and Bacon Boston.
- Neuman, W. L. (2006). *Social research methods: Qualitative and quantitative approaches (6th edn)*: Pearson, Boston.
- Nevo, D., & Wand, Y. (2005). Organizational memory information systems: a transactive memory approach. *Decision Support Systems*, 39(4), 549-562. doi:<https://doi.org/10.1016/j.dss.2004.03.002>

- Ngo, T. M. (2014). *A quest for a new model of public university governance that promotes incentives for academic excellence for modern Vietnam: lessons from multi-site comparative case studies in east asia*. (PhD), The University of New South Wales.
- Nguyen, Q. K., & Nguyen, Q. C. (2008). *Education in Vietnam: Development History, Challenges, and Solutions*. Retrieved from World Bank: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.553.774&rep=rep1&type=pdf>
- Nguyen, T. L. H. (2009). *Vietnam Higher Education – Reform for the Nation's Development*. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.553.774&rep=rep1&type=pdf>
- Nguyen, T. N. Q. (2010). *Knowledge management capability and competitive advantage: an empirical study of Vietnamese enterprises*. (PhD), Southern Cross University, Australia.
- Nguyen, V. N., & Vu, N. T. (2015). Higher Education Reform in Vietnam: Current Situation, Challenges and Solutions. *VNU Journal of Science*, 31(4), 85-97.
- Nold III, H. A. (2012). Linking knowledge processes with firm performance: organizational culture. *Journal of Intellectual Capital*, 13(1), 16-38. doi:doi:10.1108/14691931211196196
- Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, 5(1), 14-37. doi:10.1287/orsc.5.1.14
- Ockey, G. J., & Choi, I. (2015). Structural Equation Modeling Reporting Practices for Language Assessment. *Language Assessment Quarterly*, 12(3), 305-319. doi:10.1080/15434303.2015.1050101
- Okyere-Kwakye, E., & Nor, K. M. Individual Factors and Knowledge Sharing. *American Journal of Economics and Business Administration*, 3(1), 66-72.
- Osterloh, M., & Frey, B. S. (2000). Motivation, Knowledge Transfer, and Organizational Forms. *Organization Science*, 11(5), 538-550.
- Othman, F., Hawryszkiewicz, I., & Kang, K. (2014). *The influence of socio-technical factors on knowledge-based innovation in Saudi Arabia Firms*. Paper presented at the Proceedings of the 25th Australasian Conference on Information Systems, 8th - 10th December, Auckland, New Zealand.
- Pallant, J. (2010). *SPSS Survival Manual: A step by step guide to data analysis using SPSS*: Allen & Unwin Australia.
- Park, C. H., Song, J. H., Yoon, S. W., & Kim, J. (2013). A missing link: psychological ownership as a mediator between transformational leadership and organizational citizenship behaviour. *Human Resource Development International*, 16(5), 558-574. doi:10.1080/13678868.2013.839510
- Park, H. S. (2000). Relationships among attitudes and subjective norms: Testing the theory of reasoned action across cultures. *Communication Studies*, 51(2), 162-175. doi:10.1080/10510970009388516
- Paulin, D., & Suneson, K. (2012). Knowledge transfer, knowledge sharing and knowledge barriers—Three blurry terms in KM. *Electronic Journal of Knowledge Management*, 10(1), 81-91.
- Pfeffer, J., & Sutton, R. I. (1999). Knowing" What" to Do Is Not Enough: TURNING KNOWLEDGE INTO ACTION. *California management review*, 42(1).
- Pham, A. T., Nguyen, N. T., & Nguyen, D. M. (2015). Influence of Organizational and Technological Aspects on the Knowledge Sharing Behaviour in the Vietnam's University Context. *Asian Social Science*, 11(10).
- Pham, M. H. (1998). *Vietnam's Education: The Current Position and Future Prospects*: The Gioi Publishers.

- Phung, V. D., Hawryszkiewicz, I., & Binsawad, M. (2018). Exploring How Environmental and Personal Factors Influence Knowledge Sharing Behavior Leads to Innovative Work Behavior. In P. e. a. (Eds.) (Ed.), *Advances in Information Systems Development: Methods, Tools and Management* (26): Springer.
- Pierce, J. L., Kostova, T., & Dirks, K. T. (2001). Toward a Theory of Psychological Ownership in Organizations. *Academy of Management Review*, 26(2), 298-310. doi:10.5465/amr.2001.4378028
- Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *The Leadership Quarterly*, 1(2), 107-142. doi:https://doi.org/10.1016/1048-9843(90)90009-7
- Quinn, R. E. (1988). *Beyond Rational Management: Mastering the Paradoxes and Competing Demands of High Performance*. San Francisco: Jossey-Bass Inc. Publishers.
- Radaelli, G., Lettieri, E., Mura, M., & Spiller, N. (2014). Knowledge Sharing and Innovative Work Behaviour in Healthcare: A Micro-Level Investigation of Direct and Indirect Effects. *Creativity and Innovation Management*, 23(4), 400-414. doi:doi:10.1111/caim.12084
- Rahman, M. S., Osmangani, A. M., Daud, N. M., & AbdelFattah, F. A. M. (2016). Knowledge sharing behaviors among non academic staff of higher learning institutions: Attitude, subjective norms and behavioral intention embedded model. *Library Review*, 65(1/2), 65-83. doi:doi:10.1108/LR-02-2015-0017
- Rahman, M. S., Osmangani, A. M., Daud, N. M., Chowdhury, A. H., & Hassan, H. (2015). Trust and work place spirituality on knowledge sharing behaviour: Perspective from non-academic staff of higher learning institutions. *The Learning Organization*, 22(6), 317-332. doi:doi:10.1108/TLO-05-2015-0032
- Ramayah, T., Yeap, J. A. L., & Ignatius, J. (2013). An Empirical Inquiry on Knowledge Sharing Among Academicians in Higher Learning Institutions. *Minerva*, 51(2), 131-154. doi:10.1007/s11024-013-9229-7
- Ramayah, T., Yeap, J. A. L., & Ignatius, J. (2014). Assessing Knowledge Sharing Among Academics: A Validation of the Knowledge Sharing Behavior Scale (KSBS). *Evaluation Review*, 38(2), 160-187. doi:10.1177/0193841x14539685
- Reid, F. (2003). Creating a knowledge sharing culture among diverse business units. *Employment Relations Today*, 30(3), 43-49.
- Rezvani, A., Dong, L., & Khosravi, P. (2017). Promoting the continuing usage of strategic information systems: The role of supervisory leadership in the successful implementation of enterprise systems. *International Journal of Information Management*, 37(5), 417-430. doi:https://doi.org/10.1016/j.ijinfomgt.2017.04.008
- Ridley, M. (1997). *The Origins of Virtue: Human Instincts and the Evolution of Cooperation*: New York: Viking.
- Riege, A. (2005). Three-dozen knowledge-sharing barriers managers must consider. *Journal of Knowledge Management*, 9(3), 18-35.
- Saad, A. (2015). *Incorporating knowledge sharing behaviour in a knowledge management system for academic institutions*. (PhD), Universiti Teknologi MARA, Malaysia.
- Schumacker, R. E., & Lomax, R. G. (2010). *A Beginner's Guide to Structural Equation Modeling Third Edition*. New York, London: Taylor & Francis Group.
- Schwartz, D. G. (2006). *Encyclopedia of Knowledge Management*. IGI Global.

- Shah, R., & Goldstein, S. M. (2006). Use of structural equation modeling in operations management research: Looking back and forward. *Journal of Operations Management*, 24(2), 148-169. doi:10.1016/j.jom.2005.05.001
- Shankar, R., Gupta, A., & Narain, R. (2003). Strategic planning for knowledge management implementation in engineering firms. *Work Study*, 52(4), 190-200. doi:10.1108/00438020310479036
- Shanker, R., Bhanugopan, R., van der Heijden, B. I. J. M., & Farrell, M. (2017). Organizational climate for innovation and organizational performance: The mediating effect of innovative work behavior. *Journal of Vocational Behavior*, 100, 67-77. doi:<https://doi.org/10.1016/j.jvb.2017.02.004>
- Sharma, R., Yetton, P., & Crawford, J. (2009). Estimating the Effect of Common Method Variance: The Method 2014;Method Pair Technique with an Illustration from TAM Research. *MIS Quarterly*, 33(3), 473-490. doi:10.2307/20650305
- Shartle, C. L. (1956). *Executive performance and leadership*. Oxford, England: Prentice-Hall.
- Shih, H.-A., Chiang, Y.-H., & Chen, T.-J. (2012). Transformational leadership, trusting climate, and knowledge-exchange behaviors in Taiwan. *The International Journal of Human Resource Management*, 23(6), 1057-1073. doi:10.1080/09585192.2011.639546
- Simeonova, B. (2014). *Knowledge sharing and knowledge interaction processes within Bulgarian firms*. (PhD), University of London.
- Sohail, M. S., & Daud, S. (2009). Knowledge sharing in higher education institutions: Perspectives from Malaysia. *VINE*, 39(2), 125-142. doi:10.1108/03055720910988841
- Srivastava, A., Bartol, K. M., & Locke, E. A. (2006). Empowering Leadership in Management Teams: Effects on Knowledge Sharing, Efficacy, And Performance. *Academy of Management Journal*, 49(6), 1239-1251. doi:10.5465/amj.2006.23478718
- Statista. (2018). Principal rice exporting countries worldwide in 2017/2018. Retrieved from <https://www.statista.com/statistics/255947/top-rice-exporting-countries-worldwide-2011/>
- Stenmark, D. (2002). *Information vs. knowledge: the role of intranets in knowledge management*. Paper presented at the Proceedings of the 35th Annual Hawaii International Conference on System Sciences.
- Szulanski, G. (1996). Exploring Internal Stickiness: Impediments to the Transfer of Best Practice Within the Firm. *Strategic Management Journal*, 17, 27-43.
- Ta, V. C. (2014). *Knowledge sharing issues in vietnamese higher education institutions* (PhD), La Trobe University.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Experimental designs using ANOVA*: Thomson/Brooks/Cole.
- Tangaraja, G., Mohd, R. R., Ismail, M., & Abu, S. B. (2015). Fostering knowledge sharing behaviour among public sector managers: a proposed model for the Malaysian public service. *Journal of Knowledge Management*, 19(1), 121-140. doi:10.1108/JKM-11-2014-0449
- Tepper, B. J., & Percy, P. M. (1994). Structural Validity of the Multifactor Leadership Questionnaire. *Educational and Psychological Measurement*, 54(3), 734-744. doi:10.1177/0013164494054003020
- Thanasegaran, G. (2009). Reliability and Validity Issues in Research. *Integration & Dissemination*, 4, 35-40.
- THE. (2018a). Asia University Rankings 2018. Retrieved from https://www.timeshighereducation.com/world-university-rankings/2018/regional-ranking#!/page/0/length/-1/sort_by/rank/sort_order/asc/cols/stats

- THE. (2018b). World University Rankings 2018. Retrieved from https://www.timeshighereducation.com/world-university-rankings/2018/world-ranking#!/page/0/length/-1/sort_by/rank/sort_order/asc/cols/scores
- Tian, J., Nakamori, Y., & Wierzbicki, A. P. (2009). Knowledge management and knowledge creation in academia: a study based on surveys in a Japanese research university. *Journal of Knowledge Management*, 13(2), 76-92. doi:doi:10.1108/13673270910942718
- Tohidinia, Z., & Mosakhani, M. (2010). Knowledge sharing behaviour and its predictors. *Industrial Management & Data Systems*, 110(4), 611-631. doi:doi:10.1108/02635571011039052
- Treiblmaier, H., & Filzmoser, P. (2010). Exploratory factor analysis revisited: How robust methods support the detection of hidden multivariate data structures in IS research. *Information & Management*, 47(4), 197-207. doi:https://doi.org/10.1016/j.im.2010.02.002
- Tsai, Y.-H., Joe, S.-W., Chen, M.-L., Lin, C.-P., Ma, H.-C., & Du, J.-W. (2016). Assessing team performance: Moderating roles of transactive memory, hypercompetition, and emotional regulation. *Human Performance*, 29(2), 89-105. doi:10.1080/08959285.2016.1154059
- UNESCO. (2008). Chiến lược phát triển giáo dục Việt Nam 2009-2020. Retrieved from http://planipolis.iiep.unesco.org/sites/planipolis/files/ressources/viet_nam_education_strategy_2009-2020_viet.pdf
- Urbach, N., & Ahlemann, F. (2010). Structural Equation Modeling in Information Systems Research Using Partial Least Squares. *Journal of Information Technology Theory and Application (JITTA)*, 11(2).
- Valley, T., & Wilkinson, B. (2008). *Vietnam higher education: Crisis and respond*. Retrieved from <https://sites.hks.harvard.edu/innovations/asia/Documents/HigherEducationOverview112008.pdf>
- Van den Hooff, B., & De Ridder, J. A. (2004). Knowledge sharing in context: the influence of organizational commitment, communication climate and CMC use on knowledge sharing. *Journal of Knowledge Management*, 8(6), 117-130. doi:doi:10.1108/13673270410567675
- van den Hooff, B., & Huysman, M. (2009). Managing knowledge sharing: Emergent and engineering approaches. *Information & Management*, 46(1), 1-8. doi:https://doi.org/10.1016/j.im.2008.09.002
- Van den Hooff, B., & Van Weenen, F. D. L. (2004). Committed to share: commitment and CMC use as antecedents of knowledge sharing. *Knowledge and Process Management*, 11(1), 13-24. doi:doi:10.1002/kpm.187
- Van Dyne, L., & Pierce, J. L. (2004). Psychological ownership and feelings of possession: three field studies predicting employee attitudes and organizational citizenship behavior. *Journal of Organizational Behavior*, 25(4), 439-459. doi:doi:10.1002/job.249
- Vandewalle, D., Van Dyne, L., & Kostova, T. (1995). Psychological Ownership: An Empirical Examination of its Consequences. *Group & Organization Management*, 20(2), 210-226. doi:10.1177/1059601195202008
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425-478. doi:10.2307/30036540
- Vera, D., & Crossan, M. (2004). Strategic Leadership and Organizational Learning. *The Academy of Management Review*, 29(2), 222-240. doi:10.2307/20159030
- VGP. (2017). Developing digitized Vietnamese knowledge system (Vietnam Government Portal). Retrieved from <http://news.chinhphu.vn/Home/Developing-digitized-Vietnamese-knowledge-system/20175/30712.vgp>

- von Krogh, G., Nonaka, I., & Rechsteiner, L. (2012). Leadership in Organizational Knowledge Creation: A Review and Framework. *Journal of Management Studies*, 49(1), 240-277. doi:10.1111/j.1467-6486.2010.00978.x
- Walumbwa, F. O., Wu, C., & Orwa, B. (2008). Contingent reward transactional leadership, work attitudes, and organizational citizenship behavior: The role of procedural justice climate perceptions and strength. *The Leadership Quarterly*, 19(3), 251-265. doi:https://doi.org/10.1016/j.leaqua.2008.03.004
- Wang, S., & Noe, R. A. (2010). Knowledge sharing: A review and directions for future research. *Human Resource Management Review*, 20(2), 115-131. doi:https://doi.org/10.1016/j.hrmr.2009.10.001
- Wasko, M. M., & Faraj, S. (2005). Why Should I Share? Examining Social Capital and Knowledge Contribution in Electronic Networks of Practice. *MIS Quarterly*, 29(1), 35-57. doi:10.2307/25148667
- WB. (2009). Project information document (PID) concept stage. Retrieved from <http://documents.worldbank.org/curated/en/558751468015027713/pdf/PID-Print-P145634-08-11-2014-1407772091132.pdf>
- WB. (2011). *Putting higher education to work: Skills and research for growth in East Asia*.
- WB. (2015). *Project performance assessment report - Vietnam second higher education project*. Retrieved from Document of The World Bank: <http://documents.worldbank.org/curated/en/268681467997577139/Vietnam-Second-Higher-Education-Project>
- Wegner, D. M. (1987). Transactive memory: A contemporary analysis of the group mind *Theories of group behavior* (pp. 185-208): Springer.
- Wegner, D. M. (1995). A computer network model of human transactive memory. *Social Cognition*, 13, 1-21.
- Wegner, D. M., Erber, R., & Raymond, P. (1991). Transactive memory in close relationships. *Journal of personality and social psychology*, 61(6), 923.
- Whitener, E. M., Brodt, S. E., Korsgaard, M. A., & Werner, J. M. (1998). Managers as Initiators of Trust: An Exchange Relationship Framework for Understanding Managerial Trustworthy Behavior. *The Academy of Management Review*, 23(3), 513-530. doi:10.2307/259292
- Williams, B., Brown, T., & Onsmann, A. (2012). Exploratory factor analysis: A five-step guide for novices. *Australasian Journal of Paramedicine*, 8(3).
- Wong, K. Y. (2005). Critical success factors for implementing knowledge management in small and medium enterprises. *Industrial Management & Data Systems*, 105(3), 261-279. doi:10.1108/02635570510590101
- Wood, R., & Bandura, A. (1989). Social Cognitive Theory of Organizational Management. *Academy of Management Review*, 14(3), 361-384. doi:10.5465/amr.1989.4279067
- World Bank. (2018). The World Bank In Vietnam. Retrieved from <http://www.worldbank.org/en/country/vietnam/overview#1>
- Yoo, Y., & Torrey, B. (2002). National Culture and Knowledge Management in a Global Learning Organization. *The Strategic Management of Intellectual Capital and Organizational Knowledge*, 421-434.
- Yu, C., Yu, T.-F., & Yu, C.-C. (2013). Knowledge Sharing, Organizational Climate, and Innovative Behavior: A Cross-Level Analysis of Effects. *Social Behavior and Personality: an international journal*, 41(1), 143-156. doi:10.2224/sbp.2013.41.1.143

- Yukl, G. (1989). Managerial Leadership: A Review of Theory and Research. *Journal of Management*, 15(2), 251-289. doi:10.1177/014920638901500207
- Zhang, X., Zhang, Y., Sun, Y., Lytras, M., Ordonez de Pablos, P., & He, W. (2017). Exploring the effect of transformational leadership on individual creativity in e-learning: a perspective of social exchange theory. *Studies in Higher Education*, 1-15. doi:10.1080/03075079.2017.1296824
- Zins, C. (2007). Conceptual approaches for defining data, information, and knowledge. *Journal of the American Society for Information Science and Technology*, 58(4), 479-493. doi:doi:10.1002/asi.20508

APPENDICES

Appendix 1: Profile of Vietnamese universities

Overview

Vietnam is an agriculture-based communist country located in Southeast Asia with nearly 95 million people (WB, 2018). Vietnam includes 54 ethnic groups living in 63 provinces and cities, of which the Vietnamese majority group accounts for 90 per cent of the population. Since the introduction of the “Doi Moi” policy (“Renovation”) in 1986, Vietnam has shifted from a bureaucratically centralised, planned economy to a market economy (Dang, 2009; Dong et al., 2010). *Doi Moi* has put pressure on the Vietnamese higher education (HE) system to meet the knowledge bank for the socio-economic changes. In response, the Vietnamese Government has published its vision for the higher education sector (Dang, 2009). That is, building an higher education system, which is required to be innovative, responsive to the demands of the market, and vital to economic growth and national development (WB, 2009). Therefore, the Vietnamese higher education system has been undergoing a continuous change for more than twenty years through the government’s long-term agenda - The Higher Education Reform Agenda 2006-2020 (WB, 2015). As a result, the World Bank (2015) reported that Vietnam has shifted itself from one of the poorest countries in the world to a lower middle-income country since the beginning of “*Doi Moi*” policy in 1986. This transformation to a knowledge-based economy has mitigated its poverty through human resource development by providing advanced skills through higher education reform (Pham, 1998; Le, 2014). The main goals of this reform are “to make fundamental changes in the quality and size of higher education; improve institutional and system competitiveness; and make higher education institutions responsive to, and operate efficiently within, the socialist-oriented market mechanism in 2020” (Nguyen and Nguyen, 2008, p.131).

Thanks to the reform, Vietnam’s higher education system has steadily changed (Nguyen and Vu, 2015). For example, it has been changed from a system comprising only specialised universities with only Bachelor and PhD degrees following the former Soviet model to multi-disciplinary universities offering Bachelor, Master’s and PhD programs (Nguyen and Vu, 2015). In the last decade, 75 new public and private universities were established taking the total number of universities from 160 universities in 2007 to 235 in 2017 (UNESCO, 2008, MOET, 2018b). To date, the network of Vietnamese universities has spread across all parts of the country and many

cities or provinces have their own universities (MOET, 2018a). In order to survive, develop, and attract learners, many universities have focused on training in majors with high social demands – e.g. Finance, Information Technology and English.

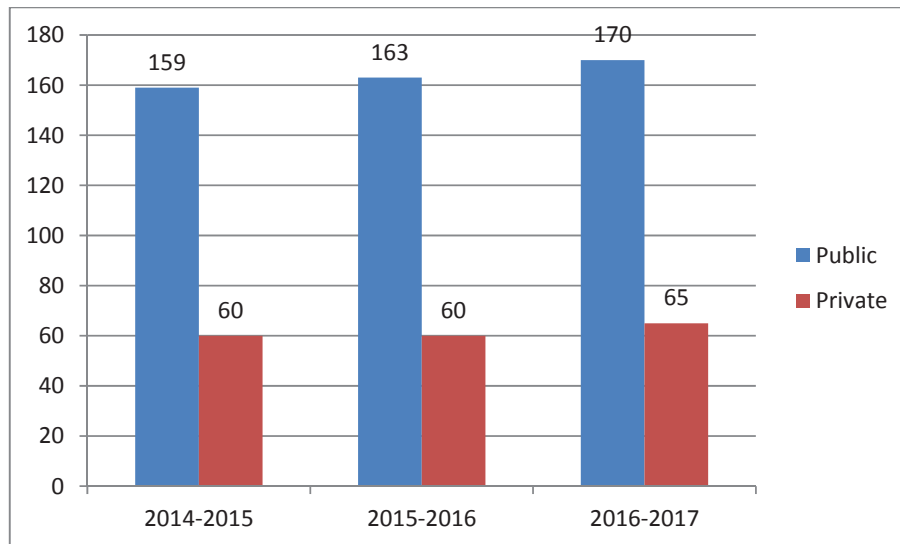


Figure A1.1. The number of universities in the last three school years (Source: MOET, 2018b)

However, the explosion in the number of universities in the last ten years has revealed many limitations and inadequacies. For example, the quality assurance of training has not met the enrollment scale and there are not enough excellent and high-quality lecturers. As a result, the quality of training has still been low and not met the requirements of socio-economic development. This is also one of the reasons why graduates cannot find jobs (MOET, 2018a).

University governance

Regarding state management, although universities in the system are under the control of Ministry of Education and Training (MOET), they are also managed by different ministries/sectors and localities, except for two national universities, Hanoi National Universities and Ho Chi Minh National University which are directly managed by the government and have subordinate universities (Figure A.2a). The figure below (or Figure A.2a shows a characteristic feature of the controlling structure of universities in the Vietnamese higher education network. Apart from two national universities, the leaders of cities or provinces and ministries intervene in most of the university's activities such as investment, organisation, personnel, administration, enrolment, and majors. Therefore, the tendency of choosing the training field (do you mean speciality

or subject offerings) of the university is influenced by the ministries, sectors and localities with particularities in development. Moreover, the implementation of autonomy in these universities is also restricted (MOET, 2018a). Figure A.2b depicts a typical organisational structure of a university in Vietnam.

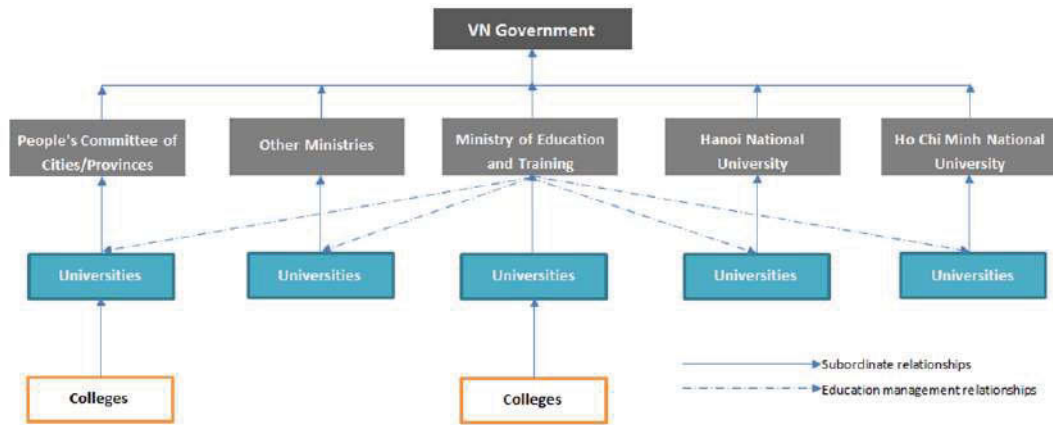


Figure A1.2a. University governance (Based on Vietnam's Law on Higher Education 2012).

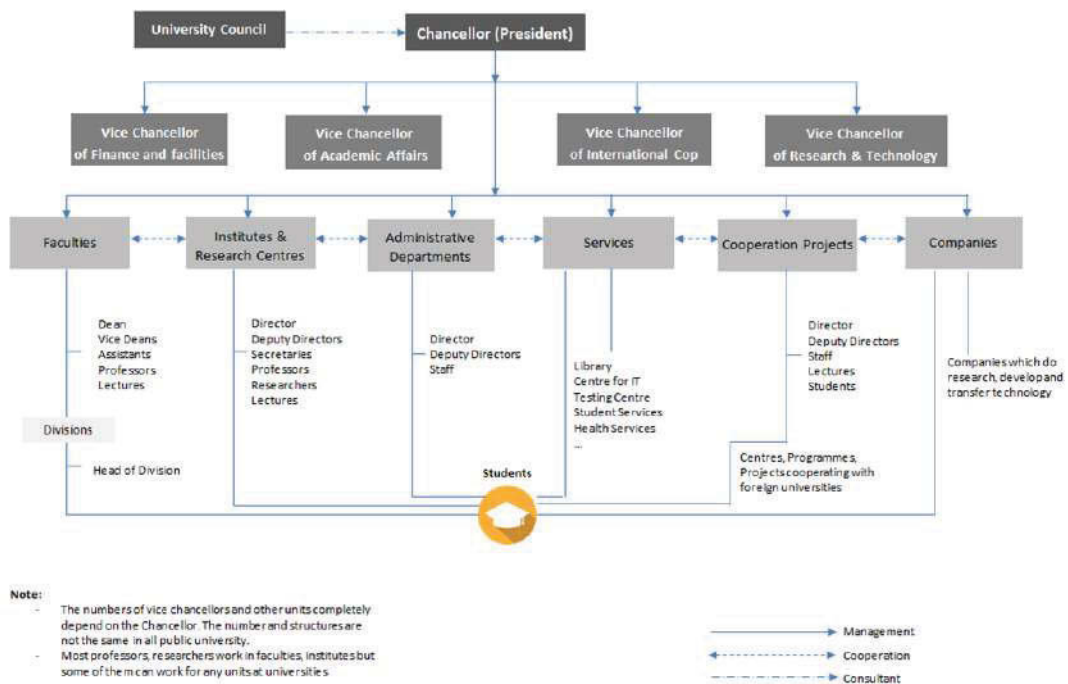


Figure A1.2b. A typical organisational structure of a university in Vietnam (Based on Vietnam's Law on Higher Education 2012).

Number of academic staff

As shown in Figure A.3a, the number of lecturers in Vietnamese universities has been increasing annually. The number of lecturers working at public universities is more than four times higher than those working in private universities.

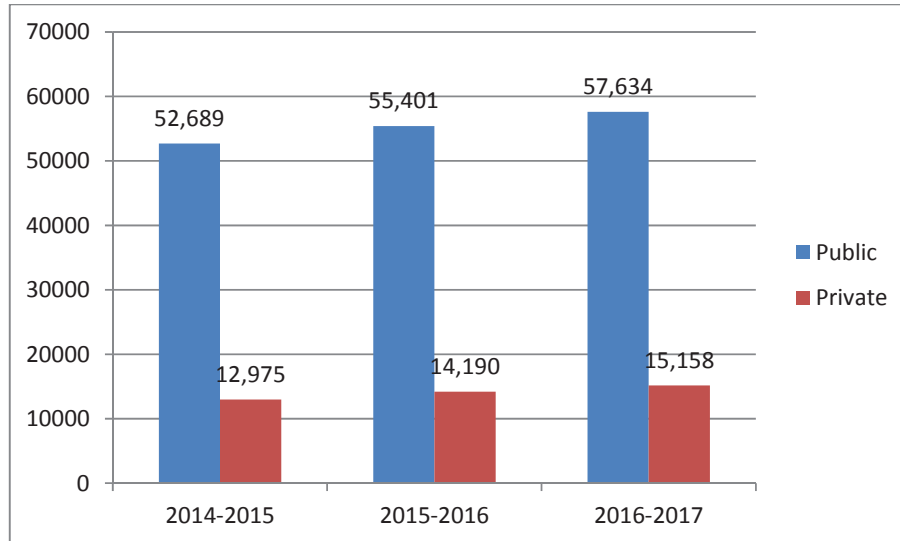


Figure A1.3a. Number of staff in public and private universities (Source: MOET, 2018b).

Figure A.3b reveals that the majority of university lecturers have Masters degrees while the number of lecturers with Doctoral and Bachelor and equivalent degrees are quite a few. However, the number of lecturers with Doctoral degrees has gradually increased over the past three years, and is expected to be 25,000 in 2020 by the national project 911.

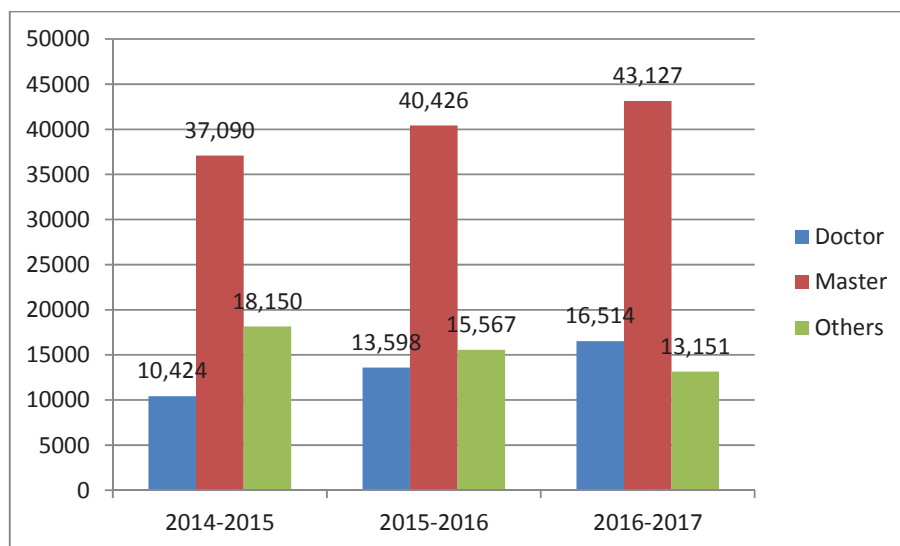


Figure A1.3b. Number of staff divided by level of education (Source: MOET, 2018b).

Student numbers

Regarding student numbers (Figure A.4), they have slightly reduced in the school year 2016-2017 compared to those in the school year 2014-2015. The number of students who study in public universities is higher than those study in private universities. The results imply that public universities are the first choice for Vietnamese students.

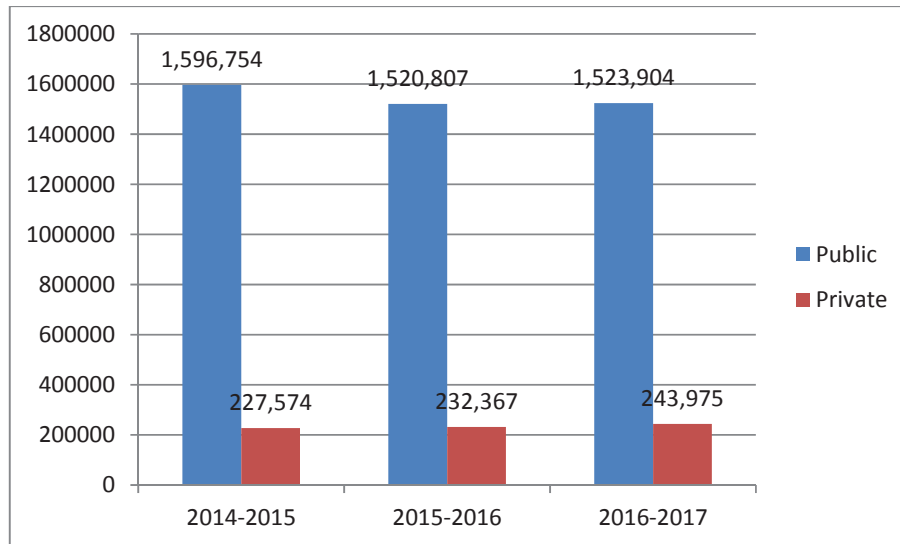


Figure A1.4. Number of students (Source: MOET, 2018b).

The challenges in knowledge management and sharing for Vietnamese universities

The nation's modernisations and industrialisation requirements in international integration processes have placed big challenges on Vietnamese higher education. Many studies revealed that it is not possible to overemphasise the seriousness of the challenges facing the higher education sector in Vietnam (Vallely and Wilkinson, 2008; Nguyen and Nguyen 2008; Huong, 2009; Nguyen and Vu, 2015). Le (2014) claimed that it is because Vietnamese HE has previously been so backward. Moreover, Vietnam has lacked a single Vietnamese university of recognised international quality (Vallely and Wilkinson, 2008; Nguyen and Vu, 2015). The scale of this challenge is underscored by the fact that at present, none of 223 Vietnamese universities rank in the top 350 in the Asia University Rankings 2018 (THE, 2018a), and none in the top 1000 World University Rankings 2018 (THE, 2018b). In this respect, Vietnam is different from other Southeast Asian countries because most of them have had at least a handful of apex institutions (Vallely and Wilkinson, 2008; Nguyen and Vu, 2015). Also, Nguyen and Nguyen (2008) pointed out that teaching programs, curriculums and methods have been out of date; resources have been limited; and resource utilisation has been inefficient. Vietnam's universities are mostly isolated from the international standard of

knowledge because of their poor publication record (Vallely and Wilkinson, 2008; Nguyen and Vu, 2015). They are not providing the educated workforce that meets the requirements of the country's socio-economic development (Nguyen and Vu, 2015). There has been a severe lack of close connections between higher education institutions and scientific research, research institutes, businesses, industries, and employers (Nguyen and Vu, 2015). Consequently, Vallely and Wilkinson (2008) and Nguyen and Vu (2015) suggested that Vietnam will only successfully accomplish its huge potential with an urgent and fundamental reform of the higher education system.

The general knowledge sharing and utilising atmosphere of Vietnam during has been impacted (Dong et al., 2010). In many ways, Vietnam's experience can be directly compared to that of modern-day Russia, in which sharing knowledge is perceived with hostility and the "ownership" of knowledge still deemed a way to secure power (Michailova and Husted, 2003; Dong et al. 2010). Dong et al. (2010) stated that with the uncertainty caused by "Doi Moi", people commonly perceived that much information and knowledge had become outdated and its sharing rendered useless. Furthermore, as one of the primary resources of growth in the global economy, the application of knowledge has influenced Vietnam's knowledge-based economy (WB, 2015). The World Bank Institute's Knowledge for Development Program aims to help its client countries to access and apply knowledge to become more competitive and enhance growth and welfare. This program revealed that all Vietnamese knowledge-based economy indices such as Knowledge, Economic Incentive Regime, Education and Skills, and Innovation System are significantly lower than those of other countries in Southeast Asia and the Pacific regions (Table 1.1). Thus, in the process of international integration, knowledge plays an essential role (WB, 2015). At the national level, the Vietnamese government has given full support to the development of a knowledge-based economy in general, and knowledge-based human resources in particular. Some of those crucial government documents are as follows:

- Resolution No.14/2005/NQ-CP on 2nd November 2005 issued by the Vietnamese Government on The Higher Education Reform Agenda 2006-2020. It is the government's long-term agenda to adopt the higher education system to the changing requirements of the knowledge-based economy.
- Directive No.55/2008/CT-BGDDT on 30th September 2008 of the Ministry of Education and Training on strengthening Information and Communication

Technology (ICT) use in teaching and training in the educational system for the period 2008-2012 (MOET, 2008b; Dang, 2013).

- Decision No.911/QĐ-TTg on 17th June 2010 issued by the Vietnamese Prime Minister to approve the Project 911 “Training lecturers of doctor’s degree for universities and colleges for the 2010-2020 period”, which is expected to obtain 20,000 PhDs by 2020, mostly through overseas training.
- Decision No.677/QĐ-TTg on 18th May 2017 approved by the Prime Minister to develop the national “Digital Vietnamese Knowledge System” project. This project will facilitate all Vietnamese people to engage in sharing knowledge conveniently and effectively.

Table A1.1. The Knowledge Economy Index (World Bank) of Vietnam and East Asia and the Pacific (Source: Knoema, 2012).

Location	Indicator	Index
Vietnam	Knowledge economy	3.40
	Economic Incentive Regime: <i>must provide incentives for the efficient use of existing and new knowledge</i>	2.80
	Education and skills: <i>people need education and skills that enable them to create and share, and to use it well</i>	2.99
	Innovation system: <i>universities must be capable of tapping the growing stock of global knowledge, assimilating and adapting it to local needs, and creating new technology</i>	2.75
East Asia and the Pacific	Knowledge economy	5.32
	Economic Incentive Regime	5.75
	Education and skills	3.94
	Innovation system	7.43

Appendix 2: Survey questionnaire



KNOWLEDGE SHARING PRACTICES AT VIETNAMESE UNIVERSITIES

Date: December, 2016

(English version)

This survey is part of the PhD research project of **Phung Van Dong**, Hanoi University, on the “How Knowledge Sharing leads to Innovative Work Behaviour in Vietnamese Universities” in Vietnamese Universities. All the information in this survey will be kept confidential and will be used for the research purpose ONLY. The questionnaire should take about 20 minutes to complete. **Please help answer the questionnaire**, then give the survey in a sealed envelope, to the Administrative Assistant of your department/centre within one week from the date of receipt.

Before proceeding, please read the following instructions carefully:

1. Your participation is completely voluntary.
2. Please complete all parts of this questionnaire by yourself.
3. There are no right or wrong answers.
4. Your identity will be kept private and confidential at all times.
5. In this survey, the term “knowledge” refers to what you know, such as facts, information, and skills you acquire through experience or education.

Thank you very much for your cooperation!

1. Please indicate the extent to which you disagree or agree with the following statements.

Strongly Disagree Disagree Undecided Agree Strongly Agree
1 ----- 2 ----- 3 ----- 4 ----- 5

Please circle your choice	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1. My president thinks that I should share my knowledge with other members in the university.	1	2	3	4	5
2. My department's leader thinks that I should share my knowledge with other members in the university.	1	2	3	4	5
3. My colleagues think that I should share my knowledge with other members in the university.	1	2	3	4	5

2. Please indicate the extent to which you disagree or agree with the following statements.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
	1	2	3	4	5

Please circle your choice	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
<i>Our university members ...</i>					
4. are generally trustworthy.	1	2	3	4	5
5. have reciprocal faith in other members' behaviours.	1	2	3	4	5
6. have reciprocal faith in others' ability.	1	2	3	4	5
7. have reciprocal faith in others' behaviours to work toward organisational goals.	1	2	3	4	5
8. have reciprocal faith in others' decision toward organisational interests than individual interests.	1	2	3	4	5
9. have relationships based on reciprocal faith.	1	2	3	4	5

3. Please indicate the extent to which you disagree or agree with the following statements.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
	1	2	3	4	5

Please circle your choice	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
10. I am confident that I possess knowledge that others in my university would consider valuable.	1	2	3	4	5
11. I have the expertise required to provide valuable knowledge for my university.	1	2	3	4	5
12. Most other employees can provide more valuable knowledge than I can.	1	2	3	4	5
13. It does not really make any difference whether I share my knowledge with colleagues.	1	2	3	4	5
14. I enjoy sharing my knowledge with colleagues.	1	2	3	4	5
15. I enjoy helping colleagues by sharing my knowledge.	1	2	3	4	5
16. It makes me feel good by helping someone by sharing my knowledge.	1	2	3	4	5
17. Sharing my knowledge with colleagues is pleasurable.	1	2	3	4	5

Please circle your choice	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
18. I will receive a higher salary in return for my KS.	1	2	3	4	5
19. I will receive a higher bonus in return for my KS.	1	2	3	4	5
20. I will receive increased promotion opportunities in return for my KS.	1	2	3	4	5
21. I will receive increased job security in return for my KS.	1	2	3	4	5
22. I strengthen ties between existing members of the university and myself.	1	2	3	4	5
23. I expand the scope of my association with other university members.	1	2	3	4	5
24. I expect to receive knowledge in return when necessary.	1	2	3	4	5

4. Please indicate the extent to which you disagree or agree with the following statements.

Strongly Disagree Disagree Undecided Agree Strongly Agree
 1-----2-----3-----4-----5

Please circle your choice	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
25. I feel that the knowledge I have is mine.	1	2	3	4	5
26. I am willing to treat my own knowledge as if it belongs to every member in the university.	1	2	3	4	5
27. I feel a very high degree of personal ownership for the knowledge that I possess.	1	2	3	4	5
28. I believe that the knowledge I have acquired during the course of my job is my personal intellectual property.	1	2	3	4	5
29. Most of the people that work for this organisation feel as though they own the university.	1	2	3	4	5

5. The following statements refer to your perceptions of your immediate supervisor. If you have more than one immediate supervisor, select one to answer this question.

	Never	Rarely	Sometimes	Often	Always
	1-----	2-----	3-----	4-----	5-----

Please circle your choice	Never	Rarely	Sometimes	Often	Always
30. My supervisor instills pride in me for being associated with him/her.	1	2	3	4	5
31. My supervisor acts in ways that build other's respect for him/her.	1	2	3	4	5
32. My supervisor talks about his/her most important values and beliefs.	1	2	3	4	5
33. My supervisor considers the moral and ethical consequences of decisions.	1	2	3	4	5
34. My supervisor emphasises the importance of having a collective sense of mission.	1	2	3	4	5
35. My supervisor talks optimistically about the future.	1	2	3	4	5
36. My supervisor expresses confidence that goals will be achieved.	1	2	3	4	5
37. My supervisor seeks differing perspectives when solving problems.	1	2	3	4	5
38. My supervisor suggests new ways of looking at how to complete assignments.	1	2	3	4	5
39. My supervisor gets me to look at problems from many different angles.	1	2	3	4	5
40. My supervisor considers me as having different needs from others.	1	2	3	4	5
41. My supervisor helps me to develop my strengths.	1	2	3	4	5
42. My supervisor spends time coaching me.	1	2	3	4	5

6. Please indicate the extent to which the following statements apply to you.

	Never	Rarely	Sometimes	Often	Always
	1	2	3	4	5
Please circle your choice	Never	Rarely	Sometimes	Often	Always
43. I frequently participate in KS activities in my department or/and the university.	1	2	3	4	5
44. I usually spend a lot of time conducting KS activities in my department or/and the university.	1	2	3	4	5
45. When participating in my department or/and the university, I usually actively share my knowledge with others.	1	2	3	4	5
46. When discussing a complicated issue, I am usually involved in the subsequent interactions.	1	2	3	4	5
47. I usually involve myself in discussions of various topics rather than specific topics.	1	2	3	4	5

7. Please indicate the extent to which the following statements apply to you.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
	1	2	3	4	5
Please circle your choice	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
48. I have a good understanding of the skills that my colleagues possess.	1	2	3	4	5
49. I know the specific expertise that my colleagues possess.	1	2	3	4	5
50. I have a good understanding of the knowledge that my colleagues possess.	1	2	3	4	5
51. I know the task responsibilities of my colleagues.	1	2	3	4	5
52. I know my task responsibilities.	1	2	3	4	5
53. When I need some tasks to be performed, I now which colleague to ask for help/guidance.	1	2	3	4	5

8. Please indicate the extent to which the following statements apply to you.

	Never	Rarely	Sometimes	Often	Always
	1	2	3	4	5
Please circle your choice	Never	Rarely	Sometimes	Often	Always
54. I create new ideas for difficult issues.	1	2	3	4	5
55. I search out new working methods.	1	2	3	4	5
56. I generate original solutions for problems.	1	2	3	4	5
57. I mobilize support for my new ideas.	1	2	3	4	5
58. I make important organizational members enthusiastic for my new ideas.	1	2	3	4	5
59. I acquire approval for my new ideas.	1	2	3	4	5
60. I transform my new ideas into useful applications.	1	2	3	4	5
61. I introduce my new ideas into the work environment in a systematic way.	1	2	3	4	5
62. I evaluate the utility of my new ideas	1	2	3	4	5

9. General information

63. Your age:

☐ below 30 ☐ 30-39 ☐ 40-49 ☐ 50 or above

64. Gender:

☐ Male ☐ Female

65. Your highest qualification:

☐ Bachelor's degree ☐ Master's degree ☐ Doctoral degree Others: (please specify) _____

66. How many years have you been working at your current organization?

☐ <5 years ☐ 5 years – 10 years ☐ 11 years – 15 years ☐ > 15 years

Thank you very much for your cooperation and support.

If you need any further information, please contact:

Research student: Van Dong Phung; Email: vandong.phung@student.uts.edu.au

KHẢO SÁT VỀ CHIA SẺ TRI THỨC TẠI CÁC TRƯỜNG ĐẠI HỌC Ở VIỆT NAM

Tháng 12 năm 2016

Vietnamese version

Khảo sát này là một phần trong đề tài nghiên cứu tiền sử của nghiên cứu sinh **Phùng Văn Đông**, Trường Đại học Hà Nội về “Phát triển mô hình nhằm loại bỏ các rào cản qua đó tạo thuận lợi cho việc chia sẻ tri thức” ở các trường đại học tại Việt Nam. Chân thành cảm ơn quý Thầy/Cô đã dành thời gian trả lời các câu hỏi dưới đây. Mọi thông tin trong bản khảo sát này sẽ được giữ bí mật và chỉ dùng vào mục đích nghiên cứu. Thời gian trả lời các câu hỏi này ước tính hết khoảng 20 phút. **Quý Thầy/Cô vui lòng trả lời các câu hỏi khảo sát dưới đây trong vòng một tuần kể từ ngày nhận**, sau đó cho vào phong bì gửi kèm theo đây, dán kín, gửi lại cho trợ lý của đơn vị thầy/cô đang công tác.

Trước khi trả lời phiếu câu hỏi, xin vui lòng đọc kỹ hướng dẫn sau đây:

1. Việc tham gia trả lời phiếu câu hỏi này là *hoàn toàn tự nguyện* và không bắt buộc.
2. Xin quý thầy/cô cố gắng *trả lời tất cả* các câu hỏi.
3. Xin nhấn mạnh rằng *không có câu trả lời đúng hoặc sai* trong phiếu câu hỏi này.
4. Phiếu câu hỏi không thu thập thông tin cá nhân vì vậy *không ai có thể biết được danh tính của quý thầy/cô*.
5. Trong nghiên cứu này, cụm từ “tri thức” (tạm dịch từ cụm từ Knowledge trong tiếng Anh) được sử dụng để ám chỉ những dữ kiện, thông tin, sự mô tả hay kỹ năng có được nhờ trải nghiệm hay thông qua giáo dục. Tri thức này giúp ích cho công việc quý Thầy/Cô làm hàng ngày.

Xin chân thành cảm ơn sự cộng tác và giúp đỡ của quý thầy/cô!

1. Xin quý cho biết mức độ đồng ý hoặc không đồng ý với những câu dưới đây.

Hoàn toàn không đồng ý Không đồng ý Không có ý kiến Đồng ý Hoàn toàn đồng ý

1-----2-----3-----4-----5

Khoanh tròn một lựa chọn cho mỗi câu dưới đây	Hoàn toàn không đồng ý	Không đồng ý	Không có ý kiến	Đồng ý	Hoàn toàn đồng ý
1. Hiệu trưởng khuyến khích tôi chia sẻ tri thức với đồng nghiệp trong trường.	1	2	3	4	5
2. Lãnh đạo đơn vị khuyến khích tôi chia sẻ tri thức với đồng nghiệp trong trường.	1	2	3	4	5
3. Đồng nghiệp khuyến khích tôi chia sẻ tri thức với những người khác trong trường.	1	2	3	4	5

2. Xin quý biết mức độ đồng ý hoặc không đồng ý với những câu dưới đây.

Hoàn toàn không đồng ý Không đồng ý Không có ý kiến Đồng ý Hoàn toàn đồng ý
1-----2-----3-----4-----5

Khoanh tròn một lựa chọn cho mỗi câu dưới đây	Hoàn toàn không đồng ý	Không đồng ý	Không có ý kiến	Đồng ý	Hoàn toàn đồng ý
<i>Các thành viên trong trường của chúng tôi:</i>					
4. Nhìn chung rất tin tưởng lẫn nhau.	1	2	3	4	5
5. Có sự tin tưởng qua lại ở hành vi của người khác.	1	2	3	4	5
6. Có sự tin tưởng qua lại ở năng lực của người khác.	1	2	3	4	5
7. Có sự tin tưởng qua lại ở hành vi của người khác để làm việc hướng tới mục tiêu chung của nhà trường.	1	2	3	4	5
8. Có sự tin tưởng qua lại ở hành vi của người khác để hướng tới những lợi ích tập thể hơn là lợi ích cá nhân.	1	2	3	4	5
9. Có mối quan hệ dựa trên sự tin tưởng lẫn nhau.	1	2	3	4	5

3. Xin quý thầy/cô cho biết mức độ đồng ý hoặc không đồng ý với những câu dưới đây.

Hoàn toàn không đồng ý Không đồng ý Không có ý kiến Đồng ý Hoàn toàn đồng ý
1-----2-----3-----4-----5

Khoanh tròn một lựa chọn cho mỗi câu dưới đây	Hoàn toàn không đồng ý	Không đồng ý	Không có ý kiến	Đồng ý	Hoàn toàn đồng ý
10. Tôi tin tưởng rằng tôi có tri thức mà những người khác ở trường sẽ coi là có giá trị.	1	2	3	4	5
11. Tôi có chuyên môn cần thiết để mang lại tri thức có giá trị cho nhà trường.	1	2	3	4	5
12. Hầu hết đồng nghiệp của tôi có thể cung cấp nhiều tri thức có giá trị hơn tôi.	1	2	3	4	5
13. Nó không thực sự tạo ra sự khác biệt cho dù tôi chia sẻ tri thức với đồng nghiệp	1	2	3	4	5
14. Tôi thích chia sẻ tri thức với đồng nghiệp.	1	2	3	4	5
15. Tôi thích giúp đỡ đồng nghiệp thông qua chia sẻ tri thức.	1	2	3	4	5
16. Chia sẻ tri thức để giúp đỡ người khác là điều tốt.	1	2	3	4	5
17. Chia sẻ tri thức với đồng nghiệp là niềm vinh hạnh của tôi.	1	2	3	4	5
18. Chia sẻ tri thức tôi sẽ nhận lại được phần thưởng vật chất.	1	2	3	4	5

Khoanh tròn một lựa chọn cho mỗi câu dưới đây	Hoàn toàn không đồng ý	Không đồng ý	Không có ý kiến	Đồng ý	Hoàn toàn đồng ý
19. Chia sẻ tri thức tôi sẽ nhận lại được thêm cơ hội thăng tiến.	1	2	3	4	5
20. Chia sẻ tri thức tôi sẽ nhận lại được sự đảm bảo về công việc.	1	2	3	4	5
21. Chia sẻ tri thức tôi sẽ nhận lại được mức lương cao.	1	2	3	4	5
22. Tôi tăng cường mối quan hệ với đồng nghiệp ở trường.	1	2	3	4	5
23. Tôi mở rộng phạm vi công tác với đồng nghiệp ở trường.	1	2	3	4	5
24. Tôi mong nhận lại được tri thức khi cần thiết.	1	2	3	4	5

4. Xin quý thầy/cô cho biết mức độ đồng ý hoặc không đồng ý với những câu dưới đây.

Hoàn toàn không đồng ý Không đồng ý Không có ý kiến Đồng ý Hoàn toàn đồng ý
 1-----2-----3-----4-----5

Khoanh tròn một lựa chọn cho mỗi câu dưới đây	Hoàn toàn không đồng ý	Không đồng ý	Không có ý kiến	Đồng ý	Hoàn toàn đồng ý
25. Tôi cho rằng tri thức mà tôi có là thuộc về tôi.	1	2	3	4	5
26. Tôi sẵn sàng xem tri thức của riêng mình cũng là tri thức của mọi thành viên trong trường.	1	2	3	4	5
27. Tôi cảm thấy mức độ sở hữu cá nhân đối với tri thức mà tôi có rất cao.	1	2	3	4	5
28. Tôi cho rằng tri thức mà tôi có được trong quá trình làm việc tại trường là tài sản trí tuệ của riêng tôi.	1	2	3	4	5
29. Hầu hết mọi người trong công ty tôi đều cảm thấy nhà trường là của chính họ.	1	2	3	4	5

5. Các câu sau đây đề cập đến phong cách của người lãnh đạo trực tiếp (trưởng hoặc phó) của quý thầy/cô. Nếu quý thầy/cô có nhiều hơn 1 lãnh đạo trực tiếp, hãy chọn một trong số đó để trả lời câu hỏi bằng cách khoanh tròn vào một số mô tả tốt nhất mức độ thường xuyên theo thang đo lường sau.

Không bao giờ Hiếm khi Thỉnh thoảng Thường xuyên Luôn luôn
 1 ----- 2 ----- 3 ----- 4 ----- 5

Khoanh tròn một lựa chọn cho mỗi câu dưới đây	Không bao giờ	Hiếm khi	Thỉnh thoảng	Thường xuyên	Luôn luôn
30. Lãnh đạo của tôi luôn cho tôi cảm giác tự hào khi cộng tác với họ.	1	2	3	4	5
31. Lãnh đạo hành động theo cách để xây dựng sự tôn trọng của người khác đối với họ.	1	2	3	4	5
32. Lãnh đạo nói về những giá trị và niềm tin quan trọng nhất của họ.	1	2	3	4	5
33. Lãnh đạo cân nhắc vấn đề phạm trù đạo đức và hậu quả của nó đối với mỗi quyết định.	1	2	3	4	5
34. Lãnh đạo nhấn mạnh tầm quan trọng về ý thức tập thể của sứ mệnh.	1	2	3	4	5
35. Lãnh đạo nói một cách tự tin về tương lai.	1	2	3	4	5
36. Lãnh đạo bày tỏ sự tự tin rằng các mục tiêu sẽ đạt được.	1	2	3	4	5
37. Lãnh đạo của tôi luôn cân nhắc giải quyết vấn đề từ nhiều góc độ khác nhau.	1	2	3	4	5
38. Lãnh đạo của tôi gợi ý các biện pháp mới để hoàn thành nhiệm vụ.	1	2	3	4	5
39. Lãnh đạo giúp tôi xem xét các vấn đề từ nhiều góc độ khác nhau.	1	2	3	4	5
40. Lãnh đạo cân nhắc tôi với những nhu cầu khác biệt với người khác.	1	2	3	4	5
41. Lãnh đạo của tôi giúp tôi phát triển những thế mạnh của mình.	1	2	3	4	5
42. Lãnh đạo dành thời gian để huấn luyện cho tôi.	1	2	3	4	5

6. Xin trả lời câu hỏi bằng cách khoanh tròn vào một số mô tả tốt nhất mức độ thường xuyên theo thang đo lường sau.

	Không bao giờ	Hiếm khi	Thỉnh thoảng	Thường xuyên	Luôn luôn
	1	2	3	4	5
Khoanh tròn một lựa chọn cho mỗi câu dưới đây	Không bao giờ	Hiếm khi	Thỉnh thoảng	Thường xuyên	Luôn luôn
43. Tôi thường xuyên tham gia vào các hoạt động chia sẻ tri thức ở trong đơn vị và nhà trường.	1	2	3	4	5
44. Tôi thường dành nhiều thời gian thực hiện các hoạt động chia sẻ tri thức trong đơn vị và nhà trường.	1	2	3	4	5
45. Khi tham gia vào đơn vị và nhà trường, tôi luôn luôn chủ động chia sẻ tri thức của tôi với đồng nghiệp.	1	2	3	4	5
46. Khi thảo luận về một vấn đề phức tạp, tôi thường tham gia vào các tương tác sau đó.	1	2	3	4	5
47. Tôi thường tự đặt bản thân mình trong các cuộc thảo luận về các chủ đề khác nhau hơn là các chủ đề cụ thể.	1	2	3	4	5

7. Xin quý thầy/cô cho biết mức độ đồng ý hoặc không đồng ý với những câu dưới đây.

	Hoàn toàn không đồng ý	Không đồng ý	Không có ý kiến	Đồng ý	Hoàn toàn đồng ý
	1	2	3	4	5
Khoanh tròn một lựa chọn cho mỗi câu dưới đây	Hoàn toàn không đồng ý	Không đồng ý	Không có ý kiến	Đồng ý	Hoàn toàn đồng ý
48. Tôi hiểu rõ những kỹ năng mà đồng nghiệp có.	1	2	3	4	5
49. Tôi biết chuyên môn cụ thể mà đồng nghiệp có.	1	2	3	4	5
50. Tôi hiểu rõ tri thức mà đồng nghiệp có.	1	2	3	4	5
51. Tôi biết những trách nhiệm công việc của đồng nghiệp.	1	2	3	4	5
52. Tôi biết những trách nhiệm công việc của mình.	1	2	3	4	5
53. Khi tôi cần thực hiện công việc gì, tôi biết cần hỏi đồng nghiệp nào.	1	2	3	4	5

8. Xin trả lời câu hỏi bằng cách khoanh tròn vào một số mô tả tốt nhất mức độ thường xuyên theo thang đo lường sau.

	Không bao giờ	Hiếm khi	Thỉnh thoảng	Thường xuyên	Luôn luôn
	1	2	3	4	5
Khoanh tròn một lựa chọn cho mỗi câu dưới đây	Không bao giờ	Hiếm khi	Thỉnh thoảng	Thường xuyên	Luôn luôn
54. Tôi nghĩ ra ý tưởng mới cho các vấn đề khó khăn.	1	2	3	4	5
55. Tôi tìm ra phương pháp làm việc mới mẻ.	1	2	3	4	5
56. Tôi tìm kiếm sự ủng hộ cho ý tưởng mới của mình.	1	2	3	4	5
57. Tôi tìm kiếm sự hỗ trợ cho những ý tưởng mới của mình.	1	2	3	4	5
58. Tôi làm cho các thành viên quan trọng của đơn vị say mê với những ý tưởng mới của mình.	1	2	3	4	5
59. Tôi giới thiệu ý tưởng mới của mình một cách hệ thống.	1	2	3	4	5
60. Tôi đưa những ý tưởng mới của mình vào trong các ứng dụng hữu ích.	1	2	3	4	5
61. Tôi giới thiệu những ý tưởng mới của mình vào môi trường làm việc một cách có hệ thống.	1	2	3	4	5
62. Tôi đánh giá sự ứng dụng những ý tưởng mới của mình.	1	2	3	4	5

9. Thông tin chung

63. Tuổi:

☐ dưới 30

☐ 30-39

☐ 40-49

☐ 50 trở lên

64. Giới tính:

☐ Nam

☐ Nữ

65. Bằng cấp cao nhất:

☐ Đại học

☐ Thạc sĩ

☐ Tiến sĩ

☐ Khác: (cụ thể)

66. Quý thầy/cô đã công tác tại Trường được bao nhiêu năm?

☐ <5 năm

☐ 5 năm – 10 năm

☐ 11 năm – 15 năm

☐ > 15 năm

Sau khi hoàn thành trả lời bản khảo sát này, xin gửi lại cho Trợ lý tại đơn vị của quý thầy/cô.

Xin chân thành cảm ơn sự công tác và giúp đỡ của quý thầy/cô!

Appendix 3: Interview protocols



KNOWLEDGE SHARING PRACTICES AT VIETNAMESE UNIVERSITIES

English version

Basic information about the interview

Time of interview: _____ Date: _____ Interviewer: _____ Interviewee: _____
Position of interviewee: _____

Introduction

Introduce about the researcher; Discuss the purpose of the study; Get informed consent signature; Provide structure of interview (audio recording, taking notes); Ask if interview has questions; Define any term necessary.

Hi Mr/Mrs. _____ I would like to thank you for accepting my invitation to participate in my research evaluation process.

Mr/Mrs. _____ this interview will be recorded are you agree with that?

If you feel not comfortable about the interview then you can request to stop this interview any time and the recording as well.

1. Could you please introduce yourself?

Your age: _____ Gender: ☐ Male ☐ Female

Your highest qualification: _____

How many years have you been working at your current organization? _____

2. Please indicate the extent to which you disagree or agree with the following results; and give your comments for each result.

Strongly Disagree Disagree Undecided Agree Strongly Agree
1-----2-----3-----4-----5

H1a: Subjective norms have a positive effect on knowledge sharing behaviour (KSB) 1 2 3 4 5

Please explain further how and why you give the above rate: _____

H2a: Trust has a positive effect on KSB 1 2 3 4 5

Please explain further how and why you give the above rate: _____

H3a: Knowledge self-efficacy has a positive effect on KSB 1 2 3 4 5

Please explain further how and why you give the above rate: _____

H4a: Enjoyment in helping others has a positive effect on KSB 1 2 3 4 5

Please explain further how and why you give the above rate: _____

H5a: Expected organisational rewards has not got the positive effect on KSB 1 2 3 4 5

Please explain further how and why you give the above rate:

H6a: Reciprocal benefits has a positive effect on KSB 1 2 3 4 5

Please explain further how and why you give the above rate:

H7a: Psychological ownership of knowledge has not got the positive effect on KSB 1 2 3 4 5

Please explain further how and why you give the above rate:

H8a: Individual willingness to share knowledge positively impact KSB 1 2 3 4 5

Please explain further how and why you give the above rate:

H1b: The positive effect of subjective norm on KSB is moderated by transformational leadership (TL) 1 2 3 4 5

Please explain further how and why you give the above rate:

H2b: The positive effect of trust on KSB is moderated by TL. 1 2 3 4 5

Please explain further how and why you give the above rate:

H3b: The positive effect of knowledge self-efficacy on KSB is moderated by TL. 1 2 3 4 5

Please explain further how and why you give the above rate:

H4b: The positive effect of enjoyment in helping others on KSB is moderated by TL. 1 2 3 4 5

Please explain further how and why you give the above rate:

H6b: The positive effect of reciprocal benefits on KSB is NOT moderated by TL. 1 2 3 4 5

Please explain further how and why you give the above rate:

3. What are your suggestions and recommendations for the contribution of these research outcomes in practices?

4. What are your suggestions, modifications, and recommendations for future work?

5. From technology aspect, what is the future work needed to develop to promote KSB in universities?

6. Please indicate the extent to which you disagree or agree with the following results; and give your comments for each result. (*Knowledge sharing behavior and Knowledge management systems*)

Strongly Disagree Disagree Undecided Agree Strongly Agree
1 ----- 2 ----- 3 ----- 4 ----- 5

The KSB of academic staff facilitates the creation of knowledge in the university 1 2 3 4 5

The KSB of academic staff facilitates the storage and retrieval of knowledge in the university 1 2 3 4 5

The KSB of academic staff facilitates the dissemination of knowledge in the university 1 2 3 4 5

The KSB of academic staff facilitates the application of knowledge in the university 1 2 3 4 5

7. The reasons why we need to promote knowledge sharing in universities?

Thank you very much for your cooperation and support.

If you need any further information, please contact:

Research student: Van Dong Phung; Email: vandong.phung@student.uts.edu.au

Lưu ý:

- Trong nghiên cứu này, cụm từ “tri thức” (tạm dịch từ cụm từ Knowledge trong tiếng Anh) được sử dụng để ám chỉ những dữ kiện, thông tin, sự mô tả hay kỹ năng có được nhờ trải nghiệm hay thông qua giáo dục. Tri thức này giúp ích cho công việc quý Thầy/Cô làm hàng ngày.
- Hành vi chia sẻ tri thức: Là các hành động chia sẻ (cho/nhận) tri thức của một người với đồng nghiệp.

1. Xin Thầy/Cô vui lòng cho biết những thông tin sau.

Tuổi: Giới tính: Nam/Nữ Trình độ học vấn:

Quý Thầy/Cô đã công tác tại HANU được bao nhiêu năm?

2. Xin quý Thầy/Cô cho biết mức độ đồng ý hoặc không đồng ý (Bằng cách bôi vàng vào số) và cho biết lý do với những câu dưới đây.

Hoàn toàn không đồng ý Không đồng ý Không có ý kiến Đồng ý Hoàn toàn đồng ý
1-----2-----3-----4-----5

Câu 1: Những ảnh hưởng tích cực của lãnh đạo và đồng nghiệp cùng tác động tích cực lên hành vi chia sẻ tri thức của giảng viên.

1 2 3 4 5

Như thế nào/Tại sao?:

Câu 2: Sự tin cậy lẫn nhau có tác động tích cực lên hành vi chia sẻ tri thức của giảng viên.

1 2 3 4 5

Như thế nào/Tại sao?:

Câu 3: Sự tự tin vào tri thức của bản thân tác động tích cực lên hành vi chia sẻ tri thức của giảng viên.

1 2 3 4 5

Như thế nào/Tại sao?:

Câu 4: Sự hứng thú khi giúp đỡ người khác tác động tích cực lên hành vi chia sẻ tri thức của giảng viên.

1 2 3 4 5

Như thế nào/Tại sao?:

Câu 5: Khi chia sẻ tri thức, giảng viên KHÔNG mong đợi được nhà trường, đơn vị tặng phần thưởng vật chất hoặc phi vật chất (VD: tiền, cơ hội thăng tiến)

1 2 3 4 5

Như thế nào/Tại sao?:

Câu 6: Lợi ích đôi bên tác động tích cực lên hành vi chia sẻ tri thức của giảng viên.

1 2 3 4 5

Như thế nào/Tại sao?:

Câu 7: Tâm lý muốn giữ tri thức là của riêng mình, làm cản trở hành vi chia sẻ tri thức của giảng viên.

1 2 3 4 5

Như thế nào/Tại sao?:.....

Câu 8: Hành vi chia sẻ tri thức (cho/nhận) tác động tích cực lên hành vi sáng tạo trong công việc của giảng viên.

1 2 3 4 5

Như thế nào/Tại sao?:.....

Trước khi trả lời câu hỏi 9-13, xin Thầy/Cô vui lòng đọc kĩ khái niệm sau:

Lãnh đạo chuyển đổi: Là quá trình mà người lãnh đạo truyền cảm hứng cho cấp dưới để họ phát huy được tối đa năng lực và vượt qua những lợi ích cá nhân để cùng nhau phát triển.

Câu 9. Ở đơn vị mà lãnh đạo có phong cách lãnh đạo chuyển đổi càng cao, thì SỰ ẢNH HƯỞNG của lãnh đạo và đồng nghiệp càng tác động tích cực lên hành vi chia sẻ tri thức của giảng viên.

1 2 3 4 5

Như thế nào/Tại sao?:.....

Câu 10. Ở đơn vị mà lãnh đạo có phong cách lãnh đạo chuyển đổi càng cao, thì SỰ TIN CẬY lẫn nhau càng tác động tích cực lên hành vi chia sẻ tri thức của giảng viên.

1 2 3 4 5

Như thế nào/Tại sao?:.....

Câu 11. Ở đơn vị mà lãnh đạo có phong cách lãnh đạo chuyển đổi càng cao, thì SỰ TỰ TIN vào tri thức của bản thân càng tác động tích cực lên hành vi chia sẻ tri thức của giảng viên.

1 2 3 4 5

Như thế nào/Tại sao?:.....

Câu 12. Ở đơn vị mà lãnh đạo có phong cách lãnh đạo chuyển đổi càng cao, thì SỰ HƯNG THÚ KHI GIÚP ĐỠ NGƯỜI KHÁC càng tác động tích cực lên hành vi chia sẻ tri thức của giảng viên. (R)

1 2 3 4 5

Như thế nào/Tại sao?:.....

Câu 13. Ở đơn vị mà lãnh đạo có phong cách lãnh đạo chuyển đổi càng cao, thì LỢI ÍCH ĐÔI BÊN càng tác động tích cực lên hành vi chia sẻ tri thức của giảng viên. (R)

1 2 3 4 5

Như thế nào/Tại sao?:.....

3. Theo Thầy/Cô thì nghiên cứu này có đóng góp gì cho việc thúc đẩy chia sẻ tri thức tại các trường đại học ở Việt Nam và những ngành/nơi khác (nếu có)? (VD: cho việc quản lý và khai thác tri thức, cho cấp lãnh đạo lập kế hoạch, xây dựng chính sách .v.v.)

4. Theo Thầy/Cô thì những nhân tố nào rất quan trọng có ảnh hưởng đến việc chia sẻ tri thức giữa các giảng viên ở trường đại học ở Việt Nam?

5. Về phía cạnh công nghệ, trường cần làm gì để thúc đẩy và tạo điều kiện việc chia sẻ tri thức?

6. Xin quý Thầy/Cô cho biết mức độ đồng ý hoặc không đồng ý (Bằng cách bôi vàng vào số) và cho biết lý do với những câu dưới đây:

Hành vi chia sẻ tri thức (cho/nhận) của giảng viên tạo điều kiện thuận lợi cho việc tạo ra tri thức trong nhà trường

1 2 3 4 5

Như thế nào/Tại sao?...

Hành vi chia sẻ tri thức của giảng viên tạo điều kiện thuận lợi cho việc lưu trữ và truy xuất tri thức trong nhà trường

1 2 3 4 5

Như thế nào/Tại sao?...

Hành vi chia sẻ tri thức của giảng viên khuyến khích việc truyền tải tri thức trong nhà trường

1 2 3 4 5

Như thế nào/Tại sao?...

Hành vi chia sẻ tri thức của giảng viên tạo điều kiện thuận lợi cho việc ứng dụng tri thức trong nhà trường

1 2 3 4 5

Như thế nào/Tại sao?...

Giảng viên sẵn lòng chia sẻ tri thức với đồng nghiệp, thì họ luôn sẵn sàng sử dụng hệ thống quản lý tri thức. (Hệ thống quản lý tri thức là hệ thống dựa trên nền tảng IT được phát triển để hỗ trợ và thúc đẩy quá trình tạo, lưu/truy xuất, truyền tải và ứng dụng tri thức).

1 2 3 4 5

Như thế nào/Tại sao?...

7. Tại sao cần phải thúc đẩy việc chia sẻ tri thức ở trường đại học?

Tôi xin trân trọng cảm ơn sự cộng tác và giúp đỡ quý báu của quý thầy/cô đối với đề tài nghiên cứu này.

Nghiên cứu sinh: Phùng Văn Đông

Giáo viên hướng dẫn: Giáo sư Igor Hawryszkiewicz & Tiến sĩ Daniel Chandran

Appendix 4: Ethical-related documents



INFORMATION SHEET FOR PARTICIPANTS

Project title: Developing a framework for removing barriers to facilitate knowledge sharing flows.

Who is doing the research:

- Van Dong Phung: PhD student - Information Systems, Faculty of Engineering and Information Technology, University of Technology, Sydney, Australia.
Phone: +61 4 16272468; Email: vandong.phung@student.uts.edu.au
- Prof. Igor Hawryszkiewicz: Principal supervisor, Faculty of Engineering and Information Technology, University of Technology, Sydney, Australia.
Email: Igor.Hawryszkiewicz@uts.edu.au
- Dr. Daniel Chandran: Co-Supervisor, Faculty of Engineering and Information Technology, University of Technology, Sydney, Australia.
Email: Daniel.Chandran@uts.edu.au

What is this research about?

This project 'Developing a framework for removing barriers to facilitate knowledge sharing flows' is conducted by Mr Van Dong Phung, a lecturer of the Faculty of Information Technology, Hanoi University (HANU), during his PhD candidature under the supervision of Professor Igor Hawryszkiewicz and Dr. Daniel Chandran, Faculty of Engineering and Information Technology, University of Technology, Sydney, Australia.

The project has two primary aims. First, it investigates the current knowledge sharing practices in academic activities at Vietnamese universities, with the focus on what are the major factors, which facilitate or impede individuals to share knowledge. Furthermore, the ultimate goal of this research is to find ways to promote knowledge sharing in order to improve the quality of knowledge management at tertiary level in Vietnam. The results could be useful for universities in Vietnam.

If I say yes, what will it involve?

You have been contacted as your position indicates that you may be able to provide information regarding knowledge sharing practices at Vietnamese universities. There are two parts in the project: Survey questionnaire and interview. We invite you to take part in the research project and highly appreciate your participation in one or both.

Part 1: Survey

This survey is written in Vietnamese and will be conducted during the fourth quarter of the year 2016. We estimate that it will take about 20 minutes to complete. You do not have to write your name on the questionnaire. Your participation in the survey is voluntary. By signing the Consent Form for the survey, we understand that you permit

us to use the information you provide in it for future academic publications such as a thesis, a report, a journal article and a conference paper.

Part 2: Interview

We would like to invite you to participate in a 30-minute one-to-one interview which will be held in Vietnamese, on your campus, and out of class time. The interview is planned to take place in the first half of the year 2017 and will be audio recorded for the purpose of the research only. During the session, we would like to hear your ideas and experiences in knowledge sharing practices to teach, learn and research at Vietnamese universities, enablers of and barriers to knowledge sharing, and effective practices of knowledge sharing in teaching, learning and research. If you are willing to take part in the interview, please fill in the last part of the survey, or give us your contact number or email address by emailing vandong.phung@student.uts.edu.au. We will ask you to fill in a Consent Form before we start the interview.

Are there any risks/inconvenience?

There are very few if any risks because the research has been carefully designed. However, it is possible that you might experience some discomfort for the first few minutes of your responses to the questionnaire or being audio recorded if you take part in the interview section or have some emotional moments possibly when you share sad/hard experiences. However, you can always be assured that:

- Participants may be vulnerable if there are comments or when being asked about something related to the weakness in their professionalism or related to corrupted activities.
- Participants might be vulnerable if their answers are not following the government policy or disciplines of their organisation.
- The participation is voluntary and declining the invitation would not affect your academic results and career in any way.
- You can stop the interview and keep on when you're ready. The interview can always be rearranged another time at any place as you wish.
- You can choose to be interviewed through instant messaging or emails as you want.
- Your data interview will be transcribed and the data will be de-identified with a system of codes which is stored separately from the transcripts before analysis.
- Your real name will not be used or identified in any way in the research.
- The researcher won't take notes during the interview so that the conversation can take place as naturally as possible.
- The findings of this research are intended to be published in a journal article or presented at a conference, without identifying you, or your department/centre in any way.

Why have I been asked?

You are able to give me information I need to find about knowledge sharing practices at Vietnamese universities.

Do I have to say yes?

You don't have to say yes because your participation in this project is completely voluntary. You can withdraw at any time, for any reason, without prejudice.

What will happen if I say no?

Nothing. I will thank you for your time so far and won't contact you about this research again.

If I say yes, can I change my mind later?

You can change your mind and withdraw at any time without having to provide a reason. I will thank you for your time so far and won't contact you about this research again.

What will be done with the results of the project?

The results of this project will be used in the doctoral thesis of Van Dong Phung, and may appear in other academic publications, e.g. a journal article, a report, a conference paper, or a similar future project on knowledge sharing and knowledge management. The results of the project will be available to you on request by email to vandong.phung@student.uts.edu.au.

Will confidentiality of provided information be maintained?

The information you provide in the interview will be kept confidential throughout the study as well as after the study has been completed. All hard-copy data (e.g. completed questionnaires, interview notes ...) will be stored in a safely locked drawer in the office of Van Dong Phung, room 218, level 6, building 11, Faculty of Engineering and Information Technology, University of Technology, Sydney, Australia. The soft-copy data (e.g. audio files, interview transcripts, data entry ...) will be password protected and kept in the computer of Van Dong Phung.

What if I have concerns or a complaint?

This project is subject to ethics approval from the University of Technology, Sydney, Australia. If you have any questions regarding this project, please do not hesitate to contact us, Prof. Igor Hawryszkiewicz, Dr. Daniel Chandran or Mr Van Dong Phung (please see the contact details above). If you have any complaints or queries that we have not been able to answer to your satisfaction, you may contact the UTS Human Research Ethics Committee (HREC), University of Technology, Sydney, Australia, email: Research.ethics@uts.edu.au and quote this number (UTS HREC REF NO. ETH16-0351).

We'd like to invite you to participate in this study.

Thank you very much for helping us with this project.

We look forward to getting your valuable input.

PhD candidate: Van Dong Phung

Supervisors: Prof. Igor Hawryszkiewicz & Dr. Daniel Chandran

THÔNG TIN DÀNH CHO NGƯỜI THAM GIA ĐỀ TÀI NGHIÊN CỨU

Tên đề tài: Phát triển mô hình nhằm loại bỏ các rào cản để tạo điều kiện cho việc chia sẻ tri thức.

Nghiên cứu sinh: Phùng Văn Đông, nghiên cứu sinh Tiến sĩ, Khoa Kỹ thuật và Công nghệ Thông tin, Trường Đại học Công nghệ Sydney, Australia. Email: dongpv@student.uts.edu.au

A. Mục đích của đề tài nghiên cứu này là gì?

‘Phát triển mô hình nhằm loại bỏ các rào cản qua đó tạo điều kiện cho việc chia sẻ tri thức’ là đề tài nghiên cứu của Phùng Văn Đông, Trung tâm Công nghệ Thông tin, Trường Đại học Hà Nội (HANU), hiện đang là nghiên cứu sinh tiến sĩ dưới sự hướng dẫn của Giáo sư Igor Hawryszkiewicz và Tiến sĩ Daniel Chandran, Khoa Kỹ thuật và Công nghệ Thông tin, Trường Đại học Công nghệ Sydney, Australia.

Đề tài này có hai mục đích chính: Thứ nhất, khảo sát thực trạng việc chia sẻ tri thức trong các hoạt động giảng dạy và nghiên cứu tại một số trường đại học ở Việt Nam, tập trung vào việc tìm ra các nhân tố ảnh hưởng việc chia sẻ tri thức giữa mọi người. Thứ hai, mục đích lớn nhất của đề tài là cố gắng tìm ra các giải pháp loại bỏ các rào cản một cách hiệu quả để cải thiện chất lượng quản lý tri thức ở bậc đại học. Hy vọng kết quả nghiên cứu có thể ứng dụng vào những trường đại học khác trên thế giới có tình hình tương tự như Việt Nam.

B. Đề tài này có bao nhiêu phần?

Đề tài này gồm hai phần: Bản câu hỏi khảo sát và phỏng vấn. Tôi xin mời quý thầy/cô tham gia vào một hoặc cả hai phần của đề tài này. Tôi biết ơn sự cộng tác của thầy/cô.

Phần 1: Bản câu hỏi khảo sát dành cho giảng viên

Trong tháng 12 năm 2016, bản câu hỏi khảo sát bằng tiếng Việt hoặc tiếng Anh sẽ được phát cho giảng viên và những người làm nghiên cứu của các đơn vị giảng dạy, nghiên cứu của một số trường đại học ở Việt Nam. Thời gian trả lời câu hỏi khoảng 20 phút. **Thầy/cô không phải viết tên.** Tham gia vào khảo sát này là **hoàn toàn tự nguyện**. Khi thầy/cô điền thông tin vào phiếu khảo sát cũng có nghĩa là thầy/cô cho phép tôi được sử dụng thông tin mà thầy/cô cung cấp để đăng trong các ấn phẩm mang tính học thuật, như luận văn tốt nghiệp, báo cáo, bài viết trên tạp chí khoa học, và trình bày tại hội thảo.

Phần 2: Phỏng vấn dành cho thầy/cô (dự kiến mỗi trường 02 người)

Tôi xin mời quý thầy/cô tham gia phỏng vấn tại nơi quý thầy/cô đang công tác hoặc trực tuyến qua mạng internet, ngoài giờ dạy học. Thời gian phỏng vấn khoảng 15-30 phút, sẽ

bắt đầu trong khoảng tháng 06 năm 2017 và được ghi âm phục vụ nghiên cứu. Trong phần này, chúng tôi muốn nghe ý kiến và kinh nghiệm của quý thầy/cô về hiện trạng chia sẻ tri thức trong các hoạt động giảng dạy và nghiên cứu. Tham gia phỏng vấn hoàn toàn mang tính tự nguyện.

C. Rủi ro hay sự phiền phức nào khi tham gia vào đề tài nghiên cứu này?

Có rất ít rủi ro xảy ra bởi vì nghiên cứu đã được thiết kế một cách cẩn thận. Tuy nhiên, thầy/cô có thể cảm thấy hơi khó chịu trong vài phút đầu tiên khi điền vào bản câu hỏi hay là ghi âm (nếu tham gia phần phỏng vấn) hoặc có thể một số cảm xúc khi thầy, cô chia sẻ những trải nghiệm buồn hoặc khó khăn. Tuy nhiên, thầy, cô luôn luôn được cam kết rằng:

- Những người tham gia có thể bị tổn thương khi được hỏi về điều gì đó liên quan đến sự yếu kém về chuyên môn của họ hoặc liên quan đến các hành vi ăn hối lộ, tham nhũng.
- Những người tham gia có thể bị tổn thương nếu câu trả lời của họ không tuân theo quy định của chính phủ hoặc của đơn vị mình.
- Sự tham gia là tự nguyện và việc từ chối sẽ không ảnh hưởng đến công việc của thầy, cô trong bất kỳ hình thức nào.
- Thầy, cô có thể dừng cuộc phỏng vấn và tiếp tục khi đã sẵn sàng. Các cuộc phỏng vấn luôn có thể được sắp xếp lại thời gian khác ở bất cứ nơi nào thầy, cô muốn.
- Thầy, cô có thể chọn hình thức phỏng vấn qua hội thoại trực tuyến hoặc email.
- Dữ liệu phỏng vấn của thầy, cô sẽ được sao lưu và mã hóa bằng một hệ thống mã riêng.
- Tên của thầy, cô sẽ không được sử dụng dưới mọi hình thức.
- Kết quả của nghiên cứu có thể dung trong các bài báo khoa học hoặc trình bày tại hội thảo nhưng không hề tiết lộ bất cứ thông tin nào của thầy, cô.

D. Những ai có thể tham gia vào đề tài nghiên cứu này?

Đối tượng tham gia là cán bộ biên chế hoặc hợp đồng (dài hạn và ngắn hạn) của các trường đại học trong thời gian thực hiện đề tài này. Đây phải là người làm việc cho các khoa, bộ môn, trung tâm hoặc thư viện ở bậc đại học, công việc liên quan tới giảng dạy, nghiên cứu và quản lý thông tin, tri thức.

E. Tôi có phải bắt buộc tham gia vào đề tài này không?

Quý thầy/cô tham gia vào đề tài này hoàn toàn tự nguyện. Quý thầy/cô có thể rút lại tất cả dữ liệu phỏng vấn trong vòng 4 tuần kể từ ngày phỏng vấn. Nếu muốn rút lại thông tin đã phỏng vấn, thầy/cô ký vào “Mẫu rút lại dữ liệu phỏng vấn”. Khi đó, tôi sẽ không sử dụng dữ liệu phỏng vấn của thầy/cô trong đề tài này nữa. Sẽ không có bất lợi hoặc hậu quả gì xảy ra đối với người xin rút lui khỏi phỏng vấn. Tất cả thông tin cá nhân của

người tham gia đề tài sẽ được giữ kín trong mọi trường hợp. Quý thầy/cô có quyền tiếp cận thông tin đã cung cấp khi gửi yêu cầu bằng email tới địa chỉ vandong.phung@student.uts.edu.au.

F. Kết quả của đề tài này sẽ được sử dụng như thế nào?

Kết quả của đề tài này sẽ được sử dụng trong luận văn tiến sĩ của nghiên cứu sinh Phùng Văn Đông, và có thể được đăng trong các ấn phẩm mang tính học thuật khác như bài viết trên tạp chí chuyên ngành, báo cáo, bài trình bày tại hội thảo hoặc sẽ được sử dụng trong đề tài tương tự về quản lý tri thức. Kết quả nghiên cứu sẽ được gửi tới người tham gia đề tài nếu có yêu cầu gửi bằng email tới địa chỉ vandong.phung@student.uts.edu.au.

G. Thông tin cung cấp có được bảo mật không?

Mọi thông tin quý thầy/cô cung cấp trong đề tài này sẽ được bảo mật trong suốt thời gian nghiên cứu cũng như sau khi kết thúc nghiên cứu. Tất cả các bản in trên giấy (TD: bản câu hỏi khảo sát đã được điền, ghi chép phỏng vấn...) sẽ được lưu trong ngăn kéo có khoá tại văn phòng của nghiên cứu sinh Phùng Văn Đông, phòng 218, tầng 6, toà nhà 11, Trường Đại học Công nghệ Sydney. Dữ liệu kỹ thuật số (TD: tệp âm thanh, bản ghi lại nội dung phỏng vấn, dữ liệu đã nhập vào máy tính...) sẽ được bảo vệ bằng mật khẩu và giữ trong máy tính của nghiên cứu sinh Phùng Văn Đông. Mọi thông tin do quý thầy/cô cung cấp chỉ sử dụng vào mục đích nghiên cứu cho đề tài này.

H. Thông tin thêm

Đề tài nghiên cứu này đã được phê chuẩn (Mã số phê chuẩn: ETH16-0351) của Ủy ban Đạo đức Con người thuộc Trường Đại học Công nghệ Sydney. Nếu có bất kỳ câu hỏi nào liên quan tới nghiên cứu này, xin liên hệ với Giáo sư Igor Hawryszkiewicz và Tiến sĩ Daniel Chandran, hoặc nghiên cứu sinh Phùng Văn Đông tại địa chỉ email: vandong.phung@student.uts.edu.au.

Nếu có thắc mắc mà chúng tôi chưa trả lời thoả đáng, quý thầy/cô có thể liên hệ trực tiếp với Thư ký của Ủy ban Đạo đức Con người thuộc Trường Đại học Công nghệ Sydney, email: Research.Ethics@uts.edu.au (Mã số phê chuẩn: ETH16-0351)

Tôi kính mời quý thầy/cô tham gia trả lời khảo sát và tham gia phỏng vấn.

Tôi mong nhận được những thông tin đóng góp quý báu của quý thầy/cô.

Tôi xin cảm ơn sự cộng tác và giúp đỡ quý báu của quý thầy/cô đối với đề tài nghiên cứu này.

Nghiên cứu sinh: Phùng Văn Đông

Giáo viên hướng dẫn: Giáo sư Igor Hawryszkiewicz & Tiến sĩ Daniel Chandran



HANOI UNIVERSITY

Km 9 Nguyen Trai Road, Thanh Xuan, Hanoi, Vietnam
Telephone: (84-4) 3854 4338 Fax: (84-4) 3854 4550
Email: hanu@hanu.edu.vn Website: www.hanu.edu.vn

Hanoi, 18th July, 2016

TO WHOM IT MAY CONCERN

As the President of Hanoi University (HANU), I hereby approve Van Dong Phung's request for access to HANU staff and students in connection with his data collection for his doctoral project 'Developing a framework for removing barriers to facilitate knowledge sharing flows' at Hanoi University. The data collection will be administered in 2016 and 2017. I hope that the research findings will be useful to HANU.

Van Dong Phung is the lecturer of the Faculty of Information Technology and the deputy director of Information Technology Centre, HANU. I would like the Heads, staff and students of all departments and centres of HANU to give this research project your full support and participation.

Best regards,

Associate Prof., Dr. Nguyen Dinh Luan
President of Hanoi University



**NATIONAL INSTITUTE OF EDUCATION
MANAGEMENT**

Phan Dinh Giot street - Thanh Xuan Dist - Ha Noi
Telephone: (84-4) 3864.3352
Website: www.niem.edu.vn

Hanoi, 8th December, 2016

TO WHOM IT MAY CONCERN

As the deputy President of National Institute of Education Management, I hereby approve Phung Van Dong's request for access to National Institute of Education Management staff in connection with his data collection for his doctoral project 'Developing a framework for removing barriers to facilitate knowledge sharing flows' in Vietnamese universities. The data collection will be administered in 2016 and 2017. I hope that the research findings will be useful to National Institute of Education Management.

Phung Van Dong is a PhD student from Faculty of Engineering and Information Technology, the University of Technology, Sydney, Australia. I would like the Heads and staff of all departments of National Institute of Education Management to give this research project your full support and participation.

Best regards,

Dr. Tran Huu Hoan

The deputy President of National Institute of Education Management

Email: hoan63@hotmail.com



BANKING ACADEMY

12 Chua Boc, Dong Da, Hanoi
Telephone: (84-4) 3.572.5646
E-mail: info@hvn.edu.vn; Website: www.hvn.edu.vn

Translated

Hanoi, 8th December, 2016

TO WHOM IT MAY CONCERN

As the deputy President of Banking Academy, I hereby approve Phung Van Dong's request for access to Banking Academy staff in connection with his data collection for his doctoral project "Developing a framework for removing barriers to facilitate knowledge sharing flows" in Vietnamese universities. The data collection will be administered in 2016 and 2017. I hope that the research findings will be useful to Banking Academy.

Phung Van Dong is a PhD student from Faculty of Engineering and Information Technology, the University of Technology, Sydney, Australia. I would like the Heads and staff of all departments of Banking Academy to give this research project your full support and participation.

Best regards,

PHÓ GIÁM ĐỐC

PGS.TS. Lê Văn Luyen

Associate Prof, Dr. Le Van Luyen

The deputy President of Banking Academy



TAY BAC UNIVERSITY

Quyet Tam, Son La City, Son La, Vietnam

Telephone: (84-22) 3.751.700

E-mail: utb@utb.edu.vn

Website: www.utb.edu.vn

Sonla, 12 December, 2016

TO WHOM IT MAY CONCERN

As the Vice Rector of Tay Bac University, I hereby approve Phung Van Dong's request for access to Tay Bac University staff in connection with his data collection for his doctoral project "Developing a framework for removing barriers to facilitate knowledge sharing flows" in Vietnamese universities. The data collection will be administered in 2016 and 2017. I hope that the research findings will be useful to Tay Bac University.

Phung Van Dong is a PhD student from Faculty of Engineering and Information Technology, the University of Technology, Sydney, Australia. I would like the Heads and staff of all departments of Tay Bac University to give this research project your full support and participation.



Best regards,



Dinh Thanh Tam

Vice Rector of Tay Bac University

HREC Approval Granted - ETH16-0351

Dear Applicant

Thank you for your response to the Committee's comments for your project titled, "Developing a framework for removing barriers to facilitate knowledge sharing flows". Your response satisfactorily addresses the concerns and questions raised by the Committee who agreed that the application now meets the requirements of the NHMRC National Statement on Ethical Conduct in Human Research (2007). I am pleased to inform you that ethics approval is now granted.

Your approval number is UTS HREC REF NO. ETH16-0351.

Approval will be for a period of five (5) years from the date of this correspondence subject to the provision of annual reports.

Your approval number must be included in all participant material and advertisements. Any advertisements on the UTS Staff Connect without an approval number will be removed.

Please note that the ethical conduct of research is an on-going process. The National Statement on Ethical Conduct in Research Involving Humans requires us to obtain a report about the progress of the research, and in particular about any changes to the research which may have ethical implications. This report form must be completed at least annually from the date of approval, and at the end of the project (if it takes more than a year). The Ethics Secretariat will contact you when it is time to complete your first report.

I also refer you to the AVCC guidelines relating to the storage of data, which require that data be kept for a minimum of 5 years after publication of research. However, in NSW, longer retention requirements are required for research on human subjects with potential long-term effects, research with long-term environmental effects, or research considered of national or international significance, importance, or controversy. If the data from this research project falls into one of these categories, contact University Records for advice on long-term retention.

You should consider this your official letter of approval. If you require a hardcopy please contact Research.Ethics@uts.edu.au.

To access this application, please follow the URLs below:

* if accessing within the UTS network: <https://rm.uts.edu.au>

* if accessing outside of UTS network: <https://vpn.uts.edu.au>, and click on "RM6 – Production" after logging in.

We value your feedback on the online ethics process. If you would like to provide feedback please go to: <http://surveys.uts.edu.au/surveys/onlineethics/index.cfm>

If you have any queries about your ethics approval, or require any amendments to your research in the future, please do not hesitate to contact Research.Ethics@uts.edu.au.

Yours sincerely,

Professor Marion Haas
Chairperson
UTS Human Research Ethics Committee
C/- Research & Innovation Office
University of Technology, Sydney
E: Research.Ethics@uts.edu.au



HANOI UNIVERSITY

Km 9 Nguyen Trai Road, Thanh Xuan, Hanoi, Vietnam

Telephone: (84-4) 3854 4338; Fax: (84-4) 3854 4550

E-mail: hanu@hanu.vn; Website: www.hanu.edu.vn

Sydney, 18th July, 2018

STATEMENT OF AUDIT TRAIL

I have had the chance to read parts of the study by Van Dong Phung and certify that:

- I have randomly sampled 3 interviews in Vietnamese and found that the transcripts accurately match what is said in respective audio interview files.
- The selection of interesting quotes to be used in chapters regarding results of data analysis and discussion is a fair representation of the respective interviews.
- The English translation of interview quotes reflects accurately their meanings.
- I have also checked the English - Vietnamese versions of the study documents (i.e. the survey questionnaire, the interview protocol, information sheet, consent forms) and found that the meanings of the two versions are the same.

Dr. Van Giang Ngo

PhD in Education The University of Adelaide

Senior Lecturer of Translation and Interpreting

Deputy Dean of English Department,

Hanoi University, Vietnam

Email: giangnv@hanu.edu.vn; gianghanuvn@gmail.com

Appendix 5: Demographics characteristics of the sample

Table A5.1: Gender of participants

		Frequency	Per cent	Cumulative %
Valid	Male	203	36.4	36.4
	Female	355	63.6	100.0
	Total	558	100.0	

Table A5.2: Age of participants

		Frequency	Per cent	Cumulative %
Valid	below 30	156	28.0	28.0
	30-39	290	52.0	79.9
	40-49	82	14.7	94.6
	50 or above	30	5.4	100.0
	Total	558	100.0	

Table A5.3: Education level of participants

		Frequency	Per cent	Cumulative %
Valid	Bachelor's degree	118	21.1	21.1
	Master's degree	377	67.6	88.7
	Doctoral degree	63	11.3	100.0
	Total	558	100.0	

Table A5.4: Years of experience of participants

		Frequency	Per cent	Cumulative %
Valid	< 5 years	137	24.6	24.6
	5 years - 10 years	253	45.3	69.9
	11 years - 15 years	120	21.5	91.4
	>15 years	48	8.6	100.0
	Total	558	100.0	

Table A5.5: Major working areas of participants

		Frequency	Per cent	Cumulative %
Valid	Language studies	151	27.1	27.1
	Economics	115	20.6	47.7
	Social science	156	28.0	75.6
	Technology and Engineering	136	24.4	100.0
	Total	558	100.0	

Table A5.6: Departments of participants

		Frequency	Per cent	Cumulative %
Valid	English Studies	39	7.0	7.0
	Information Technology	40	7.2	14.2
	Foundation Studies	21	3.8	17.9
	Language Foundation	38	6.8	24.7
	German Studies	14	2.5	27.2
	Education	15	2.7	29.9
	Korean Studies	11	2.0	31.9
	Information Management Systems	14	2.5	34.4
	International Business	6	1.1	35.5
	Accounting	16	2.9	38.4
	Economy	28	5.0	43.4
	Law	9	1.6	45.0
	Russian Studies	14	2.5	47.5
	Banking	26	4.7	52.2
	Japanese Studies	14	2.5	54.7
	Language	16	2.9	57.5
	Agriculture and Forestry	17	3.0	60.6
	French Studies	14	2.5	63.1
	Management	26	4.7	67.7
	International Studies	12	2.2	69.9
	Business Administration	23	4.1	74.0
	History and Geography	9	1.6	75.6
	Finance	16	2.9	78.5
	Psychology	16	2.9	81.4
	Spanish Studies	5	.9	82.3
	Primary and Pre-school	8	1.4	83.7
	Mathematics	16	2.9	86.6
	Chinese Studies	16	2.9	89.4
	Italian Studies	8	1.4	90.9
	Library	27	4.8	95.7
	IT and engineering	8	1.4	97.1
	Education Management	10	1.8	98.9
	Training Teacher and Manager	6	1.1	100.0
	Total	558	100.0	

Appendix 6: Descriptive statistics

Table A6.1. The descriptive statistics of subjective norms construct

Descriptive Statistics								
	Case with z>3.29	Mean		Std. Deviation	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
SN1	0.0	3.56	.038	.888	-.486	.103	.092	.206
SN2	0.0	3.59	.036	.859	-.518	.103	.191	.206
SN3	0.0	3.54	.041	.963	-.658	.103	.308	.206

Table A6.2. The descriptive statistics of trust construct

Descriptive Statistics								
	Case with z>3.29	Mean		Std. Deviation	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
TRU1	0.0	3.96	.032	.748	-.589	.103	.691	.206
TRU2	0.0	3.95	.031	.728	-.703	.103	1.297	.206
TRU3	0.0	3.98	.031	.730	-.665	.103	1.183	.206
TRU4	0.0	3.82	.039	.930	-1.009	.103	1.194	.206
TRU5	0.0	3.74	.040	.940	-1.069	.103	1.293	.206
TRU6	0.0	3.89	.031	.740	-.593	.103	.915	.206

Table A6.3. The descriptive statistics of knowledge self-efficacy construct

Descriptive Statistics								
	Case with z>3.29	Mean		Std. Deviation	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
KSE1	0.0	3.91	.032	.753	-.789	.103	1.519	.206
KSE2	0.0	3.86	.030	.699	-.522	.103	.905	.206
KSE3	0.0	3.75	.040	.952	-.959	.103	.868	.206
KSE4	0.0	3.89	.030	.714	-.519	.103	.805	.206

Table A6.4. The descriptive statistics of enjoyment in helping others construct

Descriptive Statistics								
	Case with z>3.29	Mean		Std. Deviation	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
EHO1	0.0	2.94	.051	1.209	.206	.103	-1.014	.206
EHO2	0.0	3.27	.053	1.263	-.128	.103	-1.190	.206
EHO3	0.0	3.10	.050	1.185	-.019	.103	-.981	.206
EHO4	0.0	2.98	.052	1.239	.168	.103	-1.081	.206

Table A6.5. The descriptive statistics of expected organisational rewards construct

Descriptive Statistics								
	Case with z>3.29	Mean		Std. Deviation	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
REW1	0.0	3.22	.043	1.011	-.204	.103	-.645	.206
REW2	0.0	3.29	.046	1.086	-.259	.103	-.755	.206
REW3	0.0	3.20	.045	1.071	-.232	.103	-.730	.206
REW4	0.0	3.27	.042	.982	-.149	.103	-.722	.206

Table A6.6. The descriptive statistics of reciprocal benefits construct

Descriptive Statistics								
	Case with z>3.29	Mean		Std. Deviation	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
RB1	0.0	3.87	.030	.716	-.657	.103	1.237	.206
RB2	0.0	3.69	.035	.829	-.763	.103	.595	.206
RB3	0.0	3.76	.030	.710	-.530	.103	.557	.206

Table A6.7. The descriptive statistics of psychological ownership of knowledge construct

Descriptive Statistics								
	Case with z>3.29	Mean		Std. Deviation	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
POK1	0.0	3.68	.037	.873	-.540	.103	.170	.206
POK2	0.0	3.39	.048	1.125	-.433	.103	-.625	.206
POK3	0.0	3.70	.037	.882	-.513	.103	.119	.206
POK4	0.0	3.73	.036	.861	-.607	.103	.371	.206
POK5	0.0	3.85	.034	.805	-.741	.103	.903	.206

Table A6.8. The descriptive statistics of innovative work behaviour construct

Descriptive Statistics								
	Case with z>3.29	Mean		Std. Deviation	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
IGE1	0.0	3.44	.049	1.163	-.363	.103	-.812	.206
IGE2	0.0	3.75	.044	1.033	-.830	.103	.241	.206
IGE3	0.0	3.46	.047	1.112	-.420	.103	-.723	.206
IPR1	0.0	2.94	.046	1.093	.079	.103	-.920	.206
IPR2	0.0	3.45	.043	1.027	-.498	.103	-.427	.206
IPR3	0.0	2.91	.048	1.141	.176	.103	-.894	.206
IIM1	0.0	3.61	.040	.952	-.779	.103	.509	.206
IIM2	0.0	3.61	.040	.952	-.718	.103	.364	.206
IIM3	0.0	3.73	.034	.792	-.772	.103	1.073	.206

Table A6.9. The descriptive statistics of transformational leadership construct

Descriptive Statistics								
	Case with z>3.29	Mean		Std. Deviation	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
TL1	0.0	3.03	.047	1.115	.097	.103	-.824	.206
TL2	0.0	3.43	.034	.814	-.375	.103	.150	.206
TL3	0.0	3.13	.047	1.115	.071	.103	-.871	.206
TL4	0.0	2.98	.045	1.072	.280	.103	-.877	.206
TL5	0.0	2.88	.043	1.011	.225	.103	-.803	.206
TL6	0.0	3.13	.045	1.053	.205	.103	-1.000	.206
TL7	0.0	3.04	.046	1.083	.293	.103	-.901	.206
TL8	0.0	3.08	.046	1.089	.104	.103	-1.016	.206
TL9	0.0	2.91	.041	.979	.215	.103	-.856	.206
TL10	0.0	3.13	.031	.728	.111	.103	-.458	.206
TL11	0.0	3.20	.030	.713	.258	.103	-.035	.206
TL12	0.0	3.19	.037	.878	-.179	.103	-.054	.206
TL13	0.0	2.93	.045	1.070	.351	.103	-.870	.206

Table A6.10. The descriptive statistics of KSB construct

Descriptive Statistics								
	Case with z>3.29	Mean		Std. Deviation	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
KSB1	0.0	3.55	.041	.976	-.549	.103	-.260	.206
KSB2	0.0	3.72	.036	.851	-.523	.103	.082	.206
KSB3	0.0	3.56	.044	1.029	-.557	.103	-.282	.206
KSB4	0.0	3.61	.041	.969	-.639	.103	-.089	.206
KSB5	0.0	3.65	.041	.977	-.672	.103	.006	.206

Table A6.11. The descriptive statistics of the quality of TMS construct

Descriptive Statistics								
	Case with z>3.29	Mean		Std. Deviation	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
WKW1	0.0	3.04	.046	1.080	.211	.103	-.770	.206
WKW2	0.0	3.18	.041	.966	-.090	.103	-.665	.206
WKW3	0.0	3.06	.043	1.020	-.030	.103	-.643	.206
WDW1	0.0	3.53	.042	.989	-.319	.103	-.717	.206
WDW2	0.0	3.16	.047	1.103	-.227	.103	-1.002	.206
WDW3	0.0	3.27	.045	1.056	-.223	.103	-.681	.206

Appendix 7: Results of Exploratory Factor Analysis (EFA)

Table A7.1: A part of the Anti-image correlation matrix: Full sets of variables (54)

	SN1	SN2	SN3	TRU1	TRU2	TRU3	TRU4	TRU5	TRU6	KSE1	KSE2	KSE3	KSE4	EHO1	EHO2	EHO4	REW1	REW2	REW3	REW4	RB1	RB2	RB3
SN1	.833*	-.489	-.148	-.007	.061	-.032	.013	.016	-.083	.055	.017	.041	.019	.002	.066	-.034	.060	-.011	.089	-.116	.005	-.008	-.091
SN2	-.489	.857*	-.291	-.072	.009	-.012	-.013	-.005	.016	-.103	-.030	.022	.055	.008	-.053	.000	-.027	.003	.032	.060	-.051	-.043	-.018
SN3	-.148	-.291	.810*	.059	-.027	.035	-.034	.005	-.014	-.006	.005	-.005	-.101	.029	.002	.019	.020	.037	-.037	-.007	.118	-.141	-.051
TRU1	-.007	-.072	.059	.916*	-.316	-.252	-.150	.000	-.169	-.007	-.021	.055	-.014	-.045	.043	-.063	.007	.047	.028	.035	.000	-.048	.032
TRU2	.061	.009	-.027	-.316	.911*	-.300	-.055	-.042	-.272	.005	-.039	.009	.029	.010	-.010	.042	.052	-.067	-.038	-.012	-.014	.001	-.033
TRU3	-.032	-.012	.035	-.252	-.300	.921*	.026	-.042	-.311	-.003	-.027	.010	-.041	.123	-.057	-.012	-.010	-.031	-.022	.006	-.033	.024	.033
TRU4	.013	-.013	-.034	-.150	-.065	.026	.921*	-.299	-.095	.069	.026	-.114	-.042	.006	-.068	-.042	.024	.035	-.037	-.053	.005	-.001	.034
TRU5	.016	-.005	.005	.000	-.042	-.042	-.299	.906*	-.043	-.017	.012	-.180	.120	.004	.028	-.034	.002	-.036	.019	-.066	.030	-.043	-.041
TRU6	-.083	.016	-.014	-.169	-.272	-.311	-.095	-.043	.919*	-.027	-.020	.039	-.029	-.134	.094	.047	-.016	.065	.010	-.070	.041	.006	.005
KSE1	.055	-.103	-.006	-.007	.005	-.003	.069	-.017	-.027	.896*	-.266	-.195	-.303	-.052	.041	-.055	.035	.026	-.030	-.063	.024	.000	-.016
KSE2	.017	-.030	.005	-.021	-.039	-.027	.026	.012	-.020	-.266	.870*	-.082	-.437	-.018	-.003	.106	-.088	.009	.014	-.063	.023	.008	-.067
KSE3	.041	.022	-.005	.055	.009	.010	-.114	-.180	.039	-.195	-.082	.912*	-.107	.028	-.038	-.011	.003	-.015	-.044	-.007	.048	-.015	.091
KSE4	.019	.055	-.101	-.014	.029	-.041	-.042	.120	-.029	-.303	-.437	-.107	.863*	.029	.011	-.065	-.013	-.082	-.003	.070	-.030	.015	.036
EHO1	.002	.009	.029	-.045	.010	.123	.006	.004	-.134	-.052	-.018	.028	.029	.875*	-.449	-.167	-.008	.027	-.002	-.024	.029	-.099	-.029
EHO2	.066	-.053	.002	.043	-.010	-.057	-.068	.028	.094	.041	-.003	-.038	.011	-.449	.871*	-.359	-.024	.077	-.045	.057	.064	.008	-.046
EHO4	-.034	.000	.019	-.063	.042	-.012	-.042	-.034	.047	-.065	.106	-.011	-.065	-.167	-.359	.914*	-.088	.014	-.010	-.037	-.073	.065	-.007
REW1	.060	-.027	.020	.007	.052	-.010	.024	.002	-.015	.035	-.088	.003	-.013	-.008	-.024	-.088	.919*	-.113	-.056	-.354	.003	.044	-.033
REW2	-.011	.003	.037	.047	-.067	-.031	.035	-.036	.065	.026	.009	-.015	-.082	.027	-.077	-.014	-.113	.915*	-.220	-.269	-.056	.065	.035
REW3	.089	.032	-.037	.028	-.038	-.022	-.037	.019	.010	-.030	.014	-.044	-.003	-.002	-.045	-.010	-.066	-.220	.927*	-.286	.000	.008	-.006
REW4	-.116	.060	-.007	.035	-.012	.006	-.053	-.066	-.070	-.063	-.063	-.007	.070	-.024	.057	-.037	-.354	.269	-.288	.895*	-.057	-.002	.032
RB1	.005	-.051	.118	.000	-.014	-.033	.005	.030	.041	.024	.023	-.049	-.030	.029	.064	-.073	.003	-.056	.000	-.057	.788*	-.353	-.569
RB2	-.008	-.043	-.141	-.048	.001	.024	-.001	-.043	.005	.000	.008	-.015	.015	-.059	.008	.065	.044	.065	.008	-.002	-.353	.874*	.014
RB3	-.091	-.018	-.051	.032	-.033	.033	.034	-.041	.005	-.016	-.067	-.091	.036	-.029	-.046	-.007	-.033	.035	-.006	.032	-.569	.014	.812*

Table A7.2: A part of the Anti-image correlation matrix: Reduced sets of variables (50)

	SN1	SN2	SN3	TRU1	TRU2	TRU3	TRU5	TRU6	KSE1	KSE2	KSE4	EHO1	EHO2	EHO4	REW1	REW2	REW3	REW4	RB1	RB2	RB3
SN1	.831*	-.494	-.145	-.001	.061	-.034	.026	-.084	.067	.015	.023	.001	.064	-.031	.058	-.005	.089	-.116	.004	-.010	-.087
SN2	-.494	.853*	-.296	-.077	.014	-.015	-.005	.015	-.106	-.022	.058	.016	-.055	.000	-.029	.002	.037	.062	-.051	-.038	-.021
SN3	-.145	-.296	.798*	.053	-.027	.035	-.007	-.017	-.008	.009	-.104	.033	.001	.017	.021	.036	-.036	-.008	.120	-.139	-.054
TRU1	-.001	-.077	.053	.912*	-.331	-.252	-.034	-.188	.007	-.008	-.014	-.046	.042	-.073	.012	.046	.029	.030	-.001	-.044	.038
TRU2	.061	.014	-.027	-.331	.904*	-.299	-.067	-.281	.014	-.042	.026	.005	-.015	.039	.055	-.063	-.044	-.018	-.015	.003	-.027
TRU3	-.034	-.015	.035	-.252	-.299	.917*	-.035	-.311	-.003	-.025	-.039	.127	-.056	-.010	-.012	-.032	-.020	.008	-.033	.025	.032
TRU5	.026	-.005	-.007	-.034	-.067	-.035	.947*	-.071	-.038	-.003	.089	.014	-.008	-.052	.010	-.025	-.006	-.093	.046	-.053	-.052
TRU6	-.084	.015	-.017	-.188	-.281	-.311	-.071	.914*	-.015	-.016	-.031	.135	.090	.043	-.014	.070	.008	-.075	.040	.006	.011
KSE1	.057	-.106	-.008	.007	.014	-.003	-.038	-.015	.891*	-.284	-.330	.043	.041	-.057	.035	.017	-.032	-.061	.035	.002	-.041
KSE2	.015	-.022	.009	-.008	-.042	-.025	-.003	-.016	-.284	.860*	-.453	-.023	-.009	.108	-.088	.015	.004	-.066	.026	.000	.069
KSE4	.023	.058	-.104	-.014	.026	-.039	.089	-.031	-.330	-.453	.850*	-.033	.002	-.068	-.011	-.081	-.011	.067	-.025	.012	.029
EHO1	.001	.016	.033	-.046	.005	.127	.014	-.135	-.043	-.023	.033	.873*	-.451	-.168	-.006	.029	.005	-.026	.026	-.104	-.021
EHO2	.054	-.055	.001	.042	-.015	-.056	-.008	.090	.041	-.009	.002	.451	.867*	-.363	-.023	-.071	-.053	-.062	.068	.005	.047
EHO4	-.031	.000	.017	-.073	.039	-.010	-.052	.043	-.057	.108	-.068	-.168	-.363	.908*	-.086	-.015	-.012	-.039	-.072	.066	-.007
REW1	.058	-.029	.021	.012	.055	-.012	.010	-.014	.035	-.088	-.011	-.006	-.023	-.086	.916*	-.113	-.064	-.353	.003	.045	.035
REW2	-.005	.002	.036	.046	-.063	-.032	-.025	.070	.017	.015	-.081	.029	-.071	-.015	-.113	.916*	-.216	-.257	-.056	.070	.029
REW3	.089	.037	-.036	.029	-.044	-.020	-.006	.008	-.032	.004	-.011	.005	-.053	-.012	-.064	.926*	-.295	.002	.002	-.004	
REW4	-.116	.062	-.008	.030	-.018	.008	-.093	-.075	-.061	-.066	.067	.026	-.062	-.039	-.353	-.267	-.295	.889*	-.057	-.004	.035
RB1	.004	-.051	.120	-.001	-.015	-.033	.046	.040	.035	.026	-.025	.026	.008	-.072	.003	-.056	.002	-.057	.787*	-.355	-.568
RB2	-.010	-.038	-.139	-.044	-.003	.026	-.053	.006	.002	.000	.012	-.104	.005	.066	.045	.070	.002	-.004	-.355	.872*	.018
RB3	-.087	-.021	-.054	.038	-.027	.032	-.052	.011	-.041	-.069	.029	-.021	-.047	-.007	-.035	.029	-.004	.035	-.568	.018	.813*

Note: a. Measures of Sampling Adequacy(MSA)

The size of complete Anti-image correlation matrix is too large to present in the appendix.

Table A7.3. Data factorability: Reduced sets of variables

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.890
Approx. Chi-Square		14636.123
Bartlett's Test of Sphericity	df	1225
Sig.		.000

Table A7.4. Total Variance Explained: Reduced sets of variables

Total Variance Explained							
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.200	18.399	18.399	9.200	18.399	18.399	6.207
2	6.299	12.598	30.997	6.299	12.598	30.997	6.412
3	3.862	7.724	38.722	3.862	7.724	38.722	5.672
4	2.669	5.338	44.060	2.669	5.338	44.060	4.859
5	2.396	4.792	48.852	2.396	4.792	48.852	4.934
6	1.810	3.621	52.472	1.810	3.621	52.472	3.897
7	1.724	3.447	55.920	1.724	3.447	55.920	2.809
8	1.460	2.920	58.840	1.460	2.920	58.840	3.379
9	1.397	2.793	61.633	1.397	2.793	61.633	3.289
10	1.192	2.384	64.017	1.192	2.384	64.017	4.418
11	1.095	2.190	66.207	1.095	2.190	66.207	3.673
12	1.071	2.143	68.350	1.071	2.143	68.350	3.983
13	.829	1.659	70.009				
14	.796	1.592	71.601				
15	.757	1.515	73.115				
16	.708	1.416	74.531				
...				
48	.201	.402	99.277				
49	.192	.384	99.661				
50	.169	.339	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table A7.5. Promax-Rotated Component Analysis Factor Matrix: Reduced sets of variables

	Promax-Rotated loadings factor												Communality
	1	2	3	4	5	6	7	8	9	10	11	12	
TL3	.528												.699
TL4	.715												.543
TL5	.729												.524
TL6	.720												.525
TL7	.745												.586
TL8	.731												.536
TL9	.826												.687
TL10	.870												.787
TL11	.836												.726
TL12	.617												.686
TL13	.746												.569
KSB1		.882											.767
KSB2		.714											.651
KSB3		.838											.669
KSB4		.757											.696
KSB5		.869											.779
TRU1			.898										.773
TRU2			.885										.807
TRU3			.875										.800
TRU5			.743										.625
TRU6			.881										.781
POK1				.793									.697
POK3				.845									.727
POK4				.845									.744
POK5				.851									.752
REW1					.720								.627
REW2					.842								.671
REW3					.754								.627
REW4					.852								.775
KSE1						.814							.716
KSE2						.847							.765
KSE4						.867							.783
IGE1							.860						.771
IGE2							.831						.736
IGE3							.795						.659
IPR1								.852					.745
IPR2								.890					.753
IPR3								.785					.696

	Promax-Rotated loadings factor												Communality
	1	2	3	4	5	6	7	8	9	10	11	12	
IIM1									.814				.705
IIM2									.832				.694
IIM3									.768				.704
EHO1										.862			.731
EHO2										.836			.792
EHO4										.777			.699
RB1											.886		.797
RB2											.609		.536
RB3											.843		.732
SN1												.800	.719
SN2												.790	.742
SN3												.854	.662

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Appendix 8: Results of Confirmatory Factor Analysis (CFA)

Table A8.1: Standardised factor loading estimates (Standardised regression weights)

Indicator		Construct	Estimate
IGE	<---	IWB	.817
IPR	<---	IWB	.805
IIM	<---	IWB	.754
TRU1	<---	TRU	.827
TRU2	<---	TRU	.876
TRU3	<---	TRU	.864
TRU5	<---	TRU	.422
POK1	<---	POK	.749
POK3	<---	POK	.781
POK4	<---	POK	.817
REW1	<---	REW	.728
REW2	<---	REW	.717
REW3	<---	REW	.714
REW4	<---	REW	.852
IGE3	<---	IGE	.671
IGE2	<---	IGE	.788
IGE1	<---	IGE	.840
KSE1	<---	KSE	.755
KSE2	<---	KSE	.814
KSE4	<---	KSE	.824
IPR3	<---	IPR	.725
IPR2	<---	IPR	.776
IPR1	<---	IPR	.781
RB1	<---	RB	.879
RB2	<---	RB	.579
RB3	<---	RB	.763
EHO1	<---	EHO	.744
EHO2	<---	EHO	.869
EHO4	<---	EHO	.750
IIM3	<---	IIM	.775
IIM2	<---	IIM	.727
IIM1	<---	IIM	.736
SN1	<---	SN	.775
SN2	<---	SN	.878
TL9	<---	TL	.801
TL8	<---	TL	.682
TL7	<---	TL	.720
TL6	<---	TL	.665
TL5	<---	TL	.659
TL4	<---	TL	.638
TL3	<---	TL	.614
KSB5	<---	KSB	.858
KSB4	<---	KSB	.794
KSB3	<---	KSB	.739

Indicator		Construct	Estimate
KSB2	<---	KSB	.741
KSB1	<---	KSB	.831
SN3	<---	SN	.773
TL10	<---	TL	.888
TL11	<---	TL	.847
TRU6	<---	TRU	.842
POK5	<---	POK	.822
TL13	<---	TL	.697
TL12	<---	TL	.623

Table A8.2: CFA Unstandardized factor loading estimates and t-value

Indicator		Construct	Estimate	S.E.	C.R. (t-value)	P
IGE	<---	IWB	.960	.144	6.655	***
IPR	<---	IWB	1.039	.157	6.624	***
IIM	<---	IWB	1.000	_a	_a	_a
TRU1	<---	TRU	1.000	_a	_a	_a
TRU2	<---	TRU	1.032	.041	25.020	***
TRU3	<---	TRU	1.021	.042	24.559	***
TRU5	<---	TRU	.641	.064	10.006	***
POK1	<---	POK	1.000	_a	_a	_a
POK3	<---	POK	1.053	.059	17.972	***
POK4	<---	POK	1.076	.057	18.784	***
REW1	<---	REW	1.000	_a	_a	_a
REW2	<---	REW	1.059	.067	15.807	***
REW3	<---	REW	1.040	.066	15.747	***
REW4	<---	REW	1.137	.062	18.326	***
IGE3	<---	IGE	1.000	_a	_a	_a
IGE2	<---	IGE	1.091	.074	14.834	***
IGE1	<---	IGE	1.311	.088	14.922	***
KSE1	<---	KSE	1.000	_a	_a	_a
KSE2	<---	KSE	1.002	.056	17.774	***
KSE4	<---	KSE	1.036	.058	17.883	***
IPR3	<---	IPR	1.000	_a	_a	_a
IPR2	<---	IPR	.965	.064	15.065	***
IPR1	<---	IPR	1.033	.068	15.089	***
RB1	<---	RB	1.000	_a	_a	_a
RB2	<---	RB	.762	.058	13.028	***
RB3	<---	RB	.861	.052	16.542	***
EHO1	<---	EHO	1.000	_a	_a	_a
EHO2	<---	EHO	1.220	.067	18.337	***

Indicator		Construct	Estimate	S.E.	C.R. (t-value)	P
EHO4	<---	EHO	1.032	.062	16.706	***
IIM3	<---	IIM	1.000	_a	_a	_a
IIM2	<---	IIM	1.128	.077	14.685	***
IIM1	<---	IIM	1.141	.077	14.777	***
SN1	<---	SN	1.000	_a	_a	_a
SN2	<---	SN	1.095	.064	17.129	***
TL9	<---	TL	1.367	.110	12.445	***
TL8	<---	TL	1.295	.113	11.481	***
TL7	<---	TL	1.359	.115	11.809	***
TL6	<---	TL	1.221	.108	11.316	***
TL5	<---	TL	1.163	.103	11.267	***
TL4	<---	TL	1.192	.108	11.054	***
TL3	<---	TL	1.000	_a	_a	_a
KSB5	<---	KSB	1.000	_a	_a	_a
KSB4	<---	KSB	.919	.041	22.416	***
KSB3	<---	KSB	.908	.045	20.145	***
KSB2	<---	KSB	.753	.037	20.227	***
KSB1	<---	KSB	.968	.040	24.042	***
SN3	<---	SN	.801	.062	12.856	***
TL10	<---	TL	1.127	.087	13.007	***
TL11	<---	TL	1.053	.083	12.757	***
TRU6	<---	TRU	1.008	.043	23.611	***
POK5	<---	POK	1.012	.054	18.899	***
TL13	<---	TL	1.301	.112	11.613	***
TL12	<---	TL	.953	.087	10.903	***

Note: ^aNot estimated when loading set to fixed value (i.e., 1.0)

Appendix 9: Results of Structural Equation Modelling (SEM)

Table A9.1: The results of structural model for this study

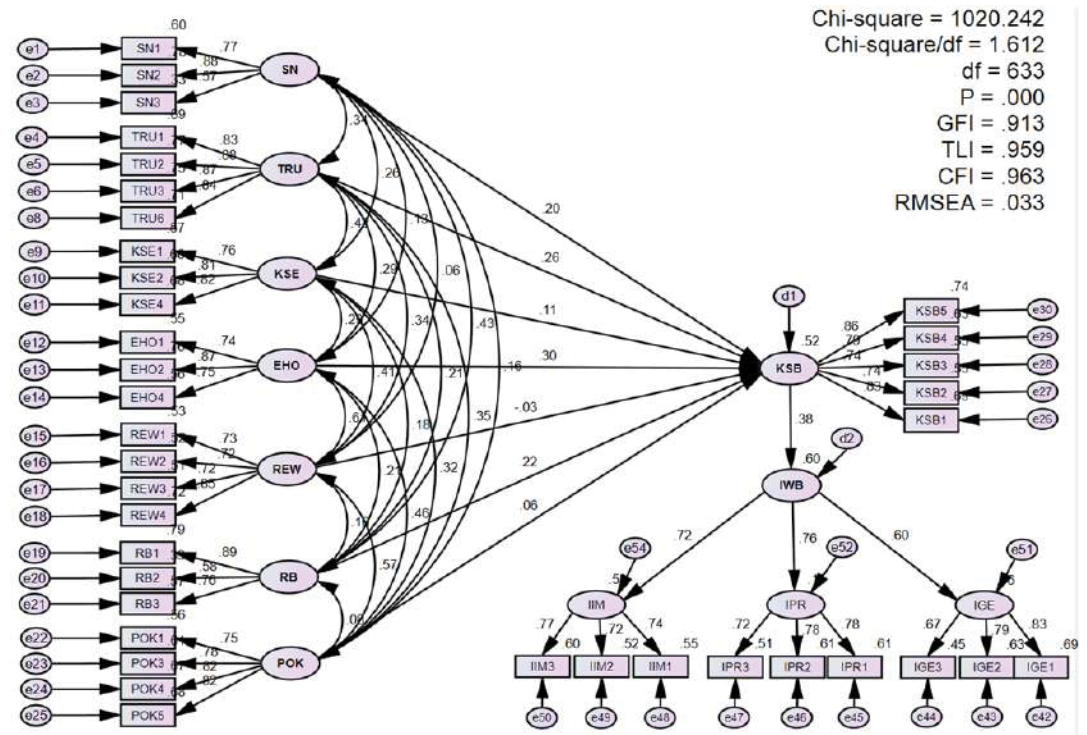


Table A9.2: Categorisation of the moderating variable (TL) into two high and low groups

Group	Frequency	Per cent	Valid per cent	Cumulative per cent
Low	276	49.5	49.5	49.5
Valid High	282	50.5	50.5	100.0
Total	558	100.0	100.0	