The Influence of Knowledge Management System Characteristics on Individual Learning in the Malaysian Telecommunications Industry

Yeong Tuck Wai
Diploma in Telecommunication and Computer Engineering
BA (Hons) International Business Administration (Lincoln) UK
Master of Business Administration (Sunshine Coast) Australia

Doctor of Business Administration (DBA)
School of Business and Law
The University of Newcastle, Australia
Student No: 3071309

Submission Date: October 2009

This Dissertation is submitted to the Faculty of Business and Law in fulfilment of the requirement for the degree of Doctor of Business Administration (DBA)
Statement of Originality

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

Signed: _____________________________
Name: Yeong Tuck Wai
Date:
Acknowledgements

I am extremely grateful to my supervisor Dr Leonard Whitehouse for his encouragement, and guidance throughout the dissertation. Special appreciation is directed to Dr Gian Casimir (DBA Programme Facilitator) for his support and invaluable perspective.

I wish to thank all those who contributed directly and indirectly to this DBA study, and helped me bring this research project to a conclusion.

I wish to humbly thank my late grandmother Wong Siew Ying, who had inspired me to adopt lifelong learning.

A very special thank you to my mother, Alice Lai Wa Chan, for her support and prayers. She has given me so much of love, motivation and encouragement during the whole duration of my DBA course.

I reserve my final gratitude for my extremely understanding and capable wife Lisa Lim Yoke Keng, my daughter Grace Yeong May Ling and my son Keith Yeong Jun Kit. They have given me so much motivation, support and encouragement, together with their love and patience, inspiration in countless ways, and the acknowledged sacrifice of quality family time during my DBA course. This dissertation belongs more to them than to me.
Dedications

This dissertation is dedicated to the loving memory of my beloved father, the late Edmund Yeong Kai Choong and to my beloved mother Alice Lai Wa Chan.

My father gave me love, motivation and encouragement during my DBA course, but who sadly did not live to see the completion of my DBA. I am sure he would have been very proud of this achievement. He was a kind, beautiful and caring man. I am privileged and honoured to have him as my father. I truly miss him and love him most deeply. He was a very special gentleman, one whom I will never forget because in my heart he will always be here. Father I love and miss you very much.
# Table of Contents

Statement of Originality ........................................................................................................ ii
Acknowledgements .................................................................................................................. iii
Dedications ............................................................................................................................... iv
Table of Contents .................................................................................................................... v
List of Tables ........................................................................................................................... ix
List of Figures .......................................................................................................................... x
Acronyms ................................................................................................................................ xi
Abstract ................................................................................................................................. xii

## Chapter 1 - Introduction

1.1 Introduction ....................................................................................................................... 1
1.2 Background to the Research ............................................................................................. 1
1.3 Justification for the Dissertation Project ......................................................................... 3
1.4 Research Question and Hypotheses ............................................................................... 5
   1.4.1 Research Question .................................................................................................... 5
   1.4.2 Hypotheses .............................................................................................................. 5
1.5 Research Methodology ..................................................................................................... 6
   1.5.1 Target Population .................................................................................................... 6
   1.5.2 Sampling Frame ...................................................................................................... 6
   1.5.3 Survey Instrument ................................................................................................. 7
   1.5.4 Data Collection Method ....................................................................................... 8
   1.5.5 Analysis of Data ..................................................................................................... 8
1.6 Major Findings .................................................................................................................. 9
1.7 Structure of the Dissertation ............................................................................................ 10

## Chapter 2 - Literature Review

2.1 Introduction ....................................................................................................................... 11
2.2 Knowledge Management (KM) ....................................................................................... 11
   2.2.1 What is Knowledge? ............................................................................................... 11
   2.2.2 Definitions of KM ................................................................................................. 14
   2.2.3 KM Strategies ....................................................................................................... 15
   2.2.4 KM Implementation Framework ........................................................................ 17
   2.2.5 Implementation of KM ...................................................................................... 19
2.3 Knowledge Management System (KMS) .................................................................... 21
3.7.5 Proposed Research Design
3.8 Sampling
3.8.1 Probability
3.8.2 Non-Probability
3.8.3 Proposed Target Population
3.8.4 Proposed Sampling Frame
3.9 Data Collection Methods
3.9.1 Face to Face Interviews
3.9.2 Observational Study
3.9.3 Telephone Interviews
3.9.4 Personally Administered Questionnaires
3.9.5 Mail Questionnaires
3.9.6 E-mail Survey
3.9.7 Web Survey
3.9.8 Proposed Data Collection Method
3.10 Scales
3.10.1 Reliability
3.10.2 Validity
3.10.3 Measurement Scale
3.10.4 Measure Justification
3.11 Questionnaire Design
3.12 Ethical Considerations
3.13 Conclusion

Chapter 4 - Research Results
4.1 Introduction
4.2 Descriptive Statistics
4.2.1 Demographics of Respondents
4.2.2 Descriptive Statistics
4.2.3 Summary
4.3 Validity Analysis
4.3.1 System Quality
4.3.2 Knowledge Quality
4.3.3 System Use
4.3.4 Individual Learning ................................................. 116
4.3.5 Summary ................................................................. 117

4.4 Reliability Analysis ......................................................... 117
4.4.1 System Quality ......................................................... 118
4.4.2 Knowledge Quality ................................................. 119
4.4.3 System Use ............................................................. 119
4.4.4 Individual Learning ............................................... 120
4.4.5 Summary ................................................................. 120

4.5 Hypothesis Testing ......................................................... 121
4.5.1 Multiple Linear Regression Results for the First Run ..... 124
4.5.2 Multiple Linear Regression Results for the Second Run... 125
4.5.3 Multiple Linear Regression Results for the Third Run..... 126
4.5.4 Nature of Relationship ............................................... 127
4.5.5 Strength of Relationship ........................................... 128
4.5.6 Explanation of Hypothesis 1 ....................................... 129
4.5.7 Explanation of Hypothesis 2 ....................................... 131
4.5.8 Summary ................................................................. 133

Chapter 5 - Conclusion ...................................................... 134
5.1 Introduction .................................................................. 134
5.2 Major Findings ............................................................ 134
5.3 Implication for Practitioners .......................................... 137
5.4 Implication for Research ............................................... 139
5.5 Limitations ................................................................. 140
5.6 Recommendations for Future Research ......................... 141
5.7 Conclusion ...................................................................... 143

Appendix A: Invitation Letters ............................................. 146
Appendix B: Questionnaire .................................................. 153
Appendix C: SPSS Data Listing ............................................. 158
Appendix D: SPSS Outputs ................................................... 165
Reference List ..................................................................... 182
List of Tables

Table 2.1: KMS Applications ............................................................................................................. 23
Table 2.2: List of Research on KMS Usage ........................................................................................ 35
Table 2.3: List of Studies on KMS Effects ......................................................................................... 54
Table 3.1: Measurement Scales ......................................................................................................... 92
Table 3.2: Operational Definitions ................................................................................................... 97
Table 3.3: Adapted and Modify Measures .......................................................................................... 99
Table 4.1: Descriptive Statistics for Gender of Respondents ............................................................. 105
Table 4.2: Descriptive Statistics for Age of Respondents ................................................................. 105
Table 4.3: Descriptive Statistics for Years of Experienced in Using Knowledge Management Systems ................................................................................................................................. 106
Table 4.4: Descriptive Statistics for System Quality, Knowledge Quality, System Use and Individual Learning ........................................................................................................................................................................ 107
Table 4.5: Principal Component Analysis Results for System Quality ............................................. 113
Table 4.6: Item Loading for the Single Factor for System Quality ...................................................... 113
Table 4.7: Principal Component Analysis Results for Knowledge Quality ...................................... 114
Table 4.8: Item Loading for the Single Factor for Knowledge Quality ............................................. 114
Table 4.9: Principal Component Analysis Results for System Use ................................................. 115
Table 4.10: Item Loading for the Single Factor for System Use ......................................................... 115
Table 4.11: Principal Component Analysis Results for Individual Learning .................................. 116
Table 4.12: Item Loading for the Single Factor for Individual Learning ........................................ 116
Table 4.13: Reliability Statistics for System Quality ........................................................................... 118
Table 4.14: Reliability Statistics for Knowledge Quality ..................................................................... 119
Table 4.15: Reliability Statistics for System Use ............................................................................... 119
Table 4.16: Reliability Statistics for Individual Learning ................................................................. 120
Table 4.17: Coefficients Result for First Run ...................................................................................... 124
Table 4.18: Coefficients Result for Second Run ............................................................................... 125
Table 4.19: Coefficients Result for Third Run ................................................................................. 126
Table 4.20: Model Summary for the Strength of Relationship ......................................................... 128
List of Figures

Figure 2.1: DeLone and McLean Model of Information Systems Success .................. 36
Figure 2.2: Technology Acceptance Model (TAM) ............................................. 37
Figure 2.3: SECI Knowledge Creation Model ....................................................... 42
Figure 3.1: Research Model ................................................................................. 61
Figure 3.2: Goodness of Measures .................................................................. 85
Figure 4.1: Histogram of the System Quality Variable ........................................ 108
Figure 4.2: Histogram of the Knowledge Quality Variable .................................. 109
Figure 4.3: Histogram of the System Use Variable ............................................. 110
Figure 4.4: Histogram of the Individual Learning Variable ............................... 111
Figure 4.5: Research Model ............................................................................. 121
Figure 4.6: Relationship between System Quality and Knowledge Quality on Individual Learning ................................................................. 124
Figure 4.7: Relationship between System Quality and Knowledge Quality on System Use ........................................................................................................ 125
Figure 4.8: Relationship between System Quality and Knowledge Quality on Individual Learning through System Use ................................................................. 127
**Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9MP</td>
<td>Ninth Malaysian Plan</td>
</tr>
<tr>
<td>COP</td>
<td>Community of Practice</td>
</tr>
<tr>
<td>e-learning</td>
<td>Electronic Learning</td>
</tr>
<tr>
<td>e-mail</td>
<td>Electronic Mail</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
</tr>
<tr>
<td>IS</td>
<td>Information Systems</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>KM</td>
<td>Knowledge Management</td>
</tr>
<tr>
<td>KMAT</td>
<td>Knowledge Management Assessment Tool</td>
</tr>
<tr>
<td>KMS</td>
<td>Knowledge Management System</td>
</tr>
<tr>
<td>NVP</td>
<td>Malaysian Government National Vision Policy</td>
</tr>
<tr>
<td>SECI</td>
<td>Socialization, Externalization, Combination and Internalization</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for the Social Sciences</td>
</tr>
<tr>
<td>TAM</td>
<td>Technology Acceptance Model</td>
</tr>
<tr>
<td>WWW</td>
<td>World Wide Web</td>
</tr>
</tbody>
</table>
Abstract

Telecommunications is a fast changing and competitive business, not only in Malaysia but also world wide. Due to deregulation in Malaysia, the mobile telephone market is 70 percent saturated and the situation is likely to be worse in the future because of the world economic slowdown. To compete in such a vibrant business environment requires a highly skilled workforce. Because of the world wide demand for such employees, turnover is high.

The intention of this research is to determine if Knowledge Management Systems can be used to retain experienced employees by managing their implicit and explicit knowledge, and promoting individual learning and, eventually, organizational learning. Knowledge has been identified as one of the success factors in maintaining competitive advantage and innovation within an organization.

The literature review has focused on Knowledge Management Systems, organization learning and individual learning. The review indicates that there has been little empirical study in these areas. Some studies have identified system quality and knowledge quality as Knowledge Management System characteristics which have impact on system usage. There is lack of study on the usage of Knowledge Management Systems as software tools that influence individual learning and organizational learning in the Malaysian telecommunications industry, and hence a gap is created for the current research.
Research data was collected using mailed questionnaires which were distributed to staff in 17 telecommunications organizations in Malaysia. One hundred and seven responses were received from 280 distributed questionnaires. The data was analysed using SPSS multiple linear regression to test the research hypotheses and mediation effects.

The research findings support the hypotheses developed for the project: (a) the positive influence of System Quality on Individual Learning is through System Use; and (b) the positive influence of Knowledge Quality on Individual Learning is through System Use.

In practice, this research indicates that Knowledge Management Systems with good System Quality and Knowledge Quality will encourage System Use. Once staff members are motivated to use a Knowledge Management System, there is a direct impact on individual learning obtained through new knowledge and learning new skills, and eventually improved organizational performance.

The research results will be of assistance to practitioners for the planning, designing, implementing, operating and upgrading of Knowledge Management Systems. For academics, the research contributes to the theory of Knowledge Management Systems and individual learning, whereby the variables, instruments and models may be adopted and extended.