

**INFLUENCE OF KNOWLEDGE MANAGEMENT FOR  
EFFECTIVE TECHNOLOGY TRANSFER: AN  
ANALYSIS OF SOFTWARE COMPANIES IN SRI  
LANKA**

P.N.G Perera

(159034B)

Degree of Master of Business Administration in Management of  
Technology

Department of Management of Technology

University of Moratuwa

Sri Lanka

January 2017

**INFLUENCE OF KNOWLEDGE MANAGEMENT FOR  
EFFECTIVE TECHNOLOGY TRANSFER: AN  
ANALYSIS OF SOFTWARE COMPANIES IN SRI  
LANKA**

P.N.G Perera

(159034B)

Supervised by

Dr. G.I.U.S. Perera

The Dissertation was submitted to the Department of technology of the University of Moratuwa in partial fulfilment of the requirement for the Degree of MBA in MOT.

Department of Management of Technology

University of Moratuwa

Sri Lanka

January 2017

## **DECLARATION**

I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

Also, I hereby grant to University of Moratuwa the non-exclusive right to reproduce and distribute my thesis/dissertation, in whole or in part in print, electronic or other medium. I retain the right to use this content in whole or part in future works (such as articles or books).

Signature:

Date:

The above candidate has carried out research for the Masters Dissertation under my supervision.

Signature of the supervisor:

Date:

Dr.G.I.U.S Perera

Senior Lecturer,

Department of Computer Science and Engineering,

University of Moratuwa.

## **ABSTRACT**

This research empirically explores how knowledge management within the organization influences technology transfers effectively. Organizations encounter a huge number of challenges which have to be overcome in the midst of various operational complexities. Knowledge and technology capabilities within the firm demonstrate competitiveness of the organization in the business world.

Knowledge as a strategic resource and support factor, has a significant importance in software development processes, and in software process improvement projects in Sri Lanka. Knowledge management is very important to create and operate a knowledge intensive environment which can facilitate direct access to the well-structured knowledge that can be used to perform various tasks, and improve the accuracy of decisions. According to experts, implementation of knowledge management processes in software development organizations are key success factors in a competitive environment with increasing technological change. New methods and applications of technology developments enable organization to come up with better quality products and services which help organizations achieve high profits. Hence a knowledge management process can be identified as a collection of several factors such as knowledge capture, knowledge creation, knowledge sharing, and effective use of knowledge and innovation. Therefore it is important to understand the contribution of the above mentioned factors towards the effectiveness of the technology transfer process individually.

Technology transfer can be defined as the process of communicating and transmitting technology from one place to another with the intent of enhancing the capabilities of the transferee through absorption and use. Comprehensive literature identifies five factors that moderate the relationship between knowledge management and technology transfer: Communication, Capacity, Commitment, Context and Motivation. This research also analyzes the positive influence of the above mentioned five factors and the relationship between knowledge management factors and technology transfer. The research was carried out as an online survey among software development companies. Quantitative methods such as correlation analysis and regression analysis were used to analyze the data that was gathered from the survey.

In summary the research aims to verify if the above mentioned factors should be used in harmony to achieve success in the technology transfer process. Another conclusion of the research is that Knowledge Management (KM) is a vital part of the operations of any software development organization or practice. Therefore a development of a KM strategy, as well as the development of KM processes is required to carry out technology transfers effectively.

## **ACKNOWLEDGEMENT**

First and foremost, I would like to take this opportunity to express my utmost gratitude to my supervisor, Dr. G.I.U.S Perera for the constant guidance and unwavering support and encouragement given to me during this research study.

I further extend my heartfelt gratitude to Dr. Dinesh Samarasinghe, Mr. I Makalanda, Ms. Gayithri Kuruppu and the rest of the staff at the Department of Management of Technology, University of Moratuwa for sharing their wealth of knowledge during the course of MBA programme and also during this study.

I would also like to thank all the software professionals who participated in this study by responding to the survey. Their valuable contributions to the study will hopefully have a positive impact on knowledge management and technology transfer practices in the Sri Lankan software industry.

I would like to thank my parents and my family for the understanding, love and support given to me throughout my MBA program. Especially I would like to thank you Mahesh Perera, for all the support and encouragement that was given to me during the research study.

Finally my sincere gratitude also goes out to my batch mates of the MBA/MOT programme and friends who were always there when I needed help and advice during the course of the study.

# TABLE OF CONTENTS

DECLARATION .....	i
ABSTRACT.....	ii
ACKNOWLEDGEMENT .....	iii
TABLE OF CONTENTS.....	iv
LIST OF FIGURES .....	vii
LIST OF TABLES .....	viii
LIST OF ABBREVIATIONS.....	xi
CHAPTER ONE .....	1
1. INTRODUCTION.....	1
1.1 Research Background.....	2
1.2 Problem Statement .....	5
1.3 Research Objectives .....	6
1.4 Significance of the Study .....	7
1.5 Research Scope .....	7
1.6 Structure of the Report .....	8
1.7 Summary .....	9
CHAPTER TWO .....	10
2. LITERATURE REVIEW .....	10
2.1 Introduction .....	10
2.2 Knowledge Management.....	10
2.3 Technology Transfer .....	15
2.4 Organizational Factors .....	17
2.4.1 Employee Motivation.....	17
2.4.2 Communication.....	18
2.4.3 Commitment .....	19
2.4.4 Capacity .....	20
2.4.5 Context.....	21
2.5 Summary .....	22
CHAPTER THREE .....	23
3. RESEARCH DESIGN AND RESEARCH METHODOLOGY .....	23
3.1 Introduction .....	23

3.2	Research Method selection.....	23
3.3	Conceptual Framework .....	24
3.4	Hypothesis Development .....	26
3.5	Operationalization of Variables .....	27
3.6	Population and Sampling .....	29
3.7	Method of Data Collection.....	30
3.8	Method of Data Analysis.....	32
3.9	Pilot Study.....	32
3.10	Summary .....	33
CHAPTER FOUR.....		34
4.	DATA ANALYSIS AND HYPOTHESIS TESTING.....	34
4.1	Introduction .....	34
4.2	Frequency of the Sample.....	34
4.3	Validity of Measure.....	37
4.4	Internal Consistency of Measure.....	39
4.5	Demographic of the Sample.....	40
4.5.1	Gender.....	40
4.5.2	Age.....	40
4.5.3	Level of Education.....	41
4.5.4	Job Role .....	42
4.5.5	Professional Experience.....	43
4.5.6	Number of Employees in the Organization .....	44
4.6	Descriptive Statistical Analyze .....	45
4.7	Current Status of Sri Lankan Software Organizations .....	47
4.8	Inferential Analysis .....	49
4.8.1	Correlation Analysis .....	49
4.8.1.1	Ha Hypothesis Testing.....	49
4.8.1.2	Hb Hypothesis Testing .....	51
4.8.2	Regression Analysis.....	53
4.8.2.1	Simple regression .....	53
4.8.2.1.1	The Relationship between Knowledge Capture and Technology Transfer	53
4.8.2.1.2	The Relationship between Knowledge Create and Technology Transfer	55
4.8.2.1.3	The Relationship between Knowledge Share and Technology Transfer	56

4.8.2.1.4	The Relationship between Effective use of Knowledge and Technology Transfer	57
4.8.2.1.5	The Relationship between Innovation and Technology Transfer	59
4.8.2.1.6	Relationship between Knowledge Management and Technology Transfer	60
4.8.2.2	Multiple Regression	62
4.8.2.2.1	Analysis to Compute the Moderator Effect of Employee Motivation on Knowledge Management and Technology Transfer	62
4.8.2.2.2	Analysis to Compute the Moderator Effect of Communication on Knowledge Management and Technology Transfer	64
4.8.2.2.3	Analysis to Compute the Moderator Effect of Capacity on Knowledge Management and Technology Transfer	66
4.8.2.2.4	Analysis to Compute the Moderator Effect of Commitment on Knowledge Management and Technology Transfer	68
4.8.2.2.5	Analysis to Compute the Moderator Effect of Context on Knowledge Management and Technology Transfer	70
4.8.2.2.6	Analysis to Compute the Moderator Effect of Organizational Factors on Knowledge Management and Technology Transfer	72
4.9	Hypothesis Testing	74
4.10	Summary	77
CHAPTER FIVE		78
5.	DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS	78
5.1	Introduction	78
5.2	Discussion and Research Findings	78
5.2.1	Summary Results of Hypotheses Testing	79
5.2.2	Findings with Regard to the Research Objectives	81
5.3	Recommendations	86
5.4	Study Limitations	88
5.5	Future Work	88
5.6	Concluding Remarks	89
6.	REFERENCES	i
APPENDIX I		i
APPENDIX II		iv
APPENDIX III		xx



## LIST OF FIGURES

Figure 1: Process of Knowledge Management .....	12
Figure 2: Knowledge Transfer Process .....	13
Figure 3: Research Method .....	23
Figure 4: Conceptual Framework .....	25
Figure 5: Categorization by Gender .....	40
Figure 6: Age Distribution of the Respondents .....	41
Figure 7: Level of Education .....	42
Figure 8: Occupation Category .....	43
Figure 9: Professional Experience .....	43
Figure 10: Number of Employees in Organization.....	44
Figure 11: Current Situation in Sri Lanka for Knowledge Management.....	47

## LIST OF TABLES

Table 1: Operationalize Table.....	28
Table 2: Questionnaire Summary .....	31
Table 3: Frequency Statistics Summary .....	34
Table 4: Detail Frequency Statistics for Demographics of Sample.....	35
Table 5: Frequency Analysis for Likert Scale Questions .....	36
Table 6: Validity of Measures.....	38
Table 7: Reliability of Measures.....	39
Table 8: Descriptive Statistics for Independent variables & Dependent variable .....	45
Table 9: Descriptive Statistics for Moderator variables .....	45
Table 10: Statistics of Current Level .....	48
Table 11: Correlations for Ha Hypotheses.....	49
Table 12: Correlations for Hb Hypotheses .....	51
Table 13: Model Summary Knowledge Capture and Technology Transfer.....	53
Table 14: ANOVA Table for Knowledge Capture and Technology Transfer.....	53
Table 15: Coefficient for Knowledge Capture and Technology Transfer .....	54
Table 16: Model Summary for Knowledge Create and Technology Transfer .....	55
Table 17: ANOVA Table for Knowledge Create and Technology Transfer.....	55
Table 18: Coefficient for Knowledge Create and Technology Transfer .....	55
Table 19: Model Summary for Knowledge Share and Technology Transfer.....	56
Table 20: ANOVA Table for Knowledge Share and Technology Transfer .....	56
Table 21: Coefficient for Knowledge Share and Technology Transfer.....	57
Table 22: Model Summary for Effective use of Knowledge and Technology Transfer .....	57
Table 23: ANOVA Table for Effective use of Knowledge and Technology Transfer.....	58

Table 24: Coefficient for Effective use of Knowledge and Technology Transfer .....	59
Table 25: Model Summary for Innovation and Technology Transfer .....	59
Table 26: ANOVA Table for Innovation and Technology Transfer .....	59
Table 27: Coefficient for Innovation and Technology Transfer .....	60
Table 28: Model Summary for Knowledge Management and Technology Transfer .....	60
Table 29: ANOVA Table for Knowledge Management and Technology Transfer .....	61
Table 30: Coefficient for Knowledge Management and Technology Transfer .....	61
Table 31: Model Summary for moderator effect of Emp Motivation .....	62
Table 32: ANOVA Table for moderator effect of Emp Motivation .....	63
Table 33: Coefficient for moderator effect of Emp Motivation .....	63
Table 34: Model Summary for moderator effect of Communication .....	64
Table 35: ANOVA Table for moderator effect of Communication .....	65
Table 36: Coefficient for moderator effect of Communication .....	65
Table 37: Model Summary for moderator effect of Capacity.....	66
Table 38: ANOVA Table for moderator effect of Capacity .....	66
Table 39: Coefficient for moderator effect of Capacity.....	67
Table 40: Model Summary for moderator effect of Commitment.....	68
Table 41: ANOVA Table for moderator effect of Commitment .....	69
Table 42: Coefficient for moderator effect of Commitment.....	69
Table 43: Model Summary for moderator effect of Context .....	70
Table 44: ANOVA Table for moderator effect of Context.....	70
Table 45: Coefficient for moderator effect of Context .....	71
Table 46: Model Summary for moderator effect of Organizational Factors .....	72
Table 47: ANOVA Table for moderator effect of Organizational Factors.....	72

Table 48: Coefficient for moderator effect of Organizational Factors .....	73
Table 49: Summary of Hypotheses Testing .....	80
Table 50: Summary for Object One Testing .....	81
Table 51: Summary for Objective Two Testing .....	82
Table 52: Summary for Objective Three Testing .....	84

## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Description</b>
KM	Knowledge Management
IT	Information Technology
SLASSCOM	Sri Lanka Association of Software and Service Companies
SPSS	Statistical Package for the Social Sciences
TT	Technology Transfer
BPM	Business Process Management
EM	Employee Motivation
COMMU	Communication
CAPA	Capacity
COMMIT	Commitment
CONT	Context
ORG EFAC	Organizational Environment Factors