A FRAMEWORK FOR MEASURING KNOWLEDGE TRANSFER PROCESS IN
E-LEARNING ENVIRONMENT

By

SALFARINA BT ABDULLAH

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfilment of the Requirement for the Degree of Master of Science

June 2006
I want to dedicate this thesis to my dearest family, especially my beloved husband, Mr. Sazly Anuar and my dearest son, Iman Raziq and lovely daughter, Iman Nuryasmin for their support and love throughout my studies.
Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

A FRAMEWORK FOR MEASURING KNOWLEDGE TRANSFER PROCESS IN E-LEARNING ENVIRONMENT

By

SALFARINA BT ABDULLAH

June 2006

Chairman:  Associate Professor Haji Mohd Hasan bin Selamat

Faculty:    Computer Science and Information Technology

Efficiently transferring knowledge has proven to be a difficult challenge as well as to get people to use the knowledge (Seidman and McCauley, 2005). And as a part of ensuring that the knowledge transfer process is effectively conducted, there is a strong needs to measure its effectiveness. Although research in this area has been conducted in many settings, unfortunately less attention has been paid to examine the process in the virtual environment (Sarker, 2003), including the E-Learning. This may be due to the fact that lack of research has been found so far, which addressed a formal or specific guideline (or framework) for measuring the effectiveness of knowledge transfer process in E-Learning. As stated by Tillquist and Rodgers (2002), the existing measures often appear confusing and may not provide a satisfactory description of the process’s effectiveness. Looking at the huge influence that E-Learning brought to Knowledge Transfer Process has motivates the attempt for developing the effectiveness measurement framework for knowledge transfer process in E-Learning environment. This framework is inspired from the E-Faculty, chosen as the case of this
research. It is an E-Learning system developed by FSKTM, UPM as complement to the traditional classroom.

This attempt however, sets its main concentration on proposing the appropriate measurement attributes for three key factors towards effective knowledge transfer process, which are knowledge to be transferred, knowledge receiver and knowledge transfer medium. This research applied the survey method in order to validate the proposed framework. The data was later analyzed using statistical analysis. Five out of eight developed hypotheses were evidently supported while three others were not supported. Consisting of three key factors to effective knowledge transfer process, this framework also provides the recommended measurement attributes for each key factor.
Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

RANGKA KERJA PENGUKURAN UNTUK MENGUKUR PROSES PEMINDAHAN ILMU PENGETAHUAN DI DALAM PERSEKITARAN E-PEMBELAJARAN

Oleh

SALFARINA BT ABDULLAH

Jun 2006

Pengerusi: Profesor Madya Haji Mohd Hasan bin Selamat
Fakulti: Sains Komputer dan Teknologi Maklumat

Pemindahan ilmu pengetahuan yang efisien telah terbukti sebagai suatu cabaran sukar selain daripada membuatkan individu-individu menggunakan ilmu pengetahuan (Seidman and McCauley, 2005). Dan sebagai sebahagian daripada membuktikan bahawa proses pemindahan ilmu pengetahuan dilakukan secara efektif, maka perlunya pengukuran ke atas keberkesanan proses tersebut. Walaupun kajian di dalam bidang ini telah dilaksanakan di dalam pelbagai keadaan, malangnya hanya sedikit perhatian yang diberikan terhadap proses di dalam persekitaran maya (Sarker, 2003), termasuklah e-pembelajaran. Ini mungkin disebabkan kurangnya kajian yang ditemui sehingga kini yang menyediakan suatu panduan (atau rangka kerja pengukuran) yang formal atau khusus bagi mengukur keberkesanan proses pemindahan ilmu pengetahuan di dalam e-pembelajaran. Seperti yang pernah dikatakan oleh Tillquist dan Rodgers (2002), pengukuran yang ada kerap kali mengelirukan dan berkemungkinan tidak dapat memberi gambaran yang memuaskan mengenai keberkesanan sesuatu proses.
Melihat kepada pengaruh besar yang dibawa oleh e-pembelajaran terhadap proses pemindahan ilmu pengetahuan, telah memberi motivasi dalam usaha untuk membangunkan suatu rangka kerja pengukuran keberkesanan bagi proses permindahan ilmu pengetahuan di dalam persekitaran e-pembelajaran. Rangka kerja ini diilhamkan daripada E-Fakulti, yang dipilih sebagai kes kajian. Ia merupakan sebuah sistem e-pembelajaran yang dibangunkan oleh FSKTM, UPM sebagai pelengkap kepada kelas tradisional.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank Allah for providing me guidance, strength, and courage to complete this thesis. I also like to convey my greatest gratitude to my dearest supervisor, Associate Professor Haji Mohd Hasan bin Selamat for all his continuous and invaluable advices, guidance, supports and encouragement in completing my research.

I would also like to express my gratitude to my supervisory committee member, Ms. Wan Nurhayati bt Wan Ab Rahman for guiding me throughout the completion of this research. I also want to thank Dr. Rusli bin Abdullah, Ms. Ainita bt Ban and Mr Mohd Farid bin Jaafar for their valuable personal comments during the preliminary and analysis stage of this research. Next, my gratitude goes to dear friends and colleagues who ever willing to listen to, help and support whenever I needed them. Many thanks to others not mentioned here.

My special thanks to my family in Kuala Lumpur especially to my mother, Ms Jamilah Mahfar and my father, Mr. Abdullah Taman for the encouragement, sacrifice and meaningful motivation throughout the journey of my research.

Last but not least, my deepest appreciation goes to the most important people in my life, my husband Sazly bin Anuar, my son, Iman Raziq and daughter, Iman Nuryasmin. My children have been my source of inspiration
all through. Thanks to my husband, who has been very loving, caring, understanding, and support that he provided throughout this research.
I certify that an Examination Committee has met on 29 June 2006 to conduct the final examination of Salfarina binti Abdullah on her Master of Science thesis entitled “A Framework for Measuring Knowledge Transfer Process in E-Learning Environment” in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

**Azmi Jaafar, PhD**  
Associate Professor  
Faculty of Computer Science and Information Technology  
Universiti Putra Malaysia  
(Chairman)

**Rusli Abdullah, PhD**  
Lecturer  
Faculty of Computer Science and Information Technology  
Universiti Putra Malaysia  
(Internal examiner)

**Md. Nasir Sulaiman, PhD**  
Associate Professor  
Faculty of Computer Science and Information Technology  
Universiti Putra Malaysia  
(Internal examiner)

**Husniyati Hussin, PhD**  
Associate Professor  
Kulliyah of Information and Communication Technology  
International Islamic University of Malaysia  
(External examiner)

---

**HASANAH MOHD. GHAZALI, PhD**  
Professor/Deputy Dean  
School of Graduate Studies  
Universiti Putra Malaysia

Date:
This thesis submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of Supervisory Committee as follows:

Haji Mohd Hasan bin Selamat  
Associate Professor  
Faculty of Computer Science and Information Technology  
Universiti Putra Malaysia  
(Chairman)

Wan Nurhayati bt Wan Ab Rahman  
Lecturer  
Faculty of Computer Science and Information Technology  
Universiti Putra Malaysia  
(Member)

AINI IDERIS, PhD  
Professor/Dean  
School of Graduate Studies  
Universiti Putra Malaysia  

Date:
DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations, which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.

SALFARINA BT ABDULLAH

Date:
TABLE OF CONTENTS

DEDICATION ii
ABSTRACT iii
ABSTRAK v
ACKNOWLEDGEMENTS vii
APPROVAL ix
DECLARATION xi
LIST OF TABLES xv
LIST OF FIGURES xvii
ABBREVIATIONS xviii

CHAPTER

1 INTRODUCTION
1.1 Introduction 1
1.2 Problem Statement 3
1.3 Research Objectives 4
1.4 Scopes and Limitations 4
1.5 Definition of Terms 5
1.6 Research Methodology 6
1.7 Research Contribution 6
1.8 Thesis Organization 7

2 LITERATURE REVIEW
Knowledge 9
KTP In KM 10
The Measurement Frameworks of KM Initiatives 12
Measurement Approaches For KTP in KM 15
E-Learning as A Platform For KTP 17
Definition of E-Learning 17
E-Learning and KTP 18
The E-Faculty of UPM 20
Chapter Summary 22

3 RESEARCH FRAMEWORK AND HYPOTHESES
Introduction 23
The Derivation of A Framework For Measuring KTP In E-Learning:
A Case of E-Faculty of UPM 23
The SECI Model 24
The Pull Model of Knowledge Transfer 25
The E-Learning Framework 26
3.3 The Model of KTP in E-Faculty 31
3.3.1 Key Factors 32
3.4 Measurement Attributes 33
3.4.1 Factor 1: Knowledge to be transferred 34
3.4.2 Factor 2: Knowledge receiver 36
3.4.3 Factor 3: Knowledge transfer medium 38
3.5 Hypotheses Formulation 40
3.6 Chapter Summary 42

4 RESEARCH METHODOLOGY
4.1 Research Design 43
4.1.1 Qualitative and Quantitative Approach 43

Descriptive Quantitative Approach 44
4.1.2 Sampling Process 47
The Sample 47
The Sampling Method 48
The Sampling Size 48
4.1.3 The Questionnaire Design 49
Measurement of Variables 50
Pilot Study 51
Statistical Technique 52
4.1.4 Data Analysis 53
4.2 Chapter Summary 53

5 RESULTS AND DISCUSSION
4.3 Introduction 55
4.4 Section One: The Demographic Profile 55
4.5 Descriptive Analysis on The Measurement Attributes 57
4.5.1 Knowledge to be transferred factor 57
4.5.2 Knowledge receiver factor 58
4.5.3 Knowledge transfer medium factor 60
4.6 Inferential Analysis on The Measurement Attributes 60
5.5 The Hypotheses Testing 62
5.5.1 Knowledge to be transferred factor 63
Quality Content of the knowledge document 63
Reliability of the knowledge document 64
Timeliness of the knowledge document 65
Accuracy of the knowledge document 66
5.5.2 Knowledge receiver factor 68
Absorptive Capacity 68
Perceived Benefit 69
Self-Motivation 70
5.5.3 Knowledge transfer medium factor 71
5.6 The Framework For Measuring KTP in E-Learning Environment: A Case of E-Faculty of UPM 72
6 CONCLUSION AND FUTURE WORKS
   6.1 Overview 75
   6.2 Contributions and Implications 76
   6.3 Limitations and Suggestions for future research 77

REFERENCES 79

APPENDICES 89

BIODATA OF THE AUTHOR 105