UNIVERSITI TEKNOLOGI MARA

OVERVIEW OF MEDICAL ERROR IN MEDICAL ENVIRONMENT BASED HEALTH INFORMATION SYSTEM: A CASE STUDY IN UiTM HEALTH CENTRE

HELMI SHAHRUL JOHARI

IT Project submitted in partial fulfilment
of the requirements for the degree of

Master of Science (Information Technology)

Faculty of Computer and Mathematical Sciences

July 2013

ABSTRACT

The rapid growth of information technology has been realized as a momentum to support decision makers to gain competitive business advantages. Today, the information technology has widely utilized and accepted by the clinical agencies who believe that it become as a support to assist in clinical practice process. It has assist clinicians to make optimal patient care decisions that relate with their clinical practice which later then affect patient care quality. However, it still becomes a challenge of health professional to enhance the healthcare service delivery and avoid potential error. The situation of medical error incidents occur at any stage of the medical process. Previous studies found that there were elements that contribute to medical errors after implementation the new system. These elements grouped accordingly into four dimensions/ factors named; individual, process, technology, and organization. Further, qualitative researches using case study, in-depth interview, observation and content analysis was used intended to discover the error for the medical informatics and guided by a conceptual model of medical informatics error. The interview method can track in-depth information around the topic and allow to probe and asked follow up questions for the specific area given. Observation attempts to describe and explain why the situation still exist, causes and create temporary solution due to implication of clinical information system. Content analysis provides an understanding of complex issue in medical process. The result from this studies found that all dimensions that contribute to medical errors in health information system are proven with its specific elements. This paper will focus to identify the situation of medical error after the implementation of Health Information Systems in UiTM Health Centre, Malaysia. Therefore, by understanding it, we can make sure the future developed technology will meet real users' needs, expectation and indirectly improve health service delivery.

ACKNOWLEDGEMENT

I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organizations. I would like to extend my sincere thanks to all of them.

I am highly indebted to Mr. Mohamad Norzamani bin Sahroni for his guidance and constant supervision as well as for providing necessary information regarding the project and also for his support in completing the project. The supervision and support that he gave truly help the progression and smoothness of the project. The co-operation is much indeed appreciated.

My grateful thanks also go to Dr. Siti Noor Hafifah Abu Bakar, Mr. Muhammad Fai'z Hussin, Ms. Khairina Hj. Ab. Jabar, Ms. Ainon Hj. Ahmad and Ms. Nor Azlina Nawawi. A big contribution and hard worked from all of you during the study is very great indeed. All projects during the course would be nothing without the enthusiasm from all of you. Not forget, great appreciation go to the rest of UiTM Health Centre staff that help me from time to time during the project.

I would like to express my special gratitude and thanks to all Information Technology lectures of CS770 year of 2013 for giving me such attention and time. Besides, this course makes me realized the value of working together as a team and as a new experience in this program, which challenges us every minute.

Last but not least I wish to avail myself of this opportunity, express a sense of gratitude towards my wife Ms. Khadijah Khairuddin & family members for their manual support, strength, help and for everything in completion of this project.

TABLE OF CONTENTS

		Page
STUDENT'S DECLARATION		**i**
ABSTRACT		**ii**
ACKNOWLEDGEMENT		**iii**
TABLE OF CONTENTS		**iv**
LIST OF TABLES		**vii**
LIST OF FIGURES		**viii**
CHAPTER ONE: INTRODUCTION		
1.1.	Introduction	1
1.2.	Research Background	2
1.3.	Problem statement	4
1.4.	Aim	5
1.5.	Research objective	5
1.6.	Scope	5
1.7.	Research significant	7
1.8.	Report Outline	7
CHAPTER TWO: LITERATURE REVIEW		
2.1.	Introduction	8
2.2.	Medical Errors in Health Information System	10
2.3.	Situation of Medical Informatics Error	13
	2.3.1. Eliminated	13
	2.3.2. Decreased	16
	2.3.3. Unchanged	17
	2.3.4. Sprout	17
2.4.	Type of Medical Informatics Error	19
2.5.	Stage of Error Incident	21
2.6.	Human Involvement in Incidents of Medical Informatics Errors	23

2.7. The Cause of Medical Informatics Error 24
2.7.1. Previous findings of content analysis 24
2.7.1.1. Leavitt Model Adaptation 25
2.7.1.1.1. Individual 27
2.7.1.1.2. Process 28
2.7.1.1.3. Technology 29
2.7.1.1.4. Organization 31
2.8. Constraints of medical Informatics errors 35
2.8.1. Individual 35
2.8.2. Process 35
2.8.3. Technology 37
2.8.4. Organization 38
2.9. Background of Theories 41
2.9.1. Medical Informatics Error Model 44
2.9.2. The Proposed Conceptual Model of Medical Informatics Error 48
2.9.2.1. Individual 49
2.9.2.2. Process 49
2.9.2.3. Technology 49
2.9.2.4. Organization 50
2.10. Summary 53

CHAPTER THREE: METHODOLOGY

3.1. Material and Method 55
3.2. Research Design 56
3.3. Case Study 57
3.4. Interview 58
3.5. Observation 59
3.6. Document Review / Content Analysis 60
3.7. Instrument 60
3.8. Plans for Data Analysis 61
3.9. Summary 61