UNIVERSITI TEKNOLOGI MARA

TECHNOLOGY FORESIGHT METHODOLOGIES FOR SENIOR CITIZENS

NORHIDAYAH BINTI KAMARUDIN

Report submitted in partial fulfillment of the requirements
for the degree of

Master of Science (Information Technology)

Faculty of Computer and Mathematical Sciences

July 2014

ABSTRACT

In recent years, there has been a sharp increase in the number of senior citizens worldwide and more old people are alive nowadays than the last time. In some extent, the ascending numbers of this population will definitely lead to the need of extra care to support and facilitate their life. Thus, the development of new technologies could be considered as one of the relevant steps to help senior citizens in performing their daily activities. Nevertheless, the technology developed for senior citizens is differ from the one developed for children or adults in term of scope, design, or functions since the technology designed for elderly is based on certain level of agreeable elements, which aligned with the characteristics of this population. Therefore, in order to identify the possible future technology for elderly, an appropriate technology foresight methodology should be implemented. The use of appropriate technology foresight methodology could helps researchers to conduct the research effectively and ensure that they are in the right path throughout the overall research process, which in turn would helps them to come out with several possible technologies for senior citizens in future. Hence, this research intends to explore various technology foresight methodologies in order to come out with a set of suggested methods for foresight study, particularly in term of elderly. Basically, this research is grounded on qualitative interpretive research, whereby it use content analysis approach to explore and gather vast amount of information related to technology foresight methods. In this research, 33 foresight methods have been selected and each method is discussed comprehensively, before they are being classified based on the four types of K-capabilities (expertise-, creativity-, interaction-, and evidence-based). Those categorized methods, will be then detailed down based on the context of elderly in Malaysia. Eventually, the information gathered will be analyzed and converge in order to enable the researcher to come out with relevance technology foresight methods for senior citizen in Malaysia. Consequently, it is hoped that the methods suggested can be used to help researchers and industrial people to conduct foresight study effectively and come out with new design of technologies to enhance living standard among the senior citizens in Malaysia.

ACKNOWLEDGEMENT

In the name of Allah, The Most Gracious and The Most Merciful,

First and foremost, I would like to express my gratitude towards Allah S.W.T, the Most Generous and Merciful, for give His blessings and guidance for me in facing all the challenges throughout this research.

Sincere appreciation is given to my supervisor, Associate Professor Dr. Haryani Haron for her patience supervision, advice and guidance from early stage of this research. Above all and the most needed, she provided me constant encouragement and support in various ways. To my coordinator, Dr. Jasber Kaur, many thanks for your great reminder and keeping me focused on track in this research. My greatest gratitude also goes to my beloved parents, Kamarudin Yusof and Norrizan Ismail for their unbelievable support, trust and prayers.

A lot of gratitude and appreciation also goes to all supportive lecturers that help me a lot from various aspects in order to accomplishing the objectives of this project. Not to be left behind, all my classmates who have contribute a lot by giving constructive criticisms and creative suggestions and all respondents for the great support and helpful feedback to this research. Thank you guys for being there for me in every condition and making this happen.

TABLE OF CONTENT

CONTENT		PAGE
STUDENT'S DECLARATION		i
ABSTRACT		ii
ACKNOWLEDGEMENT		iii
TABLE OF CONTENTS		iv
LIST OF FIGURES		viii
LIST OF TABLES		x
CHAPTER 1: INTRODUCTION		1
1.1	Introduction	1
1.2	Research Overview	1
1.3	Problem Statement	4
1.4	Research Questions	4
1.5	Research Objectives	5
1.6	Research Scope	5
1.7	Research Significance	6
1.8	Summary	6
CHAPTER 2: LITERATURE REVIEW		7
2.1	Introduction	7
2.2	Technology Foresight	7
	2.2.1 Definition of Technology Foresight	8
	2.2.2 Foresight: The Process, Phases and Approaches	9
2.3	Technology Foresight Methodology	13
	2.3.1 Classification of Methods by Type of Technique	13
	2.3.2 Classification of Methods by Type of Approaches	16
	2.3.3 Classification of Methods by Type of Knowledge Source	18
2.4	Senior Citizens	20
	2.4.1 Age Definition for Senior Citizen	20

2.4.2 Limitation among Senior Citizens 21
2.5 Technology Foresight and Senior Citizens in Malaysia 23
2.6 The Conceptual Framework of the Study 26
2.7 Summary 27

CHAPTER 3: RESEARCH METHODOLOGY 29
3.1 Introduction 29
3.2 Research Paradigm 29
3.3 Research Approach 31
3.4 Strategy of Inquiry 32
3.5 Research Design 33
3.4.1 Phase 1: Research Planning and Literature Review 34
3.4.2 Phase 2: Pilot Data Collection 37
3.4.3 Phase 3: Data Collection 39
3.4.4 Phase 4: Data Analysis 41
3.6 Summary 43

CHAPTER 4: ANALYSIS AND DISCUSSION OF FINDINGS 44
4.1 Introduction 44
4.2 Analysis of Technology Foresight Methodologies 44
4.2.1 Qualitative Methods 45
4.2.1.1 Backcasting 45
4.2.1.2 Brainstorming 50
4.2.1.3 Citizen Panels 54
4.2.1.4 Conferences/Workshops 57
4.2.1.5 Essay/Scenario Writing 58
4.2.1.6 Expert Panels 62
4.2.1.7 Genius Forecasting 65
4.2.1.8 Interviews 68
4.2.1.9 Literature Review (LR) 70
4.2.1.10 Morphological Analysis 72
4.2.1.11 Relevance Trees/Logic Chart 75