

Universiti Teknologi MARA

**Computer Technology For People With
Visual Impairment: A Study For
Malaysian Association For The Blind
(MAB)**

Roziana bt Tamerin

Thesis submitted in fulfillment of the requirements for
Bachelor of Science (Hons) Business Computing
Faculty of Information Technology And
Quantitative Science

May 2007

DECLARATION

I certify that this thesis and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline

MAY 31, 2007

ROZIANA BT TAMERIN

2005617937

TABLE OF CONTENTS

| CONTENTS | PAGE |
|--|-------------|
| ACKNOWLEDGEMENTS | iii |
| LIST OF TABLES | ix |
| LIST OF FIGURES | x |
| LIST OF PLATES | xiii |
| ABSTRACT | xiv |
| | |
| CHAPTER 1 – INTRODUCTION | |
| 1.0 Introduction | 1 |
| 1.1 Research Background | 4 |
| 1.1.1 Adaptive or Assistive Computing Technology | 5 |
| 1.1.2 Adaptive Computing Technology Products | 6 |
| 1.1.3 Braille | 8 |
| 1.2 Problem Description | 9 |
| 1.3 Objectives | 10 |
| 1.4 Significance of The Research | 11 |
| 1.5 Approach and Methodology | 12 |
| 1.6 Limitations | 13 |
| 1.7 Overview of the Report | 14 |
| | |
| CHAPTER 2 – LITERATURE REVIEW | |
| 2.0 Introduction | 15 |
| 2.1 Terminology | 15 |
| 2.1.1 Definition of Computer | 15 |
| 2.1.2 Definition of Technology | 16 |
| 2.2 Visual Impairment | 17 |

| | | |
|-------|--|----|
| 2.3 | Braille | 20 |
| 2.4 | Computers for Visually Impaired People | 22 |
| 2.4.1 | The Dynamic Keyboard | 24 |
| 2.4.2 | Adapting Direct Manipulation For Blind Users | 26 |
| 2.4.3 | Haptics In Computer Interfaces For Blind People | 28 |
| 2.5 | Adaptive or Assistive Technology | 29 |
| 2.5.1 | Screen Readers for Blind Users | 31 |
| 2.5.2 | Braille Display | 33 |
| 2.5.3 | Scanner and Optical Character Recognition (OCR) Software Braille Embosser or Braille Printer | 34 |
| 2.5.4 | Braille Embosser or Braille Printer | 36 |
| 2.6 | Summary | 38 |

CHAPTER 3 – RESEARCH APPROACH AND METHODOLOGY

| | | |
|----------|-----------------------------------|----|
| 3.0 | Introduction | 39 |
| 3.1 | The Research Approach | 39 |
| 3.2 | The Research Model | 41 |
| 3.2.1 | Technology Acceptance Model (TAM) | 41 |
| 3.2.1[a] | Perceived Usefulness (PU) | 42 |
| 3.2.1[b] | Perceived Ease-of-Use (PEOU) | 43 |
| 3.2.1[c] | Perceived Credibility (PC) | 43 |
| 3.2.1[d] | Behavioral Intention To Use | 43 |
| 3.3 | The Methods of Data Collection | 44 |
| 3.3.1 | Primary Data | 45 |
| 3.3.1[a] | Questionnaire | 46 |
| 3.3.1[b] | Interviews | 46 |
| 3.3.2 | Secondary Data | 48 |
| 3.3.2[a] | Online Journals and Articles | 48 |
| 3.3.2[b] | Previous Thesis | 48 |

ABSTRACT

People with visual impairment face difficulties in accessing computer. They need a specific devices or assistive technology that enables them to access computer. There are many assistive technologies that had been introduced mostly at First World country. For example, assistive technology for visual impairment and sighted impaired people such as computer screen readers, screen magnifiers, Braille displays, voice input software, Braille embossers or Braille printer, stand alone products and so on. This kind of assistive technology have given such a big contribution for visual impairment and sighted impaired people. It is because, through this assistive technology, they can experience a growth of technology like normal people and thus can increase their computer literacy. So this thesis purposely will identify the characteristics of computer equipments used and also the visually impaired people acceptance towards these technologies. For this thesis, the scope for the research will focus on the Malaysian Association for The Blind (MAB). Questionnaire distributed and interview sessions conducted will produce significant results and findings towards achieving the objectives of this thesis.