Government e-services delivery requires citizens awareness: the case of Brunei Darussalam

This item was submitted to Loughborough University's Institutional Repository by the/an author.

Additional Information:

- A Doctoral Thesis. Submitted in partial fulfillment of the requirements for the award of Doctor of Philosophy of Loughborough University.

Metadata Record: https://dspace.lboro.ac.uk/2134/9447

Publisher: © Adam Jait

Please cite the published version.
This item was submitted to Loughborough’s Institutional Repository (https://dspace.lboro.ac.uk/) by the author and is made available under the following Creative Commons Licence conditions.

For the full text of this licence, please go to:
http://creativecommons.org/licenses/by-nc-nd/2.5/
GOVERNMENT E-SERVICES DELIVERY REQUIRES CITIZENS’ AWARENESS: THE CASE OF BRUNEI DARUSSALAM

A doctoral thesis submitted in partial fulfillment of the requirements For the award of Doctor of Philosophy of Loughborough University

By

Adam Jait
Department of Computer Science
Loughborough University

Supervisor

Professor Ray Dawson

February, 2012

© by Adam Jait, 2012
ACKNOWLEDGEMENT

First of all, I would like to thank Professor Ray Dawson, my supervisor, for his invaluable advice, guidance and on-going support for the completion of this PhD research study. My sincere thanks also go to Dr Christian Dawson and Dr Tom Jackson for reviewing and advising me in my research study. Their advice have guided and strengthened my research work. My gratitude and appreciation goes to the Civil Services Department of Brunei and the Brunei High Commission in London for the sponsorship of my study to the United Kingdom.

My gratitude and special thanks to my family especially my caring wife, Mimi Hafiza, my two sons, Irfan Hadeef and Adzwar Danish, and my two daughters, Irdina Batrisyia and Alya Firzana, my father in-law, Mohd Jun and mother in-law, Maimoon for their inspiration, moral support, patience, encouragement, understanding and love that which I value so much throughout the period of my study.

I would like to acknowledge and convey my thanks and appreciation to my friends at Brunei, Hj Azhar Hj Ahmad, Hj Harun Hj Junid, and Dr Abdullah Hj Lampoh, and at Loughborough University, Dr Sarajul, Dr Mariam, Dr Ayong Mahani, Dr Syazli and Dr Farie for providing me with the valuable information that is needed for this study.

I would also like to thank my contact persons in every department who have helped me to distribute and collect my questionnaires. Also my thanks to my village community of Penanjong, Brunei Citizens and the government of Brunei civil services of all departments who have responded to my questionnaires, my interviewees, my discussion groups and everyone who made this study possible. Their responses have been of great value in this research study.

Always in my memory, my late father, Haji Jait bin Abdullah and my late mother, Hajjah Siti Rahmat binti Tali, I love you both so much.
ABSTRACT

This study examines citizens’ awareness and usage of government e-services. Governments use Web-based Internet applications to enhance their citizens’ access to government services. However, in a case study in Brunei Darussalam, it was found that the government’s initiative in providing e-services in last few years has not been as successful as it could have been as the services have not been citizen-centric. This was due to the availability of e-services being unknown amongst the citizens and that a silo-based approach existed for each government ministry. One notable finding was that although the ICT literacy of Brunei citizens has rapidly improved, this has not been reflected in the citizens’ interaction with government.

There are several challenges for citizens’ awareness and use of government e-services that occur on e-government initiatives. Failure in managing such problems, results in a high probability of these services becoming a ‘white elephant’, with inefficiency, wastefulness and cost overruns on e-government projects. E-government management agencies still do not have an organized citizens’ awareness strategy approach to managing knowledge in e-government initiatives. The proposed Government e-Services Citizens Awareness Strategy (GeS-CAS) framework, incorporating communication, management and education strategies, can effectively be used to enable e-government agencies to deal with e-government projects problems and risks in an organised and efficient way. It is concluded that e-government initiatives management can be improved if the knowledge dimensions of the problems are well understood and are conveyed to the right people, at the right time and the right place, and are appropriately managed.

This research has developed an integrated citizens’ awareness strategy Knowledge Management framework that provides a structured approach to achieving this which is easy to understand and put in to practice by e-government agencies, and can be used to solve citizen awareness problems, explore opportunities and make decisions.

**Keywords** - E-Government Initiatives, e-Services, Communication & Management Strategy, Citizen Awareness Framework, Knowledge Management
PUBLICATIONS

Conference Publications


# TABLE OF CONTENTS

ACKNOWLEDGEMENT ........................................................................................................ I

ABSTRACT .......................................................................................................................... II

PUBLICATIONS ..................................................................................................................... III

TABLE OF CONTENTS ......................................................................................................... IV

LIST OF FIGURES ................................................................................................................. XI

LIST OF TABLES .................................................................................................................. XIII

LIST OF ABBREVIATIONS .................................................................................................. XV

CHAPTER 1 ........................................................................................................................... 1

1.0 INTRODUCTION ........................................................................................................... 1

1.1 General Introduction ..................................................................................................... 1

1.2 Research Background ................................................................................................. 1

1.3 Justification for the Research .................................................................................... 3

1.4 Research Questions ..................................................................................................... 5

1.5 Research Aims and Objectives .................................................................................... 5

1.6 Research Scope ........................................................................................................... 6

1.7 Significance of the Study ............................................................................................ 8

1.8 Overview of Thesis Structure ..................................................................................... 9

1.9 Conclusion .................................................................................................................. 13

CHAPTER 2 .......................................................................................................................... 14

2.0 LITERATURE REVIEW ................................................................................................ 14

2.1 Introduction ................................................................................................................ 14

2.2 Overview of E-Government ....................................................................................... 14

2.3 A Review on E-Government and Citizens Interaction .............................................. 21

2.4 Citizens Participation .................................................................................................. 26

2.5 Citizens Characteristics .............................................................................................. 27
CHAPTER 3 ........................................................................................................................................ 41

3.0 A REVIEW OF THE CONTEXT OF THE STUDY - BRUNEI DARUSSALAM ......... 41

3.1 INTRODUCTION ............................................................................................................................. 41

3.2 ABOUT BRUNEI .............................................................................................................................. 42

3.2.1 A Brief History of Brunei ........................................................................................................... 43

3.2.2 Brunei Administration .................................................................................................................. 43

3.2.3 Demography ............................................................................................................................... 45

3.2.4 Brunei Economics ....................................................................................................................... 48

3.2.5 Brunei Telecommunication ........................................................................................................ 49

3.2.6 E-government Implementation in Brunei ................................................................................... 50

3.2.7 Brunei e-government Strategic Plan 2009-2014 ....................................................................... 55

3.2.8 Brunei Government e-Services Delivery ..................................................................................... 61

3.3 CONCLUSION ................................................................................................................................. 64

CHAPTER 4 ........................................................................................................................................ 65

4.0 RESEARCH METHODOLOGY ...................................................................................................... 65

4.1 INTRODUCTION .............................................................................................................................. 65

4.2 RESEARCH ORIENTATIONS OR METHODOLOGIES ............................................................... 66
CHAPTER 5 ............................................................................................................. 105

5.0 GOVERNMENT E-SERVICES PRELIMINARY STUDY AND DEVELOPMENT OF A
GUIDE BOOK AND LEAFLET ................................................................................ 105

5.1 INTRODUCTION .................................................................................................. 105

5.2 QUESTIONNAIRE TO BRUNEI CITIZENS ......................................................... 105

5.2.1 Method of Data Analysis (First Phase) ......................................................... 107
CHAPTER 6

6.0 SURVEY OF CITIZENS’ AWARENESS OF GOVERNMENT E-SERVICES – AN ANALYSIS OF THE FINDINGS

6.1 INTRODUCTION OF AWARENESS

6.2 QUESTIONNAIRE AIM

6.3 SOFTWARE QUALITY REQUIRES USER ACCEPTANCE

6.4 INTRODUCTION OF SOFTWARE QUALITY

6.5 GOVERNMENT E-SERVICES—CITIZENS AWARENESS STRATEGY (Ges-CAS)

6.5.1 Promotion Approach to User (P2U)

6.5.2 Demonstration Approach (D2U)

6.5.3 Motivation Approach to User (M2U)

6.5.4 Education Approach to User (E2U)

6.5.5 Advancement Approach to User (A2U)

6.6 ANALYSIS OF Ges-CAS CHARACTERISTICS

6.6.1 Research Method

6.6.2 Research Key Finding from the Different User Groups

6.6.2.1 Case A: Awareness Seminar & Workshop for College Students

6.6.2.2 Case B: Informal meetings with government servants & ICT Committees

6.6.2.3 Case C: Organised gathering of a village community
CHAPTER 7 ........................................................................................................ 157

7.0 CITIZENS AWARENESS STRATEGY OF GOVERNMENT E-SERVICES FRAMEWORK DEVELOPMENT .......................................................... 157

7.1 INTRODUCTION ...................................................................................... 157

7.2 GOVERNMENT E-SERVICES OF CITIZENS AWARENESS STRATEGY (GeS-CAS) FRAMEWORK DEVELOPMENT AND RELATED MODEL FUNCTIONS ..................................................................... 157

7.3 PROMOTION APPROACH MODEL FUNCTIONS .......................................... 166

7.3.1 Face-to-Face Awareness Approach ................................................................ 167

7.3.1.1 Formal Awareness Events ...................................................................... 169

7.3.1.2 Informal Awareness Events .................................................................... 169

7.3.2 Media Printed Awareness Approach ........................................................... 170

7.3.2.1 Handy Materials .................................................................................. 173

7.3.2.2 Fixed Materials .................................................................................... 175

7.3.3 Electronic Media Awareness Approach ....................................................... 175

7.3.3.1 Visual Electronic Medium ...................................................................... 177

7.3.3.2 Auditory Electronic ............................................................................. 178

7.3.4 Digital-Media Awareness Approach ............................................................ 179

7.3.4.1 Internet-based approach ....................................................................... 181

7.3.4.2 Technology-based approach .................................................................. 182

7.4 DEMONSTRATION APPROACH MODEL FUNCTIONS ................................. 184

7.4.1 Direct Demonstration .............................................................................. 186

7.4.2 Indirect Demonstration ............................................................................ 187

7.5 MOTIVATION APPROACH MODEL FUNCTIONS ............................................ 189

7.5.1 Tangible Motivation .................................................................................. 190

7.5.2 Intangible Motivation ............................................................................... 191

7.6 EDUCATION APPROACH MODEL FUNCTIONS ............................................. 192
CHAPTER 8 ......................................................................................................................... 203

8.0 CITIZENS’ AWARENESS GES-CAS SUPPORT TOOL DEVELOPMENT AND EVALUATION ......................................................................................................................... 203

8.1 INTRODUCTION ............................................................................................................ 203
8.2 SYSTEM DEVELOPMENT ............................................................................................. 203
8.3 SYSTEM OPERATION ..................................................................................................... 206

8.3.1 Research Findings of Citizens’ Awareness in Brunei Darussalam ...................... 207
8.3.2 Citizens’ Awareness Approaches in e-government .............................................. 209
8.3.3 Variety of Citizens’ Awareness Models and Frameworks .................................... 210
8.3.4 Prototype of Brunei Citizens’ Portal (BruCiP) .................................................... 210

8.4 EVALUATION AIM AND APPROACH .................................................................... 212

8.4.1 Evaluation Questionnaire ..................................................................................... 214

8.5 EVALUATION RESULTS ............................................................................................ 215

8.5.1 Responses to the Government e-Services GeS-CAS support tool and Citizens’ Portal ................................................................. 217
8.5.2 Suggestions for Improvement ................................................................................ 218

8.6 BENEFITS OF THE Prototype SUPPORT TOOL ....................................................... 219
8.7 LIMITATIONS OF THE GES-CAS SUPPORT TOOL ................................................ 220
8.8 SUMMARY .................................................................................................................. 221

CHAPTER 9 ......................................................................................................................... 222

9.0 DISCUSSION, RECOMMENDATION GUIDELINES AND CONCLUSIONS ........ 222

9.1 INTRODUCTION ......................................................................................................... 222
9.2 RESEARCH DISCUSSION & SUMMARY .................................................................. 222
9.3 RESEARCH CONTRIBUTION ...................................................................................... 229
9.3.1 Enrich the Level of Government e-Services Adoption ................................................................. 231
9.3.2 A Marketing Approach to Government e-Services Quality ................................................................ 232
9.3.3 Upgrade Relationships between Government e-Services Adoption and e-Government Initiatives
Marketing ........................................................................................................................................... 233
9.3.4 Comparison between the Government 'Supply Side' and Citizens 'Demand Side' Study ........... 234
9.4 Research Consequences ..................................................................................................................... 235
9.5 Research Limitations .......................................................................................................................... 236
9.6 Conclusions ........................................................................................................................................ 238
9.7 Recommendations for Further Study ................................................................................................. 239
9.8 The Success of this PhD Research ..................................................................................................... 241

REFERENCES ........................................................................................................................................... 242

APPENDICES ........................................................................................................................................ 275

Appendix A – Preliminary Survey Questionnaire ...................................................................................... 275
Appendix B – Government e-Services Citizens Guidebook ...................................................................... 277
Appendix C – Government e-Services Leaflet .......................................................................................... 279
Appendix D – e-Government Citizens Survey Organised By Prime Minister’s Office ............................. 281
Appendix E – Print Screens of Government e-Services for Brunei Citizens Portal ................................. 283
Appendix F – The E-government Strategic Plan 2009-2014 Brunei Darussalam ...................................... 285
Appendix G – Online News of Raising Citizens Awareness Programmes ............................................. 287
Appendix H – Letter of Field Work in Brunei Darussalam ................................................................... 289
<table>
<thead>
<tr>
<th>Figure Reference</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1-1</td>
<td>Research gap of Government to Citizens (G2C) service delivery</td>
<td>7</td>
</tr>
<tr>
<td>Figure 1-2</td>
<td>Thesis Structure</td>
<td>12</td>
</tr>
<tr>
<td>Figure 2-1</td>
<td>Government relationship with all stakeholders</td>
<td>16</td>
</tr>
<tr>
<td>Figure 2-2</td>
<td>E-government Portfolios (Siau and Long, 2004)</td>
<td>16</td>
</tr>
<tr>
<td>Figure 2-3</td>
<td>Government to Citizens (G2C) Multi-Channel Access</td>
<td>18</td>
</tr>
<tr>
<td>Figure 2-4</td>
<td>Evolving Approach to Public Service Delivery</td>
<td>19</td>
</tr>
<tr>
<td>Figure 2-5</td>
<td>A Triangle Relationship Model among E-government, E-Business and E-Citizens (Fang, 2002)</td>
<td>20</td>
</tr>
<tr>
<td>Figure 2-6</td>
<td>A Conceptual Framework of E-government Adoption Determinants (Dimitrova and Chen, 2006)</td>
<td>20</td>
</tr>
<tr>
<td>Figure 2-7</td>
<td>e-government Initiatives Model from Heeks (2001)</td>
<td>21</td>
</tr>
<tr>
<td>Figure 2-8</td>
<td>Three Models of Interactions in E-Governance (Chadwick and May, 2003)</td>
<td>22</td>
</tr>
<tr>
<td>Figure 2-9</td>
<td>Technology Acceptance Model (TAM) (Davis et al., 1989)</td>
<td>23</td>
</tr>
<tr>
<td>Figure 2-10</td>
<td>Technology Acceptance Model 2 (TAM2) (Venkatesh and Davis, 2000)</td>
<td>23</td>
</tr>
<tr>
<td>Figure 2-11</td>
<td>Technology Acceptance Model 3 (TAM3) (Venkatesh and Bala, 2008)</td>
<td>24</td>
</tr>
<tr>
<td>Figure 2-12</td>
<td>Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003)</td>
<td>25</td>
</tr>
<tr>
<td>Figure 2-13</td>
<td>Conceptual View of the Knowledge Framework (Liebowitz, 2005)</td>
<td>36</td>
</tr>
<tr>
<td>Figure 3-1</td>
<td>Map of Brunei Darussalam</td>
<td>42</td>
</tr>
<tr>
<td>Figure 3-2</td>
<td>Organisational Chart of the Brunei Government</td>
<td>44</td>
</tr>
<tr>
<td>Figure 3-3</td>
<td>Ethnic Composition of the Population 2011</td>
<td>46</td>
</tr>
<tr>
<td>Figure 3-4</td>
<td>Category of Brunei Citizens Relationship</td>
<td>47</td>
</tr>
<tr>
<td>Figure 3-5</td>
<td>Brunei’s GDP and Per Capita GDP from 1992 - 2010</td>
<td>48</td>
</tr>
<tr>
<td>Figure 3-6</td>
<td>Five Key Strategic Priorities of e-Government Strategic Plan 2009-2014</td>
<td>57</td>
</tr>
<tr>
<td>Figure 3-7</td>
<td>Strategic Priorities Translated into Work Programmes</td>
<td>58</td>
</tr>
<tr>
<td>Figure 3-8</td>
<td>Brunei Darussalam Journey of the e-Government Strategic Plan 2009-2014</td>
<td>60</td>
</tr>
<tr>
<td>Figure 4-1</td>
<td>Nested Approach of Research Methodology (Kagioglou et al., 1998)</td>
<td>66</td>
</tr>
<tr>
<td>Figure 4-2</td>
<td>Triangulation of Quantitative and Qualitative Data (Fellows and Liu, 2003)</td>
<td>77</td>
</tr>
<tr>
<td>Figure 4-3</td>
<td>Research Stages</td>
<td>84</td>
</tr>
<tr>
<td>Figure 4-4</td>
<td>Multiple-Case Studies Approach Used (Yin, 2003)</td>
<td>91</td>
</tr>
<tr>
<td>Figure 4-5</td>
<td>Rapid Prototyping Process (Turban and Aeonson, 1998)</td>
<td>97</td>
</tr>
</tbody>
</table>
Figure 4-6: The Overall Methodological Adopted for the Research ........................................ 101
Figure 4-7: Data Sampling Method (Sekaran, 1992) ................................................................. 102
Figure 5-1: Citizens’ Awareness Enhancement Strategy Model for Government e-Services ...... 116
Figure 5-2: Initial Citizens’ Awareness Enhancement Prototype System .................................... 117
Figure 5-3: PowerPoint Version of the Guidebook of Government e-Services for Citizens ........ 119
Figure 5-4: Front Page of Government e-Services Leaflet for Citizens .................................... 120
Figure 5-5: Back Page of Government e-Services Leaflet for Citizens .................................... 120
Figure 6-1: ISO/IEC 9126 Quality Model (ISO, 1992) ............................................................. 131
Figure 6-2: Motivation and Social Factors Added in TAM (Thompson, 1998) ............................ 135
Figure 6-3: High School Students’ Acceptance of GeS-CAS .................................................... 141
Figure 6-4: University Students’ Acceptance of GeS-CAS ....................................................... 141
Figure 6-5: Government Servants’ Acceptance of GeS-CAS .................................................... 143
Figure 6-6: Unemployment Village Community’s Acceptance on GeS-CAS ............................... 145
Figure 6-7: Business leader’s acceptance on GeS-CAS ............................................................ 147
Figure 7-1 : Level of e-government application model (NAO, 2002) ............................................ 160
Figure 7-2 : TAM extended framework (Phang et al., 2006) ....................................................... 161
Figure 7-3: Three-dimensional views of e-government framework (adapted from Gisler and Spahni, 2000) .................................................................................................................. 162
Figure 7-4: GeS-CAS Model added in the TAM Model ............................................................... 164
Figure 7-5: Government e-services Citizens Awareness Strategy (GeS-CAS) Cycle Model ...... 165
Figure 7-6: GeS-CAS with mix variables ..................................................................................... 166
Figure 7-7: Website address banner along the river canal in the city of Dublin ....................... 172
Figure 7-8: Product advertisement and website address on the unique tricycle taxis ............ 172
Figure 7-9: Website address on taxis and buses ........................................................................ 173
Figure 7-10: Older Students Prefer Leaflets for the e-Services Awareness ........................... 174
Figure 7-11: Digital Marketing Framework and Levers (Parsons et al., 1998) ......................... 180
Figure 7-12: Younger Students Prefer SMS-Mobile Phones for the e-Services Awareness .. 183
Figure 7-13: A Village Community Prefer a Citizens Promotion Center for e-Services Awareness .......................................................... 185
Figure 8-1 : Form Designer Window ......................................................................................... 206
Figure 8-2: GeS-CAS System Main Screen ............................................................................... 207
Figure 8-3: Research Finding Page ........................................................................................... 208
Figure 8-4: Different Awareness Approaches in e-government Countries ........................... 209
Figure 8-5: Display of Awareness Models ................................................................................ 210

xii
Figure 8-6: Brunei government e-services for citizens’ portal page .................................................. 211
Figure 8-7: Life cycle of a prototype system (Davies et al., 2004). .................................................. 213
Figure 9-1: Grounded Theory of the Research ................................................................................. 229

LIST OF TABLES

Table 3-1: Population Size and Age Structure, 2001 – 2010 ................................................................. 45
Table 3-2: Internet User and Penetration in Brunei Darussalam ............................................................ 50
Table 3-3: Examples of a Government e-Service for Each Ministry ..................................................... 62
Table 3-4: Brunei e-Government Ranking ........................................................................................... 63
Table 4-1: A summary of distinguishing characteristics of quantitative and qualitative research methods (Neuman, 2006; Abdullah, 2003; Amaratunga et al., 2002; and Leedy & Ormrod, 2001) 78
Table 4-2: Research Strategies versus Characteristics (Yin, 2003) .................................................... 80
Table 4-3: Research Approaches and Philosophical Bases (Galliers, 1992) ......................................... 81
Table 4-4: Strategies used for each of the research objectives .......................................................... 82
Table 4-5: Comparison of Interview Techniques (Wright and Ayton, 1987) ........................................ 93
Table 4-6: Comparison between Summative Evaluation and Formative Evaluation (Patton, 2002) ................................................................................................................................. 100
Table 4-7: Choice of Sampling Method ............................................................................................... 102
Table 5-1: Citizens who have heard about Brunei e-government from different sources ............... 111
Table 5-2: Percentage of Citizens’ Attitude toward the use of government e-services ................... 112
Table 5-3: Whether Citizen Requirements are Met by the Available Services .................................. 113
Table 5-4: Respondents’ Opinions and Suggestions on government e-Services ............................... 114
Table 5-5: Brunei Government e-Services Addresses ........................................................................ 124
Table 5-6: Some Government e-Services Portal Addresses ............................................................... 125
Table 6-1: ISO/IEC 9126 Quality Characteristics (ISO, 1992) ............................................................ 132
Table 6-2: Details of Citizens Awareness Methods in Groups ............................................................ 137
Table 6-3: Breakdown of users’ GeS-CAS Highest Percentage .......................................................... 138
Table 6-4: Case A - Awareness Seminar & Workshop for University & High School Students ...... 140
Table 6-5: Case B - Informal Meetings with e-government ICT Committees ....................................... 142
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2C / A2U</td>
<td>Advancement to Citizens / Users</td>
</tr>
<tr>
<td>AiTi</td>
<td>Info-communications Technology Industry</td>
</tr>
<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
</tr>
<tr>
<td>BIA</td>
<td>Brunei Investment Agency</td>
</tr>
<tr>
<td>BIT Council</td>
<td>Brunei Darussalam Information Technology Council</td>
</tr>
<tr>
<td>CAS</td>
<td>Computer Attitude Scale</td>
</tr>
<tr>
<td>CASF</td>
<td>Citizens’ Awareness Strategy Framework</td>
</tr>
<tr>
<td>CIO</td>
<td>Chief Information Officers</td>
</tr>
<tr>
<td>CRM</td>
<td>Customer Relationship Management</td>
</tr>
<tr>
<td>CTO</td>
<td>Chief Technical Officers</td>
</tr>
<tr>
<td>D2C/ D2U</td>
<td>Demonstration to Citizens / Users</td>
</tr>
<tr>
<td>DMA</td>
<td>Digital-Media Approach</td>
</tr>
<tr>
<td>E2C / E2U</td>
<td>Education to Citizens / Users</td>
</tr>
<tr>
<td>EBLF</td>
<td>E-Business Leadership Forum</td>
</tr>
<tr>
<td>EGAS</td>
<td>E-Government Agencies Services</td>
</tr>
<tr>
<td>EGBS</td>
<td>E-Government Broadband Service</td>
</tr>
<tr>
<td>e-GEMS</td>
<td>Government Employee Management System</td>
</tr>
<tr>
<td>EGLF</td>
<td>E-Government Leadership Forum</td>
</tr>
<tr>
<td>EGNC</td>
<td>E-Government National Centre</td>
</tr>
<tr>
<td>e-GSP</td>
<td>e-Government Strategic Plan</td>
</tr>
<tr>
<td>FFA</td>
<td>Face-to-Face Approach</td>
</tr>
<tr>
<td>G2B / GtB</td>
<td>Government to Businesses</td>
</tr>
<tr>
<td>G2C / GtC</td>
<td>Government to Citizens</td>
</tr>
<tr>
<td>G2E / GtE</td>
<td>Government to Employees</td>
</tr>
<tr>
<td>G2G / GtG</td>
<td>Government to Government</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GeS</td>
<td>Government e-Services</td>
</tr>
<tr>
<td>GeS-CAS</td>
<td>Government e-Services Citizens Acceptance Strategy</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>ICT</td>
<td>Information Communication Technology</td>
</tr>
<tr>
<td>ISO</td>
<td>International Standard Organisation</td>
</tr>
<tr>
<td>JTB</td>
<td>Jabatan Telekom Brunei</td>
</tr>
<tr>
<td>KM4EG</td>
<td>Knowledge Management for e-government</td>
</tr>
<tr>
<td>LTDP</td>
<td>Long-Term Development Plan</td>
</tr>
<tr>
<td>M2C / M2U</td>
<td>Motivation to Citizens / Users</td>
</tr>
<tr>
<td>EMA</td>
<td>Electronic-Media Approach</td>
</tr>
<tr>
<td>PMA</td>
<td>Printed-Media Approach</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation of Economic Cooperation and Development</td>
</tr>
<tr>
<td>OGIS</td>
<td>Online Government Information and Services</td>
</tr>
<tr>
<td>P2C / P2U</td>
<td>Promotion to Citizens / Users</td>
</tr>
<tr>
<td>PKI</td>
<td>Public Key Infrastructure</td>
</tr>
<tr>
<td>RKN8</td>
<td>8th Brunei Government Development Plan</td>
</tr>
<tr>
<td>SQM</td>
<td>Software Quality Management</td>
</tr>
<tr>
<td>GES-CAS</td>
<td>Software Quality User Acceptance Strategy</td>
</tr>
<tr>
<td>TelBru</td>
<td>Telekom Brunei Darussalam</td>
</tr>
</tbody>
</table>
Chapter 1

1.0 INTRODUCTION

1.1 General Introduction

This chapter introduces the context of this research. Beginning with a brief overview of the background to the study and the justification for the research, it then discusses the aims, objectives, scope and significance of the study. The chapter concludes by outlining the structure of the thesis.

1.2 Research Background

The use of ICT tools and applications, internet and mobile devices by government agencies and departments to support good governance, strengthen existing relationships and build new partnerships within civil society is known as an e-government initiative. (Ndou, 2004). Many countries reinvent government to streamline and improve its efficiency (Seifert, 2008), allowing it to work better and cost less (Kettl, 1998), and improve accountability (Deleon, 1998) in delivering better services to its citizens. However, if people are not aware that electronic public services exist, they will not use them even if those services have an added value for them as a recent study by Verdegem and Verleye (2009) states. Many governments strive for citizen-centric e-government services (Van Velsen et al., 2009). It appears that one of the most common reasons why the use of e-government services is still lagging behind more traditional means of providing services is citizens’ lack of awareness as to what services are offered via e-government (Teerling & Pieterson, 2009). This view is also supported by Yong (2004) who
states that while developing e-government programmes has been a challenge for many public administrations, encouraging citizens to use available services can often be equally difficult. A study by Graafland and Etchedgui (2003) identified that “among respondents who indicated a preference for online government services, citizens were not always aware of which government services were available online.” Furthermore, according to Adeshara et al., (2004) awareness of the existence of e-government services is very low and government should consider how to enhance awareness of e-services by advertising them through printed and electronic media. The idea is that government organisations could function more efficiently and effectively in their relationship with citizens by introducing a customer-oriented approach to electronically offering public information and services (Van Duivenboden and Mariam, 2005). Undheim and Blakemore (2007) state that, “to maximize the consumption dimension (the uptake, use and impact of e-government services) requires more than just the availability of infrastructure and services, no matter how well the services are designed.” In addition, Ke and Wei (2004) reported that, while striving to put almost all public services online, the Singapore government realised the importance of encouraging citizens to use them. It was recognised that it is insufficient for any e-government initiative to exclude the promotion of e-government services in their implementation (Chan et al., 2008).

Knowledge Management (KM) for e-government (KM4EG) may be viewed from a variety of perspectives, for example a process perspective, user perspective, technical perspective, organizational perspective, legal perspective, knowledge perspective, cultural, societal and political perspective (Wimmer, 2002). The integration of KM into e-government initiatives can act as a vehicle with which to solve problems, explore opportunities and make decisions that improve government efficiency. Therefore, this research aims to investigate the potential of KM approaches to enhance citizens’ awareness of e-government initiatives, across various population groups in the case study of Brunei Darussalam.
1.3 Justification for the Research

In Brunei Darussalam in the year 2000, an e-government programme was formalised through the formation of the Brunei Darussalam Information Technology Council (BIT Council) to spearhead and provide guidance on the implementation of the National IT Strategic Plan. The first e-government strategic plan, or e-government Strategy Framework, was launched in 2001 and was subsequently reviewed in 2005. In alignment with the national ICT agenda of the BIT Council, the e-Government Strategic Plan (e-GSP) 2009-2014 was introduced to provide policy guidelines.

The e-government initiative is the prime mover for ICT development in Brunei Darussalam. According to the Chairman of the e-government Leadership Forum of Brunei Darussalam, (e-GSP, 2009) after taking into account the experiences learned during those years, the government is mindful that more emphasis should be placed on citizen-centric services delivery in order for the e-government initiative to remain relevant. The Chairman also added that considering the ever increasing dependency on ICT in our daily lives, he believed passionately that citizen-centric services should be a driver of change, not only for the civil service but for all people of Brunei Darussalam. Providing citizen-centric services extends beyond creating websites. Hence, making services citizen-centric became the single guiding principle in the e-government Strategic Plan. Given this, the research aims to examine ways and means of effecting changes in organisational culture and business processes as well as the desired transition of attitudes and mindsets amongst citizens of Brunei Darussalam as a whole.

Since increasing citizens’ perceptions of the usefulness of online government services increases citizens’ intentions to use them, government agencies should publicize the advantages of using these services (Carter and Belanger, 2004). Moreover, local authorities need to make efforts to market and educate citizens about e-government services (Mayer-Schönberger and Lazer, 2007). This is because not all potential users and information seekers will equally benefit from the new opportunities (Van Deursen and Van Dijk, 2009). Once a service is located and accessed, users should be able to consume
(read, understand, process, etc.) the information provided by the service and it should be usable by all members of the intended user group. The presentation of the service should be user-oriented. If the level of usability is low, the user may have access to the service, but may not be able to consume it (IDA, 2004). A recent study by Carter and Weerakkody (2008), reported that the UK government launched a media campaign to increase awareness of e-government services and to encourage citizens to visit their local council website. However, website usage statistics published by the Society for IT Management suggest that the campaign raised awareness of local government websites but the increase in demand for services was too small to measure. This demand side explanation, which is relatively unexplored, suggests research is needed to examine citizen interaction with e-government, while the impact of mobile technology on citizen interaction with government is another possible area for future research (Reddick, 2005).

The challenge for many governments today is to provide opportunities for citizens and businesses to actively participate in the global knowledge-based economy (The World Bank, 2011). Many studies have examined citizens’ potential use of e-government services (for example, Gilbert et al., 2004; Adeshara et al., 2005; Carter and Belanger, 2005; Horst et al., 2007). Despite this, no study has yet identified any pattern or framework concerning citizen interaction with government, specifically in providing the strategies to enhance citizens’ awareness of online government services or government e-services. This is therefore the focus of this research project. A key issue here is that citizens need to be aware of the availability of government e-services to have any intention to use it. A study by Gilbert et al., 2004) indicates that while people are aware of the Internet, they are unlikely to have received training in how to use it or received direct marketing encouraging them to use it. On the other hand, if people have a positive experience with one electronic service, this should increase their awareness of and confidence in e-government and public service online offerings (Silcock, 2001). Therefore, the aim of this research is supported by (Chan et al., 2008) who states that in the implementation of e-government, it was recognised that it is insufficient for any e-government initiative to fail to promote the new e-services.
1.4 Research Questions

This study seeks to address the following questions, from which the objectives are derived:

1. In what categories of Brunei citizens would there be a high demand for online government services?
2. Are Brunei citizens having a positive experience when they use government e-services?
3. How often do citizens make use of e-services?
4. What are the main problems that cause citizens to refuse or neglect to use e-services?
5. Are the e-services sufficient to meet citizen requirements?
6. What needs to be done to improve citizen awareness of e-services?
7. What methods of increasing awareness works well for each different category of Brunei citizens?
8. What recommendations should be made to the e-government Committee in order to increase the use of government e-services?

1.5 Research Aims and Objectives

The aim of this study is to, firstly, identify the extent of the use of e-government services in Brunei Darussalam and to identify the reasons why the services are not used more frequently.

The objectives concerned with the first aim are as follows:

1. To review the literature on previous work in the research area;
2. To assess the knowledge, acceptance, involvement and responses of Brunei citizens to government e-service delivery;
3. To discover the current level of awareness of Brunei citizens of the government e-services;
4. To determine the factors which make Brunei citizens unaware of the government e-services;

Secondly, the aim is then to find methods of publicising the e-services with the aim of producing an e-government knowledge management framework and a series of guidelines and recommendations to promote citizen awareness of online government services (government e-services) to help make the Brunei Darussalam e-government initiatives a success.

The objectives concerned with the second aim are as follows:

1. To carry out case studies with different categories of Brunei citizens and analyse the consequences of differences between the different groups;
2. To use the results of the previous steps to develop an effective citizens’ awareness strategy framework to enhance the use of government e-services in Brunei Darussalam which comprises of a repository for the research findings, models for the interpretation of the findings and a set of recommendations for the specific approach to use for the citizens of Brunei Darussalam;
3. To develop a tool to assist the government to understand awareness problems and implement awareness initiatives on e-services;
4. To evaluate the effectiveness of the proposed strategy framework in enhancing the awareness and usage of government e-services in Brunei Darussalam.

1.6 Research Scope

The scope of this study is to understand the citizens’ awareness of government e-services following the e-government initiatives that were implemented by the Brunei e-government Committee. Citizens, in the context of this study, are stakeholders that are involved in e-government initiative activities which comprise five categories of citizens. This research focuses on the investigation of the issues and problems related to the
citizens’ awareness of government e-services development and its implementation and aims to provide the appropriate solutions based on its findings.

![Identification of Research Gap & Solution]

Figure 1-1: Research gap of Government to Citizens (G2C) service delivery

The lack of a sufficient theoretical understanding of government e-services development and its implementation emphasizes the requirement for a more grounded approach. This is achieved through the exploration of the citizens’ awareness strategy approached from the perspective of those involved. This research is intended to investigate the issues surrounding the successful and satisfactory delivery of government e-services solely from Bruneian citizens’ perspective, and to develop a theory based on the reasons for those issues. It is intended that the results will assist various parties involved in e-government initiatives to understand what they need to do to address those issues. Figure 1-1 shows in general the identification of the research gap and its solution in the scope of government to citizens (G2C) service delivery.
1.7 Significance of the Study

Until the time when the research fieldwork was implemented in Brunei Darussalam, there had been no local studies on the topic of e-government initiatives, particularly with regard to enhancing citizens’ awareness of government e-services. Interestingly, research in the area of any citizens’ awareness strategy framework to support knowledge management in e-government initiatives appeared to be limited internationally. A recent study by Medeni et al., (2009) has mentioned that specific awareness and promotion campaigns toward citizens should be carried out. In addition, Liang et al., (2009) reveal that even though awareness promotion has been very effective in Taiwan, the Taiwanese government still needs to continue raising awareness. Therefore, the findings of this study would not only enrich the data already available on related studies in this field, but stimulate further research studies on the topic both locally and elsewhere in the world.

The Brunei government is striving to bring e-government initiatives into the workplace to ensure that Brunei Darussalam becomes one of the world’s top ranking countries in e-government initiatives by the year 2035, based on the Long-Term Development Plan’s vision. With regard to e-government initiatives, Brunei aims to match developed nations, such as the United Kingdom (UK), the United States of America (USA), the European Nations (Euro), Japan, Korea and Singapore, which already maintain their e-government initiatives in the world rankings of e-government in countries. This target, however, is very hard to achieve without the full participation and commitment of the parties involved. There has been massive financial investment, plans and strategies, and several authorities have been created to ensure that all the programmes related to e-government initiatives are working.

As this study becomes one of the e-government strategic priorities in the e-government Strategy Plan 2009-2014 of Brunei Darussalam, it is important to discover citizens’ knowledge, acceptance, usage and positive attitudes and awareness towards government online services as it is critical to the successful incorporation of new technology in e-government initiatives. The factors that individuals consider important in evaluating
whether or not to use the service, are important to the service providers (government departments) because they contribute towards the development of attitudes in making the delivery of public services online more acceptable (Gilbert et al., 2004). The use of the Internet is increasing in many areas of life. In the context of Brunei Darussalam, this is a new awakening. It is important to see the specific level of Internet reliability, accessibility and usability to access government e-Services delivery for Brunei citizens in order to prepare them for this new era of e-government. Many aspects need to be addressed in order to enhance citizen awareness of e-government initiatives, otherwise the government’s plan would not be successful. Ndou (2004) identifies that only recently has the public sector come to recognise the potential importance of ICT and e-business models as a means of improving the quality and responsiveness of the services they provide to their citizens, expanding the reach and accessibility of their services and public infrastructure and allowing citizens to experience a faster and more transparent way of accessing government services.

1.8 Overview of Thesis Structure

The thesis comprises nine chapters and a brief description of each chapter is given below:

Chapter One: Introduction

This chapter introduces the basis for the research and briefly describes the overall purpose of the research. It defines the background of the research, justification for the research, the research aims and objectives; research questions, scope and significance of the study. It also gives an overview of the structure of the thesis.

Chapter Two: Literature Review

This chapter presents the existing literature relating to e-government, online government services, citizens’ characteristics, and citizens’ awareness of e-government initiatives and Knowledge Management in e-government. The background, elements and factors
Chapter 1 - Introduction

Influencing citizens' awareness are explored. The major issues are the current approach to effective citizens’ awareness toward the use of government e-services and the problems of its implementation. These are the core issues of the research. The findings of this literature search serve as the basis for the research.

Chapter Three: A Review of the Context Study – Brunei Darussalam
This chapter provides a synopsis of the literature about e-government initiatives in the context of the study. It seeks to address the issues with current e-government initiatives practices in Brunei Darussalam. An overview of the background, e-government implementation and e-government Strategic Plan in Brunei Darussalam is presented to highlight the context of the study and identify the major issues of Brunei Government e-Services and its implementation.

Chapter Four: Research Methodology
This chapter is devoted to the description of the methodology used in this research. The development and the proposed methodology for the research are discussed, exploring their suitability to address and achieve the aims and objectives of the research. The basis of the selection of the most suitable methodological approach for the research is discussed, taking into consideration the important and relevant factors that have an impact on the type of research method used.

Chapter Five: Preliminary Study & Development of Government e-Services Guidebook & Leaflet
This chapter describes the implementation of an initial study survey questionnaire. It begins with describing the planning, development and operation support materials for the survey questionnaire. This is followed by a description of the evaluation methodology and testing. The benefits and limitations of the support materials are also presented.
Chapter Six: Case Studies on Citizens Awareness of Government e-Services

This chapter presents the findings and analyses of the exploratory survey questionnaire from five case studies of different categories of Brunei citizens, which provides the primary data for the research. Relevant and related research questions are posed in the questionnaire. The evaluation results were used to develop the Government e-Services Citizens’ Awareness Strategy Framework.

Chapter Seven: Development of Government e-Services Citizens’ Awareness Strategy (GeS-CAS) Framework & Framework Evaluation

This chapter focuses on the development of the Government e-Services Citizens’ Awareness Strategy Framework and the evaluation of the framework for the accomplishment of e-government initiatives. It is also presents an integrated Knowledge Management (KM) framework that reflects the specific context of the awareness strategy approaches and which makes provision for both explicit and tacit knowledge. The objectives, features, development process and potential benefits of the integrated Knowledge Management and GeS-CAS framework are also discussed.

Chapter Eight: Development of GeS-CAS Support Tool & Tool Evaluation

This chapter focuses on the development of the GeS-CAS support tool which provides easy access to the research findings and the evaluation of the tool. It then describes in detail the development process of the support tool. It also demonstrates the operation of the tool and tool testing with real citizen’s awareness problems.

Chapter Nine: This chapter completes the thesis with a summary of the research, important conclusions and general recommendations. It defines the extent to which the research objectives have been achieved, the limitations of the present research, and gives recommendations for future research. The thesis structure is presented in Figure 1-2, which shows the overall research process carried out to achieve the aims and objectives of the research.
Chapter 1: INTRODUCTION
Introduction to the topic and general context of the research aim and objectives, problem statement and thesis contribution.

Chapter 2: LITERATURE REVIEW
Literature review of the e-government, Government e-Services, Citizens characteristics and Knowledge Management in e-government

Chapter 3: E-GOV INITIATIVE IN BRUNEI DARUSSALAM – A REVIEW
A review of the context study - Brunei Darussalam and its e-government Initiatives

Chapter 4: METHODOLOGY
Methodological approach & research strategy, data collection and analysis discussion

Chapter 5: PRELIMINARY STUDY
Questionnaire & development of government e-Services guidebook & leaflet for experimental study

Chapter 6: CASE STUDIES
Identification of e-government initiatives problems and proposal of problems solving within e-government practices

Chapter 8: GES-CAS SUPPORT TOOL & EVALUATION
Data collection analysis, development of GeS-CAS support tool and system evaluation and discussion

Chapter 7: FRAMEWORK DEVELOPMENT & EVALUATION
Development of Citizens’ Awareness Strategy Framework, framework evaluation and discussion

Chapter 9: CONCLUSION AND RECOMMENDATIONS
Research Conclusion, Research Limitation and Future Recommendations

Figure 1-2: Thesis Structure
1.9 Conclusion

This chapter introduced the background to the study, including the challenges faced by Brunei e-government Committee in implementing the e-government initiatives. It is obvious that e-government initiatives such as government e-services require acceptance and awareness by the citizens if they are to use them.

This research aims to improve the awareness of Bruneian citizens using the government e-services in a Knowledge Management perspective. To achieve the aim it is important to unveil current e-government practices, with regard to the government e-services, among the different government sectors and Bruneian citizens. Firstly, the researcher investigated the status of government e-services through an exploratory survey questionnaire. Secondly, the identification of critical factors affecting government e-services implementation was determined through in-depth semi-structured interviews and a model was created to relate these factors. Thirdly, recommendations are made to alleviate the problems associated with government e-services.

The next chapter (Chapter 2: Literature Review) reviews the background literature relating to e-government initiatives, citizens and online government services characteristics, knowledge management in e-government and citizens’ awareness of government e-services.
Chapter 2

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter reviews the previous research on the subject of e-government initiatives in knowledge management and citizens’ awareness of government e-services in particular. This section will be categorized into five sub-sections:

1. A general overview of e-government.
2. A review on e-government and citizens interaction.
3. The citizen participation and characteristics in e-government initiatives.
4. A review on the government e-services delivery and characteristics.
5. An overview of Knowledge Management in e-government.
6. A review of the aims and objectives to show the research is needed.

2.2 Overview of E-government

Electronic Government or e-government, as described by the World Bank, is the use by government agencies of information technologies, which include Wide Area Networks, the Internet, and mobile computing, that have the ability to transform relations with citizens (G2C), businesses (G2B), and other government agencies (G2G) to improve the efficiency, effectiveness, transparency and accountability of government (The World Bank, 2011). In other studies, e-government is also referred to as digital government (Marchionini et al., 2003), online government (Wimmer and Tambouris, 2002) and connected government (United Nations, 2008).
E-government can be seen simply as moving citizen services online, but in its broadest sense it refers to the technology-enabled transformation of government. Governments aim to reduce costs, at the same time as to promote economic development, to enhance transparency and accountability in government, to improve service delivery and public administration, and to facilitate the promotion of an information society. According to InfoDev (2004), e-government initiatives should aim to:

- Promote civic engagement by enabling the public to interact with government officials and vice versa;
- Promote accountable and transparent government in which the opportunities for corruption are reduced;
- Provide a greater access to government information and activities; and
- Provide development opportunities, especially the kind that benefits rural and traditionally underserved communities.

Likewise, Heeks (2001) describes e-government as “i-governance or integrated governance, which enables the integration of both the processing of information by people and the use of communication technologies in achieving the objectives of governance” (Heeks, 2001). Furthermore, Ifinedo (2007) states, “It is important to note that e-government does not create good governance, but that good governments use it to better their governance”. Many countries use e-government as an enabling tool to increase efficiency, enhance transparency, collect more revenue and facilitate public sector reform (Bhatnagar, 2004).

In many of the e-government studies, there are four major areas of e-government relationship: government-to-business (G2B), government-to-citizen (G2C), government-to-employee (G2E), and government-to-government (G2G), as shown in Figure 2-1. Meanwhile, Graafland and Ettedgui (2003) use the e-government relationship abbreviation as GtB for G2B, GtC for G2C and GtG for G2G in their report.
Among these four areas, G2C and G2E involve interaction between government and individuals, while G2B and G2G involve direct interaction between government and organizations. Figure 2-2, adapted from Siau and Long (2004), explains the objectives and activities of each of the four areas.

**Figure 2-2: E-government Portfolios (Siau and Long, 2004)**
In addition, Siau and Long (2004) state that “E-government is a way for governments to use new technologies such as the Internet to provide citizens with more convenient access to government information and services, to improve the quality of services, and to provide greater opportunities for citizens to participate in democratic institutions and processes.”

Heeks (2008) describes the areas of e-government in further detail:

- Improving government process (e-Administration) by making processes time and cost effective, managing process performance, making strategic connections in government, and creating empowerment;
- Connecting citizens (e-Citizens and e-Services) by providing citizens with public sector activities details, increasing citizen input into government decisions and actions and improving public services;
- Building external interactions (e-Society) by building relationships between public agencies and other public and private sector companies, non-profit and community organizations. This includes interaction between government and business.

There are many e-government development stage models, for example Deloitte’s six-stage model (2001), Layne and Lee’s four-stage model (2001), Hiller and Belanger’s five-stage model (2001), and Moon’s five-stage model (2002). The most recent of these is Siau and Long’s five-stage model (2005) capturing the whole vision of e-government using a meta-synthesis method (Siau and Long, 2005). A study conducted by the United Nations and the American Society for Public Administration – UN/ASPA (2001) introduced a five-stage e-government model of development:

1. Emerging stage – an official online government presence is established;
2. Enhanced stage – the number of government sites increases and become dynamic;
3. Interactive stage – users are able to download forms and interact with officials through the Web;
4. Transactional stage – users have the ability to make online payments;
5. Fully integrated stage – makes the integration of electronic services across government agencies possible.

Furthermore, e-government involves more than establishing a Web server and hosting government sites (Sanchez et al., 2003). The Internet plays a vital role in establishing e-government initiatives (Golden et al., 2003). Thus, e-government can be used to refer to a government that uses IT and e-commerce to provide access to government information and delivery of public services to citizens and all other business partners and stakeholders, including the private sector.

Traditional service channels such as the telephone and service desks are still the most common means of interaction, despite the efforts of the government to convince citizens to use electronic rather than traditional channels (Ebbers et al., 2008). However, the problem of a lack connectivity and participation will solve itself over time when the present, mainly elderly generation of computer illiterates becomes extinct (Van Deursen, 2007). Figure 2-3 indicates the variety of channels where government provides services accessibility to the citizens.

Figure 2-3: Government to Citizens (G2C) Multi-Channel Access
A recent annual survey (United Nations, 2008) of e-government clarifies that within the domain of the whole-of-government approach, the focus of the second generation e-government initiatives has shifted from the provision of services to the use of ICTs to increase the value of services. Figure 2-4 indicates how the approach to public sector service delivery has evolved over time from the traditional model of government dispensing services via traditional modes to an emphasis on e-government and e-services, to an integrated approach for enhancing the value of services to the citizen.

![Figure 2-4: Evolving Approach to Public Service Delivery](image)

Furthermore, the survey reveals that around the world, public sector development strategies are being revisited to address the question: how can the value of public services be enhanced? This study aims to answer this question. One of the factors to achieve the value of services as shown in Figure 2-4 is government e-services delivery. Therefore, the value of the public services can be enhanced by greater use of government e-services by citizens through a citizens’ awareness strategy.

The relationship among e-government, e-business, and e-citizens gives the context of the emergence of the so-called “knowledge society”, globalization, and sovereignty (Fang, 2002). Figure 2.5 shows a Triangle Relationship Model among e-government, e-business and e-citizens.
From the model in Figure 2-5, a more specific framework model adapted from Dimitrova and Chen (2006) can be derived - A Conceptual Framework of E-government Adoption Determinants as shown in Figure 2-6 and a Government Initiatives Model by Heeks (2001) in Figure 2-7.
These models show the need to thoroughly investigate the problems which affect the lack of citizens’ involvement in Brunei e-government initiatives to achieve the objectives of this research. The relationship of these three ‘E’s, and the determinants will clearly identify the research gap and reveal matters of concern. Although there are different views on the concept of e-government, the adoption of ICTs by the public sector will almost certainly affect public service delivery, organisational settings and the social/political system (James, 2004). In summary, the fundamental goal of e-government is to continuously improve the interactions of the government, businesses and citizens, so as to inspire political solidarity, economic stability and the social progress of society. In the long term, a successful e-government improves service delivery for ordinary citizens and business people (West, 2004).

### 2.3 A Review on e-Government and Citizens Interaction

Government delivered online services cannot improve organisational performance if citizens aren’t using it. Previous researchers have identified the determinants that can affect the acceptance of computer users with their interaction with technology. Chadwick and May (2003) outlined three typical models of how e-government might alter government and citizens relations. The three models of interaction are the Manageral

---

**Figure 2-7: e-government Initiatives Model from Heeks (2001)**

---
Model, Consultative Model and Participatory Model as shown in Figure 2-8.

<table>
<thead>
<tr>
<th>Models</th>
<th>Managerial</th>
<th>Consultative</th>
<th>Participatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role for government</td>
<td>Regulatory; responding to the needs of the “new economy”; efficient and faster delivery of government information to citizens and “users.”</td>
<td>Regulatory; responding to needs of societal interests as expressed electronically; better policy provision to citizens and “users.”</td>
<td>Protector of free speech and rights of expression, regulator of infrastructure, but little beyond that; civil society exists away from the state and (will be) mediated electronically.</td>
</tr>
<tr>
<td>Principal actors and interests</td>
<td>Government and its “customers”; business; the mass media.</td>
<td>Government; “customers”; business; interest groups.</td>
<td>Voluntary associations and interest groups spontaneously interacting within “cyberspace”; groups use information gleaned through deliberation to influence government.</td>
</tr>
<tr>
<td>Flow of information</td>
<td>Unilinear from government to “customers” or customers to government, but main emphasis on improving flow of information within government.</td>
<td>Unilinear from government to citizens or citizens to government.</td>
<td>Discursive and complex—citizens to citizens, citizens to government, government to citizens.</td>
</tr>
<tr>
<td>Principal mechanisms for interaction</td>
<td>Online tax returns; benefit claims; “one-stop shops”; updating of personal information held by public bureaucracies; government gathering and aggregation of “market research” data; government provision of information about its activities to media and public.</td>
<td>“E-voting” at elections; instant opinion polling; electronic input from voters and interest groups to government; “advisory” referendums; “electronic town meetings,” and so on.</td>
<td>Autonomous pluralist mechanisms, such as discussion lists, Usenet, peer-to-peer technologies; time and distance become compressed, facilitating increased political participation and a “cyber civil society.”</td>
</tr>
<tr>
<td>Usage issues</td>
<td>Market-based access and usage patterns; minimal state regulation and public education programs to equip consumers.</td>
<td>Market-based access and usage patterns; minimal state regulation and public education programs to equip citizens.</td>
<td>Universal access and widespread usage are prerequisites.</td>
</tr>
</tbody>
</table>

*Figure 2-8: Three Models of Interactions in E-Governance (Chadwick and May, 2003)*
The Technology Acceptance Model (TAM) introduced by Davis et al. (1989) addresses the ability to predict peoples' computer acceptance from a measure of their intentions, and the ability to explain their intentions in terms of their attitudes, subjective norms, perceived usefulness, perceived ease of use, and related variables as shown in figure 2-9.

A second version, the Technology Acceptance Model 2 (TAM2) developed and tested a theoretical extension of the Technology Acceptance Model (TAM) that explains perceived
usefulness and usage intentions in terms of social influence and cognitive instrumental processes as shown in Figure 2-10.

Figure 2-11: Technology Acceptance Model 3 (TAM3) (Venkatesh and Bala, 2008)

The Technology Acceptance Model 3 (TAM3) addresses the need to understand how various interventions can influence the known determinants of IT adoption and use as
shown in Figure 2-11. According to Venkatesh and Bala (2008) regarding the Technology Acceptance Model 3 (TAM3), they have

(i) developed a comprehensive nomological network (integrated model) of the determinants of individual level (IT) adoption and use;
(ii) empirically tested the proposed integrated model; and
(iii) presented a research agenda focused on potential pre- and postimplementation interventions that can enhance employees’ adoption and use of IT.

Figure 2-12: Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003)

The Unified Theory of Acceptance and Use of Technology (UTAUT) model shown in Figure 2-12 was derived from a review of eight prominent models for user acceptance. According to Venkatesh et al. (2003), “the eight models reviewed are the theory of reasoned action, the technology acceptance model, a motivational model, the theory of planned behavior,
a model combining the technology acceptance model and the theory of planned behavior, a model of PC utilization, innovation diffusion theory, and social cognitive theory.”

### 2.4 Citizens Participation

E-governance is the public sector’s use of the most innovative information and communication technologies, such as the Internet, to deliver improved services, reliable information and greater knowledge to citizens in order to facilitate citizen access to the governing process and encourage deeper citizen participation (UNDPEPA, 2002). The citizen interaction factors examine whether or not citizens are able to get the information or services that they are seeking. These variables measure the success of citizen interaction with e-government (Reddick, 2005). The World Bank emphasizes that e-government promotes civic engagement by enabling citizens to interact with government officials. In addition, e-government provides development opportunities for rural areas and communities with low service levels (InfoDev, 2002). Many aspects need to be addressed in order to enhance citizen participation in e-government initiatives otherwise the government’s plan would not be successful. For example, socio-technical aspects of the strategy include the redesign of governance and management systems to accommodate new models of service delivery and the requirements of users (Damodaran, et al., 2005).

From an economics viewpoint, e-government leads to lower information costs as well as lower processing costs, thus saving human resources and providing more effective service levels which are available 24 hours a day, 7 days a week. This provides citizens with greater flexibility in processing transactions at their convenience rather than only during working hours (Al-Hakim, 2007). Two aspects are considered most important in the context of e-government: online information and online services which include transaction and interaction processes. Governments can make forms and publications available online to increase citizens’ participation and ask for their opinions (Kushchu and Kuscu, 2003). Improving citizens’ use of e-government by understanding their requirements becomes one of the key success factors of e-government (Xiujian and Jun,
The European Commission (2009) points out that e-Participation Preparatory Action supports pilot projects in real-life environments that demonstrate the use of Information and Communication Technologies to bolster citizens’ participation in democratic decision-making. Furthermore, e-government has the potential to involve citizens in the governance process by facilitating their interaction with policymakers throughout the policy cycle and at all government levels (James, 2001).

2.5 Citizens Characteristics

A study on barriers and benefits in the adoption of e-government by Xiujuan and Jun (2005) shows the factors that impact on citizen’s attitudes and behaviours towards e-government in more detail. It is important to analyse the requirements of citizens as one of the important factors that will affect the success of Brunei Darussalam e-government.

A few studies have made an initial inquiry into the characteristics of citizens who tend to interact with government (Thomas and Streib, 2003). According to Thomas and Streib (2003), e-citizens are likely to be: “(a) White, (b) of higher income, and (c) more educated than other Internet users.” Meanwhile Dimitrova and Chen (2006) found that younger users were more likely to visit government websites while Afro-Caribbeans are the only racial group that use it less (Welch and Hinnant, 2003). Another study found that young adults, Whites, college graduates, and professionals were more likely to adopt e-government (Hart-Teeter, 2003). Low-income citizens, lower education and less civically engaged were less likely to have used or be interested in using the Internet for e-government (Tolbert and Mossberger, 2006).

In this research concerning the case of Brunei citizens, the different categories of citizens investigated were civil servants, business people, private sector employees, students, village communities and unemployed citizens aged between 15 and 65 years old living in urban and rural areas.
2.5.1 Citizens Knowledge of e-Government

People who are more aware of and comfortable with an e-government initiative will be more likely to be influenced by that initiative (Jaeger and Thompson, 2003). Public servants appear to be more familiar, better informed and more confident about the vision of e-government than citizens in general. Public servants also take the lead in supporting and advancing e-government and they support a faster implementation of e-government than most citizens (Moon and Welch, 2004). According to Moon and Welch (2004), most citizens are less keen about the potential of e-government and their need for services and information exchange is clearly restrained by security and privacy concerns. This statement is supported by Phang et al., (2006) who identified perceived usefulness, perceived ease of use, and Internet safety perception as antecedents of senior citizens’ intention to use e-government services. Citizens who use government Web sites are generally more comfortable with the broader range of existing and potential uses of the technology for information dissemination, online transactions, and interactive communication (Welch et al., 2005).

2.5.2 Citizens’ Attitude Towards e-Government

A study by Graafland and Ettegdi (2003) showed that attitudes towards e-government vary from country to country. There is little doubt that the growth of e-government initiatives coupled with an increased preoccupation of the mass media with ICT and computer competence has created anxiety in the minds of many people. Attitudes towards technology have been found to influence Internet usage and online transaction services and this factor has become the most significant contributor to overall attitude toward Internet shopping (Shim et al., 2001). Moon and Welch (2004) identify that “the attitude toward the preferred pace of e-government implementation of public servants is more affected by broad society-wide concerns such as equity (digital divide), the attitude toward the preferred pace of e-government implementation of citizens is more affected by potential legal issues such as equity (digital divide), security, and privacy violation.”

Meanwhile, Tolbert and Mossberger (2006) found that race, ethnicity and gender are not
significant factors in predicting attitude and use of e-government. They added that “more positive citizen attitudes might be due to increased opportunities for participation, increased ease of communication with government, greater transparency, or perception of improved efficiency.”

### 2.5.3 Citizens’ Satisfaction with Government e-Services

Satisfaction can be defined as the pleasurable fulfillment of a service (Oliver, 1999). A study by Welch et al., (2005) found that those individuals who are satisfied with e-government and government websites, with the transparency and interactivity of government (Welch and Hinnant, 2003), trust the government more. Carter & Belanger (2005) support this statement with their findings that perceived ease of use, compatibility and trustworthiness are important factors in citizens’ intention to use e-government services.

Governments providing 24/7 services can improve the level of satisfaction among citizens and the acceptance of the public sector (Stiftung, 2002). According to Gilbert et al., (2004) current technology makes it possible to personalise a website to cater for the specific needs of citizens to deliver e-government services, thus increasing the satisfaction of citizens with government services.

Kumar et al., (2007) identifies that “in order to increase the frequency of use, as well as moving citizens up the level of hierarchy of services, governments must measure and monitor the satisfaction of citizens with existing services.” They added that service quality affects citizen satisfaction which leads to recurring use of e-government services.

### 2.6 Online Government Services Characteristics

Government e-services can also be referred to as online government services or e-government services. For the purpose of this study, all these terms are deemed to be synonymous.

Although much of the attention and excitement has centered on public service delivery
through the Internet, e-government affects every aspect of a public organisation (James, 2004). Furthermore, according to James (2004), delivering such integrated services requires inter-agency cooperation, coordinating and collaborating between different departments and levels of government. A survey of 10,000 services providers revealed that centralized services have a higher rate of on-line delivery than services provided by local agencies and that important back-office reorganization is needed (European Communities, 2003).

Carter & Belanger (2005) identify that a state government web site should be easy to navigate. Information should be organized and presented based on citizens’ needs, allowing users to quickly and effortlessly find the information or services they seek. More consistency across e-government sites would make it easier for citizens to make use of online materials (West, 2004). West (2004) also informs that portal sites that integrate information regardless of the agency source are convenient for citizens and help them avoid the problem of not knowing where to find particular services or information. Reichard (1998) identifies that “the more transparent an organization’s website is, the more the organization is willing to allow citizens to monitor its performance.”

2.6.1 ICT Infrastructure Reliability

According to James (2004), ICT infrastructure provides an essential backbone for an economy’s e-government initiatives. He adds that without a robust and high bandwidth network, the delivery of e-government information and services can be significantly slowed down. In other word, Infrastructure is a key element in the overall ICT maturity in an economy. Other maturity metrics include teledensity (fixed and mobile phone penetration), networks (availability of global telecommunication as well as microwave, satellite, etc) and Internet (penetration rate and number of ISPs).

In Singapore, the ‘Singapore ONE’ (One Network for Everyone) was launched in June 1998 and became the world’s first nationwide broadband network, available to nearly 100% of households, all schools and many public and private organizations (iDA, 2003). With this project, Singapore improved their regional ICT infrastructure and services, social and
community services, social capital, and regional inclusion - meaning that technology has been made accessible and affordable to all citizens, regardless of race, language, social background or ability.

In Nigeria, the formulation of their new national ICT policy, which appears to promote e-government initiatives, is moving in the right direction. However, their main problem continues to be the unavailability of the enabling ICT infrastructure for e-government such as telecommunication facilities (Ifinedo, 2007).

Governments can invest a lot of capital into infrastructure when they start to implement e-government initiatives. In the case of Brunei Darussalam, the government ministries, department and data centres are all linked via a high-speed, reliable, fibre optic network. This “One Government Network” is connected to the Internet, thereby making government websites available to the public round the clock. At the same time, the government will ensure that the public has access to a reliable domestic Internet service in their homes either via wired or wireless means.

2.6.2 Strengthening Security & Trust

Security and trust represent significant challenges for successful e-government. Kushchu & Kuscu (2003) state that privacy and security are the most significant concerns of citizens using mobile phones to access government sites (known as m-government). They revealed that government must overcome mistrust and assure mobile phone users that their privacy is protected and the information will not be shared.

Government organizations at all levels (i.e. ministries, departments, sections, divisions, and units) collect, process and distribute a wide range of sensitive information on personal, medical, financial and educational aspects of their citizens. Certainly citizens could feel susceptible to the possibility of sensitive information being exposed or stolen as e-government makes access to such information easier (Sanchez et al., 2003). Despite government measures to keep information secure and ensure citizens’ trust in e-government, the issues of security and trust remain critical. The online government
services, network and other components need to be made secure so that citizens can confidently use the online services knowing that their privacy, confidentiality and security are properly protected. Government sites generally undergo regular security audits and a national Public Key Infrastructure (PKI) provides added security assurance to government employee and citizens.

### 2.6.3 Delivering Citizen-Centric Services

Government provides a variety of services to citizens. The delivery of information for these services over electronic means such as the Internet is called e-services. E-services are a component of e-government strategy. In changing from supply based solutions to meeting the demand of citizens, governments are gradually shifting towards provision of e-services which are the most convenient for citizens and other stakeholders in their society. Undheim and Blakemore (2007) state that “Citizen-centric e-government services are designed to deliver increasingly cost-effective, personalized and relevant services to citizens, but also serve to enhance the democratic relationship, and build better democratic dialogue, between citizens and their government, which then enhances the practice of citizenship within society.” They added that being citizen-centric is crucial for three groups which provide and/or use e-government services, government administrations and policy makers, e-government implementers who enable the policy through organisational and business strategy, and users.

The e-Government Strategic Plan (e-GSP, 2009) reports that “…online services will be made available 24 hours a day and made accessible via the Internet and mobiles. The services delivered must be easy to use, navigate and most importantly, intuitive – be it information, interactive or transactional services.” Also mentioned in that report is that delivering citizen centric services includes providing online submission of forms and applications to minimize the need for citizens to physically visit the counter of relevant government agencies. The report suggests the provision of a single government website or government portal to access these online government services for citizens’ personal or business requirements, and this should include services for non-residents such as the handling of work permits.
In the UK public sector, especially in local government, customer relationship management (CRM) is a key element in delivering citizen-centric public services (King, 2007). King added that CRM is “a key e-government enabler” which maintains positive relationships with customers, increases customer loyalty and expands customer lifetime value (see also Wayland and Cole, 1997).

2.6.4 Business Process Improvement

A business process consists of the activities between a customer’s demand for a service or product and its delivery (Janssen et al., 2003). This process is triggered by the customer’s request and ends with the fulfillment of that request. Business process improvement is very useful for businesses in order for them to remain competitive in the marketplace. Business process improvement provides an effective, efficient, adaptable and comprehensive means by which to improve a company’s performance (Zairi, 1997).

The e-Government Strategic Plan (e-GSP, 2009) states that “citizen-centric should be the fundamental focus of the business process”. This statement is supported by Shtub and Karni (2010) who state that “For a process-centric organization, the management and improvement of its business processes is an essential factor in organizational advancement.” Thus, the business process improvement has the biggest impact, though ICT can enhance the efficiency of services.

Governments generally recognise that ICT is able to help them streamline their processes and optimize the productivity of their ministries and departments. E-government brings governance issues forward because e-government has the potential to fundamentally change organisational structure, management processes and administrative authority (West, 2004).

2.6.5 Human Capacity & Operational Readiness

One of the most important factors in the success of e-government is the need to develop the civil service capabilities and capacity in ICT and prepare for the changes and reforms needed to deliver better government services (e-GSP, 2009). Brown (2002) mentioned
that “To build human capacity, countries must assess the traditions, customs, values, orientations, and attitudes associated with diversity and the impact of this diversity on the policies' dividends.”

For enhancing the human resource capacity, a number of private and public educational programmes are taking place to promote IT education in the Brunei (Mujahid, 2002). The programmes depend on their appropriate use in e-government initiatives. Examples are Cisco Certified Training, the Java Certification Programme, the Oracle Certification Programme, the Microsoft Certification Programmes, Open Sources Training, and other ICT programmes. From these programmes will come more government ICT experts and future ICT leaders of government organisations.

2.7 Knowledge Management in e-Government

Knowledge Management (KM) has been defined differently by various authors and practitioners. KM could be defined as the identification, optimisation and active management of intellectual assets to create value (Nemati et al., 2002), or an approach to gain and sustain competitive advantage, and increase productivity (Webb, 1998). Scarborough et al., (1999) describe KM as a systematic and organised attempt to use knowledge within an organisation to transform its ability to store and use knowledge to improve performance. This statement is also supported by Wong and Aspinwall, (2006) where KM has become an important strategy for improving organisational competitiveness and performance. KM allows an organisation to learn, reflect, unlearn and relearn, to build, maintain, and replenish its core-competencies.

Malhotra (2000) describes the goal of KM as to capture, store organize and distribute intellectual property, so as to allow its reuse, avoid duplication, enable sharing of best practices, and promote learning. “KM can target transaction processing efficiency or decision making effectiveness” (Wagner, 2003). Wagner adds that building portals has become a first step towards KM for many governments.
2.7.1 Different Perspectives of Knowledge Management in e-Government

Before implementing KM in e-government initiatives, it is important to examine the variety of definitions of knowledge which come from a number of different perspectives i.e. information systems, human resources and management. Davenport and Prusak (1998), from an integrated perspective, define knowledge as a fluid mix of framed experiences, values, contextual information, expert insight and grounded intuition that provides an environment and framework for evaluating and incorporating new experience and information. In organisations, knowledge becomes embedded not only in documents or repositories but also in organisational routines, processes, practices, and norms.

In another integrated perspective, according to Sallis and Jones (2002), KM can be defined as: “A systematic method for managing individual, group and organisational knowledge using the appropriate means and technology. At its roots it is to do with managing people, what they know, their social interactions in performing tasks, their decision making, the way information flows and the enterprise’s work culture.”

Drucker (1993) defines knowledge to illustrate its’ importance to the organisation as “Knowledge is not impersonal, like money. Knowledge does not reside in a book, a databank, a software program – these contain only information. Knowledge is always embodied in a person; carried by a person; created, augmented, or improved by a person, applied by a person; taught and passed on by a person, used or misused by a person.”

In addition, from a knowledge engineering perspective, “Knowledge consists of data items that are organised and processed to convey understanding, experience, accumulated learning and expertise as they apply to a current problem or activity. A set of data items processed to extract critical implications and to reflect past experience and expertise provides the recipient with organisational knowledge and has very high potential value” (Turban and Aronson, 1998).
Liebowitz (2005) asserts that there are several environmental factors affecting the knowledge cycle in project organisation as shown in Figure 2-13. These include:

- **Domain context:** It is crucial to determine the criticality of the knowledge and what should be done to resolve problems in organisations;
- **Organisational culture:** Lack of knowledge sharing affects the creation and exchange of knowledge in organisations and may be at risk of not being codified and transferred to others in project organisations;
- **Management initiatives:** These could influence how the knowledge is shared throughout an organisation; and
- **Benchmarking / standards:** These could affect the creation of knowledge in the organisation.

Information and communication technology plays an important role in KM as an enabler of the business processes aimed at creating, storing, maintaining, and disseminating knowledge (Laudon and Laudon, 2002).
Chapter 2 - Literature Review

The major potential benefits of adopting KM can be summarised as follows (Wong and Aspinwall, 2006):

- Enhanced decision making through just-in-time intelligence;
- Improved work efficiency and productivity;
- Increased innovation in products, services and operations;
- Improved competency and competitiveness;
- Enabled rapid generation of technical solutions to clients’ problems; and
- Increased responsiveness to customers.

The research described in this thesis also tries to investigate whether knowledge status, knowledge domains and organizational culture are barriers in implementing knowledge management in e-government initiatives, specifically the citizens’ awareness in government e-services. There is a need to proactively examine organisational culture and resolve associated barriers, such as citizen’s fears, attitudes or resistance to knowledge sharing. Tacit knowledge is stored in the minds of individuals and is difficult to communicate externally and share. Meanwhile, according to Nonaka and Takeuchi (1995), explicit knowledge is captured or stored in an organisation’s manuals, procedures, information systems, and is easily communicated or shared with other people or parts of an organisation.

Capturing tacit knowledge such as project related problems, solutions, experiences and know-how and making it available as explicit knowledge is important to KM in the e-government initiatives; the reuse of knowledge and the preservation of such knowledge is a government asset (Tserng and Lin, 2004).

2.7.2 Role of Knowledge Management in e-government

“Knowledge is increasingly recognized as an important, strategic resource by all types of organisations and institutions, whether private or public, services oriented or production oriented” (Jain, 2009). Jain adds that at a government level, types of knowledge depend on the functions of the government, therefore government is the highest knowledge
consumer and knowledge producer.

Common sources of knowledge in government are: visions and national strategic plans, government documents, laws, rules and regulations, notifications, archives, and directives. Thus, there is a wide array of knowledge content in the government that needs to be managed.

For the purpose of this study, Misra’s (2007) definition is adopted. Misra defines knowledge management for government (KM4G) as “leveraging of knowledge for improving internal processes, for formulation of sound government policies and programmes and for efficient public service delivery for increased productivity.” Misra also added that knowledge management for e-government (KM4EG) may be defined as “management of knowledge for and by e-government for increased productivity. KM4EG is a management tool for government decision makers and its programme implementers.”

2.7.3 Importance of Knowledge Management for E-government (KM4EG)

Government has large repositories of information and databases and e-government helps in their efficient management (Misra, 2007). Misra adds that governments face excessive amounts of information and KM4EG can help government in coping with these information explosions leading to better policy formulation, better programme implementation and need-based skill formation for increased productivity. This statement is supported by Jain (2009) who states that “the success of e-government depends heavily on knowledge management.”

A useful metaphor for the perception of the knowledge is presented by Tucker and Frappaolo (1999), where the authors divide existing knowledge in an organization into four possible states:

- Know that you know;
- Know that you don’t know;
- Don’t know that you know;
- Don’t know that you don’t know.
In this study, it is necessary to engage citizens to these considerations. Citizens always work in the sense of increasing the percentage of the first two states, and of reducing the percentage of the last two. However, this will only occur if citizens have proper support for their awareness, so they can visualise and select significant and applicable items from their memory (David and Borges, 2002).

Wimmer (2002) mentions that KM4EG may be viewed from a variety of perspectives, these include a service perspective, a technical viewpoint, and perspectives on people (citizens, businesses, and government employees), security aspects, legal issues, organisation, knowledge, and cultural, social and political aspects. In this study, the focus is on the opinions of people on the use of government e-services and a KM4EG tool, the Government e-Services Citizen Awareness Strategy (GeS-CAS) framework, with its model, recommendations and support tool, is provided to assist in e-government decision-making.

2.8 Reviewed of the Aims & Objectives to Show the Research is Needed

In the latest press release by Waseda University (2009), only a few countries have recorded satisfactory use of their online services, which implies that more extensive ‘marketing’ of online services is required. Hence, the policy-makers should take proactive steps not only to assess citizens’ needs but develop and promote citizen-centric products (online services) and enrich the user experience through continuous improvement based on user participation.

Currently, the level of e-government initiatives specific to government e-services in Brunei Darussalam is still unsatisfactory. This is supported by the online news of The Brunei Times (2010) which states that over 10 years and over $1 billion spent on e-government projects, a big portion of Brunei’s time, money and resources have been wasted. The unsatisfactory progress of Brunei’s e-government implementation over the past 10 years is a lesson learned for the government, which will now focus on citizens’ needs before simply automating business processes, according to Government Chief
Information Officer, Azhar Ahmad (Brunei Times, 2010).

James (2001) states that “the success of e-government initiatives depends on an engaged citizenry” Therefore, this research is required to understand the scenario of e-government initiatives to enhance citizens’ awareness of government e-services in Brunei Darussalam. The findings may inform policymakers in the government generally and Brunei’s e-Government Committee specifically. The findings may also benefit other Bruneian researchers, which will lead to the relevant authorities taking necessary steps to develop and improve the e-government initiatives as a whole.

The next chapter (Chapter 3: A review of the context of the study – Brunei Darussalam) reviews the history of Brunei Darussalam, its administration, demography, economy and telecommunications. Brunei e-government initiatives and government e-services delivery are also described.
3.0 A REVIEW OF THE CONTEXT OF THE STUDY - BRUNEI DARUSSALAM

3.1 Introduction

Although it is usual for the context of the study to be presented in Chapter One as part of the introductory chapter, it was decided that this chapter be devoted entirely to the context of the study. A separate chapter for the context of the study is considered appropriate in view of the importance of the context in understanding the progression of e-government initiatives which is the main aim of the study. Since e-government initiatives are involved with the social, political, economic and cultural context of the country, a detailed description of such context is important not only for understanding the nature of e-government initiatives in its natural setting but also for the generalisation of such understanding to other settings by other case-study users. Thus, while this chapter is useful and important for international readers in order for them to make an assessment as to the value of the study’s findings for applicability to their own contexts, it is less important to the local readers as they are already familiar with the context.

This chapter presents the socio-economic background of Brunei Darussalam which forms the context of the study. The explanation also helps in the understanding about Brunei Darussalam in general, describes its’ administration, economic, Long-Term Development Plan (LTDP), the e-Government Strategic Plan (e-GSP) and the latest development in online government services delivery to citizens. It also reviews citizens’ awareness initiatives in the state of Brunei Darussalam, since this is the geographical area of the study, to show that this research is needed. This research context provides the basis on which the research questions were formulated for investigation.
Chapter 3 - A Review of the Context of the Study – Brunei Darussalam

3.2 About Brunei

The official name for Brunei is Negara Brunei Darussalam (‘Negara Brunei’ – the state of Brunei, and ‘Darussalam’ - Abode of Peace). Brunei Darussalam is a small country which situated on the north-west of the Island of Borneo in Southeast Asia as in the Figure 3-1.

![Map of Brunei Darussalam](image)

Source: Prime Minister Office website (PMO, 2011)

*Figure 3-1: Map of Brunei Darussalam*

Islam is the official religion of Brunei Darussalam. Thus, Islam plays a central role in the life of every Muslim in the state. Other faiths practiced in the State include Christianity and Buddhism. The official language of the country is Malay, which is also spoken by the people in the surrounding countries of Singapore, Indonesia, Malaysia and the southern part of the Philippines. English is widely used in education, industry and commerce.

Brunei Darussalam is divided into four districts, namely Brunei-Muara, Tutong, Belait and Temburong. The capital of Brunei Darussalam is Bandar Seri Begawan. Brunei Darussalam has a total area of 5,765 sq. km with a coastline of about 161 km along the South China Sea. It has an equatorial climate characterized by uniform high temperatures, high humidity and heavy rainfall (Brunei Yearbook, 2010).
3.2.1 A Brief History of Brunei

Brunei is believed to be an old established Malay State which had a close relationship with its neighbours on the Asian continent. The Islamic tradition in Brunei is believed to have been established as early as the 6th or 7th century because of frequent visits by Muslim traders and missionaries.

In 1847, the Sultan of Brunei entered into a treaty with Britain for the purpose of strengthening commercial relations and the mutual suppression of piracy. In 1884, another treaty was signed between the two countries, which placed Brunei under British protection. The treaty strengthened the British rule in Brunei (Harun, 2007).

In 1906, Brunei signed a treaty under which it agreed to be directly ruled by Britain through the introduction of a Residential System of Government where a British representative or the first British Resident was required to be domiciled in Brunei. The British Resident was to advise the ruler (Sultan) in all matters except those affecting the local customs, religion (Stockwell, 2004) and traditions (Loo, 2009).

In 1967, the present Sultan, His Majesty Sultan Haji Hassanal Bolkiah ascended the throne as the 29th ruler of Brunei. The Sultan has given priority to the development of education and welfare services and economic diversification (Talib, 2002). On the 1st of January 1984, Brunei received its full independence from the British Government.

3.2.2 Brunei Administration

The past and the present ties with Britain have deeply influenced not only the educational system of Brunei but also the legal and administrative systems. The features of the current political system are partly based on the English Common Law (Brunei Yearbook, 2008) in which the country adheres to the rule of law and the independence of judiciary, partly on the 1959 written Constitution, and partly on the conception of the traditional Malay Islamic Monarchy. The established political system is thus a mixture of traditional and reforming policies within the ministerial structure (Talib, 2002).
Under the Constitution, His Majesty Sultan Haji Hassanal Bolkiah and Yang Di Pertuan of Brunei Darussalam (His Majesty) is the Head of State and also the Head of Government. As Sultan, His Majesty is advised and supported by Privy Council, the Religious Council, the Legislative Council, the Council of Ministers and the Council of Succession. Apart from the Prime Minister, His Majesty is also the Defence and Finance Minister of Brunei Darussalam (Brunei Yearbook, 2010).

![Organisational Chart of the Brunei Government]

Brunei’s administration system is centred on the Prime Minister’s Office and twelve autonomous ministries, each reporting to His Majesty the Sultan as shown in the Organisational Chart of the Brunei Government in Figure 3-2.

The system of government revolves around the Sultan as the source of executive power. Hence, according to the constitution, the Ministers including the Prime Minister, Deputy Ministers as well as the Attorney General and heads of departments are appointed by the Sultan to hold office at his pleasure (Brunei Yearbook, 2008).
3.2.3 Demography

The Brunei Darussalam Statistical Yearbook 2007 produced by the Economic Planning Unit, Prime Minister’s Office, Brunei has been the main source of information for this subsection. According to this source, the population of Brunei Darussalam in 2010 was 410,600. In terms of age structure, 28 per cent of the total population is under the age of 15, while 66.9 per cent are between 15 - 64 years old with the remaining 3 per cent aged 65 and above as shown in Table 3-1. The median age of the population is 25 years, reflecting a young population (LTDP, 2007). The population of Brunei Darussalam in 2011 is estimated at 401,890 and the annual growth rate is estimated at 1.712%. (CIA, 2010).

Table 3-1: Population Size and Age Structure, 2001 – 2010

<table>
<thead>
<tr>
<th>Age-Structure</th>
<th>2001</th>
<th>2005</th>
<th>2007</th>
<th>2010</th>
<th>Average Annual Growth Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>332,844</td>
<td>370,100</td>
<td>390,00</td>
<td>410,600</td>
<td>2.7</td>
</tr>
<tr>
<td>Age-Structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 – 14</td>
<td>100,912</td>
<td>111,000</td>
<td>105,100</td>
<td>115,000</td>
<td>2.4</td>
</tr>
<tr>
<td>15 – 64</td>
<td>222,615</td>
<td>248,400</td>
<td>272,400</td>
<td>283,300</td>
<td>2.7</td>
</tr>
<tr>
<td>65 and Above</td>
<td>9,317</td>
<td>10,700</td>
<td>12,500</td>
<td>12,300</td>
<td>3.5</td>
</tr>
</tbody>
</table>


Within the total population of Brunei in 2010, males constituted 53% (217,618) and females 47% (192,982). Figure 3-3 shows the ethnic composition of the population in 2010. The country’s birth rate in 2010 is 2.8% while the death rate was 0.2%. Life expectancy was comparatively high: 73 for males and 76 for females while the infant mortality rate was 0.5%.
The population is unevenly distributed within four major urban areas or towns. The density of the population in 2010 was around 67 persons per km. Over 90% of the population lives in the coastal areas where almost all social, cultural and economic activities are concentrated.

This research is mainly focused on citizens’ aged 15 to 64 for this study. In this study, citizen participation in Brunei Darussalam was sampled from government civil services (the government sector), businesses, employees in the private sector, students and others such as job seekers, pensioners, housewives etc. Apart from the “others” category, these categories of Brunei citizens are the most likely to have a high demand for online government services.

Figure 3-4 shows the categories of Brunei Citizens.
The government sector is by far the largest employer in Brunei Darussalam. According to the Brunei Darussalam Statistical Yearbook of 2007 the total potential labour force, which comprised of employed persons and the unemployed in 2007, was 184,800 and the number of students was 110,413.

Tan & Amin (1995) point out that despite rapid economic growth and high demand for labour, unemployment exists. The unemployment may have been caused by the attitude of the unemployed or mismatches between training or educational qualifications and the skills required in the jobs that were available. This problem concerns the government because of the negative social effects that unemployment among the educated can cause. However, the strong extended-family system in Brunei provides the younger segments of the population with the necessary financial and social support, thereby lessening the impact of educated unemployment (Brunei Yearbook, 2009).
3.2.4 Brunei Economics

Brunei Darussalam has been recognized by the Organisation of Economics Cooperation and Development (OECD), as a developed country because of its positive achievements in economic development (Karousakis et al., 2008). However, the Sultanate’s small population is insufficient to provide the manpower needed to implement the targets in its development plans, especially in e-government initiatives. The government continues to rely on imported labour, both skilled and unskilled. In its effort to reduce the country’s reliance on imported labour, the government gives priority to the training of technicians, engineers and other required professionals by providing local and overseas scholarships.

Since the discovery of its oil fields in 1929, the economy of Brunei has been generally performing well. The Gross Domestic Product (GDP) of the country and the respective per capita GDP at current prices are shown in Figure 3.5. Brunei’s gross domestic product per capita (GDP) in 2010 was listed as the fifth highest in the world with a per capita income of US$48,714 ($68,200) by the US business publication, Global Finance (Brunei Times, 2011).

![Figure 3-5: Brunei’s GDP and Per Capita GDP from 1992 - 2010](image)

Source: Brunei Times (2011)
Economically, Brunei Darussalam is very much dependent on revenues from crude oil and natural gas to finance its development programmes. Brunei Darussalam is the third largest oil producer in Southeast Asia and it produced 163,000 barrels per day. It is also the fourth largest producer of liquified natural gas in the world (BDEB, 2010). The revenue generated from oil and gas, along with its foreign reserves has made the country one of the richest in the world (Brunei Yearbook, 1997) and could turn the country into a financial centre of the region.

3.2.5 Brunei Telecommunication

The telecommunication services in Brunei Darussalam are constantly being upgraded from year to year, particularly within the past 3 years. Currently, there are three operators providing telecommunication services in the Sultanate, namely Telekom Brunei Darussalam (TelBru), DSTCom and B-Mobile. TelBru has been identified as the first government sector (Jabatan Telekom Brunei – JTB) to be privatized. This industry has been viewed as the frontrunner in national development, where it is hoped that revenues from the development of this sector can stimulate development and advancement in other sectors (Brunei Yearbook, 2007).

A study ranked Brunei Darussalam at number 52 in the world in terms of ICT usage out of 180 nations. However, the percentage of personal computer ownership is very low (Brunei Yearbook, 2008). RAGAM 21 – a network infrastructure based on the ‘synchronous digital hierarchy’ technology is being used to provide a backbone and platform for e-commerce and e-government services such as e-education, e-health, e-GEMS (Government Employee Management System), e-Islamic, e-heritage, and e-MinCom (Communication and Transport System).

In 2005, it was revealed that telephone penetration in Brunei Darussalam was around 23 telephone lines per 100 population, a number well above the world’s average of 12 and the second highest in Association of Southeast Asia Nations (Brunei Yearbook, 2007). In regard to cellular mobile telephone services, Brunei Darussalam has a variety of two types of services – the conventional GSM system and the 3G technology. The density of mobile
phone usage per 100 population is 19 – one of the region’s highest. This statement is supported by Internet World Stats (IWS, 2010) as shown in Table 3-2, there are 318,900 Internet users in Brunei Darussalam out of a population of 395,027 which gives a 81% penetration. While, DSTCom recorded that, as of 2005, 191,199 people out of the 357,800 population in Brunei Darussalam had access to mobile phones.

**Table 3-2: Internet User and Penetration in Brunei Darussalam**

<table>
<thead>
<tr>
<th>Year</th>
<th>Users</th>
<th>Population</th>
<th>% Pen.</th>
<th>GDP p.c.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>30,000</td>
<td>346,400</td>
<td>8.7 %</td>
<td>US$ n/a</td>
</tr>
<tr>
<td>2007</td>
<td>165,600</td>
<td>403,500</td>
<td>41.0 %</td>
<td>US$ 31,808</td>
</tr>
<tr>
<td>2009</td>
<td>217,000</td>
<td>388,190</td>
<td>55.9 %</td>
<td>US$ 26,325</td>
</tr>
<tr>
<td>2010</td>
<td>318,900</td>
<td>395,027</td>
<td>80.7 %</td>
<td>US$ 29,249</td>
</tr>
</tbody>
</table>

Source: Internet World Stats (2010)

In addition, B-Mobile customers are able to surf the Internet anywhere at any time, as they can connect to the Internet through their handsets.

### 3.2.6 E-government Implementation in Brunei

E-government realization first occurred as far back as the 1970s when computerisation of the civil service commenced. The computerisation initiatives were relatively *ad hoc* up to the early 1990s. In 1993, the various computer units in key government agencies from the Ministry of Finance, notably the Brunei Investment Agency (BIA), Treasury and Economic Planning Unit were combined to become the Computer Division under the Ministry of Finance.

In 1995, the Information Technology Programme or “*Teknologi Maklumat*” was introduced for the civil service. It aimed to raise IT usage and awareness, promote planned IT programmes for various ministries and improve service levels to the citizens.

In 1996, the Information Technology Section in the Ministry of Finance was merged with the State Store Department and upgraded to a department, known as the Department of
Information Technology and State Store. In 1997, a national IT strategic planning framework was formulated and the first National IT Strategic Plan began in 2000.

In 2000, His Majesty the Sultan expressed his desire for establishing e-Brunei as a paperless society by guiding Brunei into the mainstream of global information technology. Efforts to establish e-government and e-business were highlighted with the aim of developing Brunei’s services beyond its reliance on oil and gas reserves. Additionally, the Government of His Majesty the Sultan, like other countries of the Association of Southeast Asian Nations (ASEAN) and developing countries, have long realised that an efficient and effective public administration system is essential to the achievement of national development goals and objectives (Country Paper, 2003).

Since His Majesty’s expressed his view, the Government of Brunei has taken a highly proactive and concentrated role in the intensification of the ICT sector, with ICT taking a key position in the modernization of the Brunei Government’s provision of public services. The utilization of ICT, specifically the Internet, provides the opportunity for Brunei to build up a wide range of e-government strategies, plan and initiatives.

In the 8th Brunei Government Five Year Development Plan (RKN8) covering the years 2001 to 2005, the National Information Technology Strategic Plan, known as ‘IT2000 and Beyond’ aimed to promote the effective application of IT in the public and private sectors, raising the level of IT literacy, and ensuring the supply of IT skilled manpower to fuel growth (Country Paper, 2003). For this, the Brunei Government National IT Council (BIT Council) was formed, with the following aims:

- To advise His Majesty’s Government in matters pertaining to IT;
- To assist Brunei to achieve the vision, mission and goals of the National IT Strategy plan for the year 2000 and beyond;
- To advise, formulate and implement activities with regard to the development and use of IT.

The plan outlined 3 core strategic initiatives that would bring Brunei Darussalam towards the optimal diffusion and utilization of ICT (LTDP, 2007). The initiatives are:
Chapter 3 - A Review of the Context of the Study – Brunei Darussalam

1. e-Government – The initiatives and programmes designed to create a more conducive environment to enable the government to provide efficient, timely and high quality governance services in line with the 21st Century Civil Service Vision;

2. e-Business – A programme aimed to significantly increase the demand for e-Business services by the public and ICT applications by businesses in the country;

3. e-Brunei – The national drive towards a paperless society to move Brunei Darussalam into a paperless governance and information / data exchange through multimedia technologies.

The implementation of e-government into the Brunei Civil Service is an initiative taken by the government of His Majesty to improve the efficiency and effectiveness of its services. Its vision of the public sector services being “an e-smart government in line with the 21st century civil service vision (EG21)” (LTDP, 2007). The e-government implementation blueprint set IT development into domain areas:

- EG Agencies Services (EGAS) – Programmes and projects that cater for ICT infrastructure and application requirements for all ministries;
- EG Broadband Service (EGBS) – Programmes and projects to cater for the IT bandwidth requirement for infrastructure connectivity within and between ministries;
- EG Centre (EGC) – Programmes and projects to establish a central e-government data centre of common services such as the Disaster Recovery Center Co-location, Secure Network Operation Centre for the e-Government Network, Public Key Infrastructure for secure e-services and the e-Government Enterprise Portal.

(Source: LTDP, 2007)

An article from the Brunei Information Technology Council (BIT, 2009) quotes Dato Zakaria Sulaiman of the Ministry of Communication on the e-government of Brunei Darussalam’s future IT strategic directions, stating:
“The e-government programme has been identified as a top agenda in line with the 21st Century Civil Service Vision. The government is committed to provide all appropriate information and services online. This will improve accessibility to government information and services by members of the public or businesses. An executive committee has been tasked to advance IT diffusion in the public service and advance the development of e-related services or activities currently being undertaken by various ministries and government agencies.”

There are several government and independent statutory bodies that have played key roles in the development of the national ICT programme in Brunei Darussalam:

- The Brunei Information Technology (BIT) Council leads and facilitates the strategic development and diffusion of ICT at national level. The immediate tasks of BIT Council are to integrate the various major ICT initiatives, programmes and projects currently carried out by various government agencies and facilitate the required participation of the private sector (BIT, 2011).

- The E-Government National Centre (EGNC) under the Prime Minister’s Office (PMO) became the central agency to lead e-government and is involved in the national IT development programme, managing IT human resources through good governance, and sustainable implementation of e-government projects (EGNC, 2011).

- The E-government Leadership Forum (EGLF) is an affiliate of the BIT Council, comprising the Permanent Secretaries from all government ministries. The EGLF functions as the advisory and consultative body to the BIT Council for the development and implementation of the e-government programme.

- The E-Business Leadership Forum (EBLF) is an affiliate of the BIT Council but focuses on commerce rather than government. The main objective for the establishment of EBLF is to expand and increase more efforts towards the development of e-Business in Brunei Darussalam. The main function of EBLF is to monitor and make decisions on initiatives and programmes of e-business in Brunei Darussalam and it is accountable for its total effectiveness (EBLF, 2011).
The Authority for Info-communications Technology Industry (AiTi) is a statutory body which is responsible for telecommunications industry regulation, national radiofrequency spectrum management and development of Brunei Darussalam’s ICT industry. (AiTi, 2009).

Through the enactment of ICT related laws such the Electronic Transaction Order 2000, the Computer Misuse Act 2000, the Copyright Order 1999, the Broadcasting (Class License) Notification 2001, and the Internet Code of Practice Notification 2000, Brunei Darussalam can provide an encouraging environment for public and private sector companies to move towards more involvement and participation in on-line business (WTO, 2008).

Furthermore, evidence reports that one of the major challenges in the implementation of ICT programmes and projects in Brunei Darussalam is the constraint in both human resource and institutional capacity in the public and private sectors. The shortage of skilled and qualified local ICT workers leads to a heavy reliance on foreign IT companies and workers. To a certain extent, this had delayed the implementation of the e-government programmes. Another challenge is to ensure that all of the ICT systems are compatible and can be integrated within and among ministries (LTDP, 2007).

ICT is recognized as a major foundation of the knowledge based economy. In Brunei Darussalam, on average 1 in 3 households in non-rural and 1 in 9 households in rural areas are connected to or have access to the internet. These figures provide us with the benchmark for ICT interconnectivity and coverage before the implementation of the development plan (Wahab, 2002).

In the current National Development Plan ‘Rancangan Kerajaan Negara’ RKN2007-2012, specifically for the second phase of Brunei Darussalam’s e-government initiative, which started in 2007, the development of human resources factors is high in the implementation strategy.
3.2.7 Brunei e-government Strategic Plan 2009-2014

Success in e-government requires strategic direction (Poon, 2002). It is very important to formulate a strategic action plan that provides clear guidelines for agencies to follow in implementing e-government initiatives (Ke and Wei, 2004). The E-government Strategic Plan 2009-2014 – Brunei Darussalam book (e-GSP, 2009) produced by the e-Government Committee of the Prime Minister’s Office has been the main source of information for this sub-section (see Appendices F).

The importance of e-government for civil services has been emphasised by His Majesty the Sultan. In his ‘Titah’ (speech) in conjunction with the ceremony marking the 10th Civil Service Day on 4th October, 2003, His Majesty declared,

“... era ICT turut mencetus hasrat kerajaan beta untuk komited dalam perlaksanaan e-Kerajaan, dalam mana anggota Perkhidmatan Awam perlulah menerima cabaran perubahan cara bekerja serta mewujudkan budaya kerja baru yang mementingkan pengetahuan dan kemahiran di dalam bidang teknologi infokomunikasi.”

(Translation: The ICT era requires His Majesty’s government to commit to the implementation of e-government, where every civil service should accept dynamic change in its working environment as well as create a new working culture of knowledge and expertise in ICT)

Along the same lines, the Brunei Minister of Communications, as Chairman of Brunei Information Technology (BIT) Council, stressed that the government of His Majesty the Sultan through the Ministry of Communication will continue to implement a reliable and secure government communication infrastructure to support a successful e-government roll out through the e-Government Bandwidth Service (EGBS) project which aims to link all government agencies together via a single network.

Similarly, the Deputy Minister at the Prime Minister’s Office, as Chairman of the e-Government Leadership Forum, said,

“The first e-Government Strategic Plan or e-Government Strategy Framework was launched in 2001 and subsequently reviewed in 2005. Taking into account the
experiences learned during those years, the Government is mindful that more emphasis should be placed on citizen-centric services delivery in order that e-government initiatives remain relevant. We recognize that the e-government initiative is the prime mover for Information Communication Technology development in Brunei Darussalam. Considering the ever increasing dependency of ICT in our daily lives, I believe passionately that citizen-centric services should be a driver of change, not only for the civil service, but also for all people of Brunei Darussalam. That being said, the Change Management Team has been created to study ways and means of effecting changes in organisational culture and business processes as well as the desired transition of attitude and mindset amongst civil servants as a whole” (e-GSP, 2009)

The vision of the Government of His Majesty the Sultan is to transform the government into a smart government that focuses on the needs of its citizens by delivering integrated government services that are practical, relevant, easily accessible, convenient, caring, secure and transparent, through innovative use of ICT over the Internet, via mobile devices and through other kinds of electronic delivery systems (e-GSP, 2009). With the drive to develop integrated e-services and connected government, it is important to share common objectives and efficient coordination about policy decisions by all government agencies.

The mission of the Government is to establish electronic governance and services to best serve the nation (e-GSP, 2009). To be continuously relevant, the government must constantly innovate to position itself to be more competitive and deliver better public services to better respond to the needs of its users.
In the e-Government Strategy Plan for the next five years, five key strategic priorities were identified for the objectives to be achieved. These priorities have been built on progress made during the previous development of e-government initiatives. Emphasis will be focused on improving the provision to strengthen ICT facilities and engage government agencies to work together and speed up the delivery of integrated, easily accessible and efficient e-government services. The strategic priorities and their objectives are shown in Figure 3-6.
According to the e-GSP (2009), using ‘Citizen-Centric Services’ as the guiding principle, the strategic priorities are translated into work programmes as described in Figure 3-7. The purpose of these work programmes is to ensure that both central and agency-specific projects are working towards the e-government vision and objective.

A focus on strategic priority number SP5.2 – ‘Outreach & Awareness’, as highlighted in Figure 3.7, shows the context of the study is necessary and essential in the eyes of the Brunei government. It outlines the education, awareness, publicity activities and events that will be developed and carried out to promote and encourage the public to use the
government online services. This prompts the questions:

- How efficient and cost effective will this programme be?
- How can the categories of citizens within the awareness programmes be managed?
- What promotion method is suitable for the target users?

Before this strategic plan was implemented, this research made a contribution by investigating the awareness & publicity framework to provide very important input to the e-Government Committee.

The objective of Strategic Priority 5 – Delivering Integrated, Accessible and Convenient e-Services as shown in Figure 3.7 is to develop and provide efficient, secure and easy to use online services for citizens. The outcomes from this objective are to be:

- All major services will be delivered online using a more convenient and efficient approach;
- More online services will be used by the public;
- Public awareness and acceptance of government e-services will be increased;
- 24 hour access to e-services will be available;
- More accurate, regularly updated and reliable information will be available online.

Figure 3-8 shows Brunei Darussalam’s journey in implementing their strategic plan and shows that the ICT Awareness campaign continues until the end of 2013. Imperative research is needed for the e-Government Committee to be successful in terms of being cost effective and time efficient, targeting citizens with appropriate publicity, and using suitable methods of motivation and promotion.

The progress of Brunei Darussalam’s journey, The e-Government Strategic Plan 2009 – 2014 is shown in Figure 3-8.
At present, e-government in Brunei Darussalam is encountering a prosperous phase of development. The government is taking vigorous steps to deliver high quality services to citizens by means of e-government. All ministries and several departments in the Brunei government have their own websites with a variety of online government information and services including email, forums, downloadable forms, feedback forms, etc. However, some problems have arisen during the progression of e-government implementation. In order to facilitate the further development of online government information and services, these experiences should be taken into account.
3.2.8 Brunei Government e-Services Delivery

According to a United Nations inter-regional adviser on e-government, “Brunei needs to focus on providing more e-government services and improving the delivery of such services, which the Sultanate is lacking” (Kerby, 2010).

The growing number of available pages on the Web shows there is an increasing use of the Internet in many areas of life. In the context of Brunei Darussalam, this represents many new opportunities. It is important to assess the specific level of Internet reliability and usability needed to access online government information and service delivery for Brunei citizens in order to prepare them for this new era of e-government. Where practical, government e-services will be made available 24 hours a day and made accessible via the Internet and mobile phones. The services delivered must be easy to navigate and use, consistent in look and feel, and most importantly, intuitive – be it information, or interactive or transactional services. For added convenience, single sign-on technology is being seriously considered where each citizen only needs to remember one username and password to access online services from any government agency. However, the risks associated with this are that one failure could open the door to many hacking attacks. In the future, a biometrics Identify Card for every Brunei citizen could be used to give more secure access to online services.

Online submission of applications will be the norm, which minimizes the need for citizens to visit the relevant government agencies. Citizens will only need to remember how to access one government website to access all online government services for their personal or business requirements. Even services for non-residents will be catered for, such as the handling of work permits. Care will also need to be taken to make some services accessible for citizens who have accessibility issues through special web pages, telephone assistance or special counter support.

One of the flagship programmes of the e-government initiative is the enabling of online payments for government services via the internet or mobile devices, including the payment of utility bills. Timely public awareness campaigns will be conducted to inform the public of the launch of government e-services whilst incentivising the public to use the services by promoting the benefits they offer.
Government employees will be informed of any new developments via the intra-government website or through other relevant channels.

**Table 3-3: Examples of a Government e-Service for Each Ministry**

<table>
<thead>
<tr>
<th>Name of Ministry / Department</th>
<th>Type of e-Service provided</th>
<th>Example</th>
<th>Government e-Services Address</th>
<th>Main Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Finance</td>
<td>Download Form</td>
<td>e-Payment</td>
<td><a href="http://www.mof.gov.bn/English/downloadable_forms/Pages/default.aspx">http://www.mof.gov.bn/English/downloadable_forms/Pages/default.aspx</a></td>
<td>Government Civil Services, Private Sector</td>
</tr>
<tr>
<td>Ministry of Communication</td>
<td>Interaction</td>
<td>e-Postcode</td>
<td><a href="http://www.post.gov.bn/mail_online_postcode.htm">http://www.post.gov.bn/mail_online_postcode.htm</a></td>
<td>Residents</td>
</tr>
</tbody>
</table>
This information includes new policies, services or business process changes. Successful delivery of e-government services hinges on standardisation, sound policies, relevant legislation and frameworks to facilitate the adoption of ICT and roll-out of the services. Standardisation will ensure that systems are interoperable, manageable and cost-effective (e-GSP, 2009). A review of the websites provided by the various ministries of the government in Brunei showed that each ministry did indeed have a website and at least one online service was provided by this website as is shown in Table 3-3. Table 3-4 shows the progress made in recent years to reach the current state of e-government development in comparison with other countries.

**Table 3-4: Brunei e-Government Ranking**

<table>
<thead>
<tr>
<th>Years</th>
<th>Ranking (Point E-government Index)</th>
<th>Online Services</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>56 from 196 countries (32.7)</td>
<td>0%</td>
<td>No online services provided – Provide Publication &amp; Databases</td>
</tr>
<tr>
<td>2002</td>
<td>154 from 198 countries (35.5)</td>
<td>0%</td>
<td>No online services provided – Provide 13% Disability Accessibility</td>
</tr>
<tr>
<td>2003</td>
<td>39 from 198 countries (32.8)</td>
<td>0%</td>
<td>No online services provided – Provide Foreign Language (Malay) in the websites</td>
</tr>
<tr>
<td>2004</td>
<td>104 from 198 countries (22.4)</td>
<td>0%</td>
<td>No online services provided – Provide 20.4% Average Number of Disabilities Errors</td>
</tr>
<tr>
<td>2005</td>
<td>38 from 198 countries (29.0)</td>
<td>20%</td>
<td>Provide online services – Provide additional 20% Information websites updates</td>
</tr>
<tr>
<td>2006</td>
<td>104 from 198 countries (26.8)</td>
<td>20%</td>
<td>Provide online services – Provide additional 20% Information websites updates (No improvement)</td>
</tr>
<tr>
<td>2007</td>
<td>28 from 198 countries (36.5)</td>
<td>25%</td>
<td>Provide online services – Additional 25% Security policy</td>
</tr>
<tr>
<td>2008</td>
<td>87 from 198 countries (46.6)</td>
<td>35%</td>
<td>Provide online services – Additional 50% in publication</td>
</tr>
<tr>
<td>2009</td>
<td>17 from 198 countries (41)</td>
<td>50%</td>
<td>Provide online services – 100% in publication, and privacy policy 25%</td>
</tr>
<tr>
<td>2010</td>
<td>68 from 192 Countries (47.9)</td>
<td>55%</td>
<td>Provide online services – 100% in publication, and security policy 10%</td>
</tr>
</tbody>
</table>

Sources: Compilation from UN Global E-government ranking for Brunei Darussalam
Chapter 3 - A Review of the Context of the Study – Brunei Darussalam

Referring to Table 3-4, the e-government ranking from 2001 to 2010 created a zero to 100 point index and applied it to each nation’s website, based on the availability of contact information, publications, databases, portals, and number of online services by UN Global E-Government. In the year 2001, Brunei came in ranked 56 of 196 countries where there was no government e-services yet provided to Brunei citizens. The recent year 2010, Brunei came to ranked 68 of 192 countries due to providing 55% of services online, 100% in information online and 10% on security policy.

3.3 Conclusion

This chapter has shown there is considerable interest in developing e-government in Brunei Darussalam and there is a strong motivation to enhance e-government to support the country’s development. The country has the finance to promote e-government and this is being put into both creating the infrastructure and educating the people to develop the skills to design and implement e-government systems. Indeed this research is sponsored by the Government of Brunei Darussalam who are paying for the researcher’s university fees and salary. Furthermore, government employees can obtain computers for use at home by their families with government loans easily without bank interest, but even without government support the majority of families could get Internet access through their mobile phones.

Awareness of the e-government systems by its citizens has been identified as a potential problem for the expansion of e-government and this is the reason the Government of Brunei Darussalam is sponsoring the research to discover the extent of the problem and the possible solutions to the problem.

The next chapter (Chapter 4: Research Methodology) reviews the research orientation, approaches and strategies used in this study.
Chapter 4

4.0 RESEARCH METHODOLOGY

This chapter presents an overview of the research orientations, approaches and strategies used in this study. It reviews the basic concepts and principles relating to the research methodology, and then justifies the adopted methods.

4.1 Introduction

This research was undertaken based on the findings of the literature review discussed in Chapter 2 and a review of the e-government initiative of Brunei Darussalam in Chapter 3. One of the main findings showed that by providing a publicity and awareness framework strategy to increase awareness among the citizens, use of government e-services could be increased.

The intention of this exploratory study was to understand the implementation of e-government from a macro perspective through an analysis of the concerted e-government implementation effort made by the Brunei Government. The research carried out with Brunei citizens living in and outside the country used a variety of approaches. The evidence presented is the result of work conducted in several stages. The US government is using a variety of methods to find out what their citizens want from e-government services (Meghan, 2000). According to Meghan, different methods generate different results, with different levels of reliability. In order to determine citizen participation and attitudes towards the use of online government services through the Brunei e-government initiatives, it is necessary to use an efficient method of processing a large amount of data from a reasonable sample of Brunei citizens.
The most appropriate methods to measure the research are through the mixed method and mix model approaches.

### 4.2 Research Orientations or Methodologies

Research methodology refers to the principles and procedures of logical thought processes which are applied to a scientific investigation (Fellows and Liu, 2003; Klien and Myers, 1999). Research can be described as a systematic and organised effort to investigate a specific problem that needs a solution (Neuman, 2006 and Walker 1997). Greenfield (1996) views research as an art aided by skills of inquiry, experimental design, data collection, measurement and analysis, interpretation, and presentation. Further skills, which can be acquired and developed, are creativity and invention.

Kagioglou et al., (1998) introduce a nested approach to describe a hierarchical model of research methods that is divided into three main interrelated themes: research philosophy; research approach and research techniques, as shown in Figure 4-1.

![Figure 4-1: Nested Approach of Research Methodology (Kagioglou et al., 1998)](image)

It is important to identify the philosophy of the research since it will simplify, for the researcher, the choice of the appropriate research strategy and data collection methods, and verify how data are gathered and analysed (Crossan, 2003).
The research design is important to “ensure that the evidence obtained enables the researcher to answer the initial question as unambiguously as possible” (De Vaus, 2001). The research design chosen in this study was contingent upon the general objective of the research project, which is to determine the citizen awareness of government e-services in order to improve their use.

Generally, research starts with the researcher’s interest in solving a particular problem through becoming better acquainted with the facts surrounding the problem. Two research philosophies appear to dominate the study of awareness management; the interpretivist (otherwise known as phenomenological) approach and the positivist approach.

### 4.3 Choice of Research Philosophy

It is important to identify the philosophy of the research since it will simplify the choice of the most appropriate research strategy and data collection methods, and verify how the data is gathered and analysed (Crossan, 2003). Interpretivist philosophy and positivist philosophy are the two main research philosophies recognised in Information Systems research (Orlikowski and Baroudi, 1991).

Since this research is not a type of natural science research which seeks to provide proof of theories or mathematical models, positivism is not appropriate. Interpretivism is the most appropriate research philosophy because the study involves human behaviour in relation to ICT, in particular government e-services. This research can therefore be categorised as computer science research applied in a social context.

#### 4.3.1 Interpretivist Approach

According to Pather and Remenyi, (2004) the interpretivist approach defines people’s comprehension as being associated with their experience and culture. Interpretivists argue that knowledge is developed and theory built through developing ideas inducted from the observed and interpreted social constructions (a qualitative approach).
Blumberg et al., (2005) promote the positivist view that knowledge is developed by investigating the social reality through observing objective facts (a quantitative approach). There are four important concepts that establish the basis on which researchers should regard a piece of research as knowledge that can be assimilated into the knowledge base of a field of study. These are bias, validity, reliability and generalisability.

It is clear that interpretivism is the appropriate philosophy for this research, since this choice allows the researcher to understand the research topic in a subjective manner through empirical studies (Irani et al., 1999).

### 4.3.2 Positivist Approach

The positivist approach is the reverse of the interpretivist approach in research. This approach usually aspires to objective authenticity to enhance the perception of phenomena by independent observation, experience or testing of theories by the researchers (Galliers, 1992). Positivism supposes that the facts are predefined and independent of the researcher (Themistocleous, 2002).

The positivist approach is commonly used in natural science research (e.g. mathematics, physics, etc.). Orlikowski and Baroudi (1991) describe as positivist an approach which involves hypothesis, measurements, tests, deductions, verifications and suggestions, along with an approved analysis process. However, Conford and Smithson (1996) have queried whether a positivist approach is appropriate for social sciences research into matters such as human behavior.

### 4.4 Choice of Research Approach

Empirical and non-empirical research are the main two research approaches. The importance of the empirical approach is for investigative, expressive, logical or prognostic research (Hussey and Hussey, 1997). The empirical approach is also based on
observations in fieldwork (Easterby et al., 1991) while the non-empirical approach is based on reviewing existing literature in a subject area, and then using it as a reference for the research. This statement is supported by Svensson et al., (2008) who mention that the non-empirical approach is based upon secondary data such as general reviews, literature reviews, research agendas, and other conceptual contributions.

In the empirical approach, there are three types of research techniques; quantitative, qualitative and a combination of both techniques called triangulation or mixed method (Neuman, 2006; Fellows and Liu, 2003).

In this research, both the non-empirical and empirical approaches are used. The non-empirical approach forms the foundation of the research and involves a review of previous literature on the topic and related topics and it defines the empirical research activities. Creswell (2003) states that, “The study may begin with a quantitative method in which theories or concepts are tested, to be followed by a qualitative method involving detailed exploration of a few cases or individuals.” Creswell (2003) also shows the importance of quantitative and qualitative analysis.

Therefore, in this research, both qualitative and quantitative research methods are used since the research involves the study of the awareness and use of government e-services in Brunei Darussalam, focusing on investigating citizens and demographic contexts through numerical data and observations gathered by different data collection methods including field experiments, surveys and interviews.

4.4.1 Quantitative Research

According to Leedy and Ormrod (2001), quantitative research is used to answer questions about the relationship between the measured variables with the purpose of explaining, predicting and controlling phenomena. Fellows and Liu (2003) define quantitative research as an investigation that is related to positivism and seeks to gather factual data and to study relationships between facts and how such facts and relationships accord with theories and findings of any research executed previously. Myers (1997) describes
quantitative methods as having originated in scientific research to investigate natural phenomena through gathering and analysing numerical data collected from fieldwork from, for example, surveys, experiments and laboratory tests.

Analysis of quantitative measures can be categorised into two types (Emmit and Gorse, 2003):

- **Statistical analysis**: When quantitative information is collected it is normally analysed with the aid of either descriptive or inferential statistics. Descriptive statistics simply segregate and aggregate the data and use various methods to present the data graphically (e.g. histograms, pie charts, etc). Inferential statistics use various formulae to determine the probability of something occurring, or to identify the strength of the relationship between two or more variables.

- **Content analysis**: This form of analysis usually seeks to classify communication acts into categories that have common features. This analysis provides the researcher with a qualitative picture of the respondents’ concerns, ideas, attitudes and feelings.

Quantitative researchers tend to rely more heavily on deductive reasoning, beginning with certain premises (e.g., hypotheses, theories) and then drawing logical conclusions from them. A quantitative researcher uses a variety of research methods to provide an objective description and/or causal explanation about social phenomena or processes (Abdullah, 2003).

The following are the two most commonly used quantitative research methods:

### 4.4.1.1 Survey

There are two main types of data collection method in survey research, face-to-face or telephone interviews and online or manual questionnaires. The choice of data collection method is significant because it affects the quality and cost of the data collected (Abdullah, 2003).

This is a research methodology in which the researcher systematically asks a large
number of people the same questions and then records their answers (Neuman, 2006). According to Neuman questionnaires offer anonymity and avoid interviewer bias, but a researcher cannot control the conditions under which a questionnaire is completed. Although the questionnaire survey is cheaper compared to interview survey, the interview survey is more capable of producing quality data.

4.4.1.2 Experimental Research

Experimental research is a research method that measures the effect of manipulating one variable on another variable to find causal relationships between variables (Keppel, 1991). Fellows and Liu (2003) define an experiment as an activity or process, a combination of activities, which produces events and possible outcomes. Furthermore, according to Fellows and Liu (2003) there are two approaches to experimental research: laboratory experiments and field experiments. Field experiments are not conducted in specially built laboratories but in dynamic social, industrial, economic and political arenas. The key strength of experimental research is its control and logical rigor in establishing evidence for causality. In scientific contexts, experiments are usually devised and conducted as tests to investigate any relationships between activities carried out and the resultant outcomes.

The experimental method can be thought of as systematic trial and observation; trial because the answer is not known beforehand, observation because the result must be carefully recorded and systematic because all good research is planned and purposeful (Melville and Goddard 1996). The main idea of the experimental methods, and also their main problem, is that all external factors are excluded; every effort must be made to control those factors.

4.4.2 Qualitative Research

Qualitative research is usually used in social science research to examine social phenomena through case studies, interviews, questionnaires, action research and ethnography. Creswell (1998) defined qualitative research as an inquiry process of
understanding based on distinct methodological traditions of inquiry that explore a social or human experience. In addition, Hussey and Hussey (1997) have described qualitative research as a subjective approach involving investigation and observations to study social and human behaviours. Amaratunga et al., (2002) assert that the qualitative data emphasis on people’s “lived experience” is fundamentally well suited for locating the meanings people place on the events, processes and structure of their lives, their “perceptions, assumptions, prejudice and presuppositions”. Qualitative data does not seek to turn data into quantities, rather it helps to analyse interaction, statements, and transcripts with the intention of identifying patterns, links, beliefs and trends.

Emmit and Gorse (2003) emphasize that there are three main categories of qualitative research methods of analysis:

- **Conversation analysis** is concerned with the contextual sensitivity of language focusing on interaction and social action. Investigations using conversation analysis can only be pursued through intensive qualitative analysis of interaction events. Recordings of the interaction are required to provide the detailed data necessary for conversation analysis. The analysis attempts to provide an understanding of the relationships between different events.

- **Discourse analysis** involves the scrutiny of transcripts of discussions and statements. The content and the linguistic context are considered when establishing meaning and intention of the interaction.

- **Semiological analysis** assumes that there is a relationship between the appearance and structure of the text and interaction and the meanings that it produces within a specific culture or context.

Qualitative research makes considerable use of inductive reasoning (Neuman, 2006). Researchers make many specific observations and then draw interferences about larger and more general phenomena. Discussions of qualitative research approaches are as follows:
4.4.2.1 Grounded Theory

Grounded theory is based on data gathered from a sequence of observations. Leedy and Ormrod (2001) describe grounded theory as a research method that attempts to construct a theoretical model by using multiple stages of data collection and the refinement of information. According to McKenzie et al. (1998) this method has become popular in social research, partly because it enables processes to be explored systematically and does not require large sample sizes.

The key data collection methods for grounded theory are interviews, observations, documents, historical records, videotapes, and anything else of potential relevance to the research question. However, grounded theory analysis appears to be used as a type of poorly controlled content analysis. Consequently this has given rise to a large number of poor quality studies, with inadequate sample sizes to develop conceptually an analytical version of the theory (Mohamed, 2006).

4.4.2.2 Ethnographic Research

Ethnographic research is based on observing patterns of human activity and societies through the use of methods such as observation, interview and questionnaire from which the researcher makes deductions based on respondents' visions. This statement is supported by Alasuutari (1998) who asserts that ethnographic research is used to study an intact cultural group over a prolonged period of time by collecting primarily observational data. The researcher studies the group in its natural setting for a lengthy period of time and data collection methods are site-based fieldwork and participant observation.

Furthermore, ethnographic research is a description and interpretation of a cultural or social group or system (Creswell, 1998). The focus of investigation is on the everyday behaviours (e.g. interactions, language, rituals) of the people in the group, with an intent to identify cultural norms, belief, social structures, and other cultural patterns (Leedy and Ormrod, 2001).
This method has a different level of abstraction compared to other statistical social research. Generally, all ethnographic research shares the same objective of laying bare, from within, the logic that informs and organises the population’s life and way of thinking (Mohamed, 2006). The key strength of this method is that it gives a detailed view of the entire cultural scene by pulling together all aspects learned about the group and showing its complexity. The disadvantages of ethnographic research are that it may have limited generalisability to other topics or domains and it takes significantly longer than most other kinds of research.

### 4.4.2.3 Action Research

Action research is based on field experimental methods where the researcher attempts to work alongside the people being studied to solve a problem or try out an idea. Action research was originally concerned with applying social science knowledge to solve social problems such as conflict between groups and the need to change eating habits in wartime (Mohamed, 2006). Its main aims are to contribute both to the practical concerns of people in immediate problematic situations and to the goals of social science by joint collaboration within a mutually acceptable ethical framework (Gill and Johnson, 2002). Action researchers intend not only to contribute to existing knowledge but also to help resolve some of the practical concerns of the people, or citizens, who are trying to deal with a problematic situation.

Blumberg et al., (2005) notes that there are four main characteristics of action research:

1. It addresses real-life problems and is bounded by the context;
2. It involves a collaborative venture between researchers, participants and practitioners;
3. It is a continuing reflecting process of research and action; and
4. The credibility and validity of action research are measured on whether the actions solve the problems and realise the desired change.

The key advantages in using action research are that it provides an experience for
researchers who want to work closely with the practitioner community, it can be used in many research modes and it can combine with other research methods for diversifying a research program (Abdullah, 2003). The key weakness of this method is that it cares less about general principles, although these can be the outcome of the project (Blumberg et al., 2005). Baskerville and Harper (1996), express the view that action research is context-bound, and not context-free. Therefore it is difficult to determine the causes of a particular effect that could be due to the environment, researcher or methodology. This means that action research produces narrow learning in its context because each situation is unique and cannot be repeated.

4.4.2.4 **Phenomenological Study**

A phenomenological study is a study that attempts to understand people’s perceptions, perspectives and understanding of particular situations (Leedy and Ormrod, 2001). It is a research method in which human experiences are examined through the detailed descriptions of the people being studied (Creswell, 1998). The main focus of this method is an investigation of a particular phenomenon as it is typically lived and perceived by human beings. The key data collection method is in-depth unstructured interviews and typical purposeful sampling of 25 to 50 individuals (Mohamed, 2006).

Phenomenological analysis gives priority to people’s accounts of intentionality and subjective meanings. This is the phenomenological researcher’s first and only point of reference. Those who dispute the adequacy of this seek to go beyond subjective meanings and argue that there is an important difference between “things seeming to be the case to the actor and things being the case” (McKenzie et al., 1998).

4.4.2.5 **Case Study**

Case studies are usually used to investigate social phenomena and provide an in-depth understanding of the area of research. This statement is supported by Yin (2003) who defined the case study research method as an empirical inquiry that investigates a
contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used.

A case study involves the investigation of a single entity (the case) or multiple cases by using a variety of data collection methods during a sustained period of time (Mohamed, 2006). Good and effective case study research should have the following elements (Johnston et al., 1999):

- The research must begin with hypotheses developed by theory;
- The research design must be logical and systematic;
- The findings must be independently evaluated.

Yin (2003) emphasises that case studies are the preferred strategy when ‘how’ and ‘why’ questions are being posed, when the investigator has little control over events, and when the research is on a contemporary phenomenon within some real-life context. Critics of the case study method believe that the study of a small number of cases offers no basis for establishing reliability or generality of the findings.

Some researchers feel that the researcher’s intense exposure to the study of the case biases the findings. However, Johnston et al., (1999) are of the view that case studies have become theory-based, rigorous and more objective, if the case study design considers three important elements: the definition of the unit of analysis; the selection of appropriate cases to study, and the decision on what data to collect and how to collect it.

Researchers continue to use the case study research method with success in carefully planned and crafted studies of real-life situations, issues, and problems. Its major weakness is that it provides a limited basis for the traditional ‘scientific generalisation’ (Yin, 2003). especially when only a single case is studied. However, Amaratunga et al., (2002) argued that like all experimental observations, case study results can be generalised to theoretical propositions (analytical generalisation) not to populations or universes (statistical generalisation). Meredith (1998) pointed out that some of the difficulties of doing case study research include: the requirements of direct observation in
the actual contemporary situations (cost, time, access hurdles); the need for multiple methods, tools, and entities for triangulation; the lack of controls; and the complications of context and temporal dynamics.

### 4.4.3 Mixed or Triangulation Research

Triangulation is the combination of methodologies in the study of the same phenomenon (Amaratunga et al., 2002). Love et al., (2002) argue that triangulation is a means of representation based on the logic that we can move closer to obtaining a truer picture if we can make multiple measurements, using multiple methods, or at multiple levels of analysis. Typically, the triangulation process involves corroborating evidence from different sources to shed light on a theme or perspectives (Creswell, 1998).

As triangulated studies employ two or more research techniques, qualitative and quantitative approaches may be used to reduce and eliminate the disadvantages of each individual approach whilst gaining the advantages of each, and of the combination, as illustrated in Figure 4-2 (Fellows and Liu, 2003).

![Figure 4-2: Triangulation of Quantitative and Qualitative Data (Fellows and Liu, 2003)](image-url)
Love et al., (2002) assert that there are two main advantages of combining qualitative and quantitative research methods. Firstly, combining these methods increases the capability to produce the knowledge in a tangible form. Secondly, convergent findings can allow greater researcher confidence in the reliability and/or validity of results, whereas divergence can lead to greater definition and theoretical elaboration as the researcher attempts to piece together the many pieces of a complex puzzle into a coherent picture.

**Table 4-1: A summary of distinguishing characteristics of quantitative and qualitative research methods (Neuman, 2006; Abdullah, 2003; Amaratunga et al., 2002; and Leedy & Ormrod, 2001)**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Quantitative research</th>
<th>Qualitative research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>To explain and predict</td>
<td>To describe and explain</td>
</tr>
<tr>
<td></td>
<td>To confirm and validate</td>
<td>To explore and interpret</td>
</tr>
<tr>
<td></td>
<td>To test theory</td>
<td>To build theory</td>
</tr>
<tr>
<td>Process</td>
<td>Focused</td>
<td>Holistic</td>
</tr>
<tr>
<td></td>
<td>Known variables</td>
<td>Unknown variables</td>
</tr>
<tr>
<td></td>
<td>Established guidelines</td>
<td>Flexible guidelines</td>
</tr>
<tr>
<td></td>
<td>Statistic design</td>
<td>Emergent design</td>
</tr>
<tr>
<td></td>
<td>Context free</td>
<td>Context-bound</td>
</tr>
<tr>
<td></td>
<td>Detached view</td>
<td>Personal view</td>
</tr>
<tr>
<td>Research Procedures</td>
<td>Procedures are standard, and replication is frequent</td>
<td>Research procedures are particular, and replication is very rare</td>
</tr>
<tr>
<td>Data Collection</td>
<td>Representative, large sample</td>
<td>Informative, small sample</td>
</tr>
<tr>
<td></td>
<td>Standardized instruments</td>
<td>Observations, interviews</td>
</tr>
<tr>
<td>Theory</td>
<td>Theory is largely causal and is Deductive</td>
<td>Theory can be causal or noncausal and is often inductive</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>Analysis proceeds by using statistics, tables, or charts and discussing how they show relates to hypothesis</td>
<td>Analysis proceeds by extracting themes or generalisations from evidence and organising data to present a coherent, consistent picture.</td>
</tr>
<tr>
<td>Reporting Findings</td>
<td>Numbers</td>
<td>Words</td>
</tr>
<tr>
<td></td>
<td>Statistics, aggregated data</td>
<td>Narratives, individual quotes</td>
</tr>
<tr>
<td></td>
<td>Formal voice, scientific style</td>
<td>Personal voices, literary style</td>
</tr>
<tr>
<td>Strengths</td>
<td>Provide wide coverage of the range of situations</td>
<td>Data gathering methods seen as natural than artificial</td>
</tr>
<tr>
<td></td>
<td>Fast and economical</td>
<td>Ability to look at change process over time</td>
</tr>
<tr>
<td></td>
<td>Where statistics are aggregated from large samples, they may be considerable relevance to policy decisions</td>
<td>Ability to understand people's meaning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contribute to theory generation</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>Tend to be rather inflexible and artificial</td>
<td>Data collection can be tedious and require more resources</td>
</tr>
<tr>
<td></td>
<td>Not very effective in understanding process</td>
<td>Analysis and interpretation of data may be more difficult</td>
</tr>
<tr>
<td></td>
<td>Not very helpful in generating theories</td>
<td>Harder to control the pace, progress and end-points of research process</td>
</tr>
</tbody>
</table>
A summary of distinguishing characteristics of quantitative and qualitative research methods including their main strengths and weaknesses is shown in Table 4-1 which was drawn from Neuman, 2006; Abdullah, 2003; Amaratunga et al., 2002; and Leedy and Ormrod, 2001. Amaratunga et al., (2002) suggest that quantitative data can help with the qualitative side of a study during the design stage by finding a representative sample and locating deviant samples, while qualitative data can help the quantitative side of the study during design by aiding with conceptual development and instrumentation.

Triangulation methods may lead to a better understanding of the phenomena under investigation, when additional information may be revealed that would otherwise remain undiscovered via a single methodological approach (Abdullah, 2003). For example, using a quantitative method such as a questionnaire survey can provide a broad overview of the subject studied and combining it with qualitative methods such as semi-structured interviews and/or case studies may provide a better understanding of the same study.

According to Easterby-Smith et al., (1991), there are four distinct categories of triangulation involving the theoretical, data, investigator and methodological triangulation:

1. *Theoretical triangulation* involves borrowing models from one discipline and using them to explain situations in another discipline;

2. *Data triangulation* refers to the research where data is collected over a different timeframe or from different sources;

3. *Investigator triangulation* is where different people collect data on the same situation and the results are then compared; and

4. *Methodological triangulation* uses both quantitative and qualitative methods of data collection. These methods are extremely diverse, including questionnaires, interviews, telephone surveys and field studies.

Yin (2003) asserts that there may be problems in implementing triangulation methods in any research. Firstly, the collection of data from multiple sources is more expensive than if data were collected only from a single source. Secondly, each investigator needs to
know how to carry out the full variety of data collection techniques. If any research technique is used improperly, the opportunity to address a broader array of issues or to establish converging lines of inquiry may be lost (Mohamed, 2006).

In this study, data from different sources was first triangulated to provide a comprehensive and consistent picture of what has actually transpired in the e-government implementation process undertaken by the Brunei Government.

4.5 Choice of Research Strategy

According to Yin (2003), the research strategy should be chosen as a function of the research situation. Each research strategy has its own specific approach to collecting and analysing empirical data, and therefore each strategy has its own advantages and disadvantages. However, this depends on three conditions: the type of research questions, the control an investigator has over actual behavioural events and the focus on contemporary as opposed to historical phenomena. Table 4-2 shows these three conditions and demonstrates how each is related to the five most common research strategies: experiments, surveys, archival analyses, histories and case studies.

Table 4-2: Research Strategies versus Characteristics (Yin, 2003)

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of Research Question</th>
<th>Requires Control of Behavioural Events</th>
<th>Focuses on Contemporary Events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, Why</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, What, Where, How Many, How Much</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival Analysis</td>
<td>Who, What, Where, How Many, How Much?</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>History</td>
<td>How, Why</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case Study</td>
<td>How, Why</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The research strategy presents a general plan for answering the defined research questions (Saunders et al., 2000) and achieving the objectives of the research (Al-Hamar,
Chapter 4: Research Methodology

2010). Creswell (1998) asserts that the guiding principle for developing any research methodology is that it must completely address the research questions. To meet these objectives, a research study should have a detailed research design that can be used as a framework for collecting observations and data that are connected to the research objectives (Mohamed, 2006). Table 4-3 summarises the most common research approaches that can be chosen based on the quantitative and qualitative research approach, as provided by Galliers (1992).

In planning a research strategy, it is exceptionally important for the researcher not only to choose a viable research method but also to consider the kinds of data an investigation of the problem will require and feasible means of collecting this data (Leedy and Ormrod, 2001).

**Table 4-3: Research Approaches and Philosophical Bases (Galliers, 1992)**

<table>
<thead>
<tr>
<th>Research Approaches</th>
<th>Positivism (Quantitative)</th>
<th>Interpretism (Qualitative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action Research</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Case Studies</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Ethnographic</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>In-depth Survey</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Large Scale Survey</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Laboratory Experiments</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Field Experiments</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Simulation &amp; Modelling</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
</tbody>
</table>

**Legend:**

✓ ✓ ✓  Strictly quantitative/qualitative
✓ ✓  Have scope to be neither
✓  With some room for quantitative/qualitative

Based on the research objectives as outlined in Chapter One, the appropriate research strategy for this thesis is based on a case study of the citizens’ awareness and use of government e-services in Brunei Darussalam.

Although the case study is the main strategy applied in this research, there are some others used to assist in achieving the research objectives, as shown in Table 4-4.
Table 4-4: Strategies used for each of the research objectives

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Strategies used</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 1</strong>: To review literature on previous work in the research area.</td>
<td>Literature review.</td>
</tr>
<tr>
<td><strong>Objective 2</strong>: To assess knowledge, acceptance, involvement and responses of Brunei citizens to government e-services delivery.</td>
<td>Survey strategies including questionnaires (Manual &amp; Online) and face-to-face interviews.</td>
</tr>
<tr>
<td><strong>Objective 3</strong>: To find out the current level awareness of Brunei citizens of government e-services.</td>
<td></td>
</tr>
<tr>
<td><strong>Objective 4</strong>: To determine the factors which affect Brunei citizens’ use of the government e-services.</td>
<td>Survey strategies including questionnaires (Manual &amp; Online) and face-to-face interviews.</td>
</tr>
<tr>
<td><strong>Objective 5</strong>: To carry out case studies with different categories of Brunei citizens and analyse the consequences of differences between the different groups.</td>
<td>Case studies were deemed the appropriate method to achieve this objective, along with ethnography.</td>
</tr>
<tr>
<td><strong>Objective 6</strong>: To use the results of the previous steps to develop an effective citizens’ awareness strategy framework to enhance the use of government e-services in Brunei Darussalam which comprises of a repository for the research findings, models for the interpretation of the findings and a set of recommendations for the specific approach to use for the citizens of Brunei Darussalam.</td>
<td>Grounded theory was applied to gather and analyse the outcome of all previous methods (surveys and experiments) to identify the need for, and develop an effective citizens’ awareness strategy framework, establishing a set of recommendations for Brunei Darussalam’s government, citizens and officials responsible for ensuring the success of the e-government initiative.</td>
</tr>
<tr>
<td><strong>Objective 7</strong>: To develop a tool to assist the government to understand awareness problems and implement awareness initiatives on e-services.</td>
<td>Grounded theory was applied to gather and analyse the outcome of all previous methods (surveys and experiments) to identify the need for, and develop an effective citizens’ awareness strategy framework, establishing a set of recommendations for Brunei Darussalam’s government, citizens and officials responsible for ensuring the success of the e-government initiative.</td>
</tr>
<tr>
<td><strong>Objective 8</strong>: To evaluate the effectiveness of the proposed strategy framework in enhancing the awareness and usage of government e-services in Brunei Darussalam.</td>
<td>Action research was used to develop and evaluate the awareness strategy framework as the researcher took part in the case studies carried out to enhance awareness using methods that would be recommended to the Brunei Government to implement the framework in reality,</td>
</tr>
</tbody>
</table>
According to Yin (1994), there are different types of case studies, each used to answer different research questions, for example exploratory, descriptive and explanatory used to answer what, how and why, respectively. This research begins with exploratory, followed by explanatory and then descriptive case studies, since the research addresses three main questions:

- What is the extent of government e-services use in Brunei Darussalam?
- What are the factors which make such initiatives unsuccessful in Brunei Darussalam?
- How can an effective citizens’ awareness framework be developed to enhance Brunei citizens' use of government e-services with the aim of enhancing the success of the Brunei e-government initiative?

Case studies can employ several data collection methods, including direct or indirect observations, interviews and the study of documentations and records (Yin, 1994). In this research, the case study comprised various data collection methods explained in section 4.6.

### 4.6 Data Collection Methods for the Research

The research design and methods should be carefully planned in order to achieve the research aims and objectives (Bouma, 1996). This study focuses on the development of a viable framework that reflects the specific context of citizens’ awareness and use of e-government services and which makes provision for both explicit and tacit knowledge. In order to achieve its main aim and specific objectives, both quantitative and qualitative research approaches were adopted. This research involved a quantitative method through manual and online questionnaires. This was followed by a qualitative method through face-to-face interviews, discussion groups and, finally, a combination of both in experiments, together with a case study.
First Year (Stage 1):
- To find out problems in Government e-Services

**Quantitative Method**
- Prepare Online
- Pilot Test
- Online Questionnaire*
- Analysis Data
- Data Output / Results

*Carried out on March to May, 2009

**Main Finding**
- Lack of Publicity Awareness & marketing campaign

First Year Report

Based on the results:
- Government carried out a large scale survey to the citizens

**Second Year (Stage 2):**
- To find out what methods to make citizens aware in Government e-Services

**Qualitative Method**
- Prepare Questions & Tools
- Pilot Test
- Interview Citizens*
- Analysis Data
- Data Output / Results

*Carried out on July to September, 2009

**Main Finding**
- Variety of Methods & Approaches

Second Year Report

**Thesis Contribution:**
- To provide citizens awareness strategy framework of government e-services
- To provide recommendation of awareness approaches that work well based on categories of Brunei citizens to e-government committee
- To provide tools of awareness methods such as leaflet, government e-services guidebook and GeS-CAS support tool
- To provide awareness strategy in education and communication marketing perspective,

**Third Year (Stage 3):**
- To find out what methods & approaches work well & suit based on categories of Brunei Citizens

**Quantitative & Qualitative (Mix Method)**
- Interview focus groups*
- Analysis Data
- Data Output / Results

*Carried out on July to September, 2010

*On Technology Forum 28th Oct, 2010

Launched on 4th December, 2009

**Supervisor / Internal Examiner**

**Sponsorship**
- Gov e-Services
- Analysis Data
- Data Output / Results

Launched on 4th December, 2009

**Supervisor / Internal Examiner**

Based on the results:
- Government called for the establishment of marketing resource team and promotion programme*

Figure 4-3: Research Stages
The research approach commenced by defining theoretical concepts, research aims, objectives and methodology through an in-depth literature review, notwithstanding that the review continues throughout the research process. Afterwards, there was a review of literature on Brunei Darussalam e-government initiatives. The research stages are depicted in Figure 4-3.

Subsequently, the research methods proceeded with a quantitative questionnaire to study a defined concept on a focused sample, a qualitative interview, a quantitative and qualitative experimental study to determine the awareness of and the use government e-services and the factors that might make Brunei citizens uninformed of the services. The research contribution is then achieved by applying grounded theory to develop an effective citizens’ awareness strategy framework for government e-services (see Figure 4.3). The research methodology is defined to fulfill the objectives of the research. An explanation of each method used is given in the next sections.

4.6.1 Literature Review

To fulfill the first research objective (explained in Chapter 1, section 1.4) of this study, a literature review was undertaken. A literature review is the documentation of a comprehensive review of the published work from secondary sources of data in the areas of specific interest to the researcher (Mohamed, 2006). Blumberg et al., (2005) highlight that the literature reviews is an essential part of every research project. Gill and Johnson (2002) assert that there are several important outcomes of a well conducted literature review:

- It helps describe a topic of interest and refines either research questions or directions in which to look;
- It presents a clear description and evaluation of the theories and concepts that have informed research in the topic of interest;
- It clarifies the relationship to previous research and highlights where new research may contribute by identifying research possibilities which have been
overlooked so far in the literature;

- It provides insights into the topic of interest that are both methodological and substantive;
- It demonstrates powers of critical analysis by, for instance, exposing taken for granted assumptions underpinning previous research and identifying the possibilities of replacing them with alternative assumptions; and
- It justifies the new research through a coherent critique of what has gone before and demonstrates why new research is both timely and important.

The research process began with a general literature search focused on key concepts from the following areas: overview of e-government initiatives, citizens’ participation, citizens’ characteristics, characteristics of online government services, knowledge management in e-government (described in Chapter 2) and a review of the context of the study – Brunei Darussalam (described in Chapter 3). The initial findings from the general literature review helped to define and refine the aims and objectives of the research, research questions and scope, and significance of the study (described in Chapter 1). This focussed the research on enhancing citizens’ awareness and use of government e-services in Brunei Darussalam through the citizens’ awareness strategy framework. Hence, an in-depth literature search was required in the areas of the context of the study, citizens’ participation and attitudes toward e-government, online government services characteristics and other related topics on awareness to provide an overview of previous research in this field.

The literature review is continuous process, which was carried out alongside the case study and framework development stages to discover new issues and gaps in existing literature. Other topics that are related to the research such as research methodologies and the prototype system development process were also reviewed. Therefore, an investigative literature review of the Brunei e-government initiative was important. The review aimed to discover the extent of citizens’ levels of awareness and use of government e-services in Brunei Darussalam society and to explore the current level of Brunei e-government initiatives (described in detail in Chapter 3).
4.6.2 Survey

To fulfill the second, third and forth research objectives (explained in Chapter 1, section 1.4) proposed by this study, survey strategies included face-to-face interviews and telephone interviews. E-mail, hardcopy and online questionnaires were also distributed (described in detail in Chapter 5).

E-mail questionnaires, face-to-face semi-structured and structured interviews, household drop-off and pick-up questionnaires, and online questionnaires were the main data collection strategies used throughout the survey phase. Subsequently, a quantitative and qualitative analysis was used to analyse the data gathered from questionnaires and interviews respectively. This was then analysed in an iterative manner on the lines of the much referenced open coding technique articulated by Strauss and Corbin (1998).

Based on this open coding technique, themes were inductively generated to arrive at the macro conceptualization of e-government implementation. Through such an approach of data analysis, it was possible “to stay very close to the original data and [was] therefore high in accuracy” (Langley, 1999). Through a series of selective coding (Strauss and Corbin, 1998), the generated themes were then consolidated and generalized to achieve the desired understanding on which to build the citizen’s awareness framework (Weick, 1989).

4.6.2.1 Questionnaire

The questionnaire was e-mailed as an attachment and completed by Bruneian e-mail users. The questionnaire was used to create a profile of citizen’s knowledge, acceptance, involvement and responses toward government e-services delivery, to discover current awareness levels and to determine the factors which make Brunei citizens unaware of the government e-services. The lists of Bruneian email users were provided by Internet Services Providers; Telecom Brunei (TelBru), DST Communication (DSTCom) and Brunei Mobile Communication (B-Mobile).

Similarly, the questionnaire was also emailed to Bruneian e-mail users living or studying in the UK. The list of their email addresses was provided by the Recruitment and Training
Section of the Brunei High Commission in London and the Student Unit in Brunei Hall in London. Questionnaire participants were randomly selected from Brunei citizens according to the defined criterion, e-mail users aged between 15 and 65 years.

The questionnaire was carefully designed and reviewed, followed by a pilot test to ensure an effective design. English and Malay versions of the questionnaire were designed with simple language and straightforward questions. A covering letter was attached to each questionnaire to provide an explanation for respondents of the questionnaire target group.

The questionnaires were distributed by hand in public areas such as shopping malls, government buildings, mosques, hospitals and schools or through e-mail, for household drop-off and pick-up and online questionnaires respectively. All of the responses gathered in the paper-based questionnaire were combined with those from the online questionnaire into a database using Microsoft Access 7.0 in order to produce a single electronic source with the benefit of automated results and filtering features.

Finally, 732 responses were gathered in five categories of Brunei Citizens. The five categories of Brunei citizens were government sector employees, private sector employees, business leaders (referring to company owners, shareholders and employees at the top level of the company), students (this category was then subdivided into high school and university students to see the education level differences) and unemployed or self-employed users from a village community (who were mostly pensioners, senior citizens and housewives).

Afterwards, the responses were analysed quantitatively, with a statistical analysis of the results, and qualitatively through further interviews of participants (described in detail in Chapter 6).

4.6.2.2 Experimental Study

In order to determine the participants’ knowledge and opinions and to assist them to comprehend government e-services, an e-government leaflet and an e-government
guidebook were designed (described in Chapter 5). Before the leaflet and guidebook were distributed among the citizens, pilot tests on their effectiveness were carried out. The evaluation of the effectiveness of these information handouts was according to participant’s feedback, their questionnaire responses and through semi-structured interviews with the participants. The data gathered from the experiments in Brunei Darussalam were analysed with quantitative and qualitative methodologies to identify the factors which make Brunei citizens aware or unaware of government e-services.

4.6.3 Case Studies

To fulfill the fifth research objective (explained in Chapter 1, section 1.4) of this study, multiple case studies were undertaken. Chapter 6 describes the findings from each case study in detail. According to Myers et al., (2002) case studies are considered a common data collection method. The case study approach consists of a detailed investigation that attempts to provide an analysis of the context and processes involved in the phenomenon being studied (Johnston et al., 1999). According to Gall et al., (1996) “...researchers generally do case studies for one of three purposes: to produce detailed descriptions of the phenomenon, to develop possible explanations of it, or to evaluate the phenomenon.”

Furthermore, there are three types of case study designs (Naoum, 1998):

1. The descriptive case study, which is similar to the concept of the descriptive survey (i.e. counting), except it is applied to detailed case(s);
2. The analytical case study, which is similar to the concept of the analytical survey (i.e. counting, association and relationship), except it is applied to detailed case(s); and
3. The explanatory case study, which is the theoretical approach to the problem. It explains causality and tries to show linkages among the objects of the study. It asks why things happen the way they do. In other words, the researcher collects facts and studies the relationship between them.

A case study protocol establishes a framework for collecting and analysing data (Yin, 2003). The protocol is an important tool for increasing the reliability of case study research and is intended to guide the investigator in carrying out the case study.
Moreover, Yin (2003) highlights well-designed steps of protocols ensure that the operations of the study can be repeated with the same results.

According to Johnston et al., (1999), there are four important aspects that need to be considered when developing a case study protocol:

1. **Defining the unit of analysis**: One of the major problems in designing a case study is defining the units of analysis to be used during the research. Choosing the unit of analysis pushes the researcher to articulate the conceptual frame of reference and encourages proposition development.

2. **Case selection**: Whilst a single case study needs only to focus on one case, in multiple case studies, cases should be selected so that they are replicating one another; either direct replications or predictably systematic replications.

3. **Data collection**: A systematic plan must be developed that stipulates what information should be sought to fully investigate the research hypotheses and how it should be obtained.

4. **Data analysis**: The analysis in case study research involves assessing whether or not the evidence within each case is internally valid, supportive of the pre-specified hypotheses across the multiple cases, and conclusive. The preferred strategy for data analysis is to use the propositions that encapsulate the objectives of the study, and which have shaped the data collection.

Hence, the research begins with proving that citizens’ awareness towards the use of government e-services is a crucial issue in Brunei Darussalam society, with Brunei Darussalam being chosen as a case study as it is a country where e-government is developing rapidly and has not yet been researched in this respect.

### 4.6.3.1 Multiple Case Studies

Blumberg et al., (2005) classified case study research into two main types: single and multiple case studies. Single case studies use only one case, while multiple case studies involve the investigation of several cases. According to Yin (2003), case studies are the preferred strategy when “how” and “why” questions are to be answered, when there is little control over events, and when the focus is on contemporary phenomenon within
real life context. Moreover, Johnston et al., (1999) assert that case study research can also make extensive use of other sources of data within the organisation.

Yin (2003) developed a three stage process to aid researchers in conducting a systematic case study. The stages are the define and design stage, the prepare, collect and analyse stage, and the analyse and conclude stage. By progressing through these stages, the initial step in designing the study must consist of theory development and this shows that case selection and the definition of specific measures are important steps in the design and data collection process.

This study uses a multiple case study approach that incorporates qualitative methods within five categories of Brunei citizens, as shown in Figure 4-4. To help add depth to the study, qualitative data was collected during each of the case study interviews. In turn, this qualitative data was used to clarify citizens’ awareness and concerns. The multiple case study approach supports the validity of the research design and strategy framework.

![Diagram](image)

**Figure 4-4: Multiple-Case Studies Approach Used (Yin, 2003)**

According to Perry (1998) the ideal number of multiple case studies is between four and ten cases. He added that, with fewer than four cases, it is often difficult to generate theory with much complexity, and its empirical grounding is likely to be unconvincing. The
main advantage of case studies compared to other approaches is that they permit the combination of different sources.

In this research, there are three main sources of evidence for data collection: semi-structured interviews in the case studies, documents and archives and experimental study.

A study by Jensen and Rodgers (2001) defines three different categories of case study:

1. **Patchwork**: Defines a comprehensive vision of the research since several case studies are used for one research project (e.g. snapshot, longitudinal and/or pre-post).
2. **Snapshot**: A comprehensive study of a research area at a single point in time.
3. **Pre-post**: The study of one research entity at two time points delineated by some critical event.

In this research, patchwork case studies are used in which both snapshot and pre-post case studies are used to develop the framework and evaluate its effectiveness, respectively.

### 4.6.3.2 Interview

In this research, structured and semi-structured interviews were used. Neuman, (2006) claims that there are three categories of interviews: structured, semi structured and unstructured. According to Fellows and Liu (2003), the major differences between these categories lie in the constraints placed on the respondent and interviewer. In structured interviews, the interviewer asks each interviewee the same questions in the same order which makes the evaluation process easier for the interviewer (Campion *et al.*, 1994).

Mohamed (2006) describes in a structured interview, the interviewer administers the questionnaire, by asking the questions and recording the responses, with no scope for probing those responses by asking supplementary questions to obtain further details and pursue new and interesting aspects. On the other hand, a semi-structured interview is more flexible and aims to turn the interview into a conversation and assist interviewers in tailoring their questions to the interview context and the interviewee’s responses (Lindlof
Table 4-5: Comparison of Interview Techniques (Wright and Ayton, 1987)

<table>
<thead>
<tr>
<th>Category</th>
<th>Process</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| Structured Interview | • Questions are set in advance  
                        | • Each interview is conducted in exactly the same way  
                        | • The question and their order are the same for all respondents  
                        | • The range of possible responses is determined by the researcher | • Quick and easy to answer  
                        | • Answers are easy to code and analyse  
                        | • The direction of the inquiry is clear  
                        | • High degree of reliability – straightforward ‘factual’ information  
                        | • Produces comparable data  
                        | • Reduced possibility of interviewer bias | • Inflexible  
                        | • Participants may be forced into giving responses which do not reflect their true feelings about an issue  
                        | • Gathers a limited amount of information: lack the richness obtained by more open-ended interviews |
| Semi-structured Interview | • Very much like questionnaire  
                        | • Open-ended questions  
                        | • Permissible to stray from the subject area and ask supplementary questions two-way communication  
                        | • They can be used both to give and receive information | • Less intrusive to those being interviewed as the semi-structured interview encourages two-way communication  
                        | • Confirms what is already known but also provides the opportunity to learn  
                        | • Gives the freedom to explore general views or opinions in more detail | • Requires interviewing skill  
                        | • Need to meet sufficient people in order to make general comparisons  
                        | • Time consuming and resource intensive  
                        | • Preparation must be carefully planned so as not to make the questions prescriptive or leading |
| Unstructured Interview | • Exploratory approach  
                        | • No prepared list of questions  
                        | • Open-ended questions | • Allows flexibility  
                        | • Respondents can answer in their own words  
                        | • The nature of the response is not limited  
                        | • The result of this more open-ended approach is a richness of data  
                        | • More complex and sensitive questions possible | • Requires interviewing skills lack of standardization  
                        | • The answers are difficult to analyse  
                        | • Depends on the ability of respondents to express themselves  
                        | • Time consuming  
                        | • Largest potential for interviewer bias |
introduces the topic briefly and then records the replies of the respondent. This is to ensure completion of the statements; the respondent can say what and as much as he or she desires. The comparison of the three interview techniques is depicted in Table 4-5 (Wright and Ayton, 1987) to summarise the main differences between them.

According to McNamara (1999), the process of conducting interviews progresses through several stages: planning, preparing interviews, interviewing, transcribing, and analysing and discussing findings as follows:

1. Planning: plan the interviews, e.g. interview type, technique, decide on the major topics to be discussed, etc.
2. Preparing interviews, e.g. contact interviewees to obtain their agreement to be interviewed, gather information about the interviewees or their organisation, prepare the interview questions, etc.
3. Interviewing: conduct interviews.
4. Transcribing: prepare the interview materials for analysis.
5. Analysing and discussing findings: apply qualitative analysis to the interview materials and discuss findings.

Interviews can be divided into two main approaches: face-to-face and telephone interviews. A face-to-face interview is a two-way conversation initiated by the interviewer to acquire information from the interviewee. Blumberg et al., (2005) explain the advantages and disadvantage of using these two approaches in further detail. For a face-to-face approach, the main advantage is that the interviewer can pre-screen respondents to ensure they fit the target population’s profile. The interviewer can also do more to improve the quality of the information received than with telephone interviews. The key weakness of this approach that it is both time consuming and expensive. The cost will be particularly high if the study covers a wide geographic area or has stringent sampling requirements (Mohamed, 2006).

Telephone interviews, according to Blumberg et al., (2005) can be helpful in arranging interviews with particular people and for screening a large population for unusual types of participant. The main advantages of this approach is that telephone interviews are less
time consuming and expensive, and the researcher has access to virtually anyone who has a telephone in a wide geographical area. However, the response rate in telephone interviews is lower than for comparable face-to-face interviews. Most interviews in this research were face-to-face, although there were some telephone interviews, especially for the businessmen & businesswomen depending on the choice and time constrains of the interviewees. Most interviews were conducted in Malay but some were conducted in English or mixed languages; Malay, Brunei and English (Brulish), especially with Brunei businessmen of Chinese or Indian descent who found difficulty with the Malay language. The choice of language was mainly the decision of the interviewees. Hand written notes were the method of recording interview data.

Generally, interviews were held with ‘supply side’ (providers) and the ‘demand side’ (users) of e-government. The providers consisted of members of the Brunei e-Government Committee including e-government leaderships in each ministry, Chief Information Officers (CIOs), e-government Technical Authorities, Chief Technical Officers (CTOs), e-government Project Managers and members of the e-government Task Forces. The users were a sample of the Brunei Darussalam citizens.

Interviews were also conducted with officers from the Prime Minister’s Office (PMO) who are the overall owner of the e-government initiatives, the E-government National Center (EGNC) who manage the e-government initiatives, and the Authority Info-Communication Technology Industry (AiTi) who act as consultants for the e-government initiatives in Brunei Darussalam. Relevant insights were revealed in some of these interviews and were used in supplementing the primary source of data.

The aim of the interviews with the e-government committees was to review the extent of government e-services and possible effects associated with citizens’ responses to, acceptance of and involvement in online services, government policy and strategy and, in particular, the processes deployed for creating awareness and use of government e-services among government employees and customers. In addition, some government agencies were involved in the planning and designing of case studies and the government e-services awareness strategy framework proposed by the researcher.
Further interviews were held with participants of the questionnaires, experiments and case studies to assist in the evaluation process and the construction of the proposed framework. The participants were chosen usually randomly, according to predefined criteria assigned by the researcher depending on the needs of each data collection method and according to the convenience and willingness of participants to be interviewed. The interviews were then analysed qualitatively.

Some interviews took place during the questionnaire phase with some of the questionnaire respondents, some followed the questionnaire data collection and analysis and some took place after the implementation of the case studies and after the creation of the citizens’ awareness strategy framework. The questionnaire analysis and literature review of the Brunei e-government initiatives suggested some aspects needed further investigation. Therefore, investigations were made in available literature and also, because of deficiencies in the literature, interviews were used to support and elaborate the study.

4.6.4 Framework Development

To fulfill the sixth and seventh research objectives (explained in Chapter 1, section 1.4) proposed by this study, the citizens’ awareness strategy framework was developed (described in detail in Chapter 7). The development of the citizens’ awareness strategy framework, based on an integration of knowledge management (KM) processes, was achieved through case study findings and supported by an extensive literature review on knowledge management in e-government and a review of the context of the study of Brunei Darussalam.

The case studies have helped to identify aspects of KM at the categories of citizens’ level. The Brunei government has a variety of mechanisms for managing its knowledge, although the label of KM is not often used. On the other hand, the e-government committee working groups have difficulties with regard to resolving the issues of citizens’ awareness and use of government e-services.
4.6.4.1 Encapsulating the Framework in a GeS-CAS support tool

An important element of the methodology used which relates to the sixth and seventh objectives of the research was the automation and implementation of the framework (refer to Chapter 1, Figure 1-4). More specifically, the intention was to encapsulate the developed integrated KM framework into a GeS-CAS support tool. The aim of developing the GeS-CAS support tool was to simplify the format and use of the integrated KM framework. The GeS-CAS support tool development used a methodology known as Rapid Prototyping.

Laudon and Laudon (2002) defined prototyping as a process of building an experimental system quickly and inexpensively for demonstration and evaluation so that users can better determine information requirements. According to Turban and Aronson (1998), the researcher can go through several iterations to refine and enhance the prototype before arriving at the final prototype. The key strengths of prototyping include a short development time, short user reaction time (feedback from user), improved user understanding of the system, its information needs, and its capabilities, and low cost. The process of rapid prototyping is shown in Figure 4-5 (Turban and Aronson, 1998)

![Diagram of Rapid Prototyping Process](image)
The process started with selecting the development environment, designing the system architecture, and identifying the system’s operational framework. Then the knowledge was captured through case study findings and represented in the GeS-CAS support tool. Next, several tests were carried out based on the problems that occur for the different categories of citizens. Afterwards, the e-government committees, e-government task forces and researchers were invited to participate in the evaluation workshop in order to evaluate how well the GeS-CAS support tool met their needs and to assess the effectiveness of the system.

The results of the evaluation workshop were analysed, and suggestions for improvement were used as a guide to improve the GeS-CAS support tool. The overall development process of the GeS-CAS support tool is discussed in Chapter 8.

4.6.4.2 Evaluation of the GeS-CAS support tool

One very popular management model in education is Daniel Stufflebeam Model (Payne, 1994). Stufflebeam’s context evaluation, input evaluation, process evaluation, and product evaluation (CIPP) model is a simple systems model applied to program evaluation (Stufflebeam, 2001). The CIPP Model is a basic open system includes input, process, and output.

According to Payne (1994), the description of CIPP model as follows:

1. **Context evaluation** includes examining and describing the context of the program, conducting a needs and goals assessment, determining the objectives of the program, and determining whether the proposed objectives will be sufficiently responsive to the identified needs.

2. **Input evaluation** includes activities such as a description of the program inputs and resources, a comparison of how the program might perform compared to other programs, a prospective benefit/cost assessment, an evaluation of the proposed design of the program, and an examination of what alternative
strategies and procedures for the program should be considered and recommended.

3. **Process evaluation** includes examining how a program is being implemented, monitoring how the program is performing, auditing the program to make sure it is following required legal and ethical guidelines, and identifying defects in the procedural design or in the implementation of the program.

4. **Product evaluation** includes determining and examining the general and specific outcomes of the program, measuring anticipated outcomes, attempting to identify unanticipated outcomes and assessing the merit of the program.

However, this model is not used in this research, as the GeS-CAS support tool has only been evaluated as a prototype for proof of concept, it does not have the data the end product would have and further refinement is needed. The product evaluation process that has been used is described in chapter 8.4.

Neuman (2006) identifies two types of evaluation: formative and summative. Formative evaluation involves built-in monitoring or continuous feedback on a programme used for programme management and takes place during the development of the system. Summative evaluation uses final program outcomes and takes place after the development of the system. Table 4-6 shows the comparison between summative evaluation and formative evaluation. In this research, both were necessary to determine how well the GeS-CAS support tool reached its goals and objectives.

To determine the appropriateness and functionality of the GeS-CAS support tool in enhancing citizens’ awareness and use of government e-services, evaluation workshops were conducted. The evaluation workshops were undertaken by e-government task force groups: The E-Government National Center, the Authority Info-Communication Tecnchnology Industry, Chief Information Officers & Chief Technical Officers and Project Managers in government organisations who were also involved in the case studies and a selection of eight researchers who were willing to participate in the evaluation workshop for a pilot test.
The GeS-CAS support tool was evaluated using questionnaires. Two types of questions were used in the questionnaire survey, closed questions and open-ended questions. Closed questions limit respondents’ answers to the survey. The respondents are allowed to choose either a pre-existing set of answers (e.g. yes/no, true/false), or multiple choice with an option for ‘other’, or a Likert rating scale response action (i.e. 1 – good, 2- fair, 3 – poor). Open ended questions do not give respondents answers to choose from, but rather are phrased so that the respondents are encouraged to explain their answers with a sentence, a paragraph, or even a page or more, depending on the survey (Mohamed, 2006). The main limitation of closed questions is that the researcher cannot gauge the respondents’ reactions to questions, physical characteristics, or the setting (Neuman, 2006). Fellows and Liu (2003) consider open-ended questions appropriate to enable respondents to answer to whatever extent they wish.

The evaluation workshop comprised three parts. First there was a short presentation on the background to the framework and GeS-CAS support tool. Then a demonstration of the GeS-CAS support tool was carried out to give participants a clear understanding of the capability of the GeS-CAS support tool for addressing all stages of the framework. This was followed by an open discussion to get further feedback and suggestions from the participants after which participants were asked to complete a questionnaire. Figure 4-6 summarizes the overall research methodology adopted in this research, including the evaluation of the GeS-CAS support tool.
4.6.5 Data Sampling Method

Sekaran (1992) has classified sampling methods into two categories: probability and non-probability sampling as shown in Figure 4-7. The sampling process involves selecting a sample of the population to further investigate the phenomena. Because of time and resource constraints, it was not viable to assess the entire population and so this research uses sampling. Therefore, a sampling frame was selected to represent the population.
4.6.5.1 Choice of Data Sampling Method

This research uses a combination of both probability and non-probability sampling to ensure the selection of samples for the investigation that are representative of the population and ‘would contribute effectively in the research’ (Al-Hamar, 2010). Sampling methods used in this research are listed in Table 4-7.
## Chapter 4: Research Methodology

### Sampling Method Used

<table>
<thead>
<tr>
<th>Probability sampling</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex probability sampling</td>
<td>Questionnaire: Participants were selected randomly according to specific criterion ‘Brunei Citizens’ based on; Stratified random sampling: The population is divided into groups e.g. geographical areas, age-groups and genders. Cluster sampling: The population is grouped into clusters according to different characteristics of the community, such as interests, jobs and qualifications. This method is being used in this research. Area sampling: A sample is randomly selected based on dividing the region of the investigation into geographical units, such as rural and urban. This method is not being used in this research.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-probability sampling</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenience sampling</td>
<td>Experimental studies: Support materials such as a prototype of the e-government leaflet and guidebook were used to support citizens understanding. Evaluate framework: To ensure the effectiveness of citizens’ awareness strategy framework in enhancing the use of government e-services, samples of populations were chosen according to potential participation users. For instance, this was used to evaluate of proposed recommendations and awareness programme.</td>
</tr>
<tr>
<td>Purposive sampling</td>
<td>Interviews: Both types of purposive sampling, judgment and quota sampling were applied in identifying appropriate interviewees able to provide valuable information for the research. However, some interviewees were selected according to convenience, such as interviews with the questionnaire participants.</td>
</tr>
</tbody>
</table>

Data was collected for several control variables that may influence the study findings, including the citizens’ employment status, age, gender and qualifications.

### 4.7 Summary

This chapter has described the basic concepts and principles relating to research.
methodologies, starting from the adoption of the appropriate philosophy, research approach and strategy. Subsequently, a detailed description of the chosen data collection methods is presented. The research methodology adopted well-established research approaches and was divided into six main sections: literature review, surveys, case studies, development of an effective citizens’ awareness strategy framework; development of GeS-CAS support tool, and evaluation of the framework and prototype system. A summary of choices is shown in Figure 4.7 

The next chapter describes the questionnaire and interviews held to identify the existence of government e-services problems in Brunei Darussalam and the factors which make Brunei citizens unaware of government e-services and to identify the reasons why these e-services are not more frequently used. An information leaflet and guidebook were used to further determine the awareness and use of government e-services is also described.
5.0 GOVERNMENT E-SERVICES PRELIMINARY STUDY AND DEVELOPMENT OF A GUIDE BOOK AND LEAFLET

5.1 Introduction

This chapter describes the first stage of the initial study of Brunei citizens in Brunei Darussalam and in the United Kingdom to measure their awareness of government e-services. Also, it outlines the factors which contribute towards Brunei citizens being unaware of the existence of government e-services, such as unreliable infrastructure, security issues, usability of government e-services and citizens characteristics. In this chapter, Brunei citizens’ awareness of government e-services is addressed in depth empirically. Also addressed in this chapter is the experimental study of whether support materials, such as a government e-service guide book and leaflet, have an impact on the citizens’ awareness.

These initial results have been accepted and presented in the 7th International Conference on Technology, Knowledge and Society conferences, in Bilbao, Spain.

5.2 Questionnaire to Brunei Citizens

In order to determine citizens’ awareness of the use of online government services through Brunei e-government initiatives, it is necessary to use an efficient method of conducting a large amount of data from a reasonable sample of Brunei citizens. The most appropriate method to measure the research is through a survey questionnaire as discussed in Section 4.6.2.
The evidence presented is the result of work conducted from March to May 2009 using a variety of methods including a printed questionnaire (see Appendix A) and an online survey questionnaire to citizens of Brunei Darussalam. Email and paper-based questionnaires were also sent to a smaller number of Brunei citizens who reside in the UK.

The online questionnaire was created using Lime Survey, a free online survey software tool. This website allows users to create their own online website survey without needing to install any software. Also, it offers live results collected automatically from the website and the ability to customise and filter the results. The filter feature provided an in-depth quantitative analysis of the questionnaire results. This feature was used in the questionnaire analysis phase to provide a comprehensive quantitative analysis as it can be used to filter, for example, by gender to see the responses from participants of the same gender.

The questionnaire was pilot tested on the target population, in this case Bruneian students studying at Loughborough University, their friends and relatives who are staying in United Kingdom and also to the researchers’ colleagues, ex-students, and business friends. As a result, some of the questions had to be modified to suit the citizens’ requirements and understanding. Therefore, the questionnaire has been tested, validated and can be described as reliable, consistently applicable and justifiable.

This research has taken into consideration the above points in defining an accurate sample for study. The sample was first narrowed down from the general public of Brunei Darussalam citizens to a more focused number of citizen categories of the society. The aim was to define the criteria for citizens most likely to use government e-services. Citizens were chosen randomly from the focused citizens categories of Brunei society and the criteria were used to refine the sample.

The criteria for inclusion in the questionnaire limited participation to citizens who use the Internet because they are the potential users of the online government services. To further refine the sample, citizens aged 15 to 64 were deemed to fulfill the criteria. Other categories of Brunei citizens such as children (aged below 15) and senior citizens (aged 65
above) were not invited to participate because they are not potential users and are less likely to be interested in the services provided by the e-government initiatives.

In order to survey a representative sample of the target population as a whole and to obtain a statistically viable cohort, at least 300 citizens, representing 0.01% of the estimated 295,000 Brunei citizens aged in the range 15 to 65 in 2010, were selected. The population of the research study included different categories of citizen, such as government employees, private workers, business men and women, students, pensioners, housewives and self-employees. 328 web-based survey questionnaire replies were received after an invitation email was sent to more than 1,000 Brunei citizens who were government employees. This evidence base is, therefore, adequate to provide an overall view of the total population of citizens being studied.

5.2.1 Method of Data Analysis (First Phase)

In terms of best practice, it is important to evaluate the real results of citizens’ awareness, and to study the factors that influence either the success or failure of citizens’ involvement in these e-government initiatives. In general, this research is intended to define qualitative indicators concerning the citizens’ use of and their satisfaction with the Brunei Darussalam e-government initiatives, specifically through the use of government e-services.

Originally, data was stored online in a PHP open-source Lime Survey database. The data had to then be converted to Microsoft Access 2007, since the server of the PHP Open-Source Lime survey database was no longer being used. The data was then analyzed systematically. The data was recorded for the different categories of citizen and the raw data was summarised by using frequency and percentage distributions. Finally, to assist in the discussion of the findings, tables, figures and percentages were used.

Cross tabulation of selected variables was also done to examine any significant relationships between variables. This has produced some surprising and interesting results in that some variables that were seemingly unrelated were found to show
significant relationships. This is an indication that a further and more detailed study of these variables could be made.

The research evidence presented below is therefore organized into four sections:
1. Citizens’ feedback on the accessibility of the Internet services.
2. Citizens’ involvement in communicating via email with government agencies and using ministries’ and departments’ websites.
3. Citizens’ awareness and use of online government services.

5.2.2 Presentation of the Preliminary Results
The survey questionnaires, both paper-based and web-based, are given in Appendices A. The paper-based version of the survey was only used for the questionnaire pilot test. The questionnaire is made up of six parts where respondents can answer questions either in English or Malay.

1. Part A seeks to obtain the personal data of the respondent.
2. Part B is concerned with respondents’ Internet usage and experience level.
3. Part C seeks to find out whether respondents have knowledge of e-government initiatives via government websites.
4. Part D contains questions on attitudes toward the use of online services. Rather than developing an original measurement scale, it was decided to use the Computer Attitude Scale designed by Loyd, et al., (1984) that has been tested, validated and described as reliable and valid.
5. Part E is concerned with respondents’ requirements for e-government to ensure the success of Brunei e-government initiatives.
6. Part F is an acknowledgement section which expresses appreciation to the questionnaire participants. This part also states that the results of the research will be used to improve the quality of e-government services and, therefore, the efficiency and effectiveness of the public services for the citizens of Brunei Darussalam.
Chapter 5 - Government e-Services Preliminary Study and Development of a Guide Book & Leaflet

The questionnaires aimed to find out the present level of citizen awareness in e-government initiatives, specifically towards the use of government e-services and patterns of citizens involvement among a variety of citizen groups defined by age, gender, employment status, current place of residence and education level. The results are summarised in the next sections.

5.2.2.1 Part A

In this initial study, there are 328 respondents: 154 male and 174 female. There are 23 respondents (7%) under the age of 18, 225 respondents (69%) aged between 18 to 36, 76 respondents (23%) aged between 37 to 55, and 4 respondents (1%) aged 56 and above. This shows that the majority of the respondents are between the ages of 18 to 36.

Regarding the personal background data of the respondents in term of their employment status, 144 respondents (44%) worked in the government sector, 66 respondents (20%) worked in the private sector, 4 respondents (1%) were senior business executives, 104 respondents (32%) were students and 10 respondents (3%) were self employed, pensioners or housewives.

5.2.2.2 Part B

Part B is concerned with respondents’ Internet use and experience. 233 out of the 328 (71%) respondents used the Internet every day. The data shows that the majority of respondents have used the Internet frequently. However, the result does not indicate the citizens’ use of government e-services. Respondents might instead be using the Internet each day for surfing the web, writing emails, blogging, playing games or downloading music.

The results of the questions regarding the Internet experience of the respondents show that 140 respondents (43%) have more than 9 years of Internet experience. The data suggest that the respondents have used the Internet for many years. However, this result
also does not indicate whether participants have used the government e-services or the quality of any experiences the participant might have had.

In terms of citizens’ opinions of the Internet services or Network Broadband which they use, the results show that out of 328 respondents, none reported that Internet services outside Brunei were unsatisfactory, with only 2 respondents reporting these services as less than satisfactory. However, 15 respondents reported that Internet services within Brunei are unsatisfactory and a further 59 respondents reported the services as less than satisfactory. This shows Internet services in the country need to be upgraded to match the more reliable and faster services outside the country (such as in the UK).

5.2.2.3 Part C

Part C attempts to find out whether respondents have knowledge of e-government initiatives via government websites. Not all citizens in Brunei Darussalam know about e-government and a lot of them also do not know what government e-services are. This is confirmed by the findings that out of 328 respondents, 89% (292) reported that they have heard about Brunei e-government but 11% (36) had no previous knowledge of Brunei e-government.

This figure shows that the majority of the respondents have knowledge of Brunei e-government; however, it does not indicate the extent and quality of their use of government e-services or even whether they have used them. Information about where the citizens heard about Brunei e-government is shown in table 5-1.
Chapter 5 - Government e-Services Preliminary Study and Development of a Guide Book & Leaflet

**Table 5-1: Citizens who have heard about Brunei e-government from different sources**

<table>
<thead>
<tr>
<th>Answer</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No answer</td>
<td>2</td>
<td>0.61%</td>
</tr>
<tr>
<td>Sultan’s speech (1)</td>
<td>22</td>
<td>6.71%</td>
</tr>
<tr>
<td>Government official newspaper (2)</td>
<td>49</td>
<td>14.94%</td>
</tr>
<tr>
<td>Minister / Head of Department’s speech (3)</td>
<td>21</td>
<td>6.40%</td>
</tr>
<tr>
<td>Office colleague / friend / relative (4)</td>
<td>24</td>
<td>7.32%</td>
</tr>
<tr>
<td>Radio / TV (5)</td>
<td>47</td>
<td>14.33%</td>
</tr>
<tr>
<td>Local / Foreign newspaper (6)</td>
<td>39</td>
<td>11.89%</td>
</tr>
<tr>
<td>Website / blog (7)</td>
<td>10</td>
<td>5.49%</td>
</tr>
<tr>
<td>Others – Please specify in the box: (8)</td>
<td>17</td>
<td>5.18%</td>
</tr>
<tr>
<td>Not relevant (9)</td>
<td>36</td>
<td>10.98%</td>
</tr>
<tr>
<td>Non completed</td>
<td>53</td>
<td>16.16%</td>
</tr>
</tbody>
</table>

Information about whether respondents have visited Brunei government official websites, either ministry or department websites, show that out of 328 respondents, 90% (296) reported that they have visited Brunei government official websites while 10% (32) have never done so. This figure shows that the majority of the respondents have visited Brunei government official websites; however, it does not indicate the extent and quality of their use of government e-services.

Information about what online government services that citizens have used from any ministry or department website shows that downloading a form is the most frequently used online government service. The data indicates that a crucial percentage of citizens (91%) are not using the online government services. This specific result shows the importance of the aim of this research to enhance citizens’ awareness and use of government e-services in Brunei Darussalam and the need to try to discover why citizens are not using the online government services in the second phase of the research study.
5.2.2.4  Part D

The respondents’ attitudes towards the use of government e-services were measured and collected. The results are presented in Table 5-2. It shows that every question has a predominantly positive response and proves that the majority of respondents have no issues about their attitudes towards the use of government e-services.

Table 5-2: Percentage of Citizens’ Attitude toward the use of government e-services

<table>
<thead>
<tr>
<th>No</th>
<th>Statement</th>
<th>SD%</th>
<th>DA%</th>
<th>NS%</th>
<th>AG%</th>
<th>SA%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I am interested in using e-government online services through the Internet</td>
<td>1.83</td>
<td>1.52</td>
<td>12.5</td>
<td>35.37</td>
<td>26.56</td>
</tr>
<tr>
<td>2.</td>
<td>I can’t be bothered to know more about online government services</td>
<td>25.61</td>
<td><strong>26.22</strong></td>
<td>18.6</td>
<td>4.57</td>
<td>2.13</td>
</tr>
<tr>
<td>3.</td>
<td>I feel online services are a very difficult to work with.</td>
<td>25</td>
<td><strong>31.1</strong></td>
<td>15.24</td>
<td>4.57</td>
<td>1.52</td>
</tr>
<tr>
<td>4.</td>
<td>I feel online government information that has been provided was not sufficient</td>
<td>3.05</td>
<td>7.01</td>
<td>24.39</td>
<td><strong>26.52</strong></td>
<td>16.46</td>
</tr>
<tr>
<td>5.</td>
<td>I feel there is no difference in using online services from the Internet compared to going to the counters to deal with my matters.</td>
<td>17.38</td>
<td><strong>24.39</strong></td>
<td>17.99</td>
<td>13.11</td>
<td>3.96</td>
</tr>
<tr>
<td>6.</td>
<td>I feel it is not safe and my identity will be exposed when I use online services from the Internet.</td>
<td>9.76</td>
<td><strong>25.91</strong></td>
<td>23.17</td>
<td>15.24</td>
<td>3.05</td>
</tr>
<tr>
<td>7.</td>
<td>I feel the online government services that have been provided were not sufficient for my needs.</td>
<td>2.13</td>
<td>9.15</td>
<td>27.13</td>
<td><strong>25.30</strong></td>
<td>13.30</td>
</tr>
<tr>
<td>8.</td>
<td>I feel the reliability of the Internet services need to be upgraded to improve citizen participation in using online services.</td>
<td>2.13</td>
<td>1.22</td>
<td>3.66</td>
<td>21.04</td>
<td><strong>48.78</strong></td>
</tr>
<tr>
<td>9.</td>
<td>I believe that the use of government e-services is an important medium to deal with the government in the future.</td>
<td>1.83</td>
<td>1.83</td>
<td>6.1</td>
<td>28.35</td>
<td><strong>38.72</strong></td>
</tr>
<tr>
<td>10.</td>
<td>I feel that online government services information needs to be distributed to all citizens.</td>
<td>2.13</td>
<td>1.22</td>
<td>3.05</td>
<td>27.13</td>
<td><strong>43.29</strong></td>
</tr>
<tr>
<td>11.</td>
<td>I believe that the availability of online government services will make it easier for citizens to deal with government in the future.</td>
<td>2.44</td>
<td>1.22</td>
<td>4.57</td>
<td>28.66</td>
<td><strong>39.94</strong></td>
</tr>
<tr>
<td>12.</td>
<td>I believe that citizen involvement in using the online government services is the key success for the e-government initiative.</td>
<td>1.52</td>
<td>0.91</td>
<td>6.4</td>
<td>25.3</td>
<td><strong>42.68</strong></td>
</tr>
</tbody>
</table>
Chapter 5 - Government e-Services Preliminary Study and Development of a Guide Book & Leaflet

5.2.2.5 Part E

The respondents’ general requirements of the government e-services were measured and collected. The results are presented in Table 5-3. The findings show that most of the respondents want more government e-services, therefore these need to be set up to ensure the success of Brunei e-government initiatives.

Table 5-3: Whether Citizen Requirements are Met by the Available Services

<table>
<thead>
<tr>
<th>No</th>
<th>Statement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Do you agree that government should provide more online services through government websites for the citizen?</td>
<td>70.43%</td>
<td>0.30%</td>
</tr>
<tr>
<td>2.</td>
<td>Do you agree that a ‘Citizen’s Forum’ is needed as a proper channel for citizens to convey their opinions and suggestions on government e-services?</td>
<td>67.68%</td>
<td>3.05%</td>
</tr>
<tr>
<td>3.</td>
<td>Do you agree that a facility to record ‘Citizen’s Complaints’ is needed as a proper channel for citizen to convey their problems and complaints on government e-services?</td>
<td>65.85%</td>
<td>4.88%</td>
</tr>
<tr>
<td>4.</td>
<td>Do you agree that government should provide a ‘Brunei One Stop Citizen Centric Portal’ for Citizens’ convenience?</td>
<td>67.38%</td>
<td>3.35%</td>
</tr>
<tr>
<td>5.</td>
<td>Do you want or will you continue to participate in using online government services to ensure the success of Brunei e-government initiatives?</td>
<td>68.90%</td>
<td>1.83%</td>
</tr>
</tbody>
</table>

5.2.2.6 Part F

From the initial research questionnaire, the respondents’ opinions and suggestions regarding the government e-services were coded and collected. The results are presented in Table 5-4. It shows that most of the respondents had problems with online government services and other value information needs to be considered.
### Table 5-4: Respondents’ Opinions and Suggestions on government e-Services

<table>
<thead>
<tr>
<th>Statement</th>
<th>No. of Respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Government should raise public / citizen / student awareness of government e-services</td>
<td>25</td>
</tr>
<tr>
<td>2. Government should provide more online services through government websites for the citizen</td>
<td>21</td>
</tr>
<tr>
<td>3. Government should improve Internet connections</td>
<td>20</td>
</tr>
<tr>
<td>4. Government should encourage citizens to have more IT facilities</td>
<td>18</td>
</tr>
<tr>
<td>5. Government should train / educate the public services &amp; citizens</td>
<td>17</td>
</tr>
<tr>
<td>7. Government should improve the websites’ usability, friendliness and accessibility</td>
<td>17</td>
</tr>
<tr>
<td>8. Government should force civil services to reply to email from citizens promptly</td>
<td>16</td>
</tr>
<tr>
<td>9. Government should provide a confidential citizen complaint facility</td>
<td>15</td>
</tr>
<tr>
<td>10. Government should implement e-payment</td>
<td>15</td>
</tr>
<tr>
<td>11. Government should provide a citizen forum</td>
<td>8</td>
</tr>
<tr>
<td>12. Government should implement a single citizen portal</td>
<td>8</td>
</tr>
<tr>
<td>13. Government should take care to implement good quality e-government management policies, including the tendering process</td>
<td>5</td>
</tr>
<tr>
<td>14. Government should implement online security measures to improve the confidence of citizens</td>
<td>4</td>
</tr>
<tr>
<td>15. Government should follow e-government good practice from other countries</td>
<td>3</td>
</tr>
<tr>
<td>16. Government should create an IT ministry</td>
<td>1</td>
</tr>
<tr>
<td>17. Government should force citizens to use online services</td>
<td>1</td>
</tr>
</tbody>
</table>

#### 5.2.3 Further Study

Based on the initial findings of the study, this section suggests some major and interesting aspects that needed to be considered in the next stage of the study in order to enhance citizens’ awareness for the use of online government services delivery, as below:

- **Publicising:** For citizen participation experiments to be a success, a citizen
needs to take part and they can only do so if they are aware that the opportunity to do so exists. Several previous studies, such as by Kearns et al., (2002) mention that one of the common reasons for the failure of e-participation activities is poor marketing. Consequently, any e-participation efforts must be publicised in an effective and targeted manner. This research needs to set up the guidelines on how to publicise the e-government initiatives to the citizens.

- **Educating**: Based on the citizens’ suggestions from the survey questionnaire, the government should arrange some sort of e-government curriculum for the citizens. This curriculum should cover how citizens can use government e-services in simple steps, probably in dual languages, and it should be interactive, user friendly and accessible. Some examples of books on enabling citizens to use e-services that could be adopted are, ‘E-Citizen: The Essential Guide for the E-Citizen Qualification’ by CIA Training Ltd (2005), ‘E-Citizen’ by Arora and Malik (2006), and ‘E-Citizen’ by Lawson (2006).

- **Improving**: Government should solicit input on how to improve the government e-services from every ministry and department in order to integrate the services, collaborate with private sector companies, upgrade their internet broadband, and install more IT facilities and networks.

- **Managing**: From the simple things like an email reply policy to more complicated matters, policies need to be properly managed. Some of the citizens complained that some government officers do not reply to their email promptly, if at all, and this causes frustration amongst the citizens.

The findings above indicated that further studies needed to be carried out to overcome the issues raised and to achieve the specific aims and objectives of the research. These include;

- To analyse the awareness and use of government e-services in more depth through experimental study and case studies;
To provide guidelines on how to publicise the online government services; to develop and evaluate the citizens awareness strategy framework;

- To develop and evaluate a GeS-CAS support tool; and
- To produce a series of guidelines and recommendations for improvement of the e-government services.

Based on the preliminary main findings above and in Table 5.4, a draft version of a model and an initial GeS-CAS support tool have been developed, as shown in Figures 5-1 and 5-2 respectively. The support tool is described in more detail in Chapter 8. In Figure 5-1 the reverse psychology approach involves restricting traditional methods such as in a “No counter services day”. This can only be carried out if adequate alternative government e-services are available.

![A Framework of Government e-Services Citizens Awareness Strategy](image)

**Figure 5-1: Citizens’ Awareness Enhancement Strategy Model for Government e-Services**
5.3 Government e-Services Guidebook and Leaflet Experiment

A government e-services guidebook and leaflet were created to act as tools to support citizens in their understanding of the purpose of government e-services (see Appendices B and C). By doing this, citizens with little or no knowledge about government e-services were, at least, aware of the research being carried out and the researcher’s request for information from them.

The e-services guidebook and leaflet helped the questionnaire and interview process by helping the respondents to know what the research was about and this was also of value in the case studies. In addition, it helped the citizens to give better answers to the questions, particularly questions about what they believed is the most effective tool to deploy to enhance awareness and education about government e-services use.

5.3.1 Planning

There is extensive literature on questionnaire design, for instance Sudman and Bradburn
Chapter 5 - Government e-Services Preliminary Study and Development of a Guide Book & Leaflet

(1982). In addition, Leedy (1997) has defined four practical guidelines for developing a questionnaire which were applied to the design of the guidebook and leaflet as follows:

1. Using clear language (Both Malay and English used)
2. Meeting research aims (Helping citizens to understand better)
3. Planning the development, sample, distribution and collection
4. Creating a solid cover letter (Providing visual tools)

Although designing a perfect guidebook and leaflet to suit all categories of citizens is an unachievable aim, the study does, however, follow the above guidelines in the case of the questionnaire and interview process. They were designed and developed to provide support for the research questions, and used simple language wherever possible. Since the survey was targeted at Brunei citizens, two versions of the guidebook and leaflet were designed in Malay and English, as they are the official language and a popular second language in Brunei Darussalam respectively.

However, before finalising the design, the guidebook and leaflet were inspected by colleague researchers in the Design School and Business School at Loughborough University and Brunel University, and the researcher’s supervisor, Professor Ray Dawson, Professor of Knowledge Management at Loughborough University. A pilot to test the effectiveness of the guidebook and leaflet was also carried out with a group of Brunei students who were studying at Loughborough University.

Following the review, the guidebook and leaflet were refined accordingly. The major outcomes were some corrections in the language and suggestions for consistency in the use of colour, font sizes and style.

5.3.2 Development

For the guidebook, a short, simple introduction page was created to inform the citizens of the aims, significance of the research and the targeted group, and to verify the importance of support tools, such as guidebooks and leaflets, in the survey. The
Guidebook of Brunei Government e-Services and leaflet were written in both Malay and English and were used in the interviews and focus groups to encourage citizens to respond effortlessly and sincerely. The guidebook was also provided in PowerPoint format and can be browsed via a CD as shown in Figure 5-3 which gives the front page of the guidebook for citizens in both English and Malay versions. The front and back pages of the leaflet are shown in Figure 5-4 and Figure 5-5 respectively.

Figure 5-3: PowerPoint Version of the Guidebook of Government e-Services for Citizens
Chapter 5 - Government e-Services Preliminary Study and Development of a Guide Book & Leaflet

Figure 5-4: Front Page of Government e-Services Leaflet for Citizens

Figure 5-5: Back Page of Government e-Services Leaflet for Citizens
In addition to the initial results from the online questionnaire, the researcher conducted semi-structured interviews with a random selection of citizens using the questionnaire supported by the guidebook and leaflet to obtain more input and therefore concrete results. These initial results were accepted and presented in the 7th International Conference on Technology, Knowledge and Society in Bilbao, Spain.

5.4 Triangulation of Initial Aim and Objectives

The aim of this initial research is to obtain a clear indication of citizens’ awareness and potential use of government e-services. The objectives of this research are,

1. To evaluate citizens awareness of government e-services;
2. To discover any significant problems in their use of e-services; and
3. To obtain input from citizens on how to overcome such problems and on the best ways to inform citizens about e-services.

E-services from private sector companies and non-government organisations are not included in this part of the research to ensure the scope of the research was manageable. Only government e-services were considered.

Several main questions were asked in order to achieve the aims and objectives of the research as follows:

Q1 – Do you know of any government e-services on the websites?

If the answer is ‘Yes’, then proceed to Q2, but if the answer is ‘No’, then go straight to Q3.

Q2 – Have you used it, at least once?

If the answer is ‘No’, then proceed to Q3. But if the answer is ‘Yes’, then an extra 2 questions will be asked.

1. Can you name it (the e-services)?
2. Do you want to continue to use it?

If the answer is ‘Yes’, go straight to Q4, otherwise proceed to Q3.
Q3 – What do you think are the problems here?

Q4 – What do you think is the most appropriate way to inform citizens about the availability of government e-services?

Q5 – What do you think government should do to increase the citizens’ use of e-services?

In this particular study, the citizens of Brunei Darussalam comprised government civil servants (government sector), business leaders, private sector employees, students (from secondary to university level) and others from the general population such as job seekers, pensioners, and housewives. These are not discrete groups; for example, government civil servants may also be students.

5.4.1 Triangulation Preliminary Results

Surveys were carried out on 328 Brunei citizens in the first phase (Online Questionnaire) and, in the second phase, on 395 citizens (face-to-face interviews & discussion groups), giving a total of 723 Brunei citizens living in or outside Brunei. The evidence presented is the result of work conducted for both phases from March to May and from July to December 2009, using a variety of methods including:

- Using a prepared questionnaire for face-to-face interviews with a number of Brunei citizens and students who reside in the UK.
- Conducting telephone interviews with business leaders.
- Brainstorming with a group of e-government committee members and government public servants.
- Conducting a discussion group with higher level students.
- Conducting interviews and discussion groups of pensioners and rural communities at a village gathering.

Based on the online survey questionnaire and interview processes, the main results are as follows;
5.4.1.1 Citizens Uninformed About e-Services

One of the most significant results of the questionnaire across all participants from Question 1 was that 83% (327 out of 395) said they did not know of the availability of government e-services on the government official websites. For Question 3, a further 15% said they knew of such e-services but did not bother to use them because the e-services were unfriendly, they only offered a form to download, they were too isolated and too difficult to find, or the citizen did not have the confidence to use them. The other 2% said they knew of and had used government e-services at least once. The citizens revealed that most of them did not feel they were adequately informed of the availability of e-services by the government.

In terms of the appropriate ways for the government to inform citizens (IC) about the availability of government e-services, Question 4 produced the following results:

- IC-1: Poster/Leaflet: 87%
- IC-2: News papers/Newsletter: 82%
- IC-3: Interactive TV/Radio: 78%
- IC-4: Roadshows & Exhibitions: 73%
- IC-5: SMS/Direct call: 62%
- IC-6: Face to Face/Citizen Center: 59%

These results from Question 4, suggest that the government should use several strategies to increase the citizens’ use of e-services as described in Chapter 7. This result is similar to the result of a previous study by Van Dijk et al., (2007) of the Dutch use of e-services, who reported that one of the most striking results of their survey was the high number of respondents with internet connections that were not informed about the availability of particular e-services. Another study by Ramessur (2009) also found that respondents were not using online public services simply because they are not aware of them.
### 5.4.1.2 Silo-based Approach to e-Services

**Table 5-5: Brunei Government e-Services Addresses**

<table>
<thead>
<tr>
<th>Name of Ministry / Department</th>
<th>Category of e-Services</th>
<th>Name one of e-Services</th>
<th>Government e-Services Address</th>
<th>Main Target Citizens / Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Finance</td>
<td>Download Form</td>
<td>e-Payment</td>
<td><a href="http://www.mof.gov.bn/English/downloadable_forms/Pages/default.aspx">http://www.mof.gov.bn/English/downloadable_forms/Pages/default.aspx</a></td>
<td>Government Civil Services</td>
</tr>
</tbody>
</table>
Chapter 5 - Government e-Services Preliminary Study and Development of a Guide Book & Leaflet

The examination of the government documentation and websites carried out as part of this research found that government e-services built to date operate completely independently without any common method of access or any common layout and presentation. This silo approach results in unfriendly e-services. A list of the ministries and departments of the Brunei government and the web addresses of their respective e-services is presented in Table 5-5.

There is, as yet, no government e-services portal implemented in Brunei Darussalam. However, the e-government Strategic Plan 2009-2014 (e-GSP, 2009) shows that there is an ongoing e-government initiative towards improving the provision of ICT facilities. This initiative aims to encourage the government agencies to work together and speed up the delivery of integrated, easily accessible and efficient government e-services.

In contrast, many other countries, such as the examples listed in Table 5-6, have their own government e-services portal where all services are accessed through a single web address and a single user account. Van Daursen (2007) suggests that the result of online portals is that citizens will become more aware of the tasks of the government. His study reports that ICT makes contacting the government much easier and this will directly result in an increased amount of contact between the government and its citizens.

Table 5-6: Some Government e-Services Portal Addresses

<table>
<thead>
<tr>
<th>Country</th>
<th>Website Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td><a href="http://www.ecitizen.gov.sg/">www.ecitizen.gov.sg/</a></td>
</tr>
<tr>
<td>Bahrain</td>
<td><a href="http://www.bahrain.bh/wps/portal/">http://www.bahrain.bh/wps/portal/</a></td>
</tr>
<tr>
<td>USA</td>
<td><a href="http://www.usa.gov/index.shtml">http://www.usa.gov/index.shtml</a></td>
</tr>
<tr>
<td>Canada</td>
<td><a href="http://www.servicecanada.gc.ca/eng/home.shtml">http://www.servicecanada.gc.ca/eng/home.shtml</a></td>
</tr>
<tr>
<td>Australia</td>
<td><a href="http://australia.gov.au/services">http://australia.gov.au/services</a></td>
</tr>
</tbody>
</table>
5.5 Summary

In this chapter, the results from the surveys and interviews suggest that there is a low level of awareness of government e-services and that these services should be widely publicized to the citizens by means of a poster & leaflet campaign; newspapers & magazines; interactive TV and radio; roadshows & exhibitions; and even SMS & direct calls if possible. The preliminary findings of the research and the objectives of government e-service guidebook and leaflet development have also been reviewed. The development of guidebook and leaflet were also important information tools to assist in the survey questionnaire, interviews and discussion groups.

Based on these findings, this preliminary study proposes three specific awareness strategies that have been compiled with a focus on publicity and communication. These are a media communication strategy, a government and citizen communication strategy, and a strategy to develop citizens’ motivation to use the available government e-services. These strategies are then be updated in the final stage of the research.

These preliminary findings were also sent to the government sponsor of the research. To follow up these results, the Brunei government decided to verify the results by conducting their own, large scale (more than 3,000 respondents) survey questionnaire with the citizens. The government survey involved paper-based surveys carried out at roadshows covering all areas of Brunei. Their survey questions were similar to those of this research (but with some additional questions) and the results were similar to the results obtained by the researcher in the preliminary study. This proved that the preliminary findings were valid and justifiable (see Appendix D).

In the next chapter (Chapter 6: Surveying Citizens Awareness’ of Government e-Services) further analysis of the citizens’ awareness of government e-services is presented to confirm the preliminary findings. The results are examined to identify the existence of government e-service problems in Brunei Darussalam, the factors which make Brunei citizens unaware of government e-services and the reasons why they are not more frequently used.
Chapter 6

6.0 SURVEY OF CITIZENS’ AWARENESS OF GOVERNMENT E-SERVICES – AN ANALYSIS OF THE FINDINGS

This chapter describes the survey data presentation and key findings. It begins with the introduction of the concept of awareness and the aim of the questionnaire. This chapter also outlines case studies relating to citizens’ awareness of government e-services with the five categories of Brunei citizens and investigates the possibility of deploying awareness strategies in e-government initiatives. Furthermore, it describes the survey planning, design and execution stages.

Finally, this chapter concludes with a quantitative and qualitative data analysis of the survey results to discover the barriers to using of government e-services in Brunei Darussalam society, how to rectify them and the possible promotion and awareness strategy framework which could make the Brunei e-government initiatives a success. The framework is described in further detail in Chapter 7.

Some parts of this chapter are taken from the author’s conference paper that was presented at the Software Quality Management (SQM) and INSPIRE Conferences, held at Loughborough University, United Kingdom from 18th to 20th April 2011.

6.1 Introduction of Awareness

Awareness is “an understanding of the activities of others, which provides a context for your own activity” (Dourish and Bellotti, 1992). Wikipedia (2011) defines awareness as
“the state or ability to perceive, to feel, or to be conscious of events, objects or sensory patterns. In this level of consciousness, sense data can be confirmed by an observer without necessarily implying understanding. More broadly, it is the state or quality of being aware of something. In biological psychology, awareness is defined as a human's or an animal's perception and cognitive reaction to a condition or event.”

According to Goode (2009), sometimes awareness is called consciousness, being, love or knowledge and awareness is not an object that can be seen. Additionally, Goode has said that awareness doesn’t suffer; awareness doesn’t come and go; awareness is open and spacious; there are no limits, edges or borders to awareness; and awareness is present during the presence of objects, during the absence of objects and beyond all objects.

In order for government to increase citizens’ awareness by implementing e-government initiatives such as government e-services, it is necessary to understand who is affected by the development and its initiatives.

### 6.2 Questionnaire Aim

The fundamental aim of the questionnaire is to determine Brunei citizens’ use of government e-services in the country and their views on the best method of increasing awareness of the e-services, and this is compared with the views of Brunei citizens’ residing outside the country such as in the UK.

The survey measures citizens’ knowledge of government e-services, gives a better indication of their awareness levels and intention to use the services and identifies the extent of the problems arise. In other words, it discloses their views on the best way they propose to increase citizens’ awareness of government e-services and, specifically, what they consider the most effective citizens’ awareness strategy approach regarding government e-services. Surveys, focus group discussions and interviews are considered to be appropriate research methods to assess the citizens’ awareness and use of government e-services (Choudrie and Dwivedi, 2005; Al-Jaghoub et al., 2010)
In the following section of this chapter, which was taken from the aforementioned conference paper, ‘software quality’ refers to the government e-services delivery and ‘user acceptance’ refers to the citizens’ awareness, usage and satisfaction with government e-services.

6.3 **Software Quality Requires User Acceptance**

The development of high-quality software is an important concern for the software industry. Software quality focuses principally on two areas, software engineering and software management. However, the Government e-Services Citizens Awareness Strategy (GeS-CAS) has been derived in this chapter to have significant leverage on the perspective of user post-acceptance. This provides a clear, well-defined framework to inform the target users about software products and the benefits of using the products via the varied and mutually supportive sets of approaches, distinctions, guidelines, and experiences cited so that the users’ expectations can align with what is being provided. The users’ experiences are therefore enhanced and the software becomes a quality product. This framework has been tested on users of e-government software, and has been sufficiently developed to serve as a viable basis for choices concerning the quality of future software refinements and extensions.

6.4 **Introduction of Software Quality**

Users need quality software in their working environment. Suppose you receive a software product which is hard to understand, difficult to use, and has no features to integrate with other programs, does it follow that you will accept that product? Thus, according to Boehm *et al.*, (1976) users need software quality characteristics such as understandability, completeness, conciseness, portability, consistency, maintainability, testability, usability, reliability, structure and efficiency. However, it is no longer sufficient to just deliver software quality that has excellent technical and product characteristics—products also
need to fit in with users’ expectations for their work practices and activities. How can this be achieved? The study in this chapter explains an attempt to establish a conceptual framework and proposes some fundamental initial results in the analysis of the characteristics of GeS-CAS through users of e-government software.

Companies and countries continue to invest a great deal of time, money and effort in improving software quality (Kitchenham & Pfleeger, 2002). Some companies measure their software quality based on a product approach, while others focus on processes. Garvin (1984) studied software quality from five different perspectives:

1. **Transcendental aspect** – views quality as something that can be recognised but not defined.

2. **User aspect** – views quality as fitness for purpose.

3. **Manufacturing aspect** - views quality as conformance to specification.

4. **Product aspect** - views quality as tied to the inherent characteristics of the product.

5. **Value-based aspect** – views quality as dependent on the amount a customer is willing to pay for it.

A number of researchers have developed software quality models (e.g. Boehm et al., 1976; Kitchenham & Pfleeger, 2002; Garvin, 1984; M. Fishbein and I. Ajzen, 1975). One of the earliest is the McCall quality model (McCall et al., 1977). The ISO 9126 quality model (ISO, 1992) is shown in Figure 6-1 and the quality characteristics are detailed in Table 6-1. These models show the criteria to achieve quality software products. The direction of the arrows indicates that the criteria are meant to influence the achievement of the quality factor (Kitchenham et al., 1997).
Some of the quality factors from McCall model are not in the ISO quality model. A major difference between the models is the latter’s attempt to define measures associated with the sub-characteristics (Kitchenham et al., 1997).
The elements of both the McCall and ISO quality models and from Gavin’s different views of software quality highlight the significant evolution of software quality products required by the users in both the software engineering and software management perspectives. However, this research shows that the perspective of software exposure, awareness, comprehension and responsiveness which form the ‘GeS-CAS’ cycle model has become necessary for users, companies and agencies to experience a complete package of software quality.

Table 6-1: ISO/IEC 9126 Quality Characteristics (ISO, 1992)

<table>
<thead>
<tr>
<th>Quality characteristic</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functionality</td>
<td>A set of attributes that bear on the existence of a set of functions and their specified properties. The functions are those that satisfy stated or implied needs.</td>
</tr>
<tr>
<td>Reliability</td>
<td>A set of attributes that bear on the capability of software to maintain its level of performance under stated conditions for a stated period of time.</td>
</tr>
<tr>
<td>Usability</td>
<td>A set of attributes that bear on the effort needed for use, and on the individual assessment of such use, by a stated or implied set of users.</td>
</tr>
<tr>
<td>Efficiency</td>
<td>A set of attributes that bear on the relationship between the level of performance of the software and the amount of resources used, under stated conditions.</td>
</tr>
<tr>
<td>Maintainability</td>
<td>A set of attributes that bear on the effort needed to make specified modifications. Note. Modifications may include corrections, improvements or adaptations of software to changes in the environment and in the requirements and functional specifications.</td>
</tr>
<tr>
<td>Portability</td>
<td>A set of attributes that bear on the ability of software to be transferred from one environment to another. Note. The environment may include organizational, hardware or software environments.</td>
</tr>
</tbody>
</table>

6.5 Government e-Services – Citizens Awareness Strategy (GeS-CAS)

Software quality cannot improve an organisation’s performance if users are not consulted. To better predict, explain, and increase user acceptance, we need to better understand why people accept or refuse to use software. This chapter analyses users’ software quality
acceptance from the users’ awareness perspective, and examines ways to improve product awareness by the promotion, demonstration, motivation, education and advancement of quality software products. Fishbein and Ajzen (1975) suggest that “system design characteristics, user characteristics (including cognitive style and other personality variables), task characteristics, nature of the development or implementation process, political influences, organizational structure and so on would fall into this category.”

Users need promotion (P2U), demonstration (D2U), motivation (M2U), education (E2U) and advancement (A2U) as a complete package to form the Government e-Services Citizens Awareness Strategy (GeS-CAS) cycle model which is described in detail in chapter 7.

6.5.1 Promotion Approach to User (P2U)

The first GeS-CAS aspect of software quality or government e-services promotion is the various publicity and marketing activities and strategies to enhance user awareness. Publicity and marketing activities can be carried out by a variety of approaches:

- A face-to-face approach, such as through exhibitions, road shows, campaigns, seminars, conferences and conventions.
- A printed-media based approach such as through leaflets, posters, billboards, newspaper advertisements and press releases.
- An electronic-media based approach such as through radio and television, video conferences, information kiosks and telephone calls.
- A digital-media based approach such as through email, blogs, websites, search engines and short message services (SMS).

One of the successful factors from the Singapore e-government initiative was its promotion of its online services. In the implementation of e-government, it was recognised that it is insufficient for any e-government initiative to exclude the component of e-government promotion (Chan, et al., 2008). However, promotion to the users of
software products is often totally overlooked or, at most, given little emphasis by most government agencies that assume this aspect is not so important and does not cause much of an impact to the way they work. Thus, to foster greater use of software products, serious effort must be made to increase users’ acceptance.

6.5.2 Demonstration Approach (D2U)

A study by Sandoh (2002) deals with reliability demonstration testing for software, which is conducted to discover whether the specified level of reliability has been achieved in a software product. The pre-adoptions demonstration software that is utilised in a hands-on trial version may function as a proxy for likely service performance and user interface usability (Featherman & Pavlou, 2003).

Once the software product has been tested, it can be distributed as a free trial version to the users to familiarise themselves with the software product. Research by Cooper and Pryor (2003) revealed that “if users had the opportunity to try software products before having to make decisions on whether or not to purchase the products, it is generally believed that more copies of software products could be sold and user satisfaction would be higher.” Hence, with the demonstration approach, users could accept the software product with confidence. A face-to-face approach is the most appropriate method of carrying out this task.

6.5.3 Motivation Approach to User (M2U)

Another aspect of GeS-CAS is the users’ need for motivation. Companies and agencies can motivate users by an incentive approach such as offering a low-cost and affordable software product, and giving priority to online customers and financial support. For instance, the Malaysia and Thailand governments have embarked on ‘Affordable PC Project’, offering low-priced PCs and productivity software to motivate users to own their PC and go online. Meanwhile, the Indian government has exempted all computers and
software from excise duty (Yong, 2008). Yong (2008) reported that China has successfully organised nationwide Internet contests such as the National Internet Knowledge Contest and the China Family Online Shopping Contest to motivate users’ awareness of the Internet and promote a networked society. This approach could be used to publicise e-services in Brunei if, say, an e-services awareness competition was organised.

This GeS-CAS aspect is supported by Thompson’s (1998) study where two factors (motivation and social factors) were added to the Technology Acceptance Model (TAM) proposed by Davis (1986). Thompson discovered that the two factors exerted a strong influence on intentions to use software products as shown in Figure 6-2.

![Figure 6-2: Motivation and Social Factors Added in TAM (Thompson, 1998)](image)

6.5.4 Education Approach to User (E2U)

The education approach is an important aspect in the GeS-CAS model. Nelson (1991) claims that “to become more competitive with the rest of the world, organizations need to view employees as assets whose value can be enhanced through education and training.” Meanwhile, Davis (1989) suggests that training is possibly the most effective mechanism for reducing the risks associated with end-user computing. According to Bostrom et al., (1990) the most effective methods of education and training must be matched with the specific needs and learning styles of individuals. Therefore, to get a software product
accepted by the user, it is important to educate them using a variety of different approaches and techniques. This will be easier for the users if they have been previously exposed to the demonstration approach.

### 6.5.5 Advancement Approach to User (A2U)

Nelson and Cheney (1987) confirm that “Continued programmes of contact are critical, yet often disregarded, in the attempt to refreeze what an individual has learned.” It is very important that users give feedback, opinions and criticism to enable the enhancement of the quality of the software. They need to explain what they have experienced, and what further features need to be added. A follow-up to inform users of the latest activities, upgrade versions, and extra information is very important for the continuity of the software lifecycle.

### 6.6 Analysis of GeS-CAS Characteristics

As described in the last chapter, research was conducted to identify how users with diverse backgrounds were involved in different GeS-CAS characteristics, and how this affected their acceptance and the success of government e-services applications.

#### 6.6.1 Research Method

A three-month field study was held in Brunei Darussalam from July to September 2010 (see Appendix H – Letter of Field Work in Brunei). A mix of qualitative and quantitative methods was used. Questionnaires followed by interviews were conducted with five groups of users on the GeS-CAS characteristics in four areas of publicity and marketing activities used for government e-services awareness: The Face-to-Face Approach (FFA), Printed-Media Approach (PMA), Electronic-Media Approach (EMA), and Digital-Media Approach (DMA). These approaches are described in further detail in Chapter 7.

As described in the last chapter, the five categories of users were government sector employees, private sector employees, business leaders (referring to company owners or
shareholder and employees at the top level of the company), students (this category was then subdivided into high school and university students to see the education level differences) and unemployed or self-employed users from a village community (specifically senior citizens and housewives). Details of the discussion groups on the citizens’ awareness programmes conducted by the researcher are shown in Table 6-2. The size of these groups was up to 40 people, somewhat larger than a normal focus group, but this was as a result of practical considerations to handle the numbers of volunteers involved. Feedback from 718 respondents to the survey questionnaires and interviews was coded and computed according to these four areas of publicity and marketing activities (FFA, PMA, EMA, DMA) which related to promotion, demonstration, motivation, education and advancement activities. Similar items were categorised together and relationships between categories were identified.

### Table 6-2: Details of Citizens Awareness Methods in Groups

<table>
<thead>
<tr>
<th>Case</th>
<th>Descriptions</th>
<th>Citizen’s Categories (Groups)</th>
<th>No. of Persons</th>
<th>Place</th>
</tr>
</thead>
</table>
| A    | Seminar & Workshop presented to three classes from high school and final year of University students on 2 separate occasions to find out the differences. (Ref.6.6.2.1) | 1. High School students (ST1)  
2. University students (ST2) | 71  
67 | University main hall & School hall                                          |
| B    | Informal Meeting with 12 groups (Maximum of 30 people in any one ministry) on 12 separate occasions. (Ref.6.6.2.2) | 3. E-government committees and government employees (GSU) | 341            | 12 government meeting rooms  |
| C    | Group Gathering in 2 separate locations (Maximum of 40 people on each occasion, for details Ref.6.6.2.3) | 4. A village community (VCU)   | 75             | Village Hall & Mosque       |
| D    | Interviews of business volunteers in different locations. (Ref.6.6.3.4)      | 5. Businesses (BSU)                                   | 43             | Business Building (Shops)& Calling Places |
| E    | Group Discussion (for details Ref. 6.6.2.5)                                 | 6. Private sector employees (PEU)                      | 121            | Factory / Public & Private Places |
Table 6-3: Breakdown of users’ GeS-CAS Highest Percentage

<table>
<thead>
<tr>
<th>Approach</th>
<th>BSU</th>
<th>PEU</th>
<th>GSU</th>
<th>ST1</th>
<th>ST2</th>
<th>VCU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Face-to-Face Approach (FFA) to Citizens</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS/C of C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P2U</td>
<td>41</td>
<td>16</td>
<td>18</td>
<td>14</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>D2U</td>
<td>26</td>
<td>29</td>
<td>11</td>
<td>13</td>
<td>33</td>
<td>8</td>
</tr>
<tr>
<td>M2U</td>
<td>9</td>
<td>26</td>
<td>23</td>
<td>31</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>E2U</td>
<td>11</td>
<td>13</td>
<td>21</td>
<td>30</td>
<td>17</td>
<td>53</td>
</tr>
<tr>
<td>A2U</td>
<td>13</td>
<td>16</td>
<td>27</td>
<td>12</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>% --&gt;</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

| **Printed Media Approach (PMA) to Citizens** |     |     |     |     |     |     |
| CAS/C of C               |     |     |     |     |     |     |
| P2U                       | 35  | 17  | 22  | 24  | 27  | 23  |
| D2U                       | 15  | 21  | 12  | 11  | 19  | 3   |
| M2U                       | 7   | 26  | 21  | 29  | 18  | 24  |
| E2U                       | 11  | 19  | 21  | 26  | 20  | 28  |
| A2U                       | 32  | 17  | 24  | 10  | 16  | 22  |
| % --&gt;                  | 100 | 100 | 100 | 100 | 100 | 100 |

| **Electronic Media Approach (EMA) to Citizens** |     |     |     |     |     |     |
| CAS/C of C               |     |     |     |     |     |     |
| P2U                       | 32  | 18  | 21  | 23  | 25  | 25  |
| D2U                       | 15  | 19  | 16  | 11  | 22  | 13  |
| M2U                       | 9   | 24  | 19  | 29  | 13  | 19  |
| E2U                       | 11  | 20  | 21  | 29  | 12  | 24  |
| A2U                       | 33  | 19  | 23  | 8   | 28  | 19  |
| % --&gt;                  | 100 | 100 | 100 | 100 | 100 | 100 |

| **Digital Media Approach (DMA) to citizens** |     |     |     |     |     |     |
| CAS/C of C               |     |     |     |     |     |     |
| P2U                       | 34  | 17  | 20  | 25  | 26  | 19  |
| D2U                       | 12  | 18  | 19  | 16  | 24  | 17  |
| M2U                       | 8   | 24  | 19  | 17  | 12  | 19  |
| E2U                       | 10  | 23  | 20  | 33  | 11  | 31  |
| A2U                       | 36  | 18  | 22  | 9   | 27  | 14  |
| % --&gt;                  | 100 | 100 | 100 | 100 | 100 | 100 |

**Key:**
- **CAS:** Citizen Awareness Strategy
- **C of C:** Category of Citizens
- **Rectangle:** The highest percentage of users’ first choice of GeS-CAS characteristic

The percentage (%) is calculated based on total users’ first choice of GeS-CAS characteristic, divided by total respondents, multiplied by 100.

Example: 75 respondents chose A2U / 341 Government Users × 100 = 22%
6.6.2 Research Key Finding from the Different User Groups

The overall findings are shown in the Table 6-3. The significant analysis results are described; no single approach (Face-to-Face Approach, Media Printed Approach, Media Electronic Approach or Digital Media Approach) stands out as being more or less favoured overall, though it can do for individual groups of users for individual purposes. This implies that e-services from the government or software suppliers from business companies should consider all of these approaches.

6.6.2.1 Case A: Awareness Seminar & Workshop for College Students

A total of 138 respondents’ questionnaire and interview feedback was obtained, the first group comprised 71 respondents from the high school student’s category (ST1); and the second group comprised 67 respondents from the university student’s category (ST2). The responses were coded and computed according to these four areas of publicity and marketing activities (FFA, PMA, EMA, DMA), which related to promotion, demonstration, motivation, education and advancement activities. The case was divided into two groups in order to distinguish their acceptance differences.

The breakdown of these respondents (R) is shown in Table 6-4.
Table 6-4: Case A - Awareness Seminar & Workshop for University & High School Students

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Category</th>
<th>Frequency (R=138)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>70</td>
<td>51%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>68</td>
<td>49%</td>
</tr>
<tr>
<td>Age</td>
<td>15 - 24</td>
<td>71</td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td>25 - 34</td>
<td>64</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>35 – 44</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>45 - 54</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>55 – 64</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Above 65</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Educational Level</td>
<td>PhD / Master</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Degree / Diploma</td>
<td>65</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>High School Cert</td>
<td>71</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td>Lower School Cert</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>No Cert</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The overall findings for younger students (aged between 15 and 24 years old) or high school students’ acceptance of GeS-CAS are shown in Figure 6-3 and the findings from older students (aged between 25 and 44 years old) or university students are shown in Figure 6.4. The significant analysis results for both groups are described below:

- Younger students preferred the medium of education to gain awareness, probably because this is what they are most used to, though interestingly, this does not apply to older students who are generally far less interested.

- Not surprisingly, younger students were not interested in advancement; perhaps this is due to their inexperience of the value of advancement. Older students are much more interested in advancement if delivered online or by electronic media.
Chapter 6 – Surveying Citizens’ Awareness of Government e-Services

Figure 6-3: High School Students’ Acceptance of GeS-CAS

Figure 6-4: University Students’ Acceptance of GeS-CAS
6.6.2.2 Case B: Informal meetings with government servants & ICT Committees

A total of 341 respondents’ questionnaire and interview feedback were obtained, 309 respondents were government officers and staff and 32 respondents were from government ICT working groups. The responses were coded and computed according to these four areas of publicity and marketing activities (FFA, PMA, EMA, DMA), which relate to promotion, demonstration, motivation, education and advancement activities. The breakdown of these respondents is shown in Table 6-5.

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Category</th>
<th>Frequency (R=341)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>174</td>
<td>51%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>167</td>
<td>49%</td>
</tr>
<tr>
<td>Age</td>
<td>15 - 24</td>
<td>82</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>25 - 34</td>
<td>131</td>
<td>38%</td>
</tr>
<tr>
<td></td>
<td>35 – 44</td>
<td>90</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>45 - 54</td>
<td>36</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>55 – 64</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Above 65</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Educational Level</td>
<td>PhD /Master</td>
<td>5</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Degree / Diploma</td>
<td>148</td>
<td>43%</td>
</tr>
<tr>
<td></td>
<td>High School Cert</td>
<td>141</td>
<td>42%</td>
</tr>
<tr>
<td></td>
<td>Lower School Cert</td>
<td>47</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>No Cert</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The overall findings for government servants’ acceptance on GeS-CAS is shown in Figure 6-5. The significant analysis results are described below:

- Government workers were interested in advancement, perhaps because this is valued more in a government environment, especially as the questions were about e-government services. However, no single approach for enhancing advancement was favoured over other approaches.
6.6.2.3 Case C: Organised gathering of a village community

A total of 75 respondents’ questionnaire and interview feedback were obtained, 58 respondents were government pensioners considered as older people in the village and 17 respondents were housewives considered as unemployed. The responses were coded and computed according to these four areas of publicity and marketing activities (FFA, PMA, EMA, DMA), which relate to promotion, demonstration, motivation, education and advancement activities.

The breakdown of these respondents is shown in Table 6-6.
Table 6-6: Case C - Organised gathering with a village community

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Category</th>
<th>Frequency (R=75)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>58</td>
<td>77%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>17</td>
<td>23%</td>
</tr>
<tr>
<td>Age</td>
<td>15 – 24</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>25 – 34</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>35 – 44</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>45 – 54</td>
<td>7</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>55 – 64</td>
<td>57</td>
<td>76%</td>
</tr>
<tr>
<td></td>
<td>Above 65</td>
<td>11</td>
<td>15%</td>
</tr>
<tr>
<td>Educational Level</td>
<td>PhD /Master</td>
<td>4</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Degree / Diploma</td>
<td>16</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>High School Cert</td>
<td>41</td>
<td>55%</td>
</tr>
<tr>
<td></td>
<td>Lower School Cert</td>
<td>12</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>No Cert</td>
<td>2</td>
<td>3%</td>
</tr>
</tbody>
</table>

The overall findings for unemployed citizens’ acceptance of GeS-CAS are shown in Figure 6.6. The significant analysis results are described below:

- Villagers preferred education, particularly face-to-face education. Perhaps the difficulty of obtaining such education at a local village level makes them more appreciative of education.
- Villagers are not particularly interested in advancement. Perhaps they have not had a chance to experience the value of such advancement, especially face-to-face, which had a particularly low score.
- Villagers were generally not interested in demonstrations, especially on paper.
6.6.2.4 Case D: Interviews with Business Leaders

A total of 43 respondents’ questionnaire and interview feedback were obtained. 11 respondents were company owners and 32 respondents were from the business company’s administration and management category. The responses were coded and computed according to these four areas of publicity and marketing activities (FFA, PMA, EMA, DMA), which relate to promotion, demonstration, motivation, education and advancement activities. The breakdown details of these respondents are shown in Table 6-7.

Figure 6-6: Unemployment Village Community’s Acceptance on GeS-CAS
Chapter 6 – Surveying Citizens’ Awareness of Government e-Services

Table 6.7: Case D: Interviews with business leaders

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Category</th>
<th>Frequency (R=43)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>29</td>
<td>67%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>14</td>
<td>33%</td>
</tr>
<tr>
<td>Age</td>
<td>15 - 24</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>25 - 34</td>
<td>12</td>
<td>28%</td>
</tr>
<tr>
<td></td>
<td>35 – 44</td>
<td>15</td>
<td>35%</td>
</tr>
<tr>
<td></td>
<td>45 - 54</td>
<td>10</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>55 – 64</td>
<td>5</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>Above 65</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>Educational Level</td>
<td>PhD /Master</td>
<td>3</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>Degree / Diploma</td>
<td>38</td>
<td>88%</td>
</tr>
<tr>
<td></td>
<td>High School Cert</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Lower School Cert</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>No Cert</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The overall findings for business leader’s acceptance on GeS-CAS are shown in Figure 6-7. The significant analysis results are described below:

- Business leaders like promotional material, no matter how it is delivered, though they particularly like face-to-face promotions.
- Business leaders were particularly interested in follow-up awareness, recognising the need to keep up to date, but interestingly they did not want this through a face-to-face approach, perhaps because they feel this is something they should do in their own time.
- Business leaders had little interest in motivation, probably because they tend to be self-motivated people due to their competitive self-interest.
- Business leaders were also not interested in education, probably because they had all the education they wanted and it takes up too much time.
6.6.2.5 Case E: Group discussion with private sector employees

A total of 121 respondents’ questionnaire and interview feedback was obtained. 13 (9 female) respondents from bankers, 20 (16 female) respondents from factory workers, 8 (2 female) respondents from security agencies, 11 (8 female) respondents from tourism companies, 19 (14 female) respondents from telecommunication company, 9 (3 female) respondent from the Shell company, 15 (4 female) respondents from construction companies, and 26 (11 female) respondents from insurance companies. The responses were coded and computed according to the four areas of publicity and marketing activities (FFA, PMA, EMA, DMA), which relate to promotion, demonstration, motivation, education and advancement activities. The breakdown of the respondents is shown in Table 6-8.
Chapter 6 – Surveying Citizens’ Awareness of Government e-Services

Table 6-8: Case E - Group discussion with private sector employees

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Category</th>
<th>Frequency (R=121)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>54</td>
<td>45%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>67</td>
<td>55%</td>
</tr>
<tr>
<td>Age</td>
<td>15 - 24</td>
<td>13</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>25 - 34</td>
<td>27</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>35 – 44</td>
<td>41</td>
<td>34%</td>
</tr>
<tr>
<td></td>
<td>45 - 54</td>
<td>24</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>55 – 64</td>
<td>16</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td>Above 65</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Educational Level</td>
<td>PhD /Master</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Degree / Diploma</td>
<td>29</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>High School Cert</td>
<td>63</td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td>Lower School Cert</td>
<td>27</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>No Cert</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The overall findings for private sector employees’ acceptance on GeS-CAS are shown in Figure 6-8. The significant analysis results are described below:

- Private sector users like face-to-face demonstrations and motivations.

![Figure 6-8: Private sector employees’ acceptance on GeS-CAS](image)
6.7 **Overall Benefits**

There are some positive impacts from the results on the GeS-CAS findings. Its main benefits are:

- Explicit attention to characteristics of GeS-CAS can lead to significant savings in the government e-services life-cycle costs as publicity activities can be targeted to particular users with specific preferences for different approaches – this can lead to more effective and cost efficient awareness programmes.

- Overall there was a general interest in the government e-services being provided and all groups wanted to know more. This implies that the use of government e-services could be extended, potentially bringing further cost savings.

- Elders from the village community liked the face-to-face approach as it gave them social interaction.

- Business leaders like face-to-face promotion, which shows they are interested in the personal networking contact with government when a new initiative is being advocated. They clearly like to be seen to be involved in such new activities and this suggests there could be partnership opportunities between government and independent companies on new initiatives.

- Business leaders also have a strong desire to keep up to date with initiatives, showing that partnerships could be long-term.

- Private sector employees also appreciate more interaction with government over new initiative promotion, which further enhances the possibilities of partnerships.

- Students can gain the benefits from e-government services delivery, particularly if the awareness is gained through their normal education.

- Government employees are interested in continued professional development by keeping up to date with the initiatives the government is promoting.
Chapter 6 – Surveying Citizens’ Awareness of Government e-Services

The results of this research relate to government e-services, but the general techniques could be applied to any software or services whether from government, commercial or other organisations. The quality of this software or these services can be enhanced if users understand what they are for and appreciate the benefits of using them.

6.8 Gathering Issues and Problems

All the case study interviews emphasised the importance of citizens’ awareness of government e-services. Generally, the E-Government National Centre in Brunei is responsible for developing an aware community with regard to ICT and e-government initiatives, and the Department of Information under the Prime Minister’s office is responsible for enhancing public awareness of various programmes, one of which is the use of government e-services. The E-Government National Centre stated that they have to deal with the matter continuously to promote the services and avoid services being abandoned and wasting government resources (Brunei Times, 2010a). The following are the main issues and problems gathered from the five user groups;

- Students were not aware that government e-services for students are available on the Internet. They requested training on how to use it and motivation for students by way of gifts or discounts on ICT items or broadband. Currently, e-services for students is limited to “e-registration” as a download form for applying for study available from the Ministry of Education website. Students need more e-services like personal exam results, application for scholarships and personal study progress online. They are aware of problems that can arise when students are not informed clearly by their school management and any responsible government agencies.

- The perspective of government employees is that although e-services are provided by government agencies, most of the other agencies did not know they existed or whether the e-services were appropriate for them or not. They
generally believe that the main problem is the inadequacy of inter-agency collaboration. Furthermore, they want e-government committees to be proactive in promoting the new and upgraded version of the government e-services, providing more ICT experts in various fields such as programming, technology, security, data centers and Web management. Every Head of ministry, department, section and unit as a leader in the organisation needs to give extra support to e-government initiatives.

- The feedback from local and village communities is mainly from elder members of the community. Most of them assumed that government e-services were only for government officers and staff to use. They felt left out since they were retired and felt that government e-services were not appropriate for them. To rectify this situation, the government should inform these people of the possible benefits of using e-services in order to change their opinions. In many cases, they would like to meet with government officers face-to-face, so that they can articulate their needs appropriately. The attendees at the meetings in the local and village communities remarked that in their participation in this research they felt appreciated and that they enjoyed the opportunity to converse about interesting topics.

- Private sector employees need more promotional materials from government in order to publicise government e-services to citizens. They also need some sort of incentive from government where they can be involved in education and training and be recognised for this service even though they are not government employees. In contrast, government employees received many incentives compared to the private sector. Many private sector employees said that working in the private sector is often a stepping stone for some citizens, as when there is an opportunity, they will transfer to the government sector. They also said that government e-services are not really appropriate for their needs and they do not have access to ICT facilities and the Internet.
From the perspective of the business leaders, online communication with government services does not really work for them. In many cases, they still prefer to come to government offices to deal with their applications. For them, this is still quicker and more effective, although they had to make many visits. Government e-services promotion materials are important to them and communication with government officers is also very essential to build relationships for business purposes. They also said that government can promote their e-services easily because they can bypass some of the publication regulations, and put their advertisements on television free of charge as the television and radio are controlled by the government. The government can put printed materials such as banners, billboards and posters on every junction of main roads without charge or any restrictions on when they can do this.

6.9 Approaches to Issues and Problem Solving

More countries are increasing their efforts in e-government promotional activities (Waseda, 2009). Successful e-government initiatives require good marketing to encourage citizens to make use of them (James, 2001). The digital divide is an important barrier to e-government in that people who do not have access to the Internet will be unable to benefit from online services (Edwin, 2003). However, ICT can reduce and overcome barriers between government and their citizens so long as the citizens have sufficient access to ICT services (Al-Hakim, 2007). This analysis has, so far, identified some main issues and some problems that need to be solved. Suggestions for doing so are as follows;

Issues from students: There is a need to have a strategy to handle these problems. The first method of addressing the above problems should be to make them aware that government e-services for students are available on the Internet and will continue be enhanced on a stage-by-stage basis. They need to
continuously visit the sites and take advantage of the services provided. Their requests have been noted and will be given to the e-Government Committee for follow up, including education of students about government e-services and how to use them, and what new e-services need to be provided.

- Issues from government employees: In order to solve these problems, several strategies could be used within government agencies. Firstly, an informal discussion should be undertaken with officers and staff to give explanations and find solutions based on their working environment, and to get them to realise the rationale for each solution. Discussion and open-mindedness should be encouraged at inter-departmental meetings. Officers and staff should be given a chance to list and sort out problems and the solutions should be shared among the departmental officers. The adequacy of human resources for e-government initiatives needs to be resolved by the government. Professional development of the ICT officers and staff needs to be upgraded. The awareness strategy framework for the government e-service is required to tackle these issues.

- Issues from a village community: Attempts should be made to convince them that the government provides e-services based on what citizens need and implements them stage by stage. Many roadshows, exhibitions and activities, which facilitate communication between government and citizens, should tour the country to publicise the government e-services. Related agencies that look after these programmes need to be proactive and encouraged to use the GeS-CAS cycle model and framework.

- Issues from private sector employees: Attempts should be made to convince these employees that government e-services delivery is not only for government servants but for the citizens as a whole. They should be asked to list any government e-services they feel are needed but not currently provided. Any education and motivation programmes concerning government e-services
should include them. Their incorrect interpretation of government e-services needs to be rectified. ICT facilities and the Internet in the private sector work environment also need to be provided.

Issues from Business Leaders: In order to solve these problems, attempts should be made to obtain contractive information from businesses about how to promote services to their company and increase customer satisfaction with these services. The government e-services need to be integrated with the businesses' own online services to provide a better provision for the company's customers. Communication is one of the significant factors to increase user or customer satisfaction, so, the citizens' awareness strategy framework for businesses needs to deal with these issues. Such E-business needs to be established progressively to allow users to build confidence and familiarity with the services provided.

6.9.1 Knowledge Sharing Mechanisms

This section aims to identify the tools and techniques used by e-government committees and e-government task forces to share knowledge on e-government initiatives. In general according to Mohamed (2006), awareness sharing mechanisms take the form of written documents such as printed or digital media documents where all the knowledge can be stored (explicit knowledge); and in people's heads such as face-to-face and media electronic where people watch television or listen to the radio (tacit knowledge). For a complete awareness, both explicit knowledge and tacit knowledge are used. For example, though e-government officers generally have about 10 years experience or tacit knowledge of e-government projects, they also need to refer to explicit knowledge (system architecture & designs, system coding and strategic planning & specifications) because different projects have different characteristics and difficulty levels; especially applications in finance, healthcare and approval processes.
6.9.2 IT tools, Software Used, Role of Intranet and Internet

This section investigates the IT tools and software used in managing the e-government initiatives and explores the potential of intranets and the Internet as mediums for disseminating and sharing knowledge with citizens. The implementation of e-government initiatives such as government e-services is supported by various kinds of IT tools. Significant IT tools are an e-mail system for disseminating and sharing knowledge, and intranets and the Internet to share knowledge between the various agencies in the government, employees (G2E), businesses (G2B) and citizens (G2C). Using the intranet, employees can access employee profiles (at certain levels), government information, best practices, government policies, archived news, activities and much more. While using the Internet, citizens can access the government websites, e-services, email, download forms and submit complaints.

6.10 Summary

To become more effective and efficient in the working environment, companies and agencies need to be more proactive in enhancing the GeS-CAS characteristics to the potential system users. The results of this study indicate that there are certain areas in which some form of awareness strategy is beneficial if the users are to accept the software product. Some interesting findings from this study are that senior business people and older people prefer the face-to-face approach, but for different reasons. Older people need this approach for gathering knowledge and social interaction, while businesses favour it as it offers an opportunity for contact with the government.

The GeS-CAS model covers three-dimensional strategies: communication, education and motivation which lead to the successful user acceptance of e-government software. Hence, the software becomes a quality product. This study has shown that Government e-Services Citizens Acceptance Strategy (GeS-CAS) can have a significant leverage on the perspective of user post-acceptance of government e-services. By identifying the different
methods for making users aware of the product’s benefits and showing that different target groups can have different preferences on how they gain this awareness, software product suppliers can ensure that user expectations are managed and the potential of the product is appreciated. As meeting the customer’s needs and expectations are essential attributes of a quality software product the GeS-CAS is an invaluable tool for providers of software and e-services, whether in a government or commercial environment.

The next chapter (Chapter 7: Citizens Awareness Strategy Framework of Government e-Services Development and Evaluation) presents detailed research on the citizens’ awareness of government e-services to resolve the significant findings on the case studies.
Chapter 7

7.0 CITIZENS AWARENESS STRATEGY OF GOVERNMENT E-SERVICES FRAMEWORK DEVELOPMENT

7.1 Introduction

This chapter focuses on the development of a framework to support the integration of knowledge management within e-government management practices. The framework promotes a systematic approach to managing knowledge on citizens’ awareness of government e-services. The framework has been developed on the basis of a scholarly literature review, discussions group and survey data from the case studies. This chapter starts with a review of knowledge management frameworks and related models with an analysis of their main features. The chapter then discusses the development of the framework, including details of GeS-CAS knowledge management approaches. The chapter concludes with a discussion of e-government management problems with promoting government e-services and the potential benefits of the GeS-CAS framework.

7.2 Government e-Services of Citizens Awareness Strategy (GeS-CAS) Framework Development and Related Model Functions

This chapter describes the development of the citizens’ awareness strategy framework on government e-services to enhance people’s awareness and thereby increase the use of the government e-services. Many e-government management research projects have sought to develop a framework for government organisations. Some of the similar efforts in developing an e-government citizens’ awareness framework for government e-services are summarised in Table 7-1.
### Table 7-1: Comparison of Citizens’ Awareness Framework for Government e-Services Development based on Categories of Citizens

<table>
<thead>
<tr>
<th>Author &amp; Title</th>
<th>Research Objectives</th>
<th>Model / Framework Supported / Development</th>
</tr>
</thead>
</table>
| Al-Jaghoub *et al.*, (2010) Evaluation of Awareness and Acceptance of Using e-government Services in Developing Countries: the Case of Jordan | • To assess factors which could influence the awareness and use of e-government services in Jordan | **Main Aim of Framework:** No framework developed. Adopt model from ‘Level of e-government application model’ (NAO, 2002) – See Figure 7.1  
**Role of Framework:** Each government project goes through different phases from the basic site to the most advanced phase and fully integrated into the governance framework.  
**Targeted end users:** A pilot study with Jordanian Universities’ Students |
| Phang *et al.*, (2006) Senior Citizens’ Acceptance of Information Systems: A Study in the Context of e-Government Services | • To provide an integrative model of Information System acceptance among the aged, which may facilitate theory development and practice in Singapore | **Main Aim of Framework:** Extended framework developed. Adopt models from ‘Technology Acceptance Model - (TAM)’ by (Davis et. al., 1989); ‘Innovation Diffusion Theory – (IDT)’ by (Rogers, 1995) and ‘Theory of planned behavior – (TPB)’ by (Ajzen, 1991) - See Figure 7.2  
**Role of Framework:** A research model is developed by integrating relevant antecedents from previous literature and empirically tested in the context of an e-government service tailored for senior citizens.  
**Targeted end users:** Singaporean Senior Citizens (Age 50 and above) |
<table>
<thead>
<tr>
<th>Author &amp; Title</th>
<th>Research Objectives</th>
<th>Model / Framework Supported / Development</th>
</tr>
</thead>
</table>
• To investigate the readiness of the UK SMEs to accept e-government services | **Main Aim of Framework:**  
A framework supported by three dimensional views of e-government: institution, services and relation-based views (Gisler and Spahni, 2000)  
– See Figure 7.3  

**Role of Framework:**  
To support the research finding.  
Specific to Awareness of e-government services: 38% of companies became aware of the government web sites and e-government services through a search engine and 24% were linked to e-government services through other web sites. 14% were informed about e-government services through word of mouth, 6% through post, and 6% through TV.  

**Targeted end users:**  
Small and Medium Sized Enterprises (SMEs) - Businesses |

The summaries are based on an analysis of the published information on each of these research studies to gain additional information and to differentiate this research from preceding research. Thus, a comparison of the citizens’ awareness strategy frameworks and related model functions is crucial in order to achieve two important objectives. Firstly, it facilitates analysis of the main aim and role of these frameworks (as shown in Figure 7.1, 7.2 and 7.3), with a view to developing an effective citizens’ awareness strategy framework for government e-services context. Secondly, it will provide an opportunity to utilise the citizens’ awareness strategy framework in terms of targeted end users, effectiveness, level of detail and ease of use in the e-government management context.
The e-government application model (Fig.7-1) proposes that each e-government project goes through different phases from the basic site which mainly involves developing websites, piloting a few applications, and putting these services online to the most advanced phase in which e-government reaches a high level of maturity and becomes fully integrated into the governance framework and activities of each sector (joined-up e-government) (Yang and Paul, 2005; Santos and Heeks, 2003). In this particular study, government e-services refers to online applications and does NOT focus on the process by which government e-services become fully integrated and mature.
The TAM model (Fig.7-2) shows a number of determinants of Information Systems use and several theories that have been applied to investigate government e-services acceptance. This angle is not the main focus of the study, although some points are related.

In Phang et al.’s (2006) diagram the hypotheses can be worded as in the following examples:

1. H1a: Perceived usefulness and ease of use are positively related to senior citizen’s intention to use the Central Provident Fund (CPF) e-Withdrawal service.
2. H1b: Perceived ease of use is positively related to senior citizen’s intention to use the CPF e-Withdrawal services.
3. H1c: Internet safety perception is positively related to senior citizen’s intention to use the CPF e-Withdrawal service.
4. H2a: Preference for human contact is negatively related to senior citizen’s perceived usefulness of the CPF e-Withdrawal service.

5. H2b: Self-actualization is positively related to senior citizen’s perceived usefulness of the CPF e-Withdrawal service.

6. H2c: Resource savings is positively related to perceived usefulness of the CPF e-Withdrawal service.

7. H2d: Perceived ease of use is positively related to perceived usefulness of the CPF e-Withdrawal service.

8. H3a: Computer anxiety is negatively related to perceived ease of use of the CPF e-Withdrawal service.

9. H3b: Computing support is positively related to perceived ease of use of the CPF e-Withdrawal service.

10. H3c: Declining physiological conditions is negatively related to perceived ease of use of the CPF e-Withdrawal service.

Figure 7-3: Three-dimensional views of e-government framework (adapted from Gisler and Spahni, 2000)
The three-dimensional view of e-government framework model (Fig. 7-3) shows the relationship between e-government public services and e-business private services. Since the model shows that the citizen customer is under the domain of private services, this model contradicts other models where citizens consists of those in public services as well as those in private services, businesses, students and other populace who earn their livelihood in that particular country.

The GeS-CAS framework (incorporating communication and education strategy management) is intended to enable e-government committees to adopt a knowledge management approach (holistic approach) to addressing e-government management problems. Respondents’ feedback from the survey, discussions group, interviews and individual meetings were compiled and used to create the GeS-CAS framework. Each strategy in the GeS-CAS framework has been described in Chapter 7 to show the appropriateness and effectiveness of the strategies. It was determined that the framework should be highly effective in enabling e-government agencies to address government e-services problems from a knowledge management perspective.
The GeS-CAS Model can be deployed as a fundamental framework in this study to show the possibility extension of Technology Acceptance Model (TAM) with aspects of the Diffusion of Innovation (DOI) model (Roger, 1995), trust elements (Lean et al., 2009; Tung et al., 2008; Carter and Belanger, 2004) and culture factor of uncertainty avoidance (Hofstede, 1997). This model points the need for research to identify the determinants that determine awareness of government e-services by Brunei citizens. This relates the effect of each innovation factor to the intention to use e-government services that had been covered by previous researchers as shown in Figure 7-4.

According to Dimitrova and Chen (2006), two different information channels can be used
to inform citizens about the existence of e-government services: interpersonal channels and mass media channels. However, in the context of this study, citizens have been shown to need promotion (P2C), demonstration (D2C), motivation (M2C), education (E2C) and advancement (A2C) as a complete package to form the Government e-Service Citizens Awareness Strategy (GeS-CAS) cycle model to make citizens aware of and motivate them to use government e-services as shown in Figure 7-5. All the strategies are arranged in a circle round the awareness to indicate that each is ongoing. The order of the strategies round the circle is not important, the important aspect of the model is that each strategy is continuous.

**Figure 7-5: Government e-services Citizens Awareness Strategy (GeS-CAS) Cycle Model**

Using a combination of awareness strategies, citizens would become aware of government e-services and improve their use of these e-services as shown in Figure 7-6. All the variables in this figure were coded and categorised based on the respondents’ feedback.
7.3 Promotion Approach Model Functions

The emphasis of added value to the customer and the focus on processes should be one of the crucial elements of a framework (Janssen et al., 2003). Governments need to publicize the existence of government-services portals (West, 2004). According to West (2004), marketing tools, such as placing the portal address on state documents and vehicle license places, and using televised public service announcements would help the average citizen learn how to access e-government resources. A study by Ahn et al., (2003) states that companies are changing from product-oriented strategies to customer-oriented strategies. Likewise, mass marketing (unspecific promotion to the general public) is now changing into one-to-one marketing (individual or face-to-face) via targeted marketing (for a specific customer group), niche marketing, database marketing and Internet marketing (Ahn et al., 2003).

Promotion or publicity could be executed widely through various media approaches or locally through a face-to-face approach that can involve learning, discussion, informal meeting, workshop sessions that can engage multiple promotional components including
posters, leaflets, blogs, video conference and exhibitions. According to Handzic and Zhou (2005), there are four modes of knowledge sharing: informal, formal, personal and impersonal. Each sharing mode has its strengths and weaknesses relating to awareness, as shown in Table 7-2.

The most effective transfer mechanism depends upon the type of knowledge being shared (Mohamed, 2006). According to Al-Ghassani et al., (2005) for tacit knowledge, the most effective sharing techniques are brainstorming, face-to-face interactions, and training. For easily articulated explicit knowledge, the most effective techniques include minutes of meetings, job instructions, and drawings.

**Table 7-2 : Comparison between Four Modes of Knowledge Sharing (Hanzic and Zhou, 2005)**

<table>
<thead>
<tr>
<th>Type of Channel</th>
<th>Example</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
</table>
| Informal transfer   | Informal meetings, coffee break conversations | • Encourage socialisation  
• Effective in small organisations | • May inhibit greater diffusion                                         |
| Formal transfer     | Training, workshops, education programs       | • Effective in wide distribution                                          | • May hinder creativity                         |
| Personal transfer   | Apprenticeships, mentoring programs          | • Effective in transferring highly context-specific and situated knowledge | • May be constrained by time and resource        |
| Impersonal transfer | Knowledge repositories                        | • Easy access to knowledge that is readily generalised to other contexts  | • May discourage people from reusing due to the vast amount of knowledge in the repositories |

7.3.1 Face-to-Face Awareness Approach

This approach is aimed at spreading and making knowledge about government e-services available (awareness) to the citizens directly from government agencies. It can involve interactions between soft methodology (techniques, culture and people) and hard concepts (information and communication technologies).

This approach can be divided into two categories: face-to-face formal events and face-to-face informal events, details of which are shown in Table 7-3. It also requires awareness of
the relevant knowledge or best practice form of delivery. Egbu et al., (2005) highlighted the lack of time, lack of communication skills and rapid changes in information and communication Technologies as the main barriers to the knowledge sharing approach in e-government initiatives.

Table 7-3: Categories of Face-to-Face Awareness Approach

<table>
<thead>
<tr>
<th>Type of Approach</th>
<th>Example</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal events</td>
<td>Conference, seminar</td>
<td>• To obtain accurate information</td>
<td>• Restrict the verbal communication between both parties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Speakers expert in their own areas</td>
<td>• Only targeted at particular citizens</td>
</tr>
<tr>
<td>Informal events</td>
<td>Coincidence meet up, Tea</td>
<td>• To provide a higher degree of social presence</td>
<td>• Can cause information overload and unstructured</td>
</tr>
<tr>
<td></td>
<td>break chat</td>
<td>• Rich verbal communication by facial cue to convey information</td>
<td>• Time consuming</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Relay quick feedback to other parties</td>
<td>• Probability of the knowledge being ignored is very high</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cost effective</td>
<td></td>
</tr>
</tbody>
</table>

An experimental analysis study of face–to-face versus computer mediated communication channels was undertaken by Barkhi et al., (1999). The results indicate that the task groups using face-to-face communication outperform groups using computer-mediated communication. However, Barkhi et al., (1999) said that in a virtual organization, face-to-face communication may be replaced by computer mediated communication.
7.3.1.1 Formal Awareness Events

Government agencies which are responsible for informing citizens about their e-services delivery (in the case of Brunei, the main agencies are the E-Government National Center (EGNC) and the Information Department under the Prime Minister’s Office) can manage the awareness by using face-to-face communication at formal events such as talks at roadshows, speeches on the campaign days, e-services seminars, conferences, workshops, colloquiums, etc. Citizens would focus more at these kinds of events as they would be in a formal environment. This is supported by DiMicco et al., (2007) who researched the impact of increased awareness through face-to-face methods and found that groups with exposure to face-to-face behavior-awareness tools change not only their behavior but their perceptions of the interaction.

One administrator at head-office level said,

“Government implements a lot of e-services from every ministry. But I’m not sure either we (as government servants) or other citizens know the e-services are available to use. Government agencies that are responsible for promoting the e-services should be proactive to meet citizens by inviting them to a seminar or formal dialogue in their villages or department buildings.”

This interview data confirmed that the face-to-face awareness approaches were needed in the promotion strategy.

7.3.1.2 Informal Awareness Events

Informal awareness events can be achieved through every-day or social activities, nevertheless citizens need to consciously recognise the information they are being given. Employees at government agencies that are responsible for informing citizens about their e-services delivery can also take an informal awareness approach by including themselves in groups of citizens, informing them of the availability of government e-services. This approach can be done while in public areas such as shopping malls, recreation areas,
markets, mosques etc. The main challenge for this task is that citizens will not pay attention to someone trying to approach them spontaneously unless they are using a government official nametag. In Bruneian culture, when somebody using an official name tag with the Brunei government crest approaches, citizens will at least listen to what they are trying to say and will make apologies if they don’t want to become involved.

Another approach could be to make use of a citizen’s promotion center where citizens can visit at any time to acquire services. This would be a good place to publicise the government e-services. As one new government pensioner said:

“Government can make use the Citizens Promotion Center to promote e-services. Citizens can come anytime they want and they also want to know how e-government can satisfy their needs. It doesn’t have to be as formal as attending seminars or conferences. I have a lot of free time and can come there (Citizen Promotion Center) frequently if the government made ICT facilities available.”

Social gatherings at community functions, door-to-door campaigns and local self-government informal discussions are other approaches that can be utilised by e-government committees.

### 7.3.2 Media Printed Awareness Approach

From the business perspective, printed media still has a place for consumers. Sirkin and Bahary (2009) found that printed media is more effective than other media, excluding television. Printed media is considered to be highly persuasive for banking and retail promotion, especially for consumer electronics, mobile phones, holidays and credit cards. In the analysis in Asia, from India and China to Australia and Japan, television appears to be surprisingly weak here for some objectives, but does improve when combined with printed media.

Thus, printed media is still compelling in the e-government awareness campaigns. As one
of the Bruneian businessman in the interview said,

“Our company still uses leaflets to promote our company and our latest products. We distribute the leaflet directly to their (customers) hand. Before giving it, we still ask them if they want to know more about the product, if so, we give it to them. At least we are not wasting the leaflet giving it to inappropriate customers. So, it is the same for the government, they can promote their e-services through leaflets or big signboards (billboards). This is an advantage for the government because no charge is incurred for putting up a poster or signboard in the main (public) areas.”

This approach can be divided into 2 categories: handy materials and fixed materials, the details of which are shown in Table 7-4. The approach also requires awareness of the relevant knowledge or best practice form of delivery.

**Table 7-4: Categories of printed media awareness approach**

<table>
<thead>
<tr>
<th>Type of Approach</th>
<th>Example</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handy Materials</td>
<td>Leaflets, Newspapers, Magazines</td>
<td>• Simple, easy to carry, cost effective</td>
<td>• Mostly one-way medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Effective in the long term for visualising objects and references</td>
<td>• Could be improperly discarded as litter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can reach poorer and undereducated citizens</td>
<td></td>
</tr>
<tr>
<td>Fixed Materials</td>
<td>Billboards, Signboards. bus-stop posters, in-store displays</td>
<td>• Reaches a wider number of citizens</td>
<td>• Inappropriate for the short term visualization of objects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Short slogans emphasise the main messages</td>
<td>• Location limitations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• One way medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• High quality printing is relatively expensive</td>
</tr>
</tbody>
</table>

171 | Page
A well-designed print advertisement can easily stand out and grab attention, making a more positive impact on decision makers than advertisements online and in emails, which can easily become annoying according to Singh, (2011). He added that print advertising, when used as part of an integrated, multichannel marketing strategy, can reach customers and prospects in the most effective way as shown in Figures 7-7, 7-8 and 7-9.

![Figure 7-7: Website address banner along the river canal in the city of Dublin](image1)

![Figure 7-8: Product advertisement and website address on the unique tricycle taxis](image2)
7.3.2.1 Handy Materials

Leaflets and flyers are often derided and yet they are one of the most popular ways of promoting a business (Minefield, 2007). An eye-catching leaflet or flyer with good graphics does not necessarily need words on it. This allows the leaflet to reach undereducated citizens or disabled citizens, such as deaf people. They can contain an address of a website or an email address where citizens can find more information or ask questions about the campaign. They can also give written information in areas where there are high levels of literacy amongst the population. This enables the leaflet to emphasise the main messages and to give information to citizens specifically to make them aware of the existing, upgrading and improving government e-services delivery.

Leaflets or flyers can fit in a pocket, diary or purse, so even if they are distributed on the street, there is a good chance that recipients will take them home. They can be distributed in many ways, they can be handed out in the street or at exhibitions to passers-by or inserted in newspapers and magazines, placed on car windscreens, and can even be left in postboxes or public places for people to pick up. They are easy and simple to produce, are very cost effective and can be very attractive and vibrant. Those who do
not find the time to read a newspaper may find it easier to find time to read through a leaflet, as it will only take a few seconds to read. However, the real challenge rests with the advertisers, who need to communicate their message to the reader in just two seconds (Crewind, 2009).

On the other hand, leaflets or flyers have some drawbacks. The designers are constrained by the limited space available. They can have only brief designs and possibly only a few lines of text. They need to express the messages well in those few lines. Leaflets can also be perceived as a gimmick by many readers (Crewind, 2009). In handy materials, such as newspapers or magazines, recall is much higher than that of online banner advertisements, reinforcing the power and value of printed media (Singh, 2011). Based on the survey findings of this research, among the students aged over 25 years old (older students) in Brunei Darussalam, 76% preferred a 'Leaflet or flyer' to increase their awareness of Government e-services. This information is given in the GeS-CAS as shown in Figure 7-10.

![Figure 7-10: Older Students Prefer Leaflets for the e-Services Awareness](image-url)
7.3.2.2 Fixed Materials

Posters, billboards or large signboards can be used as part of a public campaign to raise citizens’ awareness of government e-services among large numbers of people in strategic locations. They should be tailored, with particular messages and approaches, depending on who the target audience is. The following are ideas and tips to get an idea of how to produce these materials (adapted from Schaap et al., 2001):

- The main message needs to be seen on the first sight: Use big letters, symbols or figures and a minimal background.
- For texts it is important to answer the questions Who? What? When? Where? Why? and How? at the beginning.
- Keep the information given short and interesting.
- Emphasise the benefits of your issue.
- Do not put too much information on it, just key points.
- If you want to use a slogan make it short and memorable.
- Use uniformity in layout and logos in campaign material.
- Posters in a participatory setting should be open for interpretation, in order to invoke discussion and lead to creative thinking.
- Promotional / awareness posters are clear to the viewer at a glance and should usually have one main slogan and few details. They say a lot with just one picture or slogan and should be very eye-catching and memorable.

7.3.3 Electronic Media Awareness Approach

A study by Dimitrova and Chen (2006) found that mass media channels seem to be more effective when compared to interpersonal channels in creating awareness. Questions arise in remote or rural areas about media accessibility, about how to reconcile costs of equipment such digital television and radio, and also about the appropriateness of different media for different purposes and categories of citizens.

Electronic media is a very important means of creating mass awareness. In India for
example, this tool has given positive results in providing disaster warnings (Lakshman, 2011). Television and radio are reaching the remote corners of the vast land. Transistor radios have made the facility available even where there is not electricity. According to a recent study by Ball State University (2011) on the media consumption habits of average Americans, “despite the Internet's steady rise in popularity over the last few years, television remains the dominant medium in most U.S. households. On average, the general population spends over four and a half hours a day in front of the tube, making TV watching one of the most common modern leisure activities. Is it any wonder then that television advertising is also the most powerful form of advertising?”

Table 7-5: Categories of Media Electronic Awareness Approach

<table>
<thead>
<tr>
<th>Type of Approach</th>
<th>Example</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Electronic</td>
<td>Televisions, Info-Kiosks,</td>
<td>• Broadcast and telecast repeatedly</td>
<td>• Advertisements can be very expensive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can provide a wider target audience of citizens including deaf people</td>
<td>• Good adverts are difficult and costly to create</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Effective in visualising objects</td>
<td>• Mostly a one-way medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• As there are many TV channels, it can be difficult to decide</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>where to put the adverts on the popular channels</td>
</tr>
<tr>
<td>Auditory Electronic</td>
<td>Radio, Telephone-calls</td>
<td>• Can provide a wider target audience of citizens include blind people</td>
<td>• One way medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can reach poorer and undereducated citizens</td>
<td>• As there are many radio channels, it can be difficult to decide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Less expensive when compared to TV advertising</td>
<td>where to put the adverts on the popular channels</td>
</tr>
</tbody>
</table>
Thus, electronic media should be very effective in the e-government awareness campaign. This approach can be divided into two categories; visual electronic media and auditory electronic media, details of which are shown in Table 7-5. This also requires awareness of the relevant knowledge or best practice form of delivery.

7.3.3.1 Visual Electronic Medium

Television programmes are an effective way of creating awareness, which can reach more people worldwide. However, a study by Adeshara et al., (2004) regarding the awareness of e-government services amongst small and medium sized enterprises (SMEs) found that only 6% out of 124 companies became aware of the e-government services through television.

Advertising on television allows you expose your business, product or service to a wide audience. “It allows you to actually demonstrate the benefits of ownership. You can show how your product or service works and how it's packaged so prospective customers will know what to look for at the point of sale. In advertising, it often takes multiple touch points to effectively influence consumers' purchasing behavior,” (AllBusiness, 2011).

AllBusiness (2011) adds that television advertising has been a popular medium for large retailers ever since television first began to appear in living rooms. With the arrival of cable television came lowered production costs and the opportunity to reach smaller, more targeted markets, making it a viable option for small to medium-size businesses as well. To create an effective television advert, it's first necessary to have a good script that highlights a strong offering (SilexTech, 2009). According to SilexTech, (2009) adverts must also be effectively produced, and for this reason it is often better to enlist the services of an advertising agency, which can help you create an entire campaign.
7.3.3.2 Auditory Electronic

Radio is a popular medium, some people have it on at home all day while others listen while driving, so nearly everybody listens to the radio. This is why people still consider that radio advertising can be powerful because it reaches the masses. More and more companies are choosing radio advertising because of this and also because it is cost effective (Irani, 2011).

As one of the Bruneian university students in the interview said,

“I always listen to the ‘Rangkaian Pelangi’ (One of the Brunei Radio Stations). They always update us with latest news and song albums. I think government can also put out their updates about e-services and at least mention what sort of e-services delivery is appropriate for students. The good thing is government does not need to pay to promote the e-services.”

According to Irani (2011), radio is perfect for small business operations, but most won’t realise this. He gives the potential advantages of using radio, all of which are relevant for promoting government e-services, as follows:

- **Cost** – Radio adverts are cheaper to produce and can reach millions of people at the same time. The relative cost effectiveness is highlighted when compared to television advertisements, which are so much more expensive than any other form of advertising. In the case of Brunei, radio is controlled by the government under the Department of Radio Television Brunei, Prime Minister’s Office. Thus, to promote the government e-services through radio is free of charge on any of the Brunei radio stations: *Radio Nasional, Radio Pilihan, Rangkaian Pelangi, Rangkaian Harmoni,* and *Nur Islam*. Currently, no private radio stations operate in Brunei.

- **Impact** – The impact made by a radio advert is greater than the impact made by any other medium of advertising (Irani, 2011). This is because radio adverts are played at a time that can target a particular section of society and also because they are repeated every hour or half hour, so the impact is maximised.
Radio advertising does have certain disadvantages according to Irani (2011), these are:

- **Short lifespan** – Unless it is a very catchy jingle, most people forget about radio advertisements in a day. This is because most are jingles that last for 30 seconds and are heard a few times a day and then they go off the air. The life span of that advertisement is complete and people will soon forget about the advertisement and the product or service it was for.

- **Cost fluctuation** – The cost of radio advertising can fluctuate depending on the time slot selected. In the case of Brunei, this is not a hindrance because the government can advertise on the radio free of charge as mentioned previously.

### 7.3.4 Digital-Media Awareness Approach

According to Wikipedia (2011), Internet marketing, also known as “digital marketing, web marketing, online marketing, search marketing or e-marketing, is the marketing (generally promotion) of products or services over the Internet.” A website is the main component of the online marketing strategy according to Kumar et al., (2007). They add that a website requires “consideration of elements such as ease of navigation, aesthetics, content, accessibility, and features such as customization, customer self-care, and communities.”

A survey by Parsons et al., (1998) showed that many consumer marketers approach interactive media in the same way they might approach traditional media like television, magazines, or even direct marketing channels. Despite this, there are fundamental differences between the two. Firstly, traditional media involve one-way communication from the marketer to the customer, while interactive media allow marketers to establish two-way communication.

Secondly, marketing through traditional media takes place in a mass-market environment, while interactive media allow marketers to reach and interact with individual consumers. Parsons et al., (1998) built a new model for marketing in new media environments, which consists of five essential factors for success in digital marketing as shown in Figure 7-11.
Therefore, this model can be applied to increase citizens’ awareness and usage of government e-services through the digital media approach.

Government committees should attract citizens first, then engage them to use the e-services, make sure to retain them by attempting to learn about their preference and provide them with value-added delivery.

According to Buckingham (2007), digital media are cultural forms that are inextricably connected with other visual and audio-visual media. “Digital literacy must therefore involve a systematic awareness of how digital media are constructed, and of the unique ‘rhetoric’s of interactive communication: in the case of the Web, for example, this would include understanding how sites are designed and structured, and the rhetorical functions of links between sites” (Buckingham, 2007).

This digital media awareness approach can be divided into 2 categories: an Internet-based
approach and a Technology-based approach, details of which are shown in Table 7-6.

Table 7-6: Categories of Media Digital Awareness Approach

<table>
<thead>
<tr>
<th>Type of Approach</th>
<th>Example</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
</table>
| Internet-based     | Emails, Websites, Search-Engine | • Easy to set up  
• Measureable  
• Target-Oriented  
• Instant Results  
• Access anywhere anytime | • Advertising can be very expensive  
• Can be subject to click fraudulent use |
| Technology-based   | Mobile phone-SMS          | • Handy  
• Storage Capability  
• Alert system | • Fast changing technology  
• Version incompatibility |

7.3.4.1 Internet-based approach

A study by Adeshara et al., (2004) regarding the awareness of e-government services amongst small and medium sized enterprise (SMEs) found that 38% out of 128 companies became aware of e-government services through a search engine and 24% were linked to e-government services through websites. In this case, Brunei government committees need to place the government e-services website address in the popular search engines such as google.com, yahoo.com and bing.com so that citizens can find the e-government portal’s address easily.

Furthermore, Buckingham (2007) said that literacy also involves an awareness of one’s own position as an audience (citizen or user). This means understanding how media are targeted at citizens, and how different citizens use and respond to them. In the case of
the Internet, this involves an awareness of the ways in which citizens gain access to sites, how they are addressed and guided (or encouraged to navigate), and how information is gathered about them. It also means recognising the very different ways in which the medium is utilised, for example by different social groups, and reflecting on how it is used in everyday life – and indeed how it might be used differently.

One Bruneian government school principal in the interview expressed his concern said:

“Now, students are very smart at finding information from the Internet. Just key in ‘Brunei e-government’ from google.com, and they can get the info of Brunei e-government. But, students may not know what sort of student e-services is appropriate to them. So, government should spread the word by emailing school administrations, informing us (school management) how and where to get it. By doing this, schools can assist government agencies to promote their e-services to students specifically, and to Brunei citizens (students’ parents), in general.”

7.3.4.2 Technology-based approach

Mobile phones introduce a range of new possibilities for the use and production of media, as well as personal networking and communication, they can be used for political activism, economic development (Kreutzer, 2009) and promoting citizens’ awareness of e-government initiatives. Based on the survey findings of this research, amongst students aged between 18 and 25 years old (younger students) in Brunei Darussalam, 81% would prefer 'SMS' to increase their awareness of Government e-services. The GES-CAS support tool (described in more detail in the next chapter) shows this as in Figure 7-12.
According to Ke and Wei (2004) rapid advances in technology and the advent of the Internet have redefined public expectations of the government and its services. They add that by migrating traditionally paper-based and face-to-face services to the Internet, e-government has the potential to provide citizens with the fastest and most convenient way of obtaining government services. However, they still need to make citizens aware of the availability of e-services.

One sale communication marketing manager from TelBru, one of the Brunei Telecommunication Companies, expressed his concern in the interview saying:

“In Brunei, we can see everybody has at least one mobile phone. Even younger students have one. I think to promote government e-services through mobile phones to the citizens is possible and would be effective. Government should make MOU (memorandum of understanding) with the Telecommunications Companies
such as TelBru or DSTCom to use SMS (Short Message Service) as a tool to promote government e-services. That SMS, should just ask citizens to surf the e-government portal www.gov.bn. I’m sure they (citizens) would look into it.”

7.4 Demonstration Approach Model Functions

According to a study by Phang et al., (2006) senior citizens require a demonstration of e-government services in order for them to accept them. This is also supported by Chin and Gopal (1995), who suggested that the initial interest in an Information System could be measured by providing hands-on demonstrations. Hoffer and Alexander (1992) also demonstrate the applicability of IT-related beliefs in studying adoption. Citizens had a chance to see a demonstration of certain e-government services, and this could influence their decisions on adopting the technology (Bretschneider et al., 2003).

The survey findings of this research show that, amongst citizens from a village community, who were mostly pensioners and unemployed citizens in Brunei Darussalam, 83% would prefer using a 'Citizens Promotion Center' to increase their awareness of Government e-services. This is presented in the GeS-CAS tool as shown in Figure 7-13. Government agencies can give an informal demonstration of e-services to them through facilities available in the citizens’ promotion center.
This demonstration awareness approach can be divided into two categories: a direct demonstration approach and an indirect demonstration approach, the details of which are shown in Table 7-7. These also require awareness of the relevant knowledge or best practice form of delivery.
### Table 7-7: Categories of Demonstration Awareness Approach

<table>
<thead>
<tr>
<th>Type of Approach</th>
<th>Example</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct demonstrations</td>
<td>Presentations, Seminars</td>
<td>• Measureable</td>
<td>• Can be quite expensive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Target-Oriented</td>
<td>• Some topics could be irrelevant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Instant Results or feedback</td>
<td>• Some speakers could be boring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rich in Knowledge transfer</td>
<td></td>
</tr>
<tr>
<td>Indirect demonstrations</td>
<td>Exhibitions, Citizen Promotion Centers, Information Kiosks</td>
<td>• Can freely walk around</td>
<td>• Time consuming</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can received prompt reaction and information on demand</td>
<td>• Expensive to set up</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can get new contact from promoter</td>
<td></td>
</tr>
</tbody>
</table>

#### 7.4.1 Direct Demonstration

Oostveen and Besselaar (2004) held direct demonstration sessions of a prototype system with end-users in a focus group setting in order to facilitate their participation in the design of e-government systems. From that demonstration, they identified and became aware of several dimensions in the project: usability, availability, performance, security and the impacts and effects that reflect the different perspectives and roles of the various user categories. Demonstration is needed for customisation (Holowczak, et al., 2001). Holowczak, et al., (2001) do a demonstration of a new application to government agencies to generate a customized delivery of their services.
A seminar is a platform for a group of people to meet together for discussion and learning of specific techniques and topics. Seminars also offer the ability to refresh previous skills and also gain the latest information about various subjects formally. The most important benefit of a seminar according to Rao (2011), is a sense of camaraderie, where individuals can meet others directly with the same interests/problems/concerns that they may have in their chosen field.

One programmer in the ICT Department, Ministry of Religious Affairs in the interview said, “We put a lot of online forms for citizens to download to meet their needs specifically in religious affairs services. But when we carried out a users’ assessment, less than 10 users used it and most of the citizens still came to the counter to get their forms. Government should be proactive to make citizens aware of the availability of these services. I suggest that at every counter, staff should inform the citizens of the alternative way to get the forms, that is from Internet, and tell them how and where to access it individually so, for future service, they can use the e-services provided rather than come again to the office.”

7.4.2 Indirect Demonstration

The provision of online governmental services generates awareness of the capabilities of ICT, for example, governments produce an indirect demonstration effect which can increase the adoption of ICT and e-business in the economy (Lau, 2005). Lau added that governments need to demonstrate to users the value proposition of electronic service delivery, but in order to find an equilibrium between equity and efficiency considerations, governments may have to consider developing incentives for users to move voluntarily to online channels, for example by sharing administrative savings with users. Furthermore, he added that governments can promote innovation and modernisation by exhibiting emerging technologies and business processes.
“The main difference and advantage of the exhibition compared with other instruments of marketing and advertising lie in that it is the most personalised instrument of marketing based on face-to-face communication” (IEG, 2011). The International Exhibition Group said that contacts with potential customers often become more effective because they occur on neutral territory, not in the customer’s own office and, the exhibition, provides possible, often fruitful, contacts with competitors which are not possible in other situations.

One engineer from Brunei Shell Company in the interview said,

“Government can promote their e-services from the e-government exhibitions to the citizens by providing all the promotion resources such as leaflets, posters, guidebooks, website addresses, blogs, etc. They can distribute these promotion materials to the citizens who come to visit their booths and can demonstrate to them where and how to use the e-services. In this way, citizens can gain knowledge in their own time.”

A study by Aitken (2003), in their evaluation of U.K. online centres, highlighted the informal learning atmosphere that these centers offered and noted that this played a key role in attracting users. According to Dugdale at al. (2005) “As these initiatives demonstrate, e-government needs to be two-way, to support online activities communities identify as wanted at the same time as they build the capacity for use of online services.”
7.5 **Motivation Approach Model Functions**

Motivation is the degree to which an individual wants and tries hard to do well at a particular task or job (Mitchell, 1982). A technical definition given by social scientists suggests that motivation is the psychological processes that cause the arousal, direction, and persistence of behavior (Kast & Rosenzweig, 1979). The key to more effective performance is motivation. This statement is supported by Moonasingha (2011) who states that the objective of motivation is for effective or satisfactory performance. It was found in this study that, if citizens are not sufficiently motivated, it will result in barely adequate performance and low productivity of work, a greater number of interpersonal problems, poor quality of life, and inadequate knowledge to e-government initiatives.

A key dimension of civic mindedness lies in individual motivation (Dimitrova and Chen, 2006). Buckingham (2007) states “Informed users of media need to be able to evaluate the material they encounter, for example, by assessing the motivations of those who created it and by comparing it with other sources, including their own direct experience”.

**Table 7-8: Categories of Motivation Awareness Approach**

<table>
<thead>
<tr>
<th>Type of Approach</th>
<th>Example</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
</table>
| Tangible         | Cash, support materials, prize, award, reward, bonus | • Quick result  
• Effective in the short term | • Can be seen as bribery  
• One prize doesn’t fit all  
• The reward has a cost |
| Intangible       | Recognition, honor, acknowledgment, trust, priority services | • More generous  
• Long Lasting  
• No direct cost involved | • Difficult to achieve  
• Long term result |
This motivation awareness approach can be divided into two categories: a tangible motivation approach and an intangible motivation approach, the details of which are shown in Table 7-8. These also require awareness of the relevant knowledge or best practice form of delivery.

A better understanding of motivation and the resulting patterns of development in different situations can make the process of comparing approaches easier and give a rational means of setting the improvement of government administration on track for efficiency and transparency, with clear direction towards its citizens (Bertelsmann, 2001).

### 7.5.1 Tangible Motivation

Money is not the only motivator. Jeffery and Shaffer (2007) said that tangible, non-cash incentives should still be considered extrinsic motivators because they are generally contingent on performance and are provided by a source outside of the individual. They added that a tangible incentive is an effective carrier of social utility because of its high level of visibility.

A study by Neckermann and Frey (2008) found that a reward has a significant impact on motivation and induces systematic changes in behavior. Therefore, rewards should be taken seriously as incentive instruments to increase citizens’ awareness of and intentions to use government e-services.

One Bruneian ICT teacher in the interview said,

“Government can increase citizens’ awareness of government e-services through constructive motivation, for example, citizens who use government e-services could get discount vouchers for them to buy a computer or pay for Internet broadband, or mobile prepaid top-up, etc. They have nothing to lose, in fact these will encourage them to use (e-services) more frequently and gain more knowledge.”
A motivation study of one credit union by Roth (2001) found that a dramatic increase in its e-services channel occurred because it provided a 0.25% loan discount when its customers made their applications online (versus using a loan officer). In similar study by Boyer et al., (2002) said “More importantly, the credit union also made the service more convenient by placing a computer kiosk in the lobby and directing customers to this service, which in turn, reduced customers’ overall wait times.”

### 7.5.2 Intangible Motivation

In the context of G2B, an increased level of trust among partner organisations is an example of an intangible benefit that improves subsequent collaboration in e-government (Fedorowicz, et al., 2009). This is readily evident in the apparent success of some public services in adapting the Internet to increase the quality of their service to their categories of citizens.

One Bruneian ICT project manager in the interview said,

“If you are given a choice of either a cash prize or a certificate of appreciation, I would most probably prefer the second one. It has a more long term impact of motivation for me. So, government should motivate citizens in various ways to use the government e-services. It’s similar to what government has done in giving a subsidy to citizens who bought fuel for their cars, and rice and sugar for their foods. They didn’t receive cash money from the government but they got the lowest prices and the citizens felt very happy.”
7.6 **Education Approach Model Functions**

A study by Levenberg and Caspi (2010) compared teachers’ perception of learning in formal and informal learning environments, both online and face-to-face. Studying the two levels of formality in face-to-face and online media, they compared perceived learning in four environments as shown in Table 7-9.

**Table 7-9: Classification of the four learning environment (Levenberg and Caspi, 2010)**

<table>
<thead>
<tr>
<th>Face-to-face</th>
<th>Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal learning</td>
<td>Teacher professional development courses</td>
</tr>
<tr>
<td>Informal learning</td>
<td>Teachers’ lounge</td>
</tr>
</tbody>
</table>

According to Buckingham (2007), “...digital media through media education is about much more than simply ‘accessing’ these media, or using them as tools for learning: on the contrary, it means developing a much broader critical understanding, which addresses the textual characteristics of media alongside their social, economic and cultural implications”. Furthermore, he added that in the context of media education, the aim is not primarily to develop technical skills, or to promote ‘self expression’, but to encourage a more systematic understanding of how the media operate, and hence to promote more reflective ways of using them.

In Singapore, the government allocated resources for needy groups and launched education programmes to enhance computer literacy and e-government awareness among all citizens (Ke and Wei, 2004). The details of this education awareness approach and its two categories of formal and informal approach are shown in Table 7-10. These also require awareness of the relevant knowledge or best practice form of delivery.
Table 7-10: Categories of Education Awareness Approach

<table>
<thead>
<tr>
<th>Type of Approach</th>
<th>Example</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal Education</td>
<td>Government or private School, tuition place</td>
<td>• Organised timetable</td>
<td>• Strict with the time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Proper place</td>
<td>• Tense with the commitment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Proper learning</td>
<td>• Tied to a physical setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Strict with the time</td>
<td>• Cost</td>
</tr>
<tr>
<td>Informal Education</td>
<td>Home, discussion newsgroup or discussion forum on the Internet</td>
<td>• Flexibility of time and place</td>
<td>• Tends to be unorganised</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can take place in any setting</td>
<td>• Unpredictable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Requires no or less commitment</td>
<td>• Unprepared</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• No lesson plan needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cost effective</td>
<td></td>
</tr>
</tbody>
</table>

7.6.1 Formal Education

Media education encourages a probing approach to the world of media: who is this message intended for? Who wants to reach this audience, and why? From whose perspective is this story told? What strategies does this message use to get my attention and make me feel included? (Tallim, 2011). Reflecting on those questions, government should consider and put more effort into increasing citizens’ awareness through formal media education regarding e-government initiatives, especially the government e-services.

According to Worsnop (1994), media teachers today use the terms "media education," "media study," and "media literacy" almost interchangeably. His preference is for the
term "media education" to mean a broad description of all that takes place in a media-oriented classroom, whether the subject matter is English, history, geography or science. "Media study" occurs when schools or teachers organise specific courses or units to study the media. "Media literacy" is the expected outcome from work in either media education or media study. Worsnop (1994) adds that “The more you learn about or through the media, the more media literacy you have. Media literacy is the skill of experiencing, interpreting/analyzing and making media products.”

Environmental support factors of training received and assistance from government agencies should affect the extent to which government e-services are used. AOEMA (2004) stated that community awareness and training programs are often key success factors for the successful introduction and acceptance of new e-services.

One Brunei high school ICT teacher in the interview said,

“One way to make citizens, especially students, aware of and use government e-services delivery is through formal education. Government should include e-government initiatives in the curriculum so students know what e-government is and they can learn how to use it. And we can encourage them and tell them the benefits of using it.”

7.6.2 Informal Education

Education and outreach programs in e-government services will be needed (Reffat, 2003). It is not just formal education that can increase citizens’ awareness of e-government services but informal education is also shown in enhancing citizens’ awareness of and intention to use government e-services. There are several informal channels, according to Reffat (2003), such as discussion newsgroups, discussion forums, and unstructured or semi structured workspaces.

Informal education can be seen as the learning that goes on in daily life and that comes as part of being involved in youth and community organisations. “It is a process – a way of
helping people to learn” according to Smith (2009). He adds that what is considered 'informal education' may well be described in Scotland as ‘community education’ or ‘community learning’, in Germany as ‘social pedagogy’, in France as ‘animation’, and in South America as ‘informal education.’

The applicability of informal education is illustrated by Pilling and Boeltzig (2007) who describe a project that offers informal and accredited training by qualified tutors, with assistive devices as appropriate for people with a wide range of disabilities and used in informal one-to-one or group teaching as the method of training.

As one Bruneian government pensioner in the interview said:

“If government wants to introduce their e-services to the citizens especially to a village community, they can educate citizens informally here (in a mosque) after finish praying. There is nothing wrong with that. We can allocate slots to discuss government e-services, what are the advantages, how to use it and other things that relate to the government services. I'm sure our village community here especially older people, still want to know about e-services from government.”

### 7.7 Advancement Approach Model Functions

The goal of the advancement approach is to consistently share information about e-government initiatives with citizens through ongoing updates of government e-services programmes. Stoltzfus (2005) states that “Governments that embark on citizen-centric e-government programs tend to be more successful”. According to Gent (2003), e-government programs are more capable of success when they adhere to a design methodology that is directed by public needs. It is all about continuous contact with citizens especially in the context of this study, to increase citizens’ awareness and use of government e-services.

One Bruneian supervisor from the private sector in the interview said:
“Continuous effort to update citizens of government e-services is very important. Updates about new things (programmes, projects, applications, functions and features) about e-services or to keep people informed the new things (policy, regulation and acts) are a necessary approach to deal with citizens. These two advancement approaches need to be as clear as possible for citizens, so they will be sensitive to the new issues.”

This advancement awareness approach can be divided into two categories, a progression phase or hard approach and an innovation phase or soft approach, the details of which are shown in Table 7-11.

**Table 7-11: Categories of Advancement Awareness Approach**

<table>
<thead>
<tr>
<th>Type of Approach</th>
<th>Example</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progression phase (Hard Approach)</td>
<td>Upgrade version of government e-services, Reverse engineering</td>
<td>• Refresh knowledge</td>
<td>• Information overload</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Up-to-date</td>
<td>• Cost of restructuring</td>
</tr>
<tr>
<td>Innovation phase (Soft Approach)</td>
<td>Promoter continuous contact, Reverse psychology</td>
<td>• New Ideas</td>
<td>• Hard to accept</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New contacts</td>
<td>• Challenging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• No cost involved</td>
<td>• Possibly ‘unpopular’</td>
</tr>
</tbody>
</table>

### 7.7.1 Progression Phase

According to Lucca and Fasolino (2004) the definition of a reverse engineering approach always depends on a number of factors: a reverse engineering process can be run to accomplish different purposes, such as re-documenting an existing application, supporting its maintenance, testing its evolution, or assessing its quality. They add that reverse engineering methods, techniques and tools have proved useful to support the post delivery life-cycle activities of traditional software systems, such as maintenance and evolution.
7.7.2 Innovation Phase

“Innovation is a new idea applied to initiating or improving a process, product or service” according to El-Kiki et al., (2005). A study by Damanpour (1992) found that larger cities tend to be more innovative, possibly because they face a more diverse environment that always demands innovative solutions, or because they have more organisation freedom to try new ideas.

In this study, the innovation phase is based on the culture and demographic of the county itself, Brunei Darussalam. The uniqueness of Brunei requires innovation on how to maintain continuous contact between government and citizens and between citizens and citizens concerning government e-services based on human relationships. With the small population, many citizens are related or know each other so they can spread the word about government e-services.

One Bruneian citizen, a father of seven children, in the interview said,

“My children have a lot of friends; their friends are all related to each other either from their mother’s side or father’s side. They can spread the word regarding these government e-services especially if those services are important to them. With one click of SMS, everybody knows (about e-services). It’s just you have to tell them in fascinating ways.”

A study by Aichholzer (2004) stated that “Integrating e-government services in the form of one-stop service and portals is a key characteristic of innovative services.” The latest Brunei e-government innovative service is the Brunei portal also called ‘e-Darussalam’ portal, a portal that integrates all e-government services that are provided online. It was launched on 13th August 2011. BruDirect (2011) reported that “The public should only need to remember the portal address, which is www.gov.bn, to access all online government services. Besides, all information on services by government agencies can be obtained efficiently.”
They also add “… the portal facilitates the public to deal with the government, enhancing the effectiveness of government agencies in providing services to customers, speeding up the process of completing an application and avoiding duplication of information and relevant processes among the government agencies for the delivery of services to be effective and cost effective, as well as to modernising the public service administration machinery in line with the present development and increasing customer expectations.”

### 7.8 Overview of the Framework

Dugdale at al., (2005) state that “Once people have the infrastructure to go online, they need the awareness, skills and online content to motivate their access.” This statement supports aspects of the strategies in the developed research framework where the awareness comes from promotion strategies, demonstrations and education strategy. Obviously motivation is needed to encourage citizens to use government e-services. Other strategies in the research framework were advancement where ongoing use of government e-services is very important for the success of e-government. Thus, all these strategies are part of a continuously cycle, interacting with each other to achieve citizens’ acceptance and satisfaction.

Government e-services offer a great amount of convenience and ease of use for citizens. However, it is not known whether the citizens of Brunei Darussalam are aware of the aforementioned services. Thus, the GeS-CAS framework provides a formulation of a strategy that promotes awareness and diffusion to appropriate citizens with the right awareness strategy. This framework covers the means to inform, motivate and educate citizens on the use of government e-services. Table 7-12 shows the evaluation carried out of the GeS-CAS framework proposed in this research.
### Table 7-12: Main Evaluation of the Research Implementation of Government e-Services Citizens Awareness Strategy Framework

<table>
<thead>
<tr>
<th>GeS-CAS Type</th>
<th>Events and Participants</th>
<th>Main Evaluation applied in this research</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Promotion</strong></td>
<td>The awareness gathering where the researcher showed presentation slide, leaflet, guidebook and government online services to a <strong>village community</strong>. <strong>75 Participants</strong> were involved on this occasion as detailed in the sub-section: 6.6.2.3</td>
<td><strong>Promotion:</strong> The village community reported that they felt enthusiastic about this sort of gathering and said that face-to-face approach is one of the best approaches to increase village communities’ awareness of e-government initiatives.</td>
</tr>
<tr>
<td><strong>Demonstration</strong></td>
<td>The awareness demo where the researcher showed <strong>high school students</strong> the government e-Services sites: <a href="http://www.gov.bn/en/Services/Categories/Pages/Education.aspx">http://www.gov.bn/en/Services/Categories/Pages/Education.aspx</a>. <strong>67 Participants</strong> were involved on this occasion as detailed in the sub-section: 6.6.2.1</td>
<td><strong>Demonstration:</strong> The researcher demonstrated that government e-services are available for students at anytime and anywhere. Most of them just noticed the e-services for students are available for them on the Internet and can be accessed from personal mobile phones too.</td>
</tr>
<tr>
<td><strong>Motivation</strong></td>
<td>Group discussion with <strong>private sector employees</strong> where prototypes of government e-services leaflet and guidebook were distributed to participants. <strong>121 Participants</strong> were involved on this occasion as detailed in the sub-section: 6.6.2.5</td>
<td><strong>Motivation:</strong> The researcher emphasised that private sector employees such as factory workers, buildings security staff, construction workers and bank staff don’t have time to access e-services because most of the time they focus on their work and responsibilities, limitation of internet broadband, Internet accessibility is not provided. They realised that government e-services are available for them on the Internet, although not specifically related to their jobs, the e-services could be essential for them as a parent. If the government gave them priority to deal with their online applications or give discount in their online transactions, this could motivate them to use government e-services.</td>
</tr>
<tr>
<td>GeS-CAS Type</td>
<td>Events and Participants</td>
<td>Main Evaluation applied in this research</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------</td>
<td>------------------------------------------</td>
</tr>
</tbody>
</table>
| **Education** | The awareness seminar where the PowerPoint presentation slides were shown to **university students**. 71 Participants were involved on this occasion as detailed in the sub-section: 6.6.2.1 | **Education**
The students were asked what they mostly use the Internet for. The results were as follows: 23% use for searching information, 29% to download entertainment such as songs and movies and 48% use it for communication such as e-mail and social networks. This seminar, opened their eyes to using the Internet to access government services. |
| **Advancement** | Individual interviews with **parents, and businessmen**. 43 Participants were involved on this occasion as detailed in the sub-section: 6.6.2.4. Informal groups meetings with **government employees** as detailed in the sub-section: 6.6.2.2. | **Advancement**:
The discussions with parents, businessmen and others participants showed that most were not aware of government e-services. While informal groups meetings with government employees showed that some of them are aware of the e-services but don’t use them or use them infrequently. |

The framework and strategy as a whole cannot be evaluated directly in the time available, so the method used to evaluate the model and tool was by expert opinion. The evaluation of the model and tool in practice is a long term project for future work.

### 7.9 The Potential Benefits of the Combined Citizens Awareness Strategies for e-Government Initiatives

A combination of awareness model function approaches has the potential to be more productive. Attempts in the group’s interview were made to find out the result by combining the strategies as follows:

- Promotion + Demonstration (P+D strategy)
- Promotion + Demonstration + Motivation (P+D+M strategy)
- Promotion + Motivation + Education + Advancement (P+M+E+A strategy)
Chapter 7 – Citizens Awareness of Government e-Services Framework Development

➢ Promotion + Advancement (P+A strategy)
➢ Motivation + Advancement (M+A strategy)

Overall from the 5 awareness combination strategies ((P+D), (P+D+M), (P+M+E+A), (P+A) and (M+A)) above, the majority (96%) of participants stated that P+M+E+A combination strategy would have the most potential to enhance their knowledge and awareness of government e-services. Only a few (4%) disagreed because they believed that all the strategies (P+D+M+E+A) should be combined to achieve the ongoing process of citizens’ awareness in government e-services. Therefore, the potential benefits of the combined approach to increase citizens’ awareness confirmed the GeS-CAS framework requirement.

7.10 Summary

This chapter has discussed the creation of a government e-services citizens’ awareness strategy framework, GeS-CAS. The framework consists of:

➢ Information from the literature on case studies from other countries and of models of awareness proposed by other researchers.
➢ The data gathered in this research project for the case of Brunei Darussalam
➢ Prototype materials for promoting awareness as described in Chapter 5
➢ The analysis of the findings for different groups of the Brunei population
➢ Models such as given in figures 7.4 to 7.6 that highlight the methods of increasing awareness and integrating Knowledge Management into e-government initiatives in Brunei Darussalam

The framework was developed with the support of experts in the field of awareness. These experts stressed the importance of making people aware of government e-services without daunting them, creating a framework associated with the Brunei Darussalam scenario and taking into the account citizen’s background and the factors which encourage Brunei citizens to use government e-services. The primary data included
interviews with the participants, observations and illustrative materials (e.g. the e-government strategy plan and other publications that were empirically tested related to this study) and archived e-government documentation from Internet. The different support materials developed in the previous chapters were all used as part of the framework.

The government e-services citizens’ awareness framework created as a result of this research is intended to assist the e-government committees (government employees responsible for e-services) to make citizens’ aware of the services available online in order to increase the uptake of these government e-services. This leads to the question of how the framework can be presented to enable them to make use of the framework and the research it embodies. Although this thesis which describes the framework will be made available to all government employees, such a large text is not convenient to access and use, and it would not be easy for anyone to find all the parts relevant to their own situation. The thesis is therefore not suitable for everyday use by the government committees. The next chapter (Chapter 8: Citizens Awareness GeS-CAS support tool Development and Evaluation) presents a support tool to enable easy access and use of the GeS-CAS framework to ensure the research in this thesis can be used by the relevant employees of the Brunei government.
Chapter 8

8 CITIZENS’ AWARENESS GeS-CAS SUPPORT TOOL DEVELOPMENT AND EVALUATION

8.1 Introduction

This chapter describes the development and evaluation of a GeS-CAS support tool that is based on the conceptual government e-services citizen’s awareness strategy framework described in the previous chapter. It starts by examining the choice of the system development environment and goes on to describe the system architecture and system development processes for the prototype system. The chapter also demonstrates the operation of the prototype system and concludes with the testing of the prototype system using several problems that often occur on e-government projects.

8.2 System Development

The aim of the prototype system developed in this research is to simplify the format and use of the citizens’ awareness strategy framework for government e-services processes into e-government initiatives management practices. According to Smith (1991) a prototype system is helpful in designing a knowledge management system’s end-user interface. It also encourages end-users involvement in building the system, and it is more likely to establish systems that fulfill user requirements (e.g. organisational needs, data, function and operation requirements).

The specific objectives of the prototype include:

- Clarification of the decision strategy to be selected;
- Identification of relevant measures;
Identification of awareness strategy dimensions and the required knowledge;
Identification of government e-services issues; and
Implementation measures of e-government initiatives.

The benefits on providing the GeS-CAS support tool are:

1. A large document would have added to the information overload of employees responsible for government e-services, this means the document would probably not be read by the people it was intended for.
2. The GUI of the tool makes relevant information much easier to find and allows the user to only access what they need.
3. Further research and data can be added to the tool, for a document this would be difficult.
4. It is easier to update and change the contents of the tool than it would be to update a document.

The GeS-CAS support tool was designed for a number of tasks closely linked with the specific objectives stated above. The system was designed to:

- Provide sufficient and user-friendly guidance on how to use the system;
- Allow entry, storage, viewing, and editing of information at any stage in the processing activity;
- Allow easy identification of the characteristics of knowledge;
- Allow easy search and identification of the citizens’ awareness strategy based on selected ‘characteristics of the citizens’;
- Allow monitoring and reviewing of the implemented measures of e-government initiatives; and
- Facilitate the generation of reports that can be viewed at the different stages of an awareness programme life-cycle.
The prototype system involves four stages. The first stage guides the e-government committees in selecting an appropriate awareness model approach based on the research findings. The second stage gives the idea to the e-government committees to implement the appropriate citizen’s portal approach, which consists of the following processes: specifically MyCitizens e-Services Info process (a profile of citizen), online registration, online application, online payment, form download and government agencies websites’ links. The third stage allows the e-government committees to view the prototype of the e-government guidebook and leaflet, which consists of the following processes: how to use government e-services and how to find the government e-services easily. The main role of the prototype system is to support the e-government committees in addressing government e-services management problems by providing a systematic and effective problem-based knowledge management system for the e-government initiatives.

The hardware tools and components are very important for GeS-CAS support tools, as they form a platform for the application to perform and the medium for storage and knowledge transfer. A personal computer or notebook was used to provide a platform for the development of this system. The GeS-CAS support tool has been designed to operate on a personal computer (PC) running Windows XP or better. It requires Microsoft Access 2003 and Microsoft PowerPoint 2003 (or above) to be installed. A minimum 32Mb of RAM is required to run Microsoft Access 2003 and full installation of the program requires about 100 MB of disk space. Microsoft Access 2003 is a database-program environment that makes it easy to store and analyse data from questionnaires and surveys. It can also be used to build presentation slides with its forms, links, queries and reports. Rather than having to write numerous lines of code, tables and forms can be constructed simply, along with the adding, deleting, finding and modifying of data. The data can be interrogated using queries, and the data can be saved, printed and placed on the screen as shown in Figure 8-1.
8.3 System Operation

Running the ‘GeS-CAS’ requires the installation of Microsoft Access 2003, although it is possible to convert it into a stand-alone application using the Windows EXE applications. When the file ‘GeS-CAS.mdb’ is opened, a password box is displayed. This is important for security purposes so that access is restricted to authorised users. After the correct password is entered, a main screen, which provides a gateway to other forms in the application is displayed. Figure 8-2 shows the main screen of the ‘GeS-CAS’ prototype system.
8.3.1 Research Findings of Citizens’ Awareness in Brunei Darussalam

This stage starts with the input of information on the research findings concerned with the citizens’ awareness of government e-services, the possible target groups of citizens, the medium used and their rationale. This stage guides the e-government committees to select the appropriate medium to target specific citizens to make them aware of the e-services. Figure 8-3 shows the forms for entering, viewing and editing the research data.
Chapter 8 – Citizens’ Awareness GeS-CAS Support Tool Development & Evaluation

The rationale for this stage is that the e-government committee’s management problems occur in different contexts within the publicising and promotion of government e-services management practices for the citizens. One of the main problems is that they try to promote the government e-services in a general way without targeting specific groups of citizens. This GeS-CAS system and framework will help to solve and avoid the problems associated with the e-government committee’s management practice. This function provides an opportunity for the e-government managers and task forces to address publicity and promotion management problems of government e-services based on the specific medium used to increase awareness of the e-government initiatives for specific citizens. For example, younger students (normally, aged between 18 to 25 years old) prefer Short Message Services (SMS) to encourage them to use government e-services such as finding out their exam results from the Internet. They receive SMS for free and the messages then remain in their mobile phone storage for future reference.

![Figure 8-3: Research Finding Page](image-url)
8.3.2 Citizens’ Awareness Approaches in e-government

The next stage of operation of the system is called the Citizens’ Awareness Approaches in e-government. This allows the input of relevant approaches from the previous research. Figure 8-4 shows the different approaches from different e-government countries.

![Citizens' Awareness Approaches in e-Government](image)

**Figure 8-4: Different Awareness Approaches in e-government Countries**

Based on the Citizens’ Awareness Approaches in e-government selected by the e-government managers and task forces using the system, the system will search the database to provide a list of awareness approaches associated with recorded experience and research on e-government initiatives. For example, traffic jams on the main roads in India provide time for the car, lorry and motorbike drivers to read the India citizen portal address on a billboard. One billboard covers many citizens and is a cost effective medium in this case.
8.3.3 Variety of Citizens’ Awareness Models and Frameworks

In this part, the GeS-CAS support tool provides a variety of relevant awareness models and frameworks from other researchers. It provides the graphical models of these alternatives so they can be compared with the GeS-CAS model. Figure 8-5 shows the means of displaying different models from other researchers.

![Citizens Awareness Model and Framework]

Figure 8-5: Display of Awareness Models

8.3.4 Prototype of Brunei Citizens’ Portal (BruCiP)

Before viewing this page, the user needs to log in with their user ID and Password to verify their identity. Once authorised, this prototype of a Brunei Government e-services for citizens’ portal starts with the selection of e-services categories: MyCitizen e-Services

Personal Info, Online Registration, Online Application, Online Payment, Download Forms,
Links to the Government Websites and a Help button. This stage guides the e-government committees to view a simple implementation of the citizens’ portal that would provide an effective and efficient approach for the citizens. The Google search engine is one example of a simple but effective online application, considering its number of users. Figure 8-6 shows the Brunei Government e-services for citizens’ portal.

![Figure 8-6: Brunei government e-services for citizens’ portal page](image)

There is a log in history from start to the end with the current date and time shown on the page for the security purposes. When the user wants to log out, they can click the exit button at the bottom of the page (See Appendices E for the print screens of the prototype portal).
8.4 Evaluation Aim and Approach

The aim of the evaluation was to determine the appropriateness and functionality of the developed prototype support tool in supporting e-government committees’ management practices on enhancing the citizens’ awareness of government e-services. To achieve this aim, the specific objectives of the evaluation were:

- To determine the relevance and applicability of the Citizens’ Awareness Strategy prototype support tool in addressing e-government management problems with the government e-services;
- To assess the capability of the prototype in all the stages described in Section 8.3;
- To assess the ease with which the prototype can be used; and
- To obtain comments and recommendations for improving the prototype support tool.

According to Faulkner (1998) the main role of evaluation is to eliminate any problems that may be present in a system. In this situation, Anumba and Scott (2001) view the evaluation as an important aspect of knowledge-based system development that is required to prove whether or not a system fulfils its original objectives. Figure 8-7 illustrates the proposed general framework for the life cycle of a prototype system adapted from Davies et al., (2004).
The formative evaluation is undertaken during the development phase in order to improve a system iteratively, until the desired design objectives are reached and weaknesses of the software are eliminated (Anumba and Scott, 2001). Meanwhile, the summative evaluation is an evaluation of a final design regarding guidelines, standards, or other objectives of the evaluation (Gediga et al., 1999).

A total of 12 participants from two different groups were involved in the evaluation workshop sessions. The first group comprised nine e-government CIOs, CTOs and Project Managers while the second group comprised three businessmen. For the first group, the evaluation was carried out with the ICT departments in different ministries involved in the group discussion stage. For the three businessmen, the evaluation was accomplished by making an appointment to meet with them in their offices. The second group was involved in order to obtain opinions of the system from an e-commerce perspective that may add extra information. The workshop started with a presentation on the background and justification for the developed GeS-CAS support tool for e-government committees’
management. Prior to each group session, the participants were given brief notes describing the objectives and system development process of the prototype. This was followed by a demonstration of the software and the participants completed a brief questionnaire. Lastly, the participants were encouraged to participate by giving their suggestions and ideas for improvement during the workshop session.

Background information about the evaluation workshop and participants involved is presented in Table 8-1.

Table 8-1: Details of participants involved in the evaluation

<table>
<thead>
<tr>
<th>Group</th>
<th>Detail of Participants</th>
<th>Remarks (Evaluation Approach)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 9 e-government committee members (3 CTOs, 2 CTOs &amp; 4 PMs)</td>
<td>Ministry of Religious Affairs, Ministry of Education, Ministry of Home Affairs, Ministry of Communication, Ministry of Development</td>
<td>Focus group (Group 1) / Individual appointment (Group 2), Presentation on the background to the framework and prototype system</td>
</tr>
<tr>
<td>Group 2 3 Businessmen</td>
<td>IT Company, Mobile Phone Company, Electrical Company</td>
<td>Demonstration of the prototype, Evaluation questionnaire, Brainstorm ideas</td>
</tr>
</tbody>
</table>

8.4.1 Evaluation Questionnaire

The design of the questionnaire was based on the aim and specific objectives of the evaluation stated in Section 8.4. A sample of the evaluation questionnaire (Question 1 to Question 4) is as follows:

Q1 – How useful do you consider the overall GeS-CAS support tool to be?
Q2 – How useful is it to have a citizens’ awareness strategy approach to addressing
e-government management problems?

Q3 – How easy is it to use the system?

Q4 – How suitable are you as e-government committee members to use the system?

For each question in these sections, participants were required to select and tick the box that best represented their assessment on the scale of 1 (poor), 2 (fair), 3 (satisfactory), 4 (good) and 5 (excellent). In the discussion session, participants were requested to elaborate on their answers to the above questions.

### 8.5 Evaluation Results

The twelve evaluators were generally satisfied with the effectiveness of the prototype system in addressing promotion and publicity management problems of government e-services in e-government initiatives, although there were suggestions for improvements to the system design, system data and user interface.

This section presents feedback from the participants of the evaluation workshops in response to the questions and gives comments for further improvements of the system. Table 8.2 shows the results from the evaluation questionnaire. The table presents the percentage (%) from e-government committee members and project managers (Group 1, G1 in the table) and businessmen (Group 2, G2 in the table), with regard to the assessment scale. An analysis of answers given by both groups is presented in Section 8.5 under the following sections.
### Table 8-2: Evaluation Questionnaire Results

<table>
<thead>
<tr>
<th>No</th>
<th>Evaluation Questions</th>
<th>Rating</th>
<th>1 Poor %</th>
<th>2 Fair %</th>
<th>3 Satisfactory %</th>
<th>4 Good %</th>
<th>5 Excellent %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>G1 G2 G1 G2 G1 G2 G1 G2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Q1</td>
<td>- - - -</td>
<td>55%</td>
<td>50%</td>
<td>45%</td>
<td>50%</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Q2</td>
<td>- - - -</td>
<td>40%</td>
<td>55%</td>
<td>50%</td>
<td>45%</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>Q3</td>
<td>- - - -</td>
<td>30%</td>
<td>30%</td>
<td>60%</td>
<td>60%</td>
<td>10% 10%</td>
</tr>
<tr>
<td>4</td>
<td>Q4</td>
<td>- - 5% 5%</td>
<td>50%</td>
<td>45%</td>
<td>40%</td>
<td>45%</td>
<td>5% 5%</td>
</tr>
</tbody>
</table>

Figure 8-8 shows the overall ratings from the evaluators on the GeS-CAS support tools with regard to Questions 1 to 4.

![Overall Rating on GeS-CAS support tool from e-government committee members and Project Managers (G1) and Businessmen (G2)](chart)

**Figure 8-8: Overall Rating on GeS-CAS support tool from e-government committee members and Project Managers (G1) and Businessmen (G2)**

Participants took the view that the citizens’ awareness strategy approaches could help them in managing e-government initiatives specific to the promotion and publicity of
government e-services management practices. All of the evaluators assessed the GeS-CAS support tool as ‘Good’ or ‘Satisfactory’ and it can be concluded that the developed GeS-CAS support tool gave an overall ‘Good’ performance.

In answering question 2, the capability of the prototype support tool for addressing e-government management practices was also viewed very positively, both from e-government committee and businessmen’s groups. However, the ‘Excellent’ judgement came from project managers who had less experience in e-government management and this result indicates that they need more assistance in tackling e-government initiatives’ problems.

For question 3, the ratings given by both groups regarding the ease of use of the prototype support tool was mainly ‘satisfactory’ and ‘good’. However, some of the evaluators judged the ease of use of the prototype system as ‘Excellent’. This is not surprising, as most of them can appreciate that information and communication technologies are enablers for knowledge management. Based on these findings, in general, most of the participants from both groups agreed that the overall rating for the prototype support tool’s ease of use was ‘Good’.

For the last question, the ratings given by both groups regarding the appropriateness of the prototype support tool was mainly ‘satisfactory’, ‘good’ and ‘excellent’. However, one of the evaluators judged the suitability of the prototype support tool as ‘Fair’ as he was experienced in both marketing and advertising strategy management.

8.5.1 Responses to the Government e-Services GeS-CAS support tool and Citizens’ Portal

The e-government committees agree that the prototype of the GeS-CAS support tool and citizens’ portal should be implemented as soon as possible since the citizens’ need for it is very compelling. From the citizens’ point of view, this system will give more focus for the government to promote and publicise their e-services to specific groups of citizens according to their needs with the most appropriate media approaches (FFA, PMA, EMA or DMA). It will also give the right strategy characteristics (promotion, demonstration,
motivation, education and advancement) and ensure that promotion and publicity strategies are cost-effective.

Meanwhile, the citizens’ portal itself gives an alternative method for the citizens to have dealings with the government, although some citizens, especially older people, like to meet government officers face-to-face. The portal should enable diligent citizens such as businessmen or businesswomen, and senior government officers to save time by not having to go to the government service counters. The system, when used in the government agencies, will improve by inputting more data, as more e-government projects are included. Another suggestion from a businessman was that the model needs more evaluation workshops so it could be developed for e-commerce or e-business use.

Additional positive responses gathered from the evaluators regarding this prototype portal for Brunei government e-services are as follows:

- They are very interested in the simplicity of the e-services citizens’ portal.
- They gave more attention to e-services integration and categories of e-services.
- They are keen for the portal to be implemented as soon as possible so the e-services of each ministry would be more accessible and available.

Some reservations were also gathered as follows:

- They had doubts as to whether the users’ requirements would be met.
- They also expressed caution about the security measures used in the support tool.
- They need the ability to choose between English or Malay language for the support tool.

### 8.5.2 Suggestions for Improvement

As this is only a first prototype support tool, a lot of improvements are needed in order to obtain the most effective and efficient system. In order to facilitate e-government committees, including e-government project managers, to deal with promotion and
publicity management problems in an effective way, a decision citizens’ awareness research finding form was designed to provide a decision point on whether to adopt such an approach or improvise an approach to solve problems. They suggested providing a comment box to allow e-government committee members to remark on their work using the adopted approach so these later additions will not be mixed up with the original findings.

The e-government committees would need to input more data / information into the support tool to make the system more robust. The more information in the system, the better their understanding of the adoption system with their related works will be. They also need appropriate ICT training before implementation of other e-government projects. Two main aspects were considered in designing this GeS-CAS support tool: ease of use and appropriateness for the e-government committees’ management context.

The feedback was that the evaluators would like to see more detail on how to take further steps to implementing the decisions that had been suggested in the system. This implies the system could be improved by providing an ‘Action Form’ which details step-by-step action to be taken, though this would require further research. Other positive responses from them are that the prototype support tool should be able to produce a detailed report (an example is shown in Figure 8-7) for all system categories and a ‘Help’ button should be provided to facilitate e-government project managers in accomplishing their tasks.

8.6 Benefits of the Prototype Support Tool

The Citizens’ Awareness GeS-CAS support tool is essentially an example of a knowledge management system for e-government committees and project managers. The prototype support tool can be used to provide relevant knowledge to facilitate the addressing of awareness management problems in government e-services. The relevance and capability of this tool for addressing e-government promotion and publicising management problems have been confirmed and verified through the evaluation workshop. Moreover, through the evaluation workshop the participants identified several benefits of the prototype system, which include:
It is a training aid for new e-government project managers on how to promote their government e-services to the citizens.

It is a good management tool for avoiding inappropriate citizens’ awareness programmes and wasting resources.

The system provides guidance and support for decision making on the promotion and publicity of government e-services.

The designed system has the capability to search from the database, a list of citizens’ awareness approaches that could be adopted.

It is a good way of documenting and presenting the processes that e-government committees and project managers should follow when addressing problems on promotion and publicity of government e-services to the different categories of citizens.

The system provides a simple tool for e-government committees and project managers to promote and publicise government e-services to appropriate categories of citizens with the right approach based on case study findings or measures so as to enhance the e-services use and satisfaction.

It is a good and systematic approach to identifying characteristics of knowledge, from the ‘source’ (research finding) and ‘destination’ (support tool) of knowledge, applicable KM processes and KM techniques and technologies.

### 8.7 Limitations of the GeS-CAS support tool

Comments regarding the limitations of the prototype systems were made during discussion sessions in the evaluation workshop. The participants highlighted that the prototype system is quite difficult to use without training. They also commented that the developed prototype system is very empirical and required more examples of other case studies in developing a guide to support a decision-making strategy.

Another limitation encountered in the evaluation was that the system is standalone and
needs to be shared by all e-government committee members and project managers by means of a connection to an intranet or the Internet. Last but not least, there is a possibility of participants’ bias in the system evaluation due to the participant’s recognising the author as a senior friend and working associate. This could be reflected in their ratings and comments during the evaluation. In this context, there is the need for more objective evaluation to be undertaken in different organisations and business companies to obtain a more accurate result of the evaluation.

8.8 Summary

The main objectives of the prototype support tool and choice of development environment were discussed at the beginning of the chapter to give an overview of the system. The chapter has also described the system architecture and the process of system development with a view to presenting the required features of the prototype system. Then, the operation of the prototype support tool, which consists of the decision strategy and implementation measures of e-government initiatives, was presented.

The testing of the prototype was also undertaken. It was found that the prototype support tool would be helpful in assisting the e-government election committees to understand the issues of awareness of government e-services and support decision making on how and where to market these services. This support tool, therefore, becomes an important new addition to the GeS-CAS framework itself. The framework now not only contains the data and knowledge required, but also contains a means of accessing and using it.

The last chapter (Chapter 9: Discussion, Recommendation Guidelines and Conclusions) presents the discussion of the overall findings of the research, contributions, limitations of the research, recommendations for further research and the conclusions.
9 DISCUSSION, RECOMMENDATION GUIDELINES AND CONCLUSIONS

9.0 Introduction

Having now presented all the results of this study, and proposed a detailed government e-services citizens’ awareness strategy framework and support tool, this final chapter reviews the results, gives a brief summary of the overall research findings and identifies the research contribution. The last section of the chapter presents the limitations of the research, makes recommendations for further research, followed by the final conclusions drawn from the research.

9.1 Research Discussion & Summary

The aim of this research was to investigate ways to improve e-government promotion practices through the integration of communication, education and strategy management processes. The research developed a well defined and structured framework for managing citizens’ awareness on government e-services; underpinned by case study findings from the five categories of citizens of government sector workers, private sector workers, students, businesses leaders and residents of village communities (mostly older people and housewives).

The specific tasks undertaken in this research, with respect to the research objectives, are summarised below:
Objective 1: To review literature on previous work in the research area.

The literature review on current citizens’ awareness management practices of government e-services revealed that the task of managing categories of citizens’ awareness involved solving a wide range of interesting education, management and communications problems. Heeks (2001a) stated that “… to raise awareness and belief that e-governance is relevant, functioning e-governance projects can be identified.”

Many previous researchers discuss factors and issues that need to be considered in building e-government adoption as described in chapter 2. The government is considered as the ‘supply-side’ and the citizens as the ‘demand-side’ in e-government services perspectives. A large number of researchers proposed solutions to the problems associated with e-government adoption in public sector organisations. Some researchers have suggested citizen-centric approaches. A few researchers focused on citizens’ awareness such as Choudrie and Dwivedi (2005), who studied citizens’ awareness of the government gateway in the United Kingdom, Al-Jaghoub et al., (2010) who evaluated citizens’ awareness of e-government services in Jordan, and Prima and Ibrahim (2011), who examined citizen awareness of e-government services for information personalisation.

While different researchers have identified an awareness problem, few have attempted to identify the best ways of addressing the problem, and none have done so for the particular case of Brunei Darussalam. Attempting to address this gap, the government e-services citizens’ awareness strategy (GeS-CAS) framework has been developed by integrating relevant determinants from previous literature with new research results that empirically tested alternative solutions in the context of e-government services for categories of Brunei Citizens. The development of GeS-CAS framework is also supported by the GeS-CAS support tool for use by Brunei e-government committees.
Objective 2: To investigate knowledge, acceptance, involvement and responses of Brunei citizens toward government e-services delivery.

The investigation of the key concepts of knowledge, citizens’ knowledge, acceptance, involvement and response of Brunei citizens towards government e-services delivery was presented in Chapter 3 with a view to identifying applicable Brunei e-government initiatives processes and relevant Knowledge Management tools to be integrated into e-government management practices.

Consistent with previous e-government research, this exploratory study found that a large number of Internet users have not used e-government for communication or transactions but have done so to locate information (Dimitrova and Chen, 2006). Some citizens used the Internet for social networking, but these citizens could easily overlook government e-services and may not be aware that they exist.

The main result of this preliminary study suggests that awareness of government e-services did not reach the required level for widespread use of the services by the citizens of Brunei. This finding is supported by a recent large scale study by Brunei e-government committees with the Brunei Citizens. In their report, they state that citizens “…don’t know what e-government services are available” and “Lack of public awareness and marketing campaign.” The results of the Brunei e-government committee study (2009) are given in Appendix D.
**Objective 3: To discover the current level of awareness of Brunei citizens of the government e-services.**

Reffat (2003) concludes “E-government services are only useful if people know about them” and that education and marketing of e-government services has become one of the ten most pertinent challenges for developing a successful e-government. He recommends that publicity and training campaigns should be developed to engage the public about e-government initiatives.

The second phase of this research was used to find out the current level of awareness of Brunei citizens towards government e-services delivery, as described in Section 5.4 and in a case study in Chapter 6. The data all show that there are different levels of citizens’ awareness.

**Objective 4: To determine the factors which make Brunei Citizens unaware of the Government e-services.**

“Awareness is the first step in the users’ experience, as users need to know that the service is in existence, what it does and how it is relevant to them, they then need to know in which ways they can contact and access the service” (El-Kiki and Lawrence, 2006).

Lack of education, poor communication, poor information and lack of motivation were identified as major problems occurring within Brunei concerning government e-services. The main contributory factors for these problems included the many types of government initiatives being undertaken, their varied ICT flagship programs, the types of applications and services, and the changing nature of the e-services as they progress. These findings came from the surveys, interviews and analysis described in Chapter 5. It is important to understand the underlying cause of problems before incorporating any citizens’ awareness strategy approach into e-government management practices.
Objective 5: To carry out case studies in different categories of Brunei Citizens and analyse the consequences of differences between the different groups.

A study by Reffat (2003) suggested conducting research to ensure that online services respond to actual needs and that the implementation suits the target audiences. With this objective, research was carried out to investigate different approaches of promotion, demonstration, motivation, education and advancement to suit the target citizens.

Five different categories of citizens were studied, as described in Chapter 6. The case studies carried out confirmed that existing e-government management practices could be improved through the knowledge management of a citizens’ awareness strategy framework and decision support system for the right e-services to the right citizens.

Objective 6: To use the results of the previous steps to develop an effective citizens’ awareness strategy framework to enhance the use of government e-services in Brunei Darussalam which comprises of a repository for the research findings, models for the interpretation of the findings and a set of recommendations for the specific approach to use for the citizens of Brunei Darussalam.

Many studies suggested different types of awareness approach for citizens (e.g. James, 2004; Ke and Wei, 2004; Carter & Weerakkody, 2008). In this study, it was found that there are some specific methods that are better to increase awareness in specific citizen groups.

It is important to develop an appropriate mechanism for managing the resulting knowledge. The relevant issues included:

- Identifying the most significant e-government management problems which can be attributed to a knowledge gap;
- Identifying citizens’ awareness issues relating to the problems;
- Developing an appropriate citizens’ awareness strategy framework that will bridge the knowledge gap;
- Developing an action plan for implementation.
A recent study by Sharma and Pant (2009) from a set of 240 citizens (living in both urban and rural areas) in the Indian state of Uttarakhand found that none of the rural areas’ citizens aged 40 years and above were aware of the government website, or any online services and none of the women living in the urban areas used online government services. This shows that the awareness level of government e-services delivery is very low and the authors suggested that government agencies provide awareness initiatives. For future research, the researcher will look at the gender issues, particularly in the village communities where women use the internet less. This could be because the e-services web sites are not women friendly, or the village women may be less confident or there could be a problem in the education, culture or commitment of females in these areas.

Chapter 7 fulfils this objective by presenting the creation of a framework in which various awareness model functions (e.g. promotion model functions, demonstration model functions, motivation model functions, education model functions and advancement model functions) to improve e-government management with a view to identifying its focus and benefits of citizens’ awareness implementation. These model functions give the strength and weakness as a set of recommendations to make an awareness dimension part of any e-service implementation.

**Objective 7: To develop a tool to assist the government to understand awareness problems and implement awareness initiatives on e-services.**

The GeS-CAS support tool, described in Chapter 8, was designed to enable the government employees responsible for e-services (the e-government committees) to easily access and use the research findings, analysis and recommendations in the GeS-CAS framework. When evaluated the system was found to provide user-friendly guidance on how to use the system, with simple entry, storage, viewing, and editing of information and with easy to use search facilities. Although there were suggestions for improvements, such as better facilities for the generation of reports, the evaluators all agreed the support tool would assist the e-government committees to provide the necessary awareness of the e-services to improve the use of these services by the citizens of Brunei.
**Objective 8: To evaluate the effectiveness of the proposed strategy framework in enhancing the awareness and usage of government e-services in Brunei Darussalam.**

The proposed integrative conceptual framework suggests the capture the effects of citizens’ awareness on government e-services. E-government is a relatively new subject of academic interest in the field of public administration according to Yildiz (2007). He adds “Most e-government studies still examine the output of e-government rather than the processes.”

Many studies focus on the observation and evaluation of the output of e-government initiatives. These studies analyse the contents of government agency websites, listing the kinds of online services provided, and presenting cases of best practice for benchmarking (Cohen & Eimicke, 2001). However, the analysis of the promotion of e-government initiatives has attracted limited attention among the public administration research community. Therefore, this research is needed to examine the processes that shape the management of e-government initiatives for citizens’ awareness of e-services that will lead to the citizens’ acceptance of and satisfaction with the e-services.

The implementation of the citizens’ awareness framework of government e-services as a knowledge management’s guiding principle is used to optimise government decision-making and planning processes regarding citizens’ issues. As Yildiz (2007) said, the e-government policy processes are essential to ensure that the resources are spent on projects with the highest priority, to prevent perpetuating previous mistakes, and to maximise gains while minimising resources spent.

The full evaluation of the effectiveness of the proposed framework is clearly not possible in the timeframe of this research as it would take many years of monitoring after the recommendations had been implemented to know whether any significant improvements have been made. However, a relatively short term measure of the success of the framework is whether the government of Brunei Darussalam takes the results seriously and adopts the recommendations the framework contains. This has indeed been the case. Even before the results were complete, the Brunei government took an active interest in
the results and action has already been taken on the preliminary findings, as described in section 9.4.

### 9.2 Research Contribution

The main contribution of this research is to propose the government e-services citizens awareness strategy (GeS-CAS) framework to increase citizens’ awareness of and intention to use the government e-services in Brunei Darussalam. This was identified using grounded theory based on findings from previous chapters (see Figure 9-1).

![Grounded Theory of the Research](image)

**Figure 9-1: Grounded Theory of the Research**

The GeS-CAS framework consists of:

1. Data on research results on different awareness methods and their application on different types of citizen.
2. A set of recommendations based on the data.
3. Prototype samples of research materials developed, such as the leaflet, guidebook and portal.
4. A diagrammatic model to help e-service developers and managers visualise all aspects needed for e-service awareness.
5. A support tool to give ease of access to research data, model and recommendations and to allow the framework to be easily updated and extended.

6. Some interim reports produced for the government and researcher research papers.

A summary of the main outcomes from each chapter is given in Table 9-1

<table>
<thead>
<tr>
<th>Chapters</th>
<th>Main Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction (Chapter 1)</td>
<td>The background, aims and objectives of the research is described and the research scope and significance of the study are defined.</td>
</tr>
<tr>
<td>Literature review (Chapter 2)</td>
<td>The facts that there is no research reported on citizens’ awareness of government e-services in Brunei Darussalam and there are no statistics about citizens’ knowledge, acceptance and use of government e-services in Brunei Darussalam are revealed.</td>
</tr>
<tr>
<td>Context of the Study – Brunei Darussalam (Chapter 3)</td>
<td>The history and geography of Brunei, the economic environment, the telecommunication infrastructure all affect any e-government strategy plan as the life style of Brunei citizens affects their attitudes to e-government initiatives. The impact of this on government e-services implementation is identified.</td>
</tr>
<tr>
<td>Methodology (Chapter 4)</td>
<td>The methodology structure for this study is clearly described.</td>
</tr>
</tbody>
</table>
| Preliminary Study – Quantitative Method (Chapter 5) | Then need to define a strategy of citizens’ acceptance of government e-services with a major focus on enhancing citizens’ awareness is identified.  
Various approaches of awareness are suggested from this preliminary study. It was found that there are many aspects which make Brunei citizens unaware of or not use government e-services: the rapid economic development in term of easy transportation to government agencies to deal with the services; the growth of Internet users using the Internet more for social interaction such as email, chatting, surfing, gaming and downloading; the effect of culture conditioning citizens to come to the government office counters; and the lack of e-services policies to encourage citizens to do so. |
### Survey Interviews-Qualitative Method (Chapter 6)

The survey interviews show that Brunei citizens require promotion, demonstration, motivation, education and advancement for them to use government e-services as they currently lack awareness of the services. It is also shown that a combination of strategies could lead to more effective use of government e-services.

### GeS-CAS Framework Development (Chapter 7)

Based on the findings from the literature and the citizens’ participation in the surveys, interviews, discussion groups and case studies described in the previous chapters and the resulting feedback obtained, a Government e-Services Citizens Awareness Strategy (GeS-CAS) framework was developed.

### GeS-CAS Support Tool (Chapter 8)

To share the knowledge provided in the GeS-CAS framework with the e-government committees and to support decisions on how to promote government e-services to the citizens, a support tool was developed to give easy access to the different research findings in the framework.

### Research Contributions (Chapter 9)

The GeS-CAS framework includes a body of research findings, a GeS-CAS model, prototype materials, a set of GeS-CAS recommendations and a GeS-CAS support tool to promote the use of government e-services by raising citizens’ awareness of the e-services available. This enables the e-government committees to optimise awareness methods so that only the most effective and efficient awareness enhancing methods are used for different types of citizens.

There is clearly a lack of awareness of government e-services in Brunei Darussalam and therefore there is a need to enhance Brunei Citizens’ awareness of e-government initiatives. Consequently, the need arises for a government e-services citizens’ awareness strategy framework based on research findings for different categories of Brunei citizens.

The initial discussion of contributions to the literature will be structured around these research gaps, as presented in the following four subsections.

#### 9.2.1 Enrich the Level of Government e-Services Adoption

Very few previous studies have explicitly attempted to identify those factors affecting adoption that affect both the level of citizens’ awareness of e-government initiatives
adoption and the ultimate success of the government e-services adoption (for instance, Choudrie and Dwivedi, 2005; Prima and Ibrahim, 2011) and therefore further research in this area is needed, especially in areas of the world where there has been no studies of this type before.

This study suggests that the citizens’ awareness strategy approaches are found to significantly influence both the level of government e-services adoption and success of e-government initiatives.

9.2.2 A Marketing Approach to Government e-Services Quality

This study is among the first to introduce the marketing approach to ensure government e-service quality in citizens’ awareness strategy frameworks activities. Although marketing e-services is not new for government organizations, it has never been specifically highlighted and proposed in detail in any of the previous academic research.

Consequently, one of this study’s most important contributions has been to shed new insights into the ways in which government e-service is marketed to categories of citizens. Firstly, this study has demonstrated that the promotion of government e-service activities can be organized into four common approaches, namely the face-to-face approach, printed media approach, electronic media approach, and digital media approach. Secondly, this study has shown that demonstration and education of government e-services to the citizens are very important for their acceptance. And lastly, motivation and advancement of government e-services also contribute to the success of e-government initiatives.

This study makes another important contribution by highlighting the areas in which the government, itself, believes that it is performing well or underperforming in terms of service delivery. For example, most government employees agreed that the areas in which they are best equipped to provide high levels of citizens’ service relate to addressing citizens’ complaints, reassuring citizens about their sites’ security and privacy, and successfully integrating government e-service quality management into the e-government strategic plan. Furthermore, the government employees are concerned
that they don’t have the mechanisms in place to effectively capture their citizens’ perceptions of the quality of their electronic services.

9.2.3 Upgrade Relationships between Government e-Services Adoption and e-Government Initiatives Marketing

As little prior research has explicitly tackled the marketing of government e-service, from the Brunei government organisations’ perspective, it is not surprising to find that no prior work has explicitly addressed the link between government e-service marketing and the adoption and success of e-government initiatives. The detailed findings of the research data from concerning the different categories of citizens make some important new contributions, in the respect. More specifically, it has been shown that a positive and essential association exists between:

- The level of government e-services strategy sophistication and the marketing provision of e-service quality; and
- The marketing provision of e-service quality and the success of e-government initiatives implementation.

More specifically, it has been shown that if government develops more comprehensive e-services, then it will need to enlarge the scope and sophistication of its service quality management processes, and the quality of its marketing of these services in particular. Moreover, the overall success of government e-services has been shown to be fundamentally associated with their ability to adequately support the e-services marketing processes, through the provision of appropriate resources and management support. This is supported by Shakur, (2011) in her latest study, “when the role of individual e-service quality constructs are examined, it can be seen that the management commitment to, and effective resourcing of, e-service quality has the dominant effect upon e-commerce success.”
9.2.4 Comparison between the Government ‘Supply Side’ and Citizens ‘Demand Side’ Study

Having conducted one of the first theoretical studies of the management of government e-service marketing, from the Brunei organisations’ perspective, and then complemented this with a citizen study, it was possible to make a further contribution to the literature by exploring the relationship between these two studies. More specifically, the comparative study makes important contributions, in the following areas:

- There are some areas in which the government committees can be reassured that they’re already doing a good job, and therefore don’t need to focus too much immediate attention or additional resourcing. For example, from the citizen study it was shown that the citizens are generally very happy with their government’s infrastructure and technical performance, but the citizens still consider the awareness of government e-services is very important;

- Although citizens believe that government is doing a good job in listening and their opinions will be valued, this might come as a surprise to the government, as they don’t believe that they have the mechanisms in place to respond to citizens suggestions;

- By contrast there are other areas, such as responding to complaints and queries, in which citizens believe that the government could do far better, and the government study would suggests these are not being prioritised in the way that they should.

The comparative research has highlighted a few important areas that e-government committees should investigate, specifically with regards to the citizens’ priority in using their e-service features and the types of quality of services that really matters to them. This section has highlighted four areas in which important new contributions to the literature have been made. It is also now important to draw some attention to the theoretical and marketing implications that can be gleaned from this study.
9.3 Research Consequences

This research has had the following consequences:

- An innovative element of this study has been the creation of the ‘marketing approaches to government e-service quality’ construct, to identify government e-services awareness from the categories of citizens’ perspective. Now that this important, new framework has been created and thoroughly explored, it might usefully be incorporated into future research projects. Moreover, whilst this construct has been specifically designed for use within the government to citizens (G2C) context, it could be equally applicable, in other organization contexts such as government to business (G2B) and government to government (G2G).

- There have been many previous studies of e-government adoption (e.g. Carter and Belanger, 2004a; Gilbert et al., 2004; Ebrahim et al., 2004; Kumar et al., 2007; Conklin, 2007; Lee and Lei, 2007; Lau et al., 2008; Schwester, 2009) and also many studies of e-government services quality, from the citizens perspective (Adeshara et al., 2004; Wang et al., 2005; Tung and Rieck, 2005; Van Duivenboden and Mariam, 2005; Asgarkhani, 2005; Colseca and Dobrica, 2008; Van Velsen et al., 2009; Alsobhi et al., 2009). However, no prior studies have sought to explicitly explore the concept of a citizens’ awareness strategy framework for government e-services. In so doing, not only does this study make an important new contribution to the literature (see Subsection 9.3), but it also has important implications for these new findings and ideas, as it should encourage researchers to exploit this relationship, in future research;

- The preliminary findings of this study prompted the e-government committees to conduct their own large scale study of Brunei citizens’ awareness of government. They carried out e-government roadshows across the country, distributing questionnaires to the citizens. The main results of this survey confirmed the findings of this research, showing that most of citizens are unaware of the existing e-services and that there had been no effective marketing strategies (See Appendix D).
Following the preliminary study’s finding, a prototype an e-government leaflet and guide book to support citizens’ knowledge about government e-services were developed. With these, citizens can understand clearly what government e-services are all about enabling them to answer survey and interview questions without bias. These efforts were also noted by the e-government committees, and as a result they conducted e-government exhibitions and conferences to promote the government e-services as reported in the Brunei online news (Appendix G).

The researcher has had an enjoyable experience in being in communication with top management in e-government committees that can have influence in decision making on e-government initiatives, holding some real-life experiments with older citizens and carrying out awareness programmes with other categories of Brunei citizens (Appendix H). In addition, the researcher’s empirical investigation of the impact of Brunei culture on citizen’s responses to government e-services problems, was a demanding and exciting field, not discussed before in the literature.

9.4 Research Limitations

There are several limitations that need to be recognized when interpreting the finding from this research study.

- There may be a response bias in respondent questionnaires and face-to-face interviews. Respondents are mainly from urban areas. Rural respondents can only be studied when the researcher directly goes to their rural environment or when coincidently meeting in the public places. The older citizens who attended the village discussion group are likely to be more sociable and keen to know about e-government initiatives than those who did not attend. Future studies should strive to obtain responses from less socially active citizens, such as from rural areas, to see if the results obtained are the same.
The researcher was unable to test the various and specific programmes of awareness on a large number of Brunei citizens, due to time and difficulties in obtaining authority, permissions and support from responsible organisations. The sample size needs to be increased in the studies to get better statistical results. Some respondents’ reluctance to contribute to the research by participating in interviews, surveys and experiments was a further constraint. However, the researcher tried to take positive steps to encourage citizens to participate, for instance by providing food in the gathering, giving away souvenirs such as a pen and note book when interviewing the public, and taking advantage of personal contacts with the citizens. With more time and more extensive results the affects of these limitations could be overcome.

Due to the limitation of resources, the researcher was not able to implement the proposed recommendations in a structured and detailed study. However, some recommendations were provided and tested by using the opinion of experts, from a range of businesses, private sector companies and government agencies in the field of management publicity, marketing, culture, law, communication awareness and education. Further research over a longer period of time on how well the recommendations work in practice is needed. The researcher was unable to extend the GeS-CAS support tool to become a comprehensive system tool because of the time constraint. However, the tool is able to give ideas to the e-government committees to assist in their decision making. Further research would add to the tool’s embedded knowledge and, therefore, increase its effectiveness.

The research did not compare any survey outcomes for Brunei Darussalam with those of other countries such the UK. This has limited the ability to generalise the findings for other nations, and it may have revealed other imperative differences in the awareness level of the citizens different of different countries.
9.5 Conclusions

Many researchers who have studied e-government have focused upon the supply side or government related issues such as analyzing e-government research, perspectives, philosophies, theories, methods, and practice (Heeks and Bailur, 2007) and these were put into a conceptual framework by Kumar, et al., (2007). Others have looked at the evaluation of the usability of e-government websites (Mosse and Whitley, 2004), technical issues (George, 2004), strategies and policy (Beynon-Davies, 2004), challenges in e-government (Weerakkody et al., 2004), and the difference between countries in the use of online government services (Prattipati, 2003). However, little attention has been given to the demand side or citizens’ perspective.

Recent studies that addressed the demand side or citizen related issues of e-government services such as trust and risk (Belanger and Carter, 2008), confidence (Tolbert and Mossberger, 2006), a conceptual model of citizen adoption (Al-Adawi et al., 2005), and citizens’ awareness (Choudrie and Dwivedi, 2005) were studied without proposing any framework. Citizens’ awareness was studied by Prima and Ibrahim, (2011) to achieve information personalization, but no-one has previously produced any citizens’ awareness strategy framework for the adoption of e-government services.

This study examines the outcome of e-service provision in terms of citizen awareness of e-government initiatives rather than the output of any particular e-service. This study also found that citizens recognize that government is doing a relatively good job with government e-services delivery but has not sufficiently advertised those services to the citizens. It is possible to speculate on why the government has not promoted its online services. First, the e-services themselves may not be well developed and this will also mean the dissemination process is similarly undeveloped. Secondly, the provision of many e-services would mean their integration would require a great deal of planning form the government’s perspective and work processes need to be redesigned to better exploit online interaction (Welch et al., 2005). Thus, the government requires time to change and look for better strategies to promote their e-services. This is supported by Dimitrova and Chen (2006) who state that government officials trying to promote their websites need to
target particular groups of citizens – those who indeed may benefit more from online services. This research provides the strategy to resolve these problems.

In conclusion, government e-services is about transforming the way government interacts with citizens. The process is neither quick nor simple. It requires a coherent strategy, beginning with the various approaches of promotion, demonstration, motivation and education to stimulate the usage, and advancement to maintain the ongoing use of government e-services. This is supported by Reffat (2003) who states that “the success of e-government initiatives depends on an engaged citizenry and, to that end, efforts to foster civic engagement are critical.”

The use of formal and informal communication between the government as the ‘supply side’ and citizens as the ‘demand side’ of knowledge is a means to build knowledge and best practice. In the context of knowledge management, it is important to share information, to create connections between ideas, and to build cross-connections to other knowledge areas in e-government initiatives. Leadership commitment from top management is important to create an environment within which people are able to share knowledge and are allowed to assimilate it, as well as practice the knowledge gained (Egbu et al., 2005).

### 9.6 Recommendations for Further Study

Although this research has had some success and made useful research contributions, there is considerable scope for further work. Suggestions are as follows:

- It is clear that the current study does not cover every single aspect of the demand-side (citizens) of e-government and future research is essential to get a more complete picture of the perceptions and attitudes of the demand-side of government e-services. Also, analysing why results per service or per citizen differ is of great interest for policy makers. This research will make a valuable input in the researcher’s forthcoming professional work of being responsible for ensuring citizens involvement in e-government initiatives in an organisation where categories of citizens must inevitably use government e-services.
The recommendations in this thesis and the developed citizens’ awareness strategy framework for government e-services (Ge-CAS) have been tested as far as it is possible within the time constraints of a PhD project. Ideally, the research needs to continue over a long period to see the effects of the recommendations of the framework being put into practice in Brunei Darussalam. This research would require the cooperation of the government agencies, education institutions, businesses sectors and non-profit organisations to apply the recommendations and the awareness framework so the effects can be studied. This is clearly well beyond the scope of a PhD research project.

This research has revealed that cultural and country-specific considerations are important factors affecting the Brunei citizens’ awareness of government e-services. Factors identified included the ‘comfort zone’ nature of the Brunei citizens particularly in the amount spent on ICT facilities, latest high-tech gadgets and overwhelming social networking on the Internet. It would be interesting to find if there are other cultural and country-specific factors and whether these affect some parts of Brunei society more than others. More sociological investigation and studies of human behavior that related to e-government initiatives may reveal other important characteristics not covered in this research.

The recommendations and citizens awareness strategy framework developed has been specifically proposed for Brunei Darussalam. However, it is promising that many of the recommendations and most of the framework would be applicable in other countries. It is likely that other e-government developing countries would have similar conditions that would make most of this research applicable but it is uncertain how much would be applicable to the countries that have already well developed e-government. The various different model functions of the framework could be tested in a number of different countries, both developed and developing, to discover what model functions of the framework work well and this would also help identify the conditions that
would make each of the recommendations made for Brunei applicable in other nations. This further research would then help other countries decide how to apply the recommendations and framework themselves.

### 9.7 The Success of this PhD Research

Although this research is a first step in revealing citizens’ awareness problems e-government initiatives in the Brunei Darussalam, there is still scope for future work in extending investigations. However, the research has been very successful because the aims and objectives have been achieved. Although there were some limitations, they were not critical to the success of the project.

The research has been shown to be original and to make a valuable contribution to knowledge, particularly in relation to Brunei Darussalam. Some activities have been undertaken by the Brunei e-government committees as a result of this study proposal; the first stage of the study outcome has been used to identify the current awareness level of citizens and the results of their survey shown were identical; some e-services publicity activities, i.e. ICT exhibitions, e-government seminars and conferences; some ICT trainings and the latest development of e-government initiatives was the launched of e-government citizens portal called ‘e-Darussalam’ which can be accessed from [www.gov.bn](http://www.gov.bn). In this research, e-government committees and government agencies responsible for the citizens’ affairs such as E-Government National Center (EGNC) and the Information Department of the Prime Minister Office have shown interest in this study results and are planning to take it forward into implementation thoroughly.

“We admit that promotion and awareness should be enhanced in the future. Apart from the right funding on this, the e-government should have its own marketing resource team tasked to promote e-government actively” said the deputy permanent secretary of Information Technology and E-Government at the Prime Minister’s Office (Brunei Times, 2010a).


References


13.


local and regional level. Luxembourg: Office for Official Publications of the European Communities.

F


G

References


References


Prentice Hall.


Lakshman (2011). What Are the Three Main Approaches for Creating Public Awareness
AUTHOR INFORMATIONS


---


Change in Brunei Darussalam. Working Paper No. 16. Faculty of Arts and Social Sciences. Printed by the Educational Technology Centre, Universiti Brunei Darussalam.


Themistocleous, M. (2002). Enterprise Application Integration, Brunel University, UK.


Appendices

Appendix A – Survey Questionnaires
CITIZEN PARTICIPATION IN E-GOVERNMENT WEBSITES SURVEY

The aim of this study is to assess knowledge, acceptance, involvement and responses of Brunei Internet Users towards the delivery of online government information and services in the government of Brunei Darussalam websites for the success of Brunei e-Government initiative.

I would be grateful if you could complete this questionnaire by marking appropriate responses as indicated. This should take no more 30 minutes of your time. Your responses will be kept confidential and personal anonymity will be respected. Thank you very much.

Part A. Personal Information (Please tick ONE box only)

1. Age:
   - Below 18 years old
   - Between 18 to 36 years old
   - Between 37 to 55 years old
   - Above 56 years old

2. Gender:
   - Male
   - Female

3. Employment Status:
   - Working in government sector
   - Working in private sector
   - Self-employment/businesses
   - Study, including those who are in ‘In Service Training’ in college/university
   - Not working, including job seeker, pensioner, housewife and etc

4. Current Place of Residence:
   - Brunei and Muara District
   - Tutong District
   - Belait District
   - Temburong District
   - Outside Brunei - Please specify: ____________________________

5. Academic Level:
   - PhD / Master / First Degree
   - GCE ‘A’ Level / GCE ‘O’ Level (Form 5)
   - Higher Diploma/Diploma /Professional Certification
   - BJCE (Form 3) / PCE and below

Part B. Internet Usage (Please tick ONE box only)

6. How often do you use Internet in a week?
   - Everyday (regardless of time spent)
   - 5 or 6 days a week
   - 3 or 4 days a week
   - 1 or 2 days a week
   - Sometimes, less than 1 day in a week

7. How many years have you used Internet?
   - Less than a year
   - 1 to 3 years
   - 3 to 5 years
   - 5 to 7 years
   - 7 to 9 years
   - More than 9 years

8. Generally, what is your opinion regarding the Internet services, which you are using now?
   - Very Satisfactory
   - Satisfactory
   - Less Satisfactory
   - Unsatisfactory
Appendix B – Government e-Services
Citizens Guidebook
Appendix C – Government e-Services Leaflet
Benefits:

**FAST SERVICES**
You do not have to repeatedly go to the government offices, take your number, queue and wait a long time to deal with your matters. Government e-Services provide easy to use and prompt services.

**VARIOUS INFORMATION**
You start from the Government Official Website via: www.ipm.gov.bn. This will link you to all ministries and departments which provide e-Services and various information. You become part of an information community.

**ERA OF TECHNOLOGY**
You undergo a change of life style in the new era of technology. Your society values will become more modern.

Aims:

1. This leaflet is designed in order to inform Brunei citizens regarding the availability of government e-Services through the Internet (Government Official Website).
2. We would like your opinion as a Brunei Citizen:— Do you think this leaflet is EFFECTIVE in informing Brunei citizens about government e-Services?

Contact me to give comments & suggestions:
- Telephone / SMS: 63-44706447/09
- Email: adanji1@yahoo.com
- Or visit my blog: http://adanji1.blogspot.com

(These responses will be used for my current PhD research regarding the Brunei citizen awareness of Government e-Services in our effort to make the Brunei e-Government initiative successful. Thank you very much for your cooperation.)

Get Government Online Forms via the Internet

Do you know?
Appendix D – e-Government Citizens Survey Organised By Prime Minister’s Office
E-Government Citizen Survey

Organised By:
Prime Minister’s Office

In Collaboration With:
E-Government National Centre
Appendix E – Print Screens of Government e-Services for Brunei Citizens Portal
Appendix F – The E-government Strategic Plan 2009-2014 Brunei Darussalam
The E-Government Strategic Plan
2009-2014
BRUNEI DARUSSALAM
Appendix G – Online News of Raising Citizens Awareness Programmes
Online news of government e-services programmes;
Source: http://www.bt.com.bn/print/75214 or
Source URL:

E-government exhibition receives positive response

Well-received exhibit: Deputy minister at the Prime Minister’s Office Dato Hj Eusoff Agaki (C) talking with officers of the Ministry of Religious Affairs when looking at the e-islam Kiosk at the e-government exhibition being held at The Mall, Gadong. Picture: B1/Jefrisalas

Rachel Thien and Ubai Masli
BANDAR SERI BEGAWAN
Saturday, June 13, 2009 - Page 2
Appendix H – Letter of Field Work in Brunei Darussalam
To whom it may concern,

6th July 2010

Dear Sir or Madam,

Subject: Adam Jait’s PhD Field Work in Brunei.

This letter is to inform you that Adam Jait will be returning to Brunei for the period 18th July to 18th September to carry out field work research for his PhD project at Loughborough University. Adam Jait’s PhD research is concerned with e-government initiatives and how to make the citizens aware of them. His research, therefore, requires him to return to Brunei to:

- Conduct a seminar/workshop for students at a Teacher University College
- Attend a gathering of village people to obtain their views on e-government
- Meet the Government Officers of the ICT Committee to obtain their views
- Interview e-government stakeholders, businessmen and citizens in the public and private sectors to get an in-depth analysis of the initiatives and problems faced by e-government in Brunei.
- Visit Malaysia and Singapore to observe the e-government activities and initiatives there in order to obtain ideas for Brunei.

If you are in a position to help Adam Jait with his research then please help him by allowing him to carry out these activities and/or allowing him to interview you on the subject of e-government and e-government awareness. This research will be used by the Government of Brunei to improve the e-government services available, and your contribution to this research will be greatly appreciated by all concerned.

Thanking you in anticipation,

Yours sincerely,

Professor Ray Dawson
PhD Supervisor to Adam Jait
Dept of Computer Science