FACTORS INFLUENCING SUSTAINABILITY OF INFORMATION AND COMMUNICATION TECHNOLOGY TELECENTRE PROJECTS IN RURAL PENINSULAR MALAYSIA

MOHAMMAD BADSAR

IPSS 2011 2
FACTORS INFLUENCING SUSTAINABILITY OF INFORMATION AND COMMUNICATION TECHNOLOGY TELECENTRE PROJECTS IN RURAL PENINSULAR MALAYSIA

By

MOHAMMAD BADSAR

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

May 2011
DEDICATION

Dedicated to my beloved family, my wife and my daughters

for their support and patience

During my study in Malaysia
FACTORS INFLUENCING SUSTAINABILITY OF INFORMATION AND COMMUNICATION TECHNOLOGY TELECENTRE PROJECTS IN RURAL PENINSULAR MALAYSIA

By

MOHAMMAD BADSAR

May 2011

Chairman: Associate Professor Bahaman Abu Samah, PhD

Institute: Institute for Social Science Studies

This study was designed to determine the factors that influence sustainability of Information Communication Technology (ICT) projects in rural communities in Malaysia. ICT initiatives have started since 1996 in Malaysia, however ICT for development projects through telecentre initiatives are still evolving towards a more established form and still ensuring the project sustainability is the concern of the Malaysian government. In this regard, a conceptual model has been developed to identify factors that contribute to telecentres sustainability in rural communities. The factors comprised; 1) individual characteristics, 2) telecentres characteristics, 3) understanding of community, 4) information characteristics, 5) leadership competency, and 6) telecentre outcomes. In this conceptual model, a telecentre outcome is considered
as mediator which mediates the relationship between the independent variables (factors) and sustainability of telecentre (dependent variable).

In order to achieve the goals of study, a cross-sectional survey design was applied and a set of questionnaire was used as instrument for data collection. The data were collected from 360 respondents who were randomly selected from the Program Internet Desa (PID) and Medan Info Desa (MID) centers in four Malaysia selected state, namely Perak, Kedah, Terengganu and Johor which represented central, northern, east coast and south respectively. Descriptive analysis, factor analyses, Pearson product moment correlation, multiple regressions and Structural Equation Modeling (SEM) were employed for data analyses.

The findings of study revealed that 52.8% of respondents were female and 47.2% of them were male. Average age and monthly income of respondents’ were 25 and RM801.7, respectively. Most of the respondents (72.5%) educational level was under diploma, and 34.7% of them were students. Results of the Structural Equation Modeling indicated that the data fit the model: \( \chi^2 (231) = 541.044, p = .000; \) GFI = .885, CFI = .937, TLI = .925, RMSEA = .061, Standardized RMR = .044. The results of hypotheses testing of the structural model showed that there were linear positive relationships between understanding of community, information characteristics, leadership competency, and telecentre outcomes and sustainability of telecentres. The results of overall structural model showed that there is not significant direct relationship between individual characteristics and sustainability of telecentre. The results also unveiled that
telecentre outcomes mediated the relationships between individual characteristics, telecentre characteristic, information characteristics, leadership competency and sustainability of telecentres.

This study provided a unique contribution to research by developing a framework for future research by combining empirically grounded findings together with theoretical explanations from the literature. This study also highlighted some implications and recommendations for policy and practice towards the betterment of sustainability of telecentre projects. Further, the need for future research on sustainability in ICTs projects by considering other factors in the rural communities’ context highlighted.
PENGARUH FAKTOR KESINAMBUNGAN PROJEK TEKNOLOGI KOMUNIKASI MAKLUMAT (TELECENTRE) DI KALANGAN MASYARAKAT LUAR BANDAR DI SEMENANJUNG MALAYSIA

Oleh

MOHAMMAD BADSAR

Mei 2011

Pengerusi: Profesor Madya Bahaman Abu Samah, PhD

Institut: Institut Pengajian Sains Sosial

Penyelidikan ini dijalankan untuk mengenalpasti faktor-faktor yang mempengaruhi kesinambungan projek Teknologi Maklumat dan Komunikasi (TMK) di kalangan masyarakat luar bandar di Malaysia. Walaupun kegiatan ICT bermula dari tahun 1996 di Malaysia tetapi projek TMK untuk projek-projek pembangunan melalui telecentre di Malaysia dipertingkatkan lagi. Pihak kerajaan menghadapi beberapa cabaran dalam mengenal pasti bagaimana untuk mendatangkan sumbangan untuk tujuan pembangunanserta bagaimana untuk memantau dan menilai sumbangan itu melalui pembangunan telecentre di kawasan luar bandar. Dalam hal ini, model konseptual dibangunkan untuk mengenalpasti faktor-faktor yang menyumbang terhadap keberlanjutan telecentre di kalangan masyarakat luar bandar. Dalam kajian ini hubungan
daripada enam faktordiperiksa untuk memberikan peranan dari setiap faktor yang menjelaskan kesinambungan telecentre. Faktor-faktor ini adalah; 1) ciri-ciri individu, 2) ciri-ciri telecentre, 3) pemahaman masyarakat, 4) ciri-ciri maklumat, 5) kompetensi kepemimpinan, dan 6) hasil telecentre sebagai pembolehubah bebas dan kesinambungan telecentre sebagai pembolehubah dependen. Dalam keputusan model konseptual telecentre dianggap sebagai orang tengah yang memediasi hubungan antara pembolehubah bebas dan kesinambungan Telecentre.

Dalam rangka mencapai tujuan kajian, kaedah kajian cross sectional dilaksanakan dan borang soal selidik telah dibentuk bagi pengumpulan data kajian. Data dikumpulkan dari 360 responden yang dipilih secara rawak dari pusat PID dan MID di empat negari, iaitu Perak, Kedah, Terengganu dan Johor yang merupakan wakil dari pusat di kawasan utara, timur dan selatan semenanjung Malaysia. Analisis deskriptif, analisis faktor, korelasi product moment Pearson, regresi berganda dan Struktural (SEM) dengan perisian AMOS telah diaplikasikan dalam menganalisis data kajian ini.

Penemuan kajian menunjukkan bahawa 52.8% dari responden adalah perempuan dan 47.2% dari mereka adalah laki-laki. Data menunjukkan bahawa rata-rata usia responden adalah 25 tahun. Rata-rata jumlah keseluruhan pendapatan bulanan mereka Ringgit Malaysia 801,7. Keputusan kajian menunjukkan bahawa tahap pendidikan 72,5% responden berada di bawah diploma, dan 34,7% responden pelajar.

Keputusan Model persamaan struktur menunjukkan bahawa data fit model: χ² (231) = 541.044, p = .000; GFI = .885, AGFI = .850, CFI = .937, NFI = .896, TLI = .925, RMSEA = .061, Standardized RMR = .044. Keputusan hipotesis model struktur


Dalam kajian ini juga beberapa implikasi dan cadangan untuk dasar dan amalan yang disarankan untuk meningkatkan tahap keberlanjutan dalam projek Telecentre. Penyelidikan ini juga menyoroti keperluan untuk kajian di masa depan keberlanjutan dalam projek-projek TIK dengan mempertimbangkan faktor-faktor lain dalam konteks masyarakat luar bandar.
ACKNOWLEDGEMENTS

First of all, praise is to “Allah” the cherisher, and the sustainer of the world for giving me strengths, health and determination to complete this thesis. I would like to extend my deepest appreciation to my kind supervisor, Associate Professor Dr. Bahaman for his valuable advice and support on this project. I am in debt to him for his help and patience. I am also grateful for the guidance of my committee members, Professor Dr. Musa Abu Hassan and Dr. Nizam Bin Osman. I would like to express my deepest gratitude for their valuable advices to me. Without their help, completion of this research would not have been possible.

I thank University Putra Malaysia for giving me this opportunity to pursue my doctoral degree in the field of rural advancement. I would like also express my deepest appreciation to Prof. Saleh Hassan, Head of Institute for Social Science Studies, deputy of Institute and all staffs of IPSAS, specially Hayrol Azril Mohamed Shaffril the Social Research Officer and Zamri Kamal Baharin the Driver of IPSAS for their kindness and cooperation during data collection. I would like also express my deepest appreciation to Hilyana, Inani and Yan secretaries of IPSAS for their kindness and cooperation during my study in IPSAS. Thank you for all.

In the last but not least, I owe my beloved family, my father, my mother, my wife, my daughters, my sister, my brothers, my father in law, my mother in law, and my brothers in law and all relatives and families for their support during my study in Malaysia. Without their love and support, this study would not have been possible. Thank you for all your love.
I certify that an Examination Committee has met on date of **viva voce to** conduct the final examination of **Mohammad Badsar** on his Doctor Philosophy thesis entitled “Factors Influencing Sustainability of Information and Communication Technology Telecentre Projects in Rural Peninsular Malaysia” in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that candidate be awarded the relevant degree. Members Committee are as follows:

**AINI IDERIS, PhD**  
Professor and Deputy Dean  
School of Graduate Studies  
Universiti Putra Malaysia  
Date:
This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

**Bahaman Abu Samah, PhD**  
Associate Professor  
Institute for Social Science Studies  
Universiti Putra Malaysia  
(Chairman)

**Musa Abu Hassan, PhD**  
Faculty of Modern Languages and Communication  
Universiti Putra Malaysia  
(Member)

**Nizam Bin Osman, PhD**  
Faculty of Modern Languages and Communication  
Universiti Putra Malaysia  
(Member)

**HASANAH MOHD GHAZALI, PhD**  
Professor and Dean  
School of Graduate Studies  
Universiti Putra Malaysia  
Date:
DECLARATION

I declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously and is not currently submitted for any other degree at University Putr Malaysia or at any other institution.

MOHAMMAD BADSAR
Date: 20 May 2011
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEDICATION</td>
<td>ii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>ABSTRAK</td>
<td>vi</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>ix</td>
</tr>
<tr>
<td>APPROVAL</td>
<td>x</td>
</tr>
<tr>
<td>DECLARATION</td>
<td>xii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xvi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xix</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>xxi</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>1 INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1 Background of Study</td>
<td>1</td>
</tr>
<tr>
<td>1.2 Problem Statement</td>
<td>5</td>
</tr>
<tr>
<td>1.3 Research Objectives</td>
<td>7</td>
</tr>
<tr>
<td>1.4 Significance of Study</td>
<td>8</td>
</tr>
<tr>
<td>1.5 Limitations of Study</td>
<td>10</td>
</tr>
<tr>
<td>1.6 Definition of Key Terms</td>
<td>11</td>
</tr>
<tr>
<td>1.7 Chapter Summary</td>
<td>13</td>
</tr>
<tr>
<td>2 LITERATURE REVIEW</td>
<td>14</td>
</tr>
<tr>
<td>2.1 ICT and Rural Community Development</td>
<td>14</td>
</tr>
<tr>
<td>2.2 ICT in Malaysia</td>
<td>16</td>
</tr>
<tr>
<td>2.3 Major ICT project in Malaysia</td>
<td>19</td>
</tr>
<tr>
<td>2.4 ICT in Rural Community of Malaysia</td>
<td>26</td>
</tr>
<tr>
<td>2.5 Program Internet Desa (PID)</td>
<td>30</td>
</tr>
<tr>
<td>2.6 Medan InfoDesa (MID)</td>
<td>32</td>
</tr>
<tr>
<td>2.7 Theoretical Framework of Study</td>
<td>37</td>
</tr>
<tr>
<td>2.8 Diffusion of Innovation Theory</td>
<td>39</td>
</tr>
<tr>
<td>2.9 Models</td>
<td>48</td>
</tr>
</tbody>
</table>

xiii
Model of Program Sustainability 49
Model of Telecentre Success 51
The Strengths and Weaknesses of Models and Referred Theory 53
Sustainability of Telecentres 57
Sustainability 57
Sustainability Dimensions 60
Financial Sustainability 63
Social Sustainability 65
Technological Sustainability 66
Factor Influencing Sustainability 68
Individual Characteristics and Sustainability 70
Telecentre Characteristics and Sustainability 75
Information Characteristics and Sustainability 82
Understanding the Community and Sustainability 86
Leadership Competency and Sustainability 91
Telecentre Outcomes and Sustainability 94
The Mediating Effect of Telecentre Outcomes 98
Chapter Summary 100

3 METHODOLOGY
Research Design 101
Research Framework 102
Research Hypotheses 107
Research Instrument Development 108
Validity and Reliability of Instrument 115
Population of Study and Sampling 117
Sample Size 118
Data Analysis 121
Correlation Analysis 122
Factor Analysis 122
Structural Equation Modeling (SEM) 126
Chapter Summary 131
## 4 FINDINGS AND DISCUSSION

- Demographic Profile of Respondents
- Constructs Validity of Study Instrument
- Developing and Assessing the Measurement Model Validity
- Descriptive Analysis
- The Level of Telecentre Sustainability (Objective 1)
- The Level of Predictor Variables (Objective 2)
- Correlation and Structural Equation Modeling (SEM) Analyses (Objective 3)

## 5 SUMMARY, CONCLUSION AND RECOMMENDATIONS

- Summary of findings
- Conclusions
- Implications
- Recommendations
- Recommendation for Future Studies

REFERENCES

APPENDICES

BIODATA OF STUDENT