

DIFFUSION OF TELECENTER INNOVATION IN EAST
JAVA AND ITS IMPACT: A CASE STUDY OF
TELECENTER SAKTI IN GUBUGKLAKAH VILLAGE

BY

ALFI KHAIRIANSYAH MACHFUD

A thesis submitted in fulfilment of the requirement for the
degree of Doctor of Philosophy in Information Technology

Kulliyyah of Information and Communication Technology
International Islamic University Malaysia

JUNE 2021

ABSTRACT

In an effort to achieve the Millennium Development Goals (MDGs), the Government of Indonesia established telecenters across several provinces in 2005 with a mission to empower rural community with access to ICT for poverty alleviation. After two years the telecenters fail to sustain except in East Java; and by 2015, 52 telecenters were established in 29 regencies and 9 cities in the province, indicating diffusion had occurred. This study uses qualitative and quantitative methods to analyze: (1) ICT development in Indonesia and East Java in the period of 2005-2015 in which telecenter diffusion occurred using the ICT Development Index, (2) telecenter innovation diffusion in East Java, and (3) Telecenter Sakti innovation-decision process in Gubugklakah Village by applying the Diffusion of Innovation theory, and (4) the impact of Telecenter Sakti towards the village community using the public ICT impact concept. This study found that access to ICT have generally increased in both rural and urban. In rural, household cellular telephone and computer ownership have raised significantly. In East Java, more rural household members own cellular telephone, and their internet access has significantly increased. Gaps remained with urban, emphasizing the importance of the availability of telecenter in villages. Telecenter innovation diffusion occurred in East Java as a result of authority innovation-decision by The East Java Communication and Informatics Agency (Diskominfo Jatim) through five stages. The knowledge, persuasion, and decision stages were inseparable from the role of Asianti Oetojo as the innovation “champion” who convinced key government officials at the regency/city level and members of the Regional House of Representatives to establish telecenter. The communication stage occurred with the agreement between the province, regency/city, and village government institutions on their specific roles in supporting the telecenter. The action stage began when the telecenter was established in the village, the management team was recruited from the local community, and an infomobilizer was deployed to help initiate adoption. Success stories of the telecenter were then communicated to other regencies and cities, which in turn facilitate diffusion of telecenter in East Java. Based on innovativeness, telecenters categorized as innovators and early adopters are mostly located in less developed regions, in contrast with late adopters and laggards. The rate of adoption was relatively fast as in just a decade’s time telecenter has been established in all regencies and cities across East Java. Based on the analysis of the optional innovation-decision process of Telecenter Sakti in Gubugklakah Village this study found previous PC and internet use, occupation, social participation, household farm size and monthly expenditure influenced the degree of knowledge. The degree of persuasion is influenced by relative advantage and complexity. The degrees of decision, implementation, and confirmation are influenced by the previous stages. The relationship between the dependent variables is found to be significant and therefore support the theory. Telecenter Sakti and the availability of operator aid have facilitated users’ access to ICT, information, and improved their skills in using computer and internet applications. At the community level, the local tourism awareness group (Ladesta) make use of the telecenter to develop and market agrotourism and ecotourism in the village and transformed Gubugklakah from an unknown village on the foothills of Mount Bromo to a national award-winning tourism village. Their efforts have stimulated many village economic activities such as homestays, tourist guides, transportation services, and partnership with travel agents and tourism sites, which have improved the well-being of the village households; and therefore, fulfilled the telecenter objectives of Diskominfo Jatim. Based on this evidence, the Government of Indonesia should consider telecenter as a part of the major project in the 2020-2024 Mid-term National Development Plan on digital transformation to improve village economy and prosperity.

خالصة البحث

في محاولة لتحقيق MDGs ، أنشأت حكومة إندونيسيا telecenters عبر العديد من المقاطعات في عام 2005 لتمكين المجتمع الريفي من الوصول إلى تكنولوجيا المعلومات والاتصالات ICT من أجل التخفيف من حدة الفقر. بعد عامين فقط استطاعت telecenters في جاوة الشرقية في الاستمرار ؛ وبحلول عام 2015 ، تم إنشاء telecenters 52 في جميع أنحاء المقاطعة ، مما يشير إلى حدوث انتشار. تستخدم هذه الدراسة الأساليب النوعية والكمية لتحليل: (1) تطوير تكنولوجيا المعلومات والاتصالات ICT في إندونيسيا وجاوة الشرقية في الفترة التي حدث فيها انتشار telecenter باستخدام مؤشر تنمية تكنولوجيا المعلومات والاتصالات ICT، (2) انتشار الابتكار في telecenter في جاوة الشرقية و (3) عملية اتخاذ قرار الابتكار ل Telecenter Sakti في قرية جوبوكلالكا Gubugklakah من خلال تطبيق نظرية انتشار الابتكار Diffusion of Innovation، و (4) تأثير Telecenter Sakti باستخدام مفهوم تأثير تكنولوجيا المعلومات والاتصالات العامة. وجدت هذه الدراسة في الريف ، ارتفاع ملكية الهواتف الخلوية المنزلية وأجهزة الكمبيوتر بشكل ملحوظ. في جاوة الشرقية، يمتلك عدد أكبر من أفراد الأسرة في المناطق الريفية هاتفًا خلويًا، وزاد وصولهم إلى الإنترنت بشكل كبير. ظلت الفجوات قائمة مع المناطق الحضرية ، مما يؤكد على أهمية telecenter في المناطق الريفية. حدث انتشار telecenters في جاوة الشرقية نتيجة سلطة قرارات الابتكار من قبل وكالة جاوة الشرقية للاتصالات والمعلوماتية (Diskominfo Jatim). كانت مراحل المعرفة والإقناع والقرار تأثرت بدور Asianti Oetoyo باعتباره "البطل" الذي أقنع عددًا من المؤسسات الحكومية على مستوى المدينة بدعم المبادرة. حدثت مرحلة الاتصال بالاتفاق بين المقاطعة والمدينة وحكومة القرية على أدوارهم المحددة في دعم telecenter. بدأت مرحلة العمل عندما تم إنشاء telecenter والفريق الإداري في القرية ، وتم نشر مشغل معلومات لبدء التبني للمبادرة. ثم تم نقل قصص نجاح telecenter إلى المقاطعات والمدن الأخرى ، مما أدى إلى انتشارها. استنادًا إلى الابتكار ، يوجد المبتكرون والمتبنون الأوائل في الغالب في المناطق الأقل نموًا ، على عكس المتبنين المتأخرين و المتخلفين. كان معدل التبني سريعًا نسبيًا حيث تم إنشاء telecenter في جميع المناطق والمدن خلال عقد من الزمن فقط. استنادًا إلى تحليل عملية اتخاذ القرار الاختيارية ل Telecenter Sakti ، وجدت هذه الدراسة أن استخدام الكمبيوتر الشخصي السابق والإنترنت ، والمهنة ، والمشاركة الاجتماعية ، وحجم مزرعة الأسرة والنفقات الشهرية أثرت على درجة المعرفة. تتأثر درجة الإقناع نسبيًا بالميزمة والتعقيد. تتأثر درجات القرار والتنفيذ والتأكيد بالمتغيرات السابقة. تم العثور على علاقة بين المتغيرات المعتمدة لتكون مهمة وبالتالي تدعم النظرية. سهّل Telecenter Sakti وتوافر مساعدة المشغل وصول المستخدمين إلى تكنولوجيا المعلومات والاتصالات ICT والمعلومات وحسن مهاراتهم في تشغيل تطبيقات الكمبيوتر والإنترنت. على مستوى المجتمع المحلي ، استفادت مجموعة التوعية السياحية المحلية (Ladesta) من telecenter للتسويق للسياحة الزراعية والسياحة البيئية وحولت Gubugklakah من قرية غير معروفة إلى قرية سياحية وطنية. حفزت جهودهم العديد من الأنشطة الاقتصادية والشراكة، مما أدى إلى تحسين رفاهية مجتمع القرية؛ وبالتالي، حققت أهداف telecenter ل Diskominfo Jatim. بناءً على هذه الأدلة ، يجب على الحكومة اعتبار telecenter جزءًا من الخطة التنموية الوطنية متوسطة المدى 2020-2024 لتحسين القرية وازدهارها.

APPROVAL PAGE

The thesis of Alfi Khairiansyah Machfud has been approved by the following:

Mira Kartiwi
Supervisor

Abd Rahman Ahlan
Internal Examiner

Sohaimi Zakaria
External Examiner

Tariq Zaman
External Examiner

Radwan Jamal Yousef Elatrash
Chairman

DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

Alfi Khairiansyah Machfud

Signature

Date.....

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

**DECLARATION OF COPYRIGHT AND AFFIRMATION OF
FAIR USE OF UNPUBLISHED RESEARCH**

**DIFFUSION OF TELECENTER INNOVATION IN EAST JAVA
AND ITS IMPACT: A CASE STUDY OF TELECENTER SAKTI
IN GUBUGKLAKAH VILLAGE**

I declare that the copyright holder of this thesis is
Alfi Khairiansyah Machfud.

Copyright © 2021 Alfi Khairiansyah Machfud. All rights reserved.

No part of this unpublished research may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without prior written permission of the copyright holder except as provided below

1. Any material contained in or derived from this unpublished research may be used by others in their writing with due acknowledgement.
2. IIUM or its library will have the right to make and transmit copies (print or electronic) for institutional and academic purposes.
3. The IIUM library will have the right to make, store in a retrieved system and supply copies of this unpublished research if requested by other universities and research libraries.

By signing this form, I acknowledged that I have read and understand the IIUM Intellectual Property Right and Commercialization policy.

Affirmed by Alfi Khairiansyah Machfud

.....
Signature

.....
Date

ACKNOWLEDGEMENTS

All praise due to the Almighty Allah alone. I praise him, I seek his help and forgiveness. I bare witness that there is no god worthy of worship except Allah and that Muhammad ﷺ is his servant and his messenger. All grand thanks and glory to Allah for giving me the strength to conduct this research. It is with Allah's permission, help, and blessings that this research has been possible.

I would like to make mention that this thesis is a result of combined efforts of a number of cherished persons who have assisted and supported me during the research. Therefore, to them, I would like to express my sincere gratitude and thanks as I am greatly indebted. As the Messenger of Allah ﷺ said, "He who does not thank people, does not thank Allah".

I would like to express my deep gratitude, sincere appreciation and thanks to my supervisor, Assoc. Prof. Dr. Mira Kartiwi whose kind attention, assistance, guidance and encouragement has helped me throughout this research and beyond. I would also like to thank Dr. Tariq Zaman, Prof. Dr. Sohaimi Zakaria, and Dr. Abd Rahman Ahlan for their valuable input for the improvement of this thesis.

My deep appreciation and heartfelt thanks to my family, especially my beloved mother, father, and my sister for their love, support and encouragement to accomplish this study. My appreciation and thank to my wife Mutiara who has provided love, patience and encouragement throughout the years. My love and gratitude to my daughters Sumayyah, Ruqoyyah, Juwayriyyah, Mariyyah, Shofiyyah and Asiyyah who never fail to cheer me up during difficult times.

I am grateful to my friends at the research lab: Golooba Moses, Binyamin Ajayi, Adebiyi Lukman, Muharman Lubis, and Muhammad Bawazier. I greatly value their friendship, discussions, appreciate their trust in me that I can finish this journey.

I would like to express my sincere thanks to Drs. Mardjiono and Drs. Oetami Trisna Sayekti of the East Java Province Communication and Informatics Agency, and Drs. Pidekso Adi, M.Pd of the East Java Telecenter Association who have shared their valuable time and information, and facilitated me in the Telecenter Communication Forum Event.

Finally, my appreciation and sincere thanks to all the participants of this study, especially to Ngadiono, SP, the Village Head of Gubugklakah, the management team of Ladesta DWG and Telecenter Sakti: Purnomo HM Anshori, SE, Muchammad Muksin, SH, Hery Siswoyo and Hariyanto, and all the team members for sharing their time, information, valuable experiences, and friendship during my stay in the village.

Jazāhumullāhu khairan.

TABLE OF CONTENTS

Abstract	ii
Abstract in Arabic	iii
Approval Page.....	iv
Declaration.....	v
Copyright	vi
Acknowledgements.....	vii
List of Tables	xiii
List of Figures	xvi
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background of Study	1
1.2 Problem Statement.....	5
1.3 Research Questions.....	12
1.4 Research Objectives.....	18
1.5 Scope of the Study	18
1.6 Significance of the Study.....	19
1.7 Structure of The Thesis.....	20
CHAPTER TWO: LITERATURE REVIEW.....	22
2.1 Introduction.....	22
2.2 ICT Development Index	22
2.3 Telecenter Innovation	25
2.3.1 Definition and Typologies.....	25
2.3.2 Diffusion of Telecenter Innovation	26
2.3.3 Success of Telecenter Initiative	28
2.4 Diffusion of Innovations Theory	29
2.4.1 Elements of Diffusion	30
2.4.2 Innovation-Decision Process.....	31
2.4.3 Innovativeness.....	36
2.4.4 Rate of Adoption.....	37
2.4.5 Innovation Champion.....	39
2.4.6 Telecenter Studies using the Diffusion of Innovation Theory	40
2.5 Telecenter Impact	42
2.6 Chapter Summary	47
CHAPTER THREE: METHODOLOGY.....	48
3.1 Introduction.....	48
3.2 Theoretical Framework.....	48
3.2.1 ICT Development in Indonesia and East Java	51
3.2.2 Diffusion of Telecenter Innovation in East Java.....	51
3.2.3 Telecenter Sakti Innovation-Decision Process.....	53
3.2.4 Impact of Telecenter Sakti in Gubugklakah Village.....	55
3.3 Operational Definition for Variables in Telecenter Sakti Innovation- Decision Process.....	57

3.4 Research Method and Activities	62
3.4.1 Phase 1: Exploratory Study to Diskominfo Jatim	65
3.4.2 Phase 2: Exploratory Study to 10 Telecenters Across East Java	67
3.4.3 Phase 3: Observation at the 2014 Telecenter Communication Forum Event	68
3.4.4 Phase 4: Interview with Award-winning Telecenter Managers	69
3.4.5 Phase 5: Interview on the Continuation of Telecenter Program	69
3.4.6 Phase 6: Exploratory Study to Gubugklakah Village	70
3.4.7 Phase 7: Survey to Gubugklakah Village Residents	71
3.5 Validity and Reliability of the Survey Instrument.....	73
3.6 Result from Field Study to Ten Telecenters in East Java.....	76
3.6.1 Telecenter Daragati in Buring Urban Village, Malang City	77
3.6.2 Telecenter Lentera Buana, Wajak Village, Malang Regency	79
3.6.3 Telecenter Sakti, Gubugklakah Village, Malang Regency	81
3.6.4 Telecenter Karunia, Sumbergondo Village, Batu City	83
3.6.5 Telecenter Kelud, Kelud Village, Kediri Regency	84
3.6.6 Telecenter Jayati in Ngletih Urban Village, Kediri City.....	86
3.6.7 Telecenter Muneng, Muneng Village, Madiun Regency	88
3.6.8 Telecenter Bumi Penataran, Nglegok Village, Blitar Regency.....	90
3.6.9 Telecenter Semeru, Kertosari Village, Lumajang Regency	93
3.6.10 Telecenter Banger, Wonoasih Sub-district, Probolinggo City.....	96
3.6.11 Insights from the Exploratory Field Study	98
3.7 Selection of the Case Study Site	100
3.8 Features of the Research Site	101
3.8.1 East Java Province.....	102
3.8.2 Malang Regency.....	104
3.8.3 Human Development in East Java Province and Malang Regency	106
3.8.4 Gubugklakah Village.....	106
3.8.5 Ladesta and Telecenter Sakti	117
3.9 Chapter Summary	123

CHAPTER FOUR: ICT DEVELOPMENT IN INDONESIA AND EAST

JAVA.....	125
4.1 Introduction.....	125
4.2 ICT Access	127
4.2.1 Fixed-line Telephone Ownership.....	127
4.2.2 Mobile-cellular Telephone Ownership	129
4.2.3 Household Computer Ownership	132
4.2.4 Household Internet Access.....	137
4.3 ICT Use.....	141
4.3.1 Percentage of Individual Internet Users	141
4.3.2 Mobile-broadband Subscriptions	141
4.3.3 Characteristics of Internet Users in Indonesia and East Java.....	142
4.4 ICT Skills.....	148
4.4.1 Adult Literacy Rates	148
4.4.2 Gross Enrolment Ratio (GER)	151
4.4.3 Computer and Internet Activities	155
4.5 Chapter Summary	161

CHAPTER FIVE: DIFFUSION OF TELECENTER INNOVATION IN EAST JAVA	163
5.1 Introduction.....	163
5.2 Telecenter: A Package of Innovation	163
5.3 Telecenter Innovation-Decision Process in East Java.....	166
5.4 Innovativeness and Telecenter Adopter categories	178
5.5 Rate of Adoption of Telecenter Innovation in East Java.....	185
5.6 Chapter Summary	192

CHAPTER SIX: INNOVATION-DECISION PROCESS OF TELECENTER SAKTI IN GUBUGKLAKAH VILLAGE	199
6.1 Introduction.....	199
6.2 Profile of The Respondents	199
6.3 Telecenter Sakti Innovation-Decision Process	208
6.3.1 Degree of Knowledge	209
6.3.1.1 Prior Condition	209
6.3.1.1.1 Need to Use PC	209
6.3.1.1.2 Need to Use Internet	211
6.3.1.1.3 Previous PC Use	213
6.3.1.1.4 Previous Internet Use	214
6.3.1.1.5 Innovativeness.....	216
6.3.1.1.6 Influence of Prior Condition Factors on the Degree of Knowledge on Telecenter Sakti.....	218
6.3.1.2 Socioeconomic Characteristics.....	220
6.3.1.2.1 Age	220
6.3.1.2.2 Working Sector	221
6.3.1.2.3 Occupation	223
6.3.1.2.4 Social Participation	224
6.3.1.2.5 Household Farm Size.....	225
6.3.1.2.6 Household Monthly Expenditure.....	226
6.3.1.2.7 Household ICT Device Ownership.....	228
6.3.1.2.8 Influence of Socioeconomic Characteristics on the Degree of Knowledge on Telecenter Sakti	229
6.3.1.3 Communication Channels	232
6.3.1.3.1 Influence of Communication Channel on the Degree of Knowledge on Telecenter Sakti	234
6.3.2 Degree of Persuasion.....	235
6.3.2.1 Perceived Characteristics of Telecenter Sakti	236
6.3.2.1.1 Relative Advantage	236
6.3.2.1.2 Compatibility	238
6.3.2.1.3 Complexity.....	239
6.3.2.1.4 Influence of the Perceived Characteristics of Innovation on the Degree of Persuasion on Telecenter Sakti	241
6.3.2.2 Communication Channel	243
6.3.2.2.1 Influence of Communication Channel on the Degree of Persuasion on Telecenter Sakti	245
6.3.3 Degree of Decision.....	246

6.3.3.1 Communication Channel	246
6.3.3.2 Factors Influencing the Degree of Decision to Adopt Telecenter Sakti	248
6.3.4 Degree of Implementation.....	249
6.3.4.1 Communication Channel	249
6.3.4.2 Factors Influencing the Degree of Implementation of Telecenter Sakti	251
6.3.5 Degree of Confirmation	253
6.3.5.1 Communication Channel	253
6.3.5.2 Factors Influencing the Degree of Confirmation on Telecenter Sakti	255
6.3.6 Correlation between Stages of Telecenter Sakti Innovation- Decision Process	256
6.4 Chapter Summary	257

**CHAPTER SEVEN: IMPACT OF TELECENTER SAKTI IN
GUBUGKLAKAH VILLAGE..... 265**

7.1 Introduction.....	265
7.2 First-order Impact of Telecenter Sakti.....	265
7.2.1 Technology Access	265
7.2.1.1 ICT Hardware Access.....	267
7.2.1.2 Information Access.....	274
7.2.1.3 Development of ICT Skills.....	276
7.2.2 Important Place to Improve ICT Skills	281
7.3 Second-order Impact of Telecenter Sakti	284
7.3.1 Ladesta (Village Tourism Institution).....	284
7.3.2 Homestay Owners	288
7.3.3 Ladesta Members	292
7.3.4 Transportation Services.....	294
7.3.5 Tourism Sites	296
7.3.6 Village Government Office.....	297
7.4 Chapter Summary	298

CHAPTER EIGHT: CONCLUSION 306

8.1 Conclusion	306
8.2 Research Contributions.....	321
8.3 Limitations of the Study	325

REFERENCE 327

APPENDIX A: REFERENCE LETTER FROM THE DIRECTORATE GENERAL OF POLITICS AND GENERAL GOVERNMENT, MINISTRY OF INTERNAL AFFAIRS OF THE REPUBLIC OF INDONESIA	339
APPENDIX B: REFERENCE LETTER FROM THE NATIONAL AND POLITICS UNITY AGENCY OF EAST JAVA PROVINCE	340
APPENDIX C: REFERENCE LETTER FROM THE NATIONAL AND POLITICS UNITY AGENCY OF MALANG REGENCY	341

APPENDIX D:	LETTER TO THE COMMUNICATION AND INFORMATICS AGENCY OF EAST JAVA PROVINCE FOR PERMISSION TO CONDUCT FIELD STUDY	342
APPENDIX E:	LETTER TO TELECENTER MANAGERS FOR PERMISSION TO CONDUCT FIELD STUDY	343
APPENDIX F:	QUESTIONNAIRE A. HOUSEHOLD PROFILE	344
APPENDIX G:	QUESTIONNAIRE B. ICT ACCESS AND SKILLS.....	346
APPENDIX H:	QUESTIONNAIRE C1. TELECENTER USER.....	348
APPENDIX I:	QUESTIONNAIRE C2. TELECENTER INNOVATION- DECISION PROCESS	350
APPENDIX J:	QUESTIONNAIRE D. LADESTA MEMBERS	352
APPENDIX K:	QUESTIONNAIRE E. HOMESTAY OWNERS	353
APPENDIX L:	GUBUGKLAKAH VILLAGE 2017 CENSUS QUESTIONNAIRE	355
APPENDIX M:	TELECENTER MANAGEMENT TEAM JOB DESCRIPTION	358
APPENDIX N:	DISTRIBUTION OF TELECENTER BY REGION, NUMBER OF TELECENTER, INITIATOR AND SUPERVISOR.....	361
GLOSSARY.....		363

LIST OF TABLES

<u>Table No.</u>		<u>Page No.</u>
3.1	Field Study Method and Activities	64
3.2	Summary of Instrument Validity Test of Prior Condition and Socioeconomic Characteristics	74
3.3	Summary of Instrument Validity Test on the Variables Related to the Five Stages of Optional Innovation-Decision Process of Telecenter Sakti	75
3.4	Summary of Reliability Test	76
3.5	Distribution of Population of Gubugklakah Village by Age Group and Sex in 2017	109
3.6	Distribution of Head of Household in Gubugklakah Village by Educational Attainment in 2017	111
3.7	Percentage of Population of Gubugklakah Village by Level of Education and Age Group in 2017	112
3.8	Population of Gubugklakah Village by Type of Occupation and Sex in 2017	114
5.1	Summary of Findings from the Distribution of Telecenters in East Java	176
5.2	Telecenter Distribution in East Java by Region, Type of Administrative Area and Year of Establishment, in 2005-2015	179
5.3	Telecenters Replication by Location and Year of Establishment	180
5.4	Distribution of Telecenters by Adopter Categories, 2005-2015	184
6.1	Respondents Individual Profile (N=33)	201
6.2	Respondents Household Profile (N=33)	205
6.3	Respondents Household Number of ICT Device Ownership (in percent)	208
6.4	Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti by Need to Use PC (in percent)	210

6.5	Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti by Need to Use Internet (in percent)	212
6.6	Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti by First PC Use (in percent)	214
6.7	Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti by First Internet Use (in percent)	215
6.8	First Knowledge and First Use of Telecenter Sakti (in percent)	216
6.9	Degree of Knowledge on Components and ICT Aspects of Telecenter Sakti by Innovativeness (in percent)	217
6.10	Influence of Prior Condition Factors on the Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti Innovation	218
6.11	Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti by Age (in percent)	220
6.12	Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti by Working Sector (in percent)	222
6.13	Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti by Occupation (in percent)	223
6.14	Degree of Knowledge on the Components and ICT aspects of Telecenter Sakti by Social Participation (in percent)	224
6.15	Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti by Household Farm Size (in percent)	226
6.16	Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti by Household Monthly Expenditure (in percent)	227
6.17	Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti by Household ICT Device Ownership (in percent)	228
6.18	The Influence of Socioeconomic Factors on Knowledge on the Components of Telecenter Sakti	230
6.19	Degree of Knowledge on the Components and ICT Aspects of Telecenter Sakti by Communication Channels (in percent)	233
6.20	The Influence of Communication Channel Factors on Knowledge on Telecenter Sakti	235
6.21	Degree of Persuasion on the Components and ICT Aspects of Telecenter Sakti by Level of Relative Advantage (in percent)	237

6.22	Degree of Persuasion on the Components and ICT Aspects of Telecenter Sakti by Compatibility (in percent)	238
6.23	Degree of Persuasion on Components and ICT Aspects of Telecenter Sakti by Level of Complexity (in percent)	240
6.24	Influence of the Perceived Characteristics of Telecenter Sakti on the Degree of Persuasion	242
6.25	Degree of Persuasion on the Components and ICT Aspects of Telecenter Sakti by Communication Channel (in percent)	244
6.26	Influence of Communication Channel on the Degree of Persuasion on the Components and ICT Aspects of Telecenter Sakti	245
6.27	Degree of Decision to Adopt the Components and ICT Aspects of Telecenter Sakti by Communication Channel (in percent)	246
6.28	Factors Influencing the Degree of Decision to Adopt the Components and ICT Aspects of Telecenter Sakti	248
6.29	Degree of Implementation of Telecenter Sakti by Communication Channel (in percent)	250
6.30	Factors Influencing the Degree of Implementation of the Components and ICT Aspects of Telecenter Sakti	252
6.31	Degree of Confirmation on the Components and ICT Aspects of Telecenter Sakti by Communication Channel (in percent)	254
6.32	Factors Influencing the Degree of Confirmation of the Components and ICT Aspects of Telecenter Sakti	255
6.33	Correlation between the Stages of Telecenter Sakti Innovation-Decision Process	257

LIST OF FIGURES

<u>Figure No.</u>		<u>Page No.</u>
2.1	Three stages of ICT development towards information society	23
2.2	Weight of ICT Development Index Indicators	24
2.3	Three Types of Innovation-Decision Process and Its Stages	34
2.4	Five Stages of Optional Innovation-Decision Process	35
2.5	Variables Determining the Rate of Adoption of Innovations	38
3.1	Telecenter Authority Innovation-Decision Process at the Meso Level	52
3.2	Optional Innovation-Decision Process of Telecenter Sakti Innovation in Gubugklakah Village	55
3.3	First-order and Second-order Impact of Telecenter Sakti	57
3.4	Location of the Ten Visited Telecenters in East Java Province	68
3.5	Telecenter Daragati in Buring Urban Village, Malang City	78
3.6	Telecenter Lentera Buana in Wajak Village, Malang Regency	80
3.7	Telecenter Sakti in Gubugklakah Village, Malang Regency	82
3.8	Telecenter Karunia in Sumbergondo Village, Batu City	84
3.9	Telecenter Kelud in Kelud Village, Kediri Regency	85
3.10	Telecenter Jayati in Ngletih Urban Village, Kediri City	87
3.11	Telecenter Muneng in Muneng Village, Madiun Regency	90
3.12	Telecenter Bumi Penataran in Nglegok Village, Blitar Regency	91
3.13	Telecenter Semeru in Kertosari Village, Lumajang Regency	95
3.14	Telecenter Banger in Wonoasih Sub-district, Probolinggo City	97
3.15	Location of East Java Province in Indonesia	102
3.16	Location of Malang Regency in East Java Province	104

3.17	Location of Gubugklakah Village in Malang Regency	107
3.18	Proportion of Land Use in Gubugklakah Village	108
3.19	Distribution of Head of Household in Gubugklakah Village by Type of Occupation in 2017	113
4.1	Percentage of Household Fixed-Line Telephone Ownership by Urban-Rural, 2005-201	128
4.2	Percentage of Households Mobile-Cellular Telephone Ownership by Urban Rural Classification, 2005-201	129
4.3	Percentage of Household Number of Active Cellular Phone Number (ACPN) in Indonesia and East Java, 2012-2015	130
4.4	Average Number of Household Active Cellular Phone Number in East Java and Indonesia by Urban-Rural, 2012-2015	131
4.5	Percentage of Household Computer Ownership by Urban-Rural, 2005-2015	133
4.6	Number of Poor People (in millions) in Indonesia by Urban-Rural, 2005-2015	134
4.7	Percentage of Household Computer Ownership in East Java and Indonesia by Urban-Rural, 2012-2015	135
4.8	Percentage of Household Who Used Internet Within the Past 3 Months by Urban-Rural, 2005-2015	137
4.9	Percentage of Household Who Used Internet Within the Last 3 Months by Location, 2005-2015	139
4.10	Average Number of Household Member Who Used Internet within the Past 3 Months in East Java and Indonesia by Urban-Rural, 2013-2015	140
4.11	Percentage of Population Aged 5+ Who Used Internet Within the Last 3 Months Using Cellular Telephone, 2010-2015	142
4.12	Percentage of Population Aged 5+ Who Used Internet Within the Last 3 Months in East Java and Indonesia by Gender, 2012-2015	143
4.13	Percentage of Population Aged 5+ Who Used Internet within the Past 3 Months in East Java and Indonesia by Age Group, 2012-2015	144

4.14	Percentage of Population Aged 5+ Who Used Internet within the Past 3 Months in East Java and Indonesia by Educational Attainment, 2013-2015	145
4.15	Percentage of Population Aged 10+ Who Used Internet in the Past 3 Months in East Java and Indonesia by Occupational Field	147
4.16	Percentage of Population Aged 15+ Who are Literate in East Java and Indonesia, 2010-2015	149
4.17	Percentage of Population Aged 15+ Who are Illiterate by Age Group in East Java and Indonesia, 2005-2015	150
4.18	Junior High School Gross Enrolment Ratio in East Java and Indonesia, 2005-2016	151
4.19	Senior High School Gross Enrollment Ratio in East Java and Indonesia, 2005-2016	153
4.20	Gross Enrollment Ratio of Tertiary Education in Indonesia, 2005-2015	154
4.21	Percentage of Computer and Internet Use by Main Occupation	156
4.22	Percentage of Computer and Internet Use by Educational Level	157
4.23	Percentage of Computer and Internet User by Age Group	158
4.24	Types of Activities in Using Computers	159
4.25	Types of Activities in Using the Internet	160
5.1	Typical Telecenter Organizational Structure	165
5.2	Summary of Authority Innovation-Decision of Telecenter Innovation in East Java Province	174
5.3	Number of Telecenter Adoption in East Java in the Period of 2005-2015 (in frequency and cumulative number)	182
5.4	Adopter Categorization of Telecenters in East Java (in percent)	184
7.1	Respondents Purpose of Using ICT in Telecenter Sakti (in percent)	267
7.2	Respondents Degree of Benefits on ICT Hardware in Telecenter Sakti (in percent)	267

7.3	Respondents Computer Application Use in Telecenter Sakti (in percent)	268
7.4	Respondents Degree of Benefit of Computer Applications in Telecenter Sakti (in percent)	269
7.5	Respondents Internet Applications Use in Telecenter Sakti (in percent)	270
7.6	Common Daily Activity in Telecenter Sakti	271
7.7	Degree of Benefit of Internet Applications in Telecenter Sakti (in percent)	272
7.8	Respondents Request for Operator Assistance (in percent)	273
7.9	Degree of Benefit of Operator Aid in Telecenter Sakti (in percent)	273
7.10	Type of Information Accessed by Respondents in Telecenter Sakti (in percent)	274
7.11	Degree of Benefit of Types of Information Accessed in Telecenter Sakti	276
7.12	Respondents Computer Applications Usage in Telecenter Sakti (in percent)	277
7.13	Respondents Internet Applications Usage in Telecenter Sakti (in percent)	278
7.14	Respondents Aid Request to Telecenter Sakti Operator (in percent)	280
7.15	Most Important Place to Improve Computer Skills (in percent)	282
7.16	Most Important Place to Improve Internet Skills (in percent)	283
7.17	Activities of Ladesta	285
7.18	Number of Tourist Served by Ladesta in 2014-2018	286
7.19	Revenue, Expense and Gross Profit of Ladesta in 2014-2018 (in million IDR)	287
7.20	Period in Which Respondents Began to Open Homestay (in percent)	288
7.21	Respondents Main Motivation to Opening Homestay (in percent)	289
7.22	Respondents Number of Available Rooms for Homestay (in percent)	290

7.23	Respondents Frequency of Accepting Guests per Month (in percent)	291
7.24	Homestay Revenue in 2014-2018 (in million IDR)	292
7.25	Transportation Services Revenue in 2014-2018 (in million IDR)	295
7.26	Tourist Attractions Revenue from Ladesta in 2014-2018	297
7.27	Village Office Revenue from Ladesta in 2014-2018 (in million IDR)	297

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY

Grounded from the belief that access to ICTs has a key role in fostering social and economic development, international bodies have embarked to bridge the digital divide—the gap between individuals advantaged by the internet and those who are relatively disadvantaged by the Internet caused by the divergence in the rates of its adoption (Rogers, 2001). In year 2000, in the United Nations Millennium Summit, world leaders committed on a global partnership to achieve eight international development goals by 2015 termed the Millennium Development Goals (MDGs). One of the targets is related to ICT; stated in Goal 8 Target 8F the Millennium Development Goals: “In cooperation with the private sector, make available the benefits of new technologies, especially information and communications technologies” (United Nations, 2014). In the same year, members of the G8 countries sign the Okinawa Charter on Global Information Society. The Charter calls both public and private sector to contribute to bridging the information and knowledge divide. The members were also committed to the principle of inclusion, that “everyone, everywhere should be enabled to participate in and no one should be excluded from the benefits of the global information society” (Ministry of Foreign Affairs of Japan, 2000).

Related to the MDGs target and the Okinawa Charter, in the subsequent events, i.e., the World Summit on the Information Society (WSIS) held in Geneva (2003) and Tunisia (2005), participating countries committed to bridge the digital divide by empowering the poor living in remote, rural and marginalized urban areas with access

to information and communication technologies (ICTs) and to use it as a tool to support their efforts to lift themselves out of poverty (International Telecommunication Union, 2005). Indonesia was among the many governments who signed the global initiatives.

Corresponding with the indicators of Target 8F of the MDGs, the Government of Indonesia established a goal that by 2015: (1) the proportion of population with fixed-line telephone is increased, (2) one hundred percent of population have mobile-cellular phones, (3) fifty percent of household have access to the internet, (4) the proportion of household with personal computers is increased (Ministry of National Development Planning of the Republic of Indonesia, 2010). In achieving the above goals, the government established the national fiber-optic broadband network (Palapa Ring project) that connects all major island in Indonesia with 497 regencies and cities. The government also provided access to telecommunications and internet services with the Universal Service Obligation (USO) to 33,184 villages with fixed-line telephone (*Desa Berdering* program) and 5,748 urban villages with internet access center (PLIK or *Pusat Layanan Internet Kecamatan*). The government also initiated the Smart Village Program (*Desa Pinter* program) which provides basic internet services to 131 villages across 32 provinces which aims to reduce the gap in educational information.

With 2015 marked the end of the MDGs program, the agenda was continued with the Sustainable Development Goals (SDGs) in which 17 development goals is targeted. In the SDGs period (2016-2030), ICT is considered as a crucial enabler and a catalyst in assisting to achieve the SDGs (International Telecommunication Union, 2016). Since the MDGs era, ICT has experienced the fastest global diffusion in history, exceeding any former technologies with the shortest time taken for the global public to adopt ICT-based applications such as mobile phones, internet, and social media.

In 2005, to accelerate the achievement of MDGs, the Government of Indonesia through the National Development Planning Agency (Bappenas) collaborated with the United Nations Development Program (UNDP) and launch the Partnership for e-Prosperity for the Poor (Pe-PP) program. The program aims to alleviate poverty by empowering poor communities to gain benefit from the availability of access to ICT for their social and economic activities. Through this initiative, telecenter innovation were then introduced in several rural and marginalized areas across several provinces: Central Sulawesi, South Sulawesi, Gorontalo, Papua and East Java. These areas were selected based on the consideration of poverty level, availability of basic infrastructure, commitment from local government, the presence of potential host organization and the possibility of synergies with other development programs (National Development Planning Agency & United Nations Development Programme, 2004).

The Pe-PP program was carried on in the period 2005-2007 and pilot telecenters were built during this time. Each telecenter was supported for two years in funding and other resources, and thereafter the telecenters were expected to self-sustain. Unfortunately, after two years of its implementation the pilot telecenters fail to sustain, all except two. Interestingly, these two sustaining telecenters were located in the same province, i.e., East Java Province. Moreover, ever since its initiation, telecenter has been replicated by the East Java Communication and Informatics Agency (Diskominfo Jatim) throughout the province; indicating there has been a diffusion of the telecenter innovation. By 2015, about ten years after the introduction of telecenter innovation, 52 telecenters had been built, covering all 29 regencies and 9 cities across the province. In addition, majority of the telecenters continue to operate and self-sustaining after the initial project support ends. On top of that, several telecenters were reported to succeed in giving desirable impact in the community.

On the other side, in 2007, the ITU held the World Telecommunication/ICT Indicators Meeting (WTIM) in Geneva whereby participating countries agreed upon the need of a global index that can measure the development of ICT and information society of countries around the world. In 2009, the ITU publishes the Measuring the Information Society Report that formalizes the ICT Development Index (IDI). In addition to measuring ICT development in a given country, the IDI was meant to measure digital gap between countries, to analyze using standardized indicators that can be compare across time and region, and to measure the potential of ICT development based on available resources and skills (International Telecommunication Union, 2016).

The conceptual framework of the ICT Development Index (IDI) explains the process of how a country to become an information society based of three stages: (1) ICT readiness, which reflect the level of access and infrastructure of ICT, (2) ICT Intensity, which reflect the degree of ICT use, and (3) ICT Impact which reflects efficient and effective use of ICT (International Telecommunication Union, 2016).

As generally known, the establishment of telecenter in rural and marginalized areas is a kind of local community development program using ICT. Its goal is to (1) empower local communities with ease of access to basic information such as market, agriculture, trade, education, and health, (2) to enhance local communities' skills in accessing information using computers through trainings, (3) to encourage them to improve local economies with community development activities using ICT, and (4) to develop partnership with relevant parties in building local community (Dinas Komunikasi dan Informatika Jawa Timur and Asosiasi Telecenter Jawa Timur, 2011). With that, telecenter becomes an integral part in moving Indonesia forward towards becoming an information society nation. Therefore, it is important to integrate the ICT