Faculty of Cognitive Sciences and Human Development

TECHNOLOGY ADOPTION AMONG SEMI-RURAL COMMUNITIES IN BETONG, SARAWAK

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Bachelor of Science with Honours
(Human Resource Development)
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Grade: **A-**

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Student's Declaration:

I **NOR SHAMMININ BIN ABDULLAH, (MATRIC NO 67005) (FSKPM)** hereby declare that the work entitled, Technology Adoption Among Semi-Rural Communities in Betong, Sarawak is my original work. I have not copied from any other students' work or from any other sources except where due   reference or acknowledgement is made explicitly in the text, nor has any part been written for me by another person.

   2 July 2021   NOR SHAMMININ BIN ABDULLAH (67005)
     Date submitted   Name of the student (Matric No.)

Supervisor's Declaration:

I, **Dr. FLORIANNA LENDAI ANAK MICHAEL MULOK** hereby certifies that the work entitled, *" Adoption Among Semi-Rural Communities in Betong, Sarawak"* was prepared by the above named student, and was submitted to the "FACULTY" as a * partial/full fulfillment for the conferment of *Bachelor's Degree of Science (Hons) Human Resources Development*, and the aforementioned work, to the best of my knowledge, is the said student's work.

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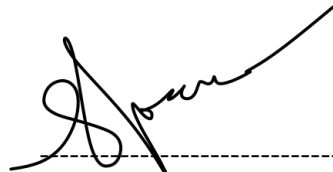
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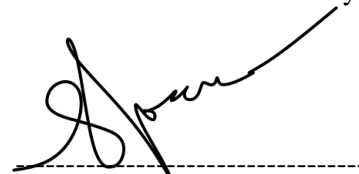**Gred**
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The project entitled '***Technology Adoption Among Semi-Rural Communities in Betong, Sarawak***' was prepared by ***NOR SHAMMIMIN BIN ABDULLAH*** and submitted to the Faculty of Cognitive Sciences and Human Development in partial fulfillment of the requirements for a Bachelor of Science with Honours (*program*)

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ABSTRACT

The purpose of the researcher conducting this study is to measure the level of technology adoption for semi rural communities in Betong, Sarawak. The researcher chose people who live in Betong to become the target population for this study to cover the gap, which is no study on technology adoption has been made in that particular area. For this study, a quantitative research method has been used to allow the researchers to get the information from employees that are working in the semi-rural communities area in Betong, Sarawak. The reason why researcher choose to use the quantitative approach is to get objective information on technology adoption for semi-rural communities. This method will allow the researcher to get the conclusions from the research hypotheses. In conclusion, the findings of this study indicates that all the hypothesis are accepted. This can be concluded that the all the independent variables for this study has no significant relationship towards technology adoption on communities in semi-rural area, Betong, Sarawak.

Chapter 1

Introduction

1.1   Introduction

The purpose of the researcher conducting this study is to measure the level of technology adoption for semi rural communities in Betong, Sarawak. This chapter also will provide more information on background of study, problem statement, research objectives, research questions and hypothesis, research framework, limitations of the study and definition of terms.

1.2   Background of study

Information and Communication Technology is what ICT stands for. It refers to technologies that through telecommunications, provide access to information. It is similar to Information Technology (IT) but emphasizes mainly on technologies of communication. This includes the internet, mobile phones, cellular networks and other forms of communication. The technology such ICT uses in daily life can not be inevitable. It plays a major role as a changing agent for the country to develop. Malaysia can be categorized as a developing country that arises with technology adoption for economic development purposes. Malaysia comes with a vision that embraces the ICT technology to become a tool that helps to achieve Malaysia as a developed country in 2020 (Minges and Gray, 2002). Technology such as an internet for communication are one example of the rapid changes agent for the country such as Malaysia to become a developed country.

In the 1990s, Malaysian government sector started to use the ICT as a plan to modernising the sector such as education, administration, business, information for the public and researchers (Buyong, 2001). The emerging e-Government system for the uses of public employees and public citizens are examples of IT technology for the changes and improving the productivity of employees. This is the example of a plan that the government took to improve the productivity of the economy by promoting ICT technologies as a strategic effort to enhance the communication system that directly contributes to the positive changes to certain populations, especially for the rural areas.

IT has been used in developed countries to establish comparative advantages in industry and different areas (Apulu & Latham, 2009). In private companies, governments and research, Information Technology (IT) plays a significant role in enhancing productivity and efficiency (Al-Gahtani, 2003).

In Sarawak, there still consists of rural and semi rural communities. Semi-rural communities usually live in an area where the places are still in development areas. This research will measure the level of technology adoption for semi-rural communities in Betong, Sarawak. The researcher chose people who live in Betong as a target population because it was still counted as a semi-rural area. This study will explore more on the factors that affect the people who live in Betong who face the problem of adopting the technology and the internet.

1.3   Problem statement

For the rural area such as Betong, there is a problem for communities who live there to adopt the technology. Despite some of the technology that has been provided such as IT infrastructure at that location, the community who live there might have difficulty adapting to it. In the study to examine the technology adoption for semi rural communities in Betong, there are 34 respondents who have been selected to answer the questionnaire for this study. The aim of this study is to measure the level of technology adoption for the rural community in Betong, Sarawak. The main activity involves collecting data for the process of evaluating the awareness of technology adoption on that location. It is important to determine the level of technology adoption and what factors influence the rural community to accept and refuse to use technology. Past related study such as A Test of the Technology Acceptance Model for Understanding the ICT Adoption Behavior of Rural Young Entrepreneurs by Zaremohzzabieh et. Al (2015), did not cover the gap of issues that the rural communities are facing to adopt the technology. The researcher chose people who live in Betong to become the target population for this study to cover the gap, which is no study on technology adoption has been made in that particular area. In conclusion, this study needs to be conducted to determine the adoption of technology among government servants in rural areas.

1.4   Objectives

The general objective of this study is to measure the level of technology adoption for semi rural communities in Betong, and the specific objectives of this study is:

a)   To determine the relationship between access to technology and internet with technology adoption.

b)   To determine the relationship between internet availability with technology adoption.

c)   To determine the relationship between device usage with technology adoption.

d)   To determine the relationship between the ability to use internet with technology adoption.

e)   To determine the relationship between attitude and perception towards internet with technology adoption.

1.5   Research Hypotheses

Ho1: There is no significant relationship between access to technology and internet with technology adoption

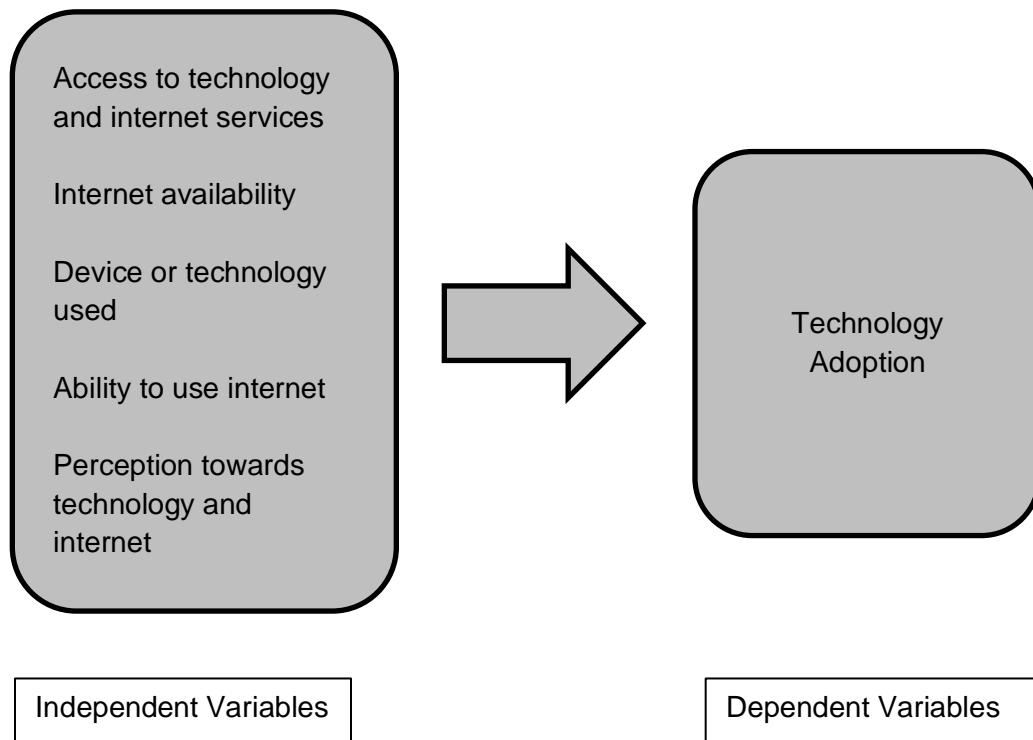Ho2: There is no significant difference between internet availability with technology adoption.

Ho3: There is no significant relationship between device usage with technology adoption.

Ho4: There is no significant relationship between ability to use internet with technology adoption.

Ho5: There is no significant relationship between attitude and perception towards internet with technology adoption.

1.6　Conceptual framework/ Research framework

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┌────────────────────────┐
│ Access to technology   │
│ and internet services  │
│                        │                            ┌─────────────────┐
│ Internet availability  │                            │                 │
│                        │                            │                 │
│ Device or technology   │        ═══════▶            │   Technology    │
│ used                   │                            │   Adoption      │
│                        │                            │                 │
│ Ability to use internet│                            │                 │
│                        │                            └─────────────────┘
│ Perception towards     │
│ technology and         │
│ internet               │
└────────────────────────┘

┌────────────────────────┐                            ┌─────────────────┐
│  Independent Variables  │                            │ Dependent Variables │
└────────────────────────┘                            └─────────────────┘
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1.7　Significance of the Study

The importance of this study is it can be used as supportive information for other researchers to conduct other research on technology adoption in rural or semi-rural areas. This study will cover the existing gap that affects the rural communities adapting technology and the internet for their daily life uses. As a result, this study will bring positive changes to the people who live in rural and semi-rural areas as the assessment of the basic needs to adapt technologies has been done, and the government can improve the utilities needs on that location.

1.8   Limitations of the Study

In conducting this study, the researcher has specified several limitations. First, this research must be conducted by using a quantitative approach which is collecting data by questionnaire. Then, the respondents that need to be selected must live in a semi-rural area such as Betong in order to get the best data for this study.

1.9   Definition of Terms

Perceived usefulness (PU) – according to Davis (1989), PU relates to the degree to which a person thinks that using a specific information system will increase his or her job efficiency. The definition of Davis follows from the definition of the word "useful," i.e. capable of beneficial use. It represents the technology itself's extrinsic attributes, such as task efficiency and task effectiveness.

Perceived ease of use (PEOU) – according to Davis (1989), PEOU refers to the technology's features, e.g. ease of use, easy to understand, flexibility; in other words, the degree to which a person feels that it would be effortless to use a specific information system. The definition of Davis derives from the definition of the word "ease," i.e. freedom from challenging or large effort.

1.10   Scope of Study

The key problem to be explored in the study is how technology adoption patterns among rural communities in Betong in terms of new type of technology utilized, communities attitude, challenges in adopting and knowledge improvement towards technology adoption.

1.11   Chapter Summary

This chapter has focused on discussing the background of study, problem statement and the objectives of the study on the measure of the level of technology adoption for semi rural communities in Betong. The research hypotheses, conceptual framework, the significance of study, limitation of the study, and definition of term also have been discussed in this chapter. The following chapter will provide more discussion and explanation on literature review for this study.

Chapter 2

Literature review

2.1 Introduction

There were several theories that led this study to further understanding of the attitudes and technology adoption. This chapter will provide further explanation on issues related to topic, related theories, past similar findings, and practical discussion. This chapter is important for readers to understand more on the issues and theory related to the topic.

2.2 Discussion of issues related to topic

a) Government Policy

A strategic policy framework for the acquiring and use of IT for social and economic growth is to be provided by governments. Because of weak policies and inadequate IT sector investment, the growth of IT infrastructures in emerging economies has been lagging behind those in developed countries (Laryea, 1999). Many developing countries have poor policies in the field of information technology and this has created a problem with the development and implementation of information technology. The governments recognise the need for and the importance of IT, but there has been little practical action in this area (Enakrire & Onyenania, 2007). Developed countries were already invested in IT infrastructure growth and maintenance, while developing countries have done nothing. Many emerging economies do not have the resources in their respective countries to develop information technology. Rather to ensure the advancement of information technology, they depend on major foreign assistance. Also, developed countries have not done much to support developing nations to improve their infrastructure for information technology (Laryea, 1999). Without modification, many developing countries import technology and its inventions to suit their climate and culture (Akubue, 2002).

b)   Infrastructure

The infrastructure for information technology consists of computers, software and all telecommunications system components required to allow the efficient transmission and management of data (Enakrire & Onyenania, 2007). In order to run the system effectively, it also requires IT experts designing, installing, maintaining and repairing systems and trained IT technicians (Laryea, 1999). The major cause of stagnation in the development of information technology in developing countries is poor basic information technology infrastructure (Omekwu, 2003). In developing countries, the essential infrastructure and networks to facilitate IT transformation, implementation and growth are lacking. This has made it difficult to access telecommunications, computing and the Internet (NEPAD, 2003). In every country, the basic national IT infrastructure that is accessible to people and linked to the global is of vital importance and should be effectively introduced into the country's socio-economic and business life. Such IT services, including access to hardware and software, are still limited in many developing countries.

2.3   Discussion of Related Theory

a)   Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) by Davis (1989) has been widely used by researchers to access the technology adoption studies. (Alshare & Alkhateeb, 2008). Technology Acceptance Model has outlined perceived usefulness and the use intentions as it relates to social impact and cognitive instrumental processes. The determinants of the perceived usefulness construct must be recognized because it drives use intentions and how these determinants effect changes over time, with increasing use of the technologies. The causal link between perceived ease of use (PEOU), perceived usefulness (PU), attitude (AT), and behavioural intention (BI) is included in TAM. PU and PEOU are the key factors in BI, which is explained by AT, according to TAM. Furthermore, TAM suggests that different external variables such as consumer traits and organisational elements influence PU and PEOU. By affecting beliefs (PU and PEOU) and AT, external variables are likely to influence BI, and then to affect actual behaviour.

2.4   Discussion of past similar findings

According to Zaremohzzabieh, Zeinab & Abu Samah, Bahaman & Muhammad, Mahazan & Omar, Siti & Bolong, Jusang & Hassan, Md Salleh & Shaffril, Hayrol. (2015), information and communication technologies (ICTs) provide young rural entrepreneurs with new ways to strengthen their businesses. The complexities of implementing and using ICTs, however are hindering these companies from being drivers of rural economic growth and job creation. The findings indicated that TAM is robust enough to measure the dimensions of the adoption of ICT by young entrepreneurs through the model, accounting for 55% of the variance mostly in intention to use ICT. They also suggested that the relationship between the usefulness of ICT and entrepreneurial purpose was partially mediated by the attitude towards entrepreneurship.

2.5   Practical discussion

Government policy have brought the effects on development of technology adoption, this also affecting the infrastructure for Information Technology (IT). Those types of causal have been highlighted by Technology Acceptance Model (TAM) to indicate the influencer of individual to using IT. The factor of this issue is perceived ease of use (PEOU), perceived usefulness (PU), and due to lack of infrastructure provided to rural communities in order to adopting the technology.

2.6   Chapter summary

This chapter has provided and discussed all the relevant theoretical literature that has been used in conducting this study which is Technology Adoption for Semi-Rural Communities in Betong, Sarawak. These reviews lead the researcher to develop the conceptual framework of this study. The following chapter will discuss more on the methodology of the research.

Chapter 3

Methodology

3.1   Introduction

This chapter will provide more information on research design, population, sample and sampling procedures, instrument, pilot study, validity and reliability, ethics of the study, data collection procedure, data analysis procedure and chapter summary. This chapter is important to provide the methodology of this study.

3.2   Research design

For this study, a quantitative research method has been used to allow the researchers to get the information from employees that are working in the semi-rural communities area in Betong, Sarawak. The reason why researcher choose to use the quantitative approach is to get objective information on technology adoption for semi-rural communities. This method will allow the researcher to get the conclusions from the research hypotheses.

3.3   Population, sample & sampling procedure

For the population, the researcher has set the target to choose employees working in semi-rural communities areas in Betong, Sarawak. The informant has been selected by using a cluster sampling method to make sure that the researcher gets the unbiased informant for this study.

3.4   Instrument

For the instrument, this research has adopted the Technology Adoption Community questionnaire. This questionnaire consists of 6 sections, which is Section A (access to the technology and internet services), Section B (Internet), Section C (Technology or device usage), Section D (The Ability to Use Internet), Section E (Attitude and Perception Towards Internet), and Section F (Demographic).

3.5   Pilot study

Pilot study can be referred to as a small scale version or trial of a certain research instrument before conducting it on a major study (Polit et al., 2001). The researcher has conducted a pre-test on the research instrument before conducting a real research with the informant. The purpose of a researcher conducting a pre-test on the questions for an interview is to ensure the language and the questions can be easily understood by the informant. The pilot study is also important for researcher to improve the quality of the questions in order to get the quality data for the study.

3.6   Validity & reliability

In order to keep the integrity of these research findings, the threat to validity and reliability is important to be identified. Validity is concerning the evaluation aspect whether the research evaluates what is supposed to be evaluated (Zohrabi, 2013). The researcher needs to narrow the characteristics of the sample for this study. The individual that does not meet the characteristics to be respondent cannot be selected to answer the questionnaire (Cresswell, 2014). Then, for reliability of the research, the research is considered reliable when there is high positive correlation.

3.7   Ethics of the study

To ensure the researcher uphold the ethics for this research, the first thing researcher need to do is to get the approval from the organization manager to conduct the research. Then, the researcher does not force the informant to give their response or answer to the questionnaire questions. Next, the researcher will ensure the data about informants such as name, address and other personal data not be mentioned in the research report. Lastly, before conducting the survey with the respondents, the researcher need to conduct pilot study in order to improve the quality of the questions for the interview session.

3.8   Data collection procedure

For the data collection procedure, the researcher has explained the detail about the study and requesting participants permission to become the respondent for this study. In order to give the flexibility for the employees to answer the questionnaire, researcher give two weeks for the employees to answer the questionnaire. In order to prevent the transportation issues, researcher have distributed questionnaires to where the employees are working so that the employees do not need to go somewhere and get the questionnaire from the researcher.

3.9   Data analysis procedure

For data analysis procedure, the researcher has used the IBM Statistical Package for the Social Science (SPSS) Version 22 to test the hypotheses. All the answers from the questionnaire have been coded before being analyzed. Spearman's correlation coefficient has been used in order to test the relationships between variables and significance. The confidence levels for the correlations were 0.05, and the results have been present in diagrams and tables.

3.10   Chapter Summary

This study has been conducted to 34 employees from the semi rural communities in Betong, Sarawak. The quantitative approach has been used to get more in depth information about technology adoption and semi-rural communities in Betong, Sarawak. This type of research method is usually conducted in a number of sample size which is 30 respondents minimum. The researcher is also conducting a pilot study on a research questionnaire which is to ensure the question and language can be easily understood by the informant in order to get the quality data for this study.

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Chapter 4

Findings and Discussion

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4.1 Introduction

This chapter will discuss more on the respondent demographic, Kolmogorov-Smirnov Normality Test, Spearman's correlation, summary of findings and chapter summary.

4.2 Respondents Demographic

4.2.1 Gender

The respondents demographic is obtained from the Section F of the questionnaire.

Based on Table 1, it shows that the total of number respondents for this study is 34 respondents, and majority of the respondent for this study is male respondents, which is 19 respondents (55.9%), and for the female respondents is 15 respondents (44.1%).

Table 1: Distribution of respondents based on the gender

<div align="center">

Gender

</div>

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	19	55.9	55.9	55.9
Female	15	44.1	44.1	100.0
Total	34	100.0	100.0	

4.2.2 Housing Situation

Based on Table 2, it shows that the total of number respondents for this study is 34 respondents, and majority of the respondent for this study is male respondents, which is 19 respondents (55.9%), and for the female respondents is 15 respondents (44.1%).

Table 2: Respondents housing situation

Housing Situation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Own	19	55.9	55.9	55.9
	Rent	10	29.4	29.4	85.3
	Stay With Extended Family	5	14.7	14.7	100.0
	Total	34	100.0	100.0	

4.2.3 Expenses on the Internet

Based on Table 3, the majority expenses of the respondent on internet data is RM100-Rm150 which is 13 respondents (38.2%), followed by less than RM50, which is 11 respondents, and the least number of respondents on the expenses is 1 repondent (2.9%), which is spend RM150 and more.

Table 3: Respondents expenses on Internet data

How much you roughly spend on internet data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less Than Rm50	11	32.4	32.4	32.4
	Rm51-Rm99	9	26.5	26.5	58.8
	Rm100-Rm150	13	38.2	38.2	97.1
	Rm150 and More	1	2.9	2.9	100.0
	Total	34	100.0	100.0	

4.3   Kolmogorov-Smirnov Normality Test

Tests of Normality

	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
Access to internet	.251	34	.000
Internet	.227	34	.000
Technology Or Device Usage	.299	34	.000
Ability	.096	34	.200[*]
Attitude	.429	34	.000

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 4: Kolmogorov-Smirnov Normality Test

4.4   Discussion

4.4.1   Correlation between access to internet and technology adoption

Ho1: There is no significant relationship between access to internet with technology adoption

Table 5: Spearman Correlation between access to internet and technology adoption

Correlations

			Technology Adoption	Access to internet
Spearman's rho	Technology Adoption	Correlation Coefficient	1.000	.125
		Sig. (2-tailed)	.	.480
		N	34	34
	Access to internet	Correlation Coefficient	.125	1.000
		Sig. (2-tailed)	.480	.
		N	34	34

Based on Table 5, it shows that the access to internet was weak positively related to technology adoption (r= 0.125, p=0.480, p>0.05). The strength for relationship was fall to very weak positive relationship due to the rho value . As the result, the hypotheses Ho1 that stated "There is no significant relationship between access to internet and technology adoption" is failed to reject. This result shows that there was no significant relationship between access to internet with technology adoption.

4.4.2 Correlation between internet availability with technology adoption

> **Ho2: There is no significant relationship between internet availability with technology adoption**

Table 6: Spearman Correlation between internet availability with technology adoption

Correlations

			Technology Adoption	Internet Availability
Spearman's rho	Technology Adoption	Correlation Coefficient	1.000	.070
		Sig. (2-tailed)	.	.693
		N	34	34
	Internet availability	Correlation Coefficient	.070	1.000
		Sig. (2-tailed)	.693	.
		N	34	34

As shown on Table 6, it shows that the internet availability was very weak positively related to technology adoption (r= 0.070, p=0.693, p>0.05). The strength for relationship was fall to very weak positive relationship due to the rho value . As the result, the hypotheses Ho2 that stated "There is no significant relationship between internet availability and technology adoption" is failed to reject.