

THE FACTORS AFFECTING BEHAVIORAL INTENTION TO ADOPT ICT FOR HEALTH INFORMATION IN RURAL COMMUNITIES

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Abstract

Information communication and technology (ICT) is important for developing countries. In developed and developing countries, governments invest in the infrastructure of ICT to develop human capital. The purpose of this paper is to identify personal factors influencing the behavioral intention of rural communities' acceptance and adoption of ICT and to determine the association between behavioral intention of ICT adoption and health information among people in rural communities. This study used a quantitative survey to collect data from eight provinces in the south of Thailand. The sample population was people living in rural communities. The study used hierarchical regression to analyze the data. Two hypotheses were analyzed. The results found that the knowledge of ICT on behavior intention was moderated by personal characteristics and shows the statistical significant at a level of .01. In addition, the influence of performance expectancy on behavioral intention moderated by personal characteristics show a statistical significance at the level of .01. Therefore, people who live in rural areas as farmers would like to learn more about how to use computers for searching health information. Thus, the Thai government should provide the infrastructure in rural areas and the people must have training courses to learn to use ICT for searching health information.

Keywords: Bridging the Digital Divide, ICT adoption, personal characteristics

1.0 INTRODUCTION

ICT is a key factor for developing countries because ICT growth can develop organizations and the country. The development of ICT infrastructures will continue to grow as needs and demand increases, and will contribute to helping and educating people in rural communities [1]. ITU [2] reported that in 2011, one third of the population worldwide was able to get online. The percentage of individuals using the Internet was 70% in developed countries, while only 24% in developing countries.

In rural areas particularly, poor internet access is a serious concern. Without good internet access rural populations are significantly disadvantaged when it comes to benefiting from the wealth of information available online. There are many challenges to be faced such as patchy broadband provision, infrastructure, costs of maintenance, cost of equipment, and skills in using personal computers, and other internet ready devices such as tablets and smartphones.

In developing countries, agriculture is the mainstay of economic growth. This industry uses ICT to increase

productivity by better knowledge of fertilizers, improved seeds, and cropping techniques. Compared with traditional farming, knowledge gained from ICT sources increases productivity while costing less [3]. When farmers have access to ICT and ICT applications it can change lives. Farmers can learn to use ICT, such as looking at the weather forecasts rather than use experience to guess how to reduce the cost of farming and the price of grain [4].

Many developed and developing countries are using ICT for public health. The Telemedicine system uses ICT to facilitate healthcare and counseling from medical professionals. This system also lowers cost and saves time [5]. Some countries also use e-Health or electronic information technologies widely distributed to urban and rural regions to reduce the differences in health provision and improve patient care [6].

The development of ICT has been rapid in both developed and developing nations. Although ICT use is seen in many countries, it also has existing inequalities between developing and developed countries [7]. Some people can access and use ICT,

but some cannot. This is where the digital divide comes in [8]. OECD (2001) stated that the digital divide was unequal between people who had opportunities to use ICT and people who did not. For instance, some people who lived in urban areas had more access to the Internet than people in rural areas. This study will, therefore, investigate the problem of the digital divide for health information in the rural community.

Although the government diffuses ICT across the country, there still are differences in access or use of ICT for health information or the difference between people in the countryside who have access to health information and those who do not. This problem has negatively impacted where there is inequality of information and people who do not use and access ICT for health information, and then they do not gain health information for healthcare. Thus, this study investigates the digital divide for health information in rural communities in Thailand, develops a framework of addressing the digital divide for health information for rural communities in Thailand which could be a remedy for the present lack.

1.1 Research objectives

The research objectives based on the problem statements are as follows:

1. To identify personal factors influencing behavioral intention of rural community adoption and acceptance of ICT.
2. To determine the association between behavioral intention of ICT adoption and health information among people in rural communities.

2.0 EXPERIMENT

This study employed a survey using quantitative research to collect the data from people in rural areas. The questionnaire was verified by three experts. One expert was from the psychology program from Walailak University and two other experts came from the computer education program and innovation development program of Nakhon Si Thammarat Rajabhat University. In addition, the instrument was designed based on an UTAUT model and literature review about knowledge of ICT, the performance expectancy, the effort expectancy, social influence, facilitating conditions, personal characteristics, intention behavior in health information and ICT adoption for health information for people in rural areas. This study used multi-stage approach and selected the sample group from eight provinces in the south of Thailand: Songkhla, Phatthalung, Satun, Krabi, Phang Nga, Trang, Nakhon Si Thammarat and Surat Thani. The sample group consisted of people who lived in the rural areas that could be classified from eight provinces, divided into 32 sub-districts examine the reliability of the measurement items [9].

2.1 Sample Size and Sampling Techniques

The sample size and sampling techniques were conducted by using the Taro Yamane formula for social and behavioral research [10]. The following steps were employed in choosing the respondents and sampling techniques.

2.2 Procedure of Data Collection

This study used a quantitative research method to collect data from people from rural areas in the south of Thailand. The study used the multi-stage method to design and select the sample population. The sample population was divided into eight provinces; Songkhla, Phatthalung, Satun, Krabi, Phang Nga, Trang, Nakhon Si Thammarat and Surat Thani. Ten research assistants visited the provinces and distributed 50 questionnaires for each province. The research assistants visited the district and sub districts of each province and collected data from people in these areas. The assistants explained the purpose in collecting data if they did not understand these questions. The respondents returned the questionnaires in approximately 30 minutes.

The study was concerned about ethical considerations, thus the detail of the data was confidential and the assistants had to respect people in every place that they visited. All the questionnaires were returned. All items of the questionnaires were coded into a statistical program.

3.0 RESULTS AND DISCUSSION

A process of data analysis was used to test the data based on the research questions and original hypotheses. The statistical analyses were conducted to test the two parts of the data. The first part was used to test for regression analysis consisting of simple regression analysis and multiple regression analysis. The second part was used to test for hierarchical analysis for testing the moderator variable.

3.1 Descriptive Analysis

The descriptive analysis describes the general statistical description of variables in the study such as demography of the respondents, the means, standard deviation, minimums and maximums for the independent and dependent variables.

3.1.1 The demographic Particulars of the Respondents

The data were collected from the sample of the respondents in the rural communities of eight provinces of Thailand. The data collected were 87.27 percent returned from respondents. There were 264 females (54.90 %) and 217 males (45.1%). Those aged 15-24 years was 28 percent, 25-34 years was 29

percent. Those 35-49 years was 28.2 percent and aged over 50 years was 14.8 percent.

The education level can be described as follows. There were 16.5 percent who completed primary school, while 13 percent graduated from secondary school. 30.8 percent graduated from high school, and 30.2 percent graduated at bachelor degree. At least 3.5 percent graduated with a master degree and 6 percent were unknown.

Respondents' occupations can be explained as follows. Twenty percent are farmers and 16.8 percent are government officers. While 10.5 percent of the respondents are officials and 7 percent are fishermen. In addition 5.8 percent are business owners, while 40 percent of the respondents have other occupations such as gardeners, house keepers and no occupation.

Incomes of the respondents found that 34 percent have a salary between 10,000 to 19,999 baht per month. While 29.7 percent earn between 5,000 to 9,999 baht and those respondents having a salary less than 5,000 are 22.5 percent. Respondents who have a salary between 20,000 to 29,999 baht are 7.8 percent and 3 percent have a salary between 30,000 to 39,999 baht. Only 3 percent of the respondents earn more than 40,000 baht.

Research Hypothesis 1: The influence of knowledge of ICT on behavioral intention will be moderated by personal characteristics (gender, age, education, income, occupation, location).

Table 1 Hierarchical regression analysis examining predictors of the influence of knowledge of ICT on behavioral intention will be moderated by personal characteristics (gender, age, education, income, occupation, location).

Variables	Hierarchical regression analysis	
	Model	
	Step 1	Step 2
Constant	1.303	1.537
Knowledge of ICT	.553	.595
Gender	-	.003
Age	-	.049
Education	-	.241
- Primary school	-	.355
-Bachelor degree	-	.414
Occupation	-	.047
Income	-	.064
Location	-	
- Trang		.155*
-Krabi		.153
R	.553	.595
R ²	.306	.354
Adjust R ²	.305	.309
R ² change	.306	.048
Std. Error of Estimate	.612	.610
F	211.296	7.93
P	.000*	.000*
Durbin-Watson		2.115

Independent variables: Knowledge of ICT, Gender, Age, Education, Occupation, Income, Location

Dependent variable: Behavioral intention

The relationship between knowledge of ICT and behavioral intention was moderated by personal characteristics (gender, age, education, income, occupation, location). Table 1 shows the results of hypothesis testing with hierarchical regression analysis by enter method using forced entry at statistical significant level at p-value < 0.01. It was found that the knowledge of ICT and personal characteristics (gender, age, education, occupation, income, location) had a positive association with behavioral intention at p-value < 0.01 (Beta =.553 and .595 respectively). These results could explain that the influence of knowledge of ICT affected behavioral intention and it could be explained that the hierarchical regression coefficient (R) was .553 and multiply R (R²) was .30.6 while the adjusted R square was .305. The R² change was .306 and the standard error of estimate (SEE) was .612. Therefore, knowledge of ICT can explain the behavioral intention of 30.6%.

In addition, the knowledge of ICT and personal characteristics (education, location) could predict behavioral intention with a statistical significance at p-value = 0.01 (F = 211.296 and 7.93). It could be explained that the hierarchical regression coefficient (R) was .595 and multiply R (R²) was .354 while the adjusted R square was .309. The R² change was .048, the standard error of estimate (SEE) was .610 and the Durbin-Watson being 2.101, indicated that there was no errors in the variables.

Therefore, Table 1 could be also explained in that the knowledge of ICT on behavioral intention was moderated by personal characteristics (occupation and location) between 30.6% and 35.4%. In addition, the personal characteristic that moderated the knowledge of ICT on behavioral intention is education at primary level. Thus, these results partially support Hypothesis 1

Research Hypothesis 2: The influence of performance expectancy on behavioral intention will be moderated by personal characteristics (gender, age, education, income, occupation, and location).

This hypothesis was analyzed for the influence of performance expectancy on behavioral intention moderated by personal characteristics (gender, age, education, income, occupation, and location) as shown in Table 2.

The relationship between performance expectancy and behavioral intention was moderated by personal characteristics (gender, age, education, income, occupation, location). Table 4.36 shows the results of hypothesis testing with hierarchical regression analysis by enter method using forced entry at statistical significant level at p-value < 0.05. It was found that the performance expectancy and personal characteristics (gender, age, education, occupation, income, location) had a positive association with behavioral intention at p-value < 0.05 (Beta =.510 and .504 respectively). These results could be explained in that the influence of performance expectancy affected the behavioral intention and it could be explained that the hierarchical regression coefficient (R) was .521 and multiply R (R²) was .27.1

while the adjusted R square was .270. The R² change was .271 and the standard error of estimate (SEE) was .627. Therefore, the performance expectancy can explain the behavioral intention seen as 27.1%.

In addition, the performance expectancy and personal characteristics (occupation, location) could predict behavioral intention with a statistical significance at p-value = 0.05 (F=178.20 and 25.90). It could be explained that the hierarchical regression coefficient (R) was .526 and multiply R (R²) was .27.7 while the adjusted R square was .266. The R² change was .006. The standard error of estimate (SEE) was .628 and the Durbin-Watson being 2.08 indicated that there was no errors in the variables

Table 2 Hierarchical regression analysis examining predictors of the influence of performance expectancy on behavioral intention will be moderated by personal characteristics (gender, age, education, income, occupation, location).

Variables	Hierarchical regression analysis	
	Model	
	Step 1	Step 2
Constant	1.389	1.596
Performance expectancy	.510	.504
Gender	-	.003
Age	-	.061
Education	-	
-primary school		.346
Occupation	-	.012
Income	-	.053
Location	-	.014
R	.521	.526
R ²	.271	.277
Adjust R ²	.270	.266
R ² change	.271	.006
Std. Error of Estimate	.627	.628
F	178.20	25.90
P	.000*	.000*
Durbin-Watson		2.08

Independent variables: Performance expectancy, Gender, Age, Education, Occupation, Income, Location
 Dependent variable: Behavioral intention

Therefore, Table 2 could be also be explained in that the performance expectancy on behavioral intention was moderated by the personal characteristics (occupation and location) between 27.1% and 27.7%. In addition, the personal characteristic that moderated the performance expectancy on behavioral intention is education at primary level. Thus, these results partially support Hypothesis 2.

4.0 CONCLUSION

This paper emphasizes the behavioral intention of ICT adoption in health information in rural communities.

The results from the two hypotheses analyzed found that the influence of knowledge of ICT on behavioral intention was moderated by personal characteristics occupation and location. The occupation that influenced the knowledge of ICT is farming in rural areas. In addition, the influence of performance expectancy on behavioral intention is also farmers that live in rural areas. Moreover, the influence of effort expectancy on behavioral intention is moderated by farming as an occupation in rural areas of Nakhon Si Thammarat province, Surat Thani province, Trang province and Satun province. These locations are around 100 kilometers from any urban area. Therefore, people who live in rural areas and work in farming would like to learn more how to use computers for searching out health information. Thus, the Thai government should provide the infrastructure in rural areas and the people must have training courses about how to use ICT for searching health information.

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