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ISSUES IN INTERNET ADOPTION: A STUDY AMONG SRI LANKAN RURAL COMMUNITIES

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Abstract
Internet user percentage in Sri Lanka has lingered at a mere 13.1% in 2011 according to an Annual report by Department of Census and Statistics in Sri Lanka. The aim of this paper is to identify the issues hindering rural internet adoption in Sri Lanka. This paper will report results of descriptive statistics, mean score for the dependent variable and independent variables and results of correlation analysis regarding the relationship between internet adoption and infrastructure facilities, adopter characteristics of rural communities, technology characteristics and affordability. A survey using questionnaire was used to obtain data from 400 respondents in Bibile, Monaragala district. The results show that internet adoption among the rural communities was low due to lack of infrastructure facilities, problem of affordability and low in computer skills. The mean scores for affordability, infrastructure facilities and computer skills, have high effect with internet adoption. The variables, viz. adopter characteristics (needs, relevancy, attitudes, English language skills), technology characteristics (ease of use, perceived benefits) have average effect with internet adoption. From the correlation results adopter characteristics and technology characteristics have strong significant positive relationships with internet adoption. There is a strong significant negative relationship between internet adoption and infrastructure facilities, computer skills and affordability. The government or non-government organizations should introduce ICT policies; improve infrastructure facilities, socioeconomic situation and computer skills in order to increase internet adoption among rural communities in Sri Lanka. Therefore, this study suggests that efforts must be made to address the issues hampering the adoption of the internet among the rural communities.

Keywords: Issues, Internet adoption, Rural communities, Sri Lanka

1.0 INTRODUCTION

Information and communication technologies (ICTs) have the potential to address the concerns of rural empowerment in developing countries. There is a widening gap between the developed and developing countries and between the urban and rural areas in terms of ICT adoption. A new medium such as the internet has to address the ICT needs of the rural communities. "The Internet serves as an agent of change in rural areas; it has positive effects on the livelihood and education of the rural people "(Zhao 2008: 17).

Some 81% of the people in the United States of America have used the Internet for their development purposes in 2012. This was the highest internet usage in

the world (World Bank Report in 2013). However, quite a number of the Asian, African and Latin American countries are lagging behind in internet adoption.

Sri Lankan internet user percentage is very low when compared to some other countries. Internet user percentage in Sri Lanka lingered at a mere 13.1% (Annual report by Department of Census and Statistics in Sri Lanka, 2011). The percentage of internet usage in Sri Lanka was figured 13.1%, while Korea , Singapore and Malaysia reported 84.1% , 74.2% and 65.8% respectively (World Bank Report in 2013) .Developed countries being the owners of the ICTs, while the developing countries are lagging behind in internet adoption. Chanuka Wattegama has identified a number of important issues that have prevented the successful distribution of the internet in Sri Lanka in his report titled 'Development of Information Technology for Human Enhancement'. They are the higher charges for internet facility, the low level of computer and English literacy in the rural areas, attitude issues among rural communities, the lack of developed social and ICT infrastructure in the rural areas.

Department of Census and Statistics have carried out a survey in 2009 about the Computer and internet adoption in Sri Lanka, it shows that the computer and internet skills are highly influenced by the English language skills of the community. Galpaya (2011) finds that, people who attached to low social and economic states appear to lag behind in internet adoption. The number of people who are using to ICT including internet is severely limited. While it is true ICTs are increasing mainly in urban areas, considerable efforts are required to increase access in rural and semi urban areas where the majority of communities lives.

Liyanage (2007) claims that, NGOs and some other non-governmental organizations do not support the empowerment of rural communities in Sri Lanka. At present there are some ICT programs conducted to increase internet adoption among rural communities in Sri Lanka, but many programs are based in specific areas and they really don't understand the ICT needs of the grassroot people. Gunasekera (2008) notes that, ICT and social infrastructure, English and computer skills and affordability are critical issues in internet adoption among rural communities in Sri Lanka.

According to the above literature review the majority of rural communities in Sri Lanka are facing numerous issues in internet adoption such as: lack of infrastructures facilities, economic problems, lower literacy in computer usage and English, attitudinal constraints, and technological problems.

The purpose of this paper is to identify the issues hindering rural internet adoption in Sri Lanka. This paper will report results of descriptive statistics, mean score for the dependent variable and independent variables and results of correlation analysis regarding the relationship between internet adoption and infrastructure facilities, adopter characteristics of rural communities, technology characteristics and affordability.

2.0 METHODOLOGY

Bibile chosen for this study, a rural area in Monaragala district, Sri Lanka. It is rural in a geographical sense, and less developed socially and economically. .Viraj (2011) notes that, Monaragala is the poorest district in Sri Lanka (poverty headcount index 33.2 percent). There were 470 questionnaires distributed among the respondents in

March 2013. The age component contains of four groups comprising 15-30, 31-40, 41-50 and 51-60 and the sample consisted of equal number of males and females. A total of 413 answered questionnaires were collected and 400 questionnaires were usable giving a return rate of 87.87%. Statistical Package for Social Sciences (SPSS version 20.0) used to analyse quantitative data. Analysis includes both descriptive and inferential statistics. For the descriptive statistics, mean score was used and correlation analysis was used as inferential statistics. Internet adoption is Dependent Variable (DV) and infrastructure facilities, adopter characteristics (needs, relevance, attitudes, computer skills and English language skills), technology characteristics (ease of use, perceived benefits) and affordability are Independent Variables (IVs).

3.0 RESULTS

This section discusses the results of this study. It explains the demography of the respondents, Mean score and Correlation analysis between internet adoption and the independent variables.

3.1. Demography of the respondents

A total of 400 respondents were analysed, comprising 200 males (50 %) and 200 (50%) females. In terms of age, 131(32.8%) of the respondents belong to the 15-30 age group , 119 (29.8%) in 31- 40 age group, 101(25.2%) in 41-50 age group, and 49(12.2%) in 51-60 age group.

Majority of respondents, 67.5% (270) are employed, 29.5% (118) are unemployed and students make up 3% (12) of the respondents. Academically, 59% (236) have A/L and 5.3% (21) have 0/L, 26 % (104) who have Diploma qualifications, 8.8 %(35) have Bachelor qualifications, .8% have Master Qualifications and .3% have PHD qualifications.

In terms of household income, majority of respondents, 30% (120) earn between Rs.20000-29999 monthly, 17.5 %(70) respondents who earn between Rs.10000-19999, 3 %(12) earn less than RS. 10000. 18.8% (75) earn between Rs.30000 to 39999, 2% (8) earn above Rs.40000 but less than 49999 and no income group makes up 29.7% (119) of the respondents.

3.2 Mean score for the Dependent Variable and Independent Variables

The respondents were asked to rate the items on a 1-7 likert scale. A mean of 2.99 and lower than 2.99 is considered weak, 3 - 4.99 is considered average, 5 and above is high.

Table 1 Internet adoption (Mean Score and Standard Deviation)

Variable	Means score	SD	Level
Money transfer	2.1	1.2	Low
Email	4.0	0.3	Average
Newspaper, radio, television/ searching for information	3.5	0.6	Average
Access government information	3.5	0.6	Average
Job/ agriculture and work related	3.5	0.6	Average
Educational use	4.0	0.3	Average
Music,games,movies	4.0	0.3	Average
Pornography	4.0	0.3	Average
Social communication (My space, yahoo messenger, Skype, face book and etc.)	4.0	0.3	Average
Online booking	2.1	1.2	Low
Buying (online shopping)	2.1	1.2	Low
Bill payments	2.1	1.2	Low
Health information	3.5	0.6	Average
Downloading software, files etc.	2.1	1.2	Low

N	Computed Mean	Computed SD
400	44.5	9.9

The five items under internet adoption (DV) have means lower than 3.5 such as money transfer, online booking, online shopping, bill payments, downloading software, files, and education, information, pornography, email, music, games, movies and social communication items have average effect. Majority of respondents use internet for email and social media usage. This shows that internet adoption of respondents in Bibile is low.

Table 2 Infrastructure facilities (Mean Score and Standard Deviation)

Variable	Means score	SD	Level
Non availability of electricity	3.6	0.8	Average Effect
Non availability of telephone	3.8	0.8	Average Effect
Non availability of computer	5.9	0.6	High effect
Inadequate internet coverage	6.9	0.3	High effect
Data transmission speed is low.	6.9	0.3	High effect
Difficulty to log in to the internet with lower speed	6.9	0.3	High effect

N	Computed Mean	Computed SD
400	34	3.1

In table 2, the means for infrastructure has high effect with internet adoption. Many items have highest mean score exceeding 5.9 such as inadequate internet coverage, data transmission speed is low, difficulty to log in to the internet with lower speed. It shows that infrastructure issue is high among these rural communities.

Adopter characteristics

Table 3 Needs (Mean Score and Standard Deviation)

Variable	Means score	SD	Level
Internet is a need in my life	6.0	0.4	High Effect
Internet is an important thing for my life.	3.6	0.6	Average Effect
Internet is an essential tool in my life	3.6	0.6	Average effect
Internet tools can be used for my educational needs.	6.5	0.3	High effect

N	Computed Mean	Computed SD
400	19.7	1.9

The mean for needs has average effect with internet adoption. All items have average mean score exceeding 3.5. The majority of respondents use internet for educational need.

Table 4 Relevancy (Mean Score and Standard Deviation)

Variable	Means score	SD	Level
I can use the internet to interact with the outside world.	5.0	0.1	High Effect
I can use internet for entertainment	5.0	0.1	High Effect
I can use the Internet to get to know new people on internet.	5.0	0.1	High effect
I can use the internet as an information source	3.9	0.5	Average effect
I can use internet same way as telephone	5.0	0.1	High effect
I can use internet for government information access.	3.5	0.5	Average effect

N	Computed Mean	Computed SD
400	27.4	1.4

In table 4, the means for relevancy has average effect with internet adoption. Some items have high mean score such as use internet to interact with the outside world (5.0), use internet same way as telephone (5.0), use internet to get to know new people(5.0), use internet for entertainment(5.0).

Table 5 Attitude (Mean Score and Standard Deviation)

Variable	Means score	SD	Level
I intend to use internet to complete my job/ assignment.	6.0	0.2	High Effect
I intend to use internet for communicating with others.	6.9	0.1	High Effect
I intend to use internet to plan meetings.	3.5	0.8	Average effect
I intend to use internet more frequently in my life.	5.0	0.3	High effect
N	**Computed Mean**	**Computed SD**	
400	21.4	1.4	

The mean for attitudes has average effect with internet adoption. There is an average mean score only for plan meetings on internet adoption, other items have high effect.

Table 6 Computer skills (Mean Score and Standard Deviation)

Variable	Means score	SD	Level
I am not aware of application about internet.	5.8	0.8	High Effect
I am not aware about software and hardware.	5.6	0.9	High effect
I don't have technical knowledge to use internet.	5.7	0.9	High Effect
My computer skills are not good	5.7	0.9	High effect
N	**Computed Mean**	**Computed SD**	
400	22.8	3.5	

In table 6, the mean for computer skills have high effect with internet adoption. All the items have highest mean scores exceeding 5.5.

Table 7 English Language skills (Mean Score and Standard Deviation)

Variable	Means score	SD	Level
I have good knowledge of English.	3.5	0.6	Average Effect
I can surf English language websites.	6.9	0.1	High effect
My English language skill is good.	3.5	0.9	Average Effect
The Internet provides a rich learning environment of English for me.	6.9	0.1	High effect
N	**Computed Mean**	**Computed SD**	
400	20.8	1.7	

In table 7, English language skills have average effect on internet adoption.

Technology characteristics

Table 8 Ease of Use (Mean Score and Standard Deviation)

Variable	Means score	SD	Level
I find internet is easy to learn	3.5	0.6	Average Effect
I find that the internet makes my work easier.	6.9	0.1	High effect
It is clear and easy to understand.	3.5	0.6	Average Effect
I find the internet to be flexible in my interaction	6.9	0.1	High effect
I find internet is easy to use	3.5	0.6	Average effect

N	Computed Mean	Computed SD
400	24.3	2.0

From table 8 the means for ease of use has average effect on internet adoption.

Table 9 Perceived Benefits (Mean Score and Standard Deviation)

Variable	Means score	SD	Level
I can save time as I don't have to queue for services.	6.9	0.1	High Effect
I can save time and money on travelling to destination for services	4.0	0.3	Average effect
I can buy goods online	4.0	0.3	Average effect
I can transact with government departments.	4.0	0.3	Average effect
I can do online banking	4.0	0.3	Average effect
Internet applications would improve my job performance	4.0	0.3	Average effect
Internet can satisfy personal needs	6.9	0.1	High effect

N	Computed Mean	Computed SD
400	33.8	1.7

In table 9, the means for perceived benefits has average effect on internet adoption.

Table 10 Affordability (Mean Score and Standard Deviation)

Variable	Means score	SD	Level
Using internet increases my electricity bill.	6.8	0.4	High Effect
I find that having a telephone line is expensive	6.8	0.4	High Effect
I find that buying a computer is expensive.	6.8	0.4	High effect
Internet access cost is high	6.8	0.4	High effect
Cost of software, hardware, applications & repairing cost high.	6.8	0.4	High effect

N	Computed Mean	Computed SD
400	34	2

In table 10, the mean for Affordability has high effect on internet adoption.

All independent variables have effects with internet adoption. Some of the items under internet adoption (dependent variable) have mean scores below 3.5and it shows that internet adoption among rural communities in Bibile is low. The mean scores for affordability, infrastructure facilities and computer skills, have high effect with internet adoption and other independent variables have average effect with internet adoption. The results show that affordability, infrastructure and computer skills are the main issues among rural communities in Bibile.

3.3 Correlation analysis between internet adoption and the independent variables

All the IVs have p below 0.05 and correlation coefficient above 0.8. Table 11 presents the Pearson correlation analysis between internet adoption and independent variables.

Table 11 Pearson correlation analysis between internet adoption and independent variables

Internet adoption	Infrastructure		needs		relevancy		attitudes		computer skills	
	r	p	r	p	r	p	r	p	r	p
	-.960	.000	.927	.000	.873	.000	.898	.000	-.944	.000

Internet adoption	English skills		ease of use		perceived benefits		affordability	
	r	p	r	p	r	p	r	p
	.857	.000	.927	.000	.948	.000	-.948	.000

N = 400
Correlation is significant at the 0.01(2-tailed)

From the correlation analysis all the nine variables have significant relationship with internet adoption. Table 11 shows there exists a significant negative

relationship which are strong between internet adoption and infrastructure (r=- .960, p=.000), computer skills (r=- .944, p=.000) and affordability (r= -.948, p=.000). Adopter characteristics [needs(r= .927, p=.000), relevancy(r=.873, p=.000), attitudes (r= .898, p=.000) and English languages skills(r= .857, p=.000)], Technology characteristics [ease of use(r= .927, p=.000), perceived benefits(r= .948, p=.000)] have significant positive relationships with internet adoption.

It can be concluded that infrastructure, computer skills and affordability play negative roles in influencing internet adoption among respondents in Bibile. In other words, these are the main issues on internet adoption among rural communities. The results show that Adopter characteristics (needs, relevancy, attitudes and English languages skills), Technology characteristics (ease of use, perceived benefits) have positive relationships with internet adoption among these respondents in Bibile.

4.0 DISCUSSION

Internet was introduced to Sri Lanka in 1995, but still the internet is an innovation in Sri Lanka. Therefore this study sought to determine the issues in rural internet adoption in Sri Lanka. From the results of this study, there are strong negative relationships between internet adoption and infrastructure facilities, computer skills, and affordability and adopter characteristics (needs, relevancy, attitudes and English languages skills), Technology characteristics (ease of use, perceived benefits) have strong positive relationships with internet adoption.

The results of the study have proven that there are some issues such as infrasturue facilities, affordability and computer skills in internet adoption among these respondents. There should be a way to overcome these issues in order to increase internet adoption among these respondents. Therefore, suitable solutions should be taken by responsible government and non-governmental authorities to improve infrastructure facilities in rural areas, more effort must be put in to utilizing computer skills of these rural people and increase financial situation of the respondents.

Kapadia (2005) notes that, the government should build the ICT infrastructure, fund large-scale ICT education, create rural employment, political empowerment and peace building in order to increase ICT usage among rural community. “In this context there are three important players who can contribute towards making the ‘e-Sri Lanka’ dream a reality. They are the public sector, private sector and civil society. These three parties can act on their own, but this is the best time for collaboration. If the objectives are correctly unidentified and there is a workable action plan, there would not be any unconquerable barriers on the way of making an information rich and developed society in Sri Lanka in near future” (Wattegama, Gunawardene & Wickremasinghe 2005 :130-131). “The regional or even global level, the search for formulas ‘to bridge the digital divide’ needs to be put to an end. Community ICT applications will have a higher rate of success if they are part of a cohesive strategy supported by international, regional and national policies that are genuinely interested to empowering rural men and women, girl and boys to use ICTs in positive way” (Pringle& David 2002:14).

5.0 CONCLUSION

Majority of rural communities remain separated from the facilities provided by internet. The ICT including internet has potential to bridge the digital divide among urban and rural people in Sri Lanka .Therefore, efforts must be made to address the issues hampering the internet adoption among the rural communities.

From the results of this study, there are strong negative relationships between internet adoption and infrastructure facilities, computer skills, and affordability and adopter characteristics (needs, relevancy, attitudes and English languages skills), Technology characteristics (ease of use, perceived benefits) have strong positive relationships with internet adoption. The results show that infrasturue facilities, affordability and computer skills are the major issues in rural internet adoption in Sri Lanka. Therefore, suitable solutions should be taken by responsible government and non-governmental organizations to overcome these major issues such as lack of infrastructure facilities, low in computer skills, and affordability issues in order to increase internet adoption among rural communities in Sri Lanka.

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