

**AN ASSESSMENT OF
LEVEL OF INFORMATIZATION OF
RURAL AREAS OF SRI LANKA**

**MASTER OF BUSINESS ADMINISTRATION
IN
INFORMATION TECHNOLOGY**



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December 2007

AN ASSESSMENT OF LEVEL OF INFORMATIZATION OF RURAL AREAS OF SRI LANKA

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The Dissertation was submitted to the Department of Computer Science & Engineering of the University of Moratuwa in partial fulfillment of the requirement for the Degree of Master of Business Administration.

Department of Computer Science & Engineering
University of Moratuwa
December 2007

DECLARATION

“I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university to the best of my knowledge and belief and it does not contain any material previously published, written or orally communicated by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organizations”

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.....
Supervisor

ABSTRACT

The primary focus of this study was to assess the level of Informatization, simple definition of utilization of Information and Communication Technologies (ICTs), in the Rural areas of Sri Lanka. In this study Rural Areas of Sri Lanka is defined as the areas outside the Municipal council and Urban council areas. This definition will lead to use Pradeshiya Saba (PS) divisions as Rural Areas. Presently there are 270 PS divisions in Sri Lanka. 205 PS divisions were used in this study excluding the North and East province PS divisions that were difficult to reach.

The level of Informatization was measured as an index value, which is referred as the Informatization Index. In the Asia Pacific region different type of Informatization Indices are calculated in different countries. In this study author had defined a mechanism to calculate the Informatization Index for Sri Lanka, by considering number of indices related to Informatization. This Informatization Index was calculated using 48 measures categorized under 11 sub components of ICT. For the index calculation multistage cluster sampling was used and the index was measured for the whole sample and first stage clusters considered.

According to the results obtained from this study, it was observed that in rural areas high utilization were there for utilization of Radio, Television, and Telephone. Mobile phone and Computer utilization is at a medium level. Level of utilization of ICT varies with the living location and working location also.

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My sincere thanks to all the Divisional secretaries, Grama Niladaris who helped me to get the questionnaires filled within their administrative divisions. Also I would like to thank my Father, and other friends who helped me to contact those administration people. My thanks are also due to my wife who helped me to enter the collected data while managing all other work. I would like to express my thankfulness to Mr. Chinthaka, who helped me to resolve statistics related problems with his busy schedule. Also my thanks goes to Mr. Arthur Arambepola, who supported by proving expert view with his more than 10 years of ICT experience, and more than 20 years of IT experience.

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ABBREVIATIONS

CDMA	Code Division Multiple Access
CI	Confidence Interval
CL	Confidence Level
CSE	Computer Self Efficacy
DAI	Digital Access Index
DII	Digital Inclusion Index
DOI	Digital Opportunity Index
GCE (A/L)	General Certificate of Education (Advanced Level)
GCE (O/L)	General Certificate of Education (Ordinary Level)
GN	Grama Niladari
ICT	Information and Communication Technology
ICT-OI	ICT Opportunity Index
II	Informatization Index
IT	Information Technology
ITU	International Telecommunications Union
NII	National Informatization Index
PII	Personal Information Index
PS	Pradeshiya Saba
SLT	Sri Lanka Telecom
TAM	Technology Acceptance Model
TFF	Task Technology Fit
TRA	Theory of Reasoned Action
TRCSL	Telecommunication Regulatory Commission of Sri Lanka
TV	Television
UTAUT	Unified Theory of Acceptance and Use of Technology
WII	Women's Informatization Index
WLL	Wireless Local Loop

1 INTRODUCTION

1.1 Background & Motivation

With the introduction of new technologies such as CDMA, many of the barriers that were there for the access provision to rural areas were broken. And the government and other related organizations try to provide much information via web technologies, with the initiatives such as e-Sri Lanka, and in all languages used in the country. Under this environment it would be better to study whether the rural areas of the country are supported by all these changes.

1.2 Problem Statement

Providing the required information to the required people at the required time will help a country to move forward in the developing track. One of the best examples for this is the Korea, which has achieved a significant development in the region with the help of proper handling of Informatization (simple definition of the term “Informatization” is utilization of Information and Communication Technologies).

In Sri Lanka, there are many new systems and services introduced to provide information to the community. But most of those systems and services can easily be accessed by urban community of the country. As Sri Lanka is a developing country, it would be better to know the level and knowledge of Informatization, within the rural community. The main problem statement for this study will be “What is the present level of Informatization of rural areas of Sri Lanka?”

1.3 Research Objectives

By considering all the above factors, main objectives of this study were defined as below.

1. To identify the Informatization readiness of the rural community
2. To identify the impact of Informatization on rural community
3. To identify the knowledge among the rural community about Informatization

4. To identify the barriers that prevents the rural community from accessing the available information by considering Political, Economical, Social & Technological factors.
5. Identify best practices and provide necessary recommendations for the Informatization of rural areas of Sri Lanka.

In addition to those objectives, if possible provide some best practices to improve the level of Informatization in the rural community of Sri Lanka.

1.4 Administrative Divisions in Sri Lanka

Sri Lanka is administratively divided into 9 provinces. For administrative purposes those provinces are further divided into small divisions. These divisions are done as Municipal councils, Urban councils and Pradeshiya Sabas. Presently, there are 18 Municipal councils and 42 Urban councils, as listed in Table 1.1, in Sri Lanka [1]. There are 270 Pradeshiya Sabas which cover the rest of the country that is other than the Municipal council and Urban council areas.

Municipal Councils		Urban Councils			
1	Colombo	1	Kolonnawa	22	Hatton-Dickoya
2	Dehiwal - Mt. Lavinia	2	Seethawakapura	23	Thalawakele-Lindula
3	Sri Jayawardanapura Kotte	3	Maharagama	24	Bandarawela
4	Moratuwa	4	Boraleagamuwa	25	Haputale
5	Negombo	5	Kesbewa	26	Ambalangoda
6	Gampaha	6	Wattala Maboale	27	Hikkaduwa
7	Kurunegala	7	Peliyagoda	28	Weligama
8	Kandy	8	Katunayake Seeduwa	29	Hambantota
9	Matale	9	Minuwangoda	30	Tangalle
10	Nuwara-Eliya	10	Ja-Ela	31	Balangoda
11	Badulla	11	Panadura	32	Embilipitiya
12	Galle	12	Horana	33	Kegalle
13	Matara	13	Kalutara	34	Point Pedro
14	Rathnapura	14	Beruwala	35	Velvettithurai
15	Anuradhapura	15	Kuliyapitiya	36	Chavakachchery
16	Jaffna	16	Puttalam	37	Mannar
17	Batticaloa	17	Chilaw	38	Vavuniya
18	Kalmunai	18	Wattegama	39	Kathankudi
		19	Kadugannawa	40	Ampara
		20	Gampola	41	Trincomalee
		21	Nawalapitiya	42	Kinniya

Source: Ministry of Provincial Council and Local Government, Sri Lanka

Table 1.1 – Municipal Councils and Urban Councils of Sri Lanka

2 LITERATURE REVIEW

In this literature review, the first section will provide a definition for the term “Informatization.” Then the next section will review “the level of Informatization.” Finally, “Rural Areas of Sri Lanka” will be defined with the help of literature.

2.1 Working Definition of Informatization

In the study named “An Assessment on the Informatization of Brazilian Industrial companies” [2], Informatization was defined as “the process of converting the main goods and energy of a social economy to information through the revolution of high data communication technology and utilizing information produced by gathering, processing and distributing data within the vast fields of the society”. In that research Informatization was corresponded to a process of managed adoption and use of IT resources by an organization to support, develop, and optimize its performance. Dimensions that had been taken into account to characterize the Informatization intensity are;

1. Infrastructure: related to the availability of hardware, basic software and communication technology.
2. Use: related to utilization of information systems and internet resources and their outcomes.
3. Management: related to the human resources and investments of the IT area [2].

In China for the 10th Five-Year plan for National Economy and Social Development, a comprehensive definition was given to the term Informatization. That is “Informatization is an integrated system, with the extensive application of information technologies as its aim, information resources as its nucleus, information network as its basis, information industry as its pillar, information talents as its reliance, and regulations, policies and legal standards as its safeguard”. With this definition China had identified six aspects of Informatization. They were;

1. Information resources
2. National information network

3. Application of information technologies
4. Information technologies and industry
5. Informatization talents
6. Policies, regulations and standards [3].

In Japan, Informatization was defined as the utilization of information and communication technologies in activities by companies, individuals and the public sector. In that case Information and communication technologies consist of computer technology, communication technology, and contents technology [4]. Information and Communication Technologies (ICTs) are basically information handling tools, which is a set of goods, applications, and services that are used to produce, store, process, distribute and exchange information. With this definition ICT will include radio, television, telephone which are named as “old ICT” and “new ICT” such as computers, satellite and wireless technology and the internet [5]. Another definition of ICT was to include telephones, the Internet, satellite communication, optical communications, broadcasting, data storage media such as CD-ROM and DVD, and various applications software [6].



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By combining the above definition of “Informatization” and the two definitions of ICT the working definition for Informatization was build for this study. Also this study focused only on the individuals. Therefore, in this study Informatization was defined as utilization of ICTs by individuals, where ICTs are information handling tools which are a set of goods, applications, and services that are used to product, store, process, distribute, and exchange information. As sub components of ICT Radio, Television (TV), Telephone, Mobile phone, Computers, and Satellite TV were selected, with related to one of the above ICT definitions. Under the telephone category telephones provided by Sri Lanka Telecom (SLT), Suntel, and Lanka Bell were considered. This included all fixed line telephones, wireless local loop connections, and CDMA telephones. In addition to those components; Storage media that are used to store information, Software that are used to produce and process information, and the Internet was included with related to the other ICT definition. Email was considered separately as it is becoming an official media of communicating. Both online publications and printed publications, which are used to distribute information, were considered as another component. Therefore, in this study there

were eleven sub categories of ICT named Radio, Television, Satellite TV, Telephone, Mobile phone, Computers, Internet, email, storage media, software, and publications.

2.2 Measuring Level of Informatization

After having a working definition for Informatization, it was required to select a way to measure the “level of Informatization.” This study found out the “level of Informatization” in two aspects. One was to analyze it using the factors considered in the other studies and accepted models and the other was to find out the “level of Informatization” as an index value.

In this section of the literature review indices used to measure the Informatization and ICT utilization are examined to select suitable sub components to measure the “level of Informatization” as an index value.

National Informatization Index (NII), which is used in Korea to measure the Informatization level, is one of the main indices related to Informatization. Structure of the NII is shown in the Table 2.1 [7]. For this study instead of CATV, Satellite TV was considered. As Internet and email were considered as two separate categories, subscription for email was also considered.

Sector	Individual Indicator
Computer	PC penetration
Internet	Internet users
	Broadband internet subscribers
Telecommunication	Telephone lines
	Mobile phone subscribers
Broadcasting	TV penetration
	CATV subscribers

Source: National Computerization Agency, Republic of Korea

Table 2.1 – National Informatization Index (NII) Framework

In South Korea, Personal Information Index (PII) is used to represent a personal information score which comprised of three dimensions named access, capacity, and

utilization. Construction of the personal information score is shown in Table 2.2. Digital Inclusion Index (DII) used in Hong Kong also uses some similar approach to PII [8].

Grand Category	Category	Sub-Category
Access	Ownership of IT devices	PC ownership
		Home Internet connection
		Ownership of wireless Internet device
	Availability of IT devices	Availability of PC when needed
		Easiness to access PC
		Availability of the Internet when needed
		Easiness of access the Internet
	Quality of IT devices	Quality of PC
		Quality of the Internet connection
Capacity	Capacity to use computer	Ability to use computer related items
	Capacity to use the Internet	Ability to use Internet related items
Utilization	Quantity of usage	Usage of PC/the Internet
		Average hours of usage of PC/Internet
	Quality of usage	Usefulness of Internet Activities
		Usage of needed Internet/Computer activities

Source: Digital Divide and Social Inclusion [8]

Table 2.2 – Structure of Personal Information Index

In the Assessment Report on the City Informatization Development in Asia-Pacific Region, Informatization Level Index, which consists of 12 indices, was used to measure the city Informatization. Those 12 indices were [9];

1. City outlet bandwidth per 10,000 inhabitants
2. The terminal bandwidth access as a percent of total Internet connection
3. The number of personal computers per 100 inhabitants
4. The number of landlines per 100 inhabitants
5. The number of mobile telephone users per 100 inhabitants

6. The number of TV sets per 100 inhabitants
7. Average number of years set for education
8. The number of the Internet users per million inhabitants
9. The online enterprises as a percent of the total enterprises
10. Average number of personal computers in the college and middle school students
11. The percentage of E-government on the net
12. The proportion of expense on family information consumption to total family expense.

For this study indices related to individuals and households were used. Therefore, indices 3 to 6, and 8 were directly used in the relevant sub category of ICT working definition. Last index, that is the proportion of expense on family information consumption to total family expense, was used as percentage of total income spent on applicable sub categories of ICT working definition.

Core ICT indicators list had been published by International Telecommunications Union (ITU) as a part of “Partnership on Measuring ICT for Development” [10]. To study about individuals there are number of indicators that can be used out of this list which are discussed below. The codes used by ITU are shown within the brackets. The indicators that can be directly used are;

- Proportion of households with a radio (HH1)
- Proportion of households with a TV (HH2)
- Proportion of households with a fixed line telephone (HH3)
- Proportion of households with a mobile cellular telephone (HH4)
- Proportion of households with a computer (HH5)
- Proportion of individuals who used a computer (HH6)
- Proportion of households with Internet access at home (HH7)
- Proportion of individuals who used the Internet (HH8)

In the above indicators “proportion of individuals / households” was obtained by dividing the number of individuals / households with the considered device / service by the total number of individuals / households that are in scope. For this study the same indicators can be used for analyzing the “level of Informatization.” But in this

study instead of households, individuals were used. As mention in the ITU publication sub indicators may be considered using the individual classificatory variables; age, gender, highest employment level, employment status and occupation. Therefore, those individual classificatory variables were included in this study for analysis purposes.

Internet access tariff (A8) and Mobile cellular tariff (A9) as a percentage of per capita income were also considered as core ICT indicators [10]. Instead of per capita income, monthly income was used in this study. Location of individual use of the internet (HH9) was another core indicator [10] that was used in this study for the analysis purpose. Location includes home, work, place of education, another person's home, community Internet access facility, commercial Internet access facility, and other places. In this study place of education was divided into two sections as school and other education institute. Also community Internet access facility and commercial Internet access facility were considered as Public facility (free) and Public facility (paid) respectively. Location of access was considered for all the other categories of ICT also. Internet activities undertaken by individuals (HH10) indicator had values as for getting information, for communication, for education, for leisure activities [10]. For this study two indicators mentioned later were considered in the analysis of other sub categories of ICT as well. Frequency of individual access to the Internet (HH13) was considered, with the frequency of at least once a day or daily, at least once a week, at least once a month, less than once a month [10]. In this study Frequency of using was considered for Internet, Computer, and email with some more division of the values.

Since most of the ICT indicators didn't consider the gender dimension, Women's Informatization Index (WII) had tried to capture the use of ICT among women [11]. In the framework used to calculate WII, there were number of factors that can be considered in this study also. They were; Frequency of Internet usage, Frequency of PC usage, Length of PC usage, Ownership of Info equipment. Those factors were considered in calculating the "level of Informatization." Frequency of usage and length of usage were also considered under email category in this study.

Digital Opportunity Index (DOI)		ICT Opportunity Index (ICT-OI)	
Opportunity	Percentage of population covered by mobile telephony	Info density: Networks	Main telephone lines per 100 inhabitants
	Internet access tariffs as a percentage of per capita income		Mobile cellular subscribers per 100 inhabitants
	Mobile cellular tariffs as a percentage of per capita income		International Internet bandwidth (kbit/s per inhabitant)
Infrastructure	Proportion of households with a fixed-line telephone	Info density: Skills	Adult literacy rates
	Proportion of households with a computer		Gross enrolment rates
	Proportion of households with Internet access at home	Info use: Uptake	Internet users per 100 inhabitants
	Mobile cellular subscribers per 100 inhabitants		Proportion of households with a TV
	Mobile Internet subscribers per 100 inhabitants		Computers per 100 inhabitants
Utilization	Proportion of individuals that have used the Internet	Info use: Intensity	Total broadband Internet subscribers per 100 inhabitants
	Ratio of fixed broadband subscribers to total Internet subscribers		International outgoing telephone traffic (minutes) per capita
	Ratio of mobile broadband subscribers to total mobile subscribers		

Source: International Telecommunication Union (ITU)

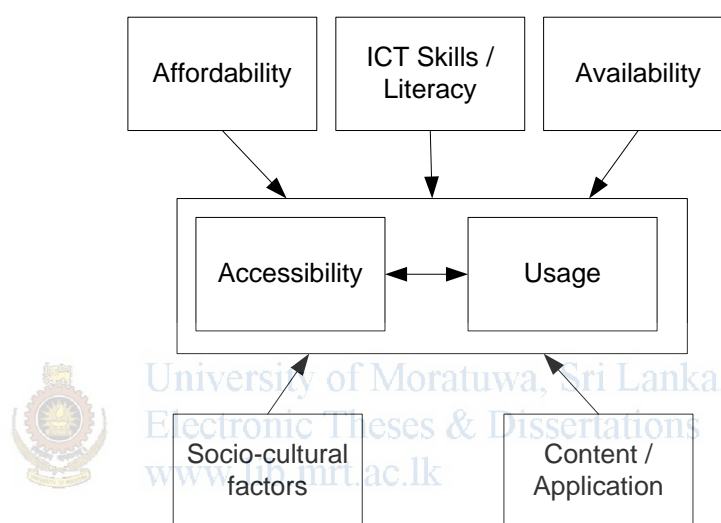
Table 2.3 – Structure of DOI and ICT-OI

Two other indices that are related to use of ICT are Digital Opportunity Index (DOI) and ICT Opportunity Index (ICT-OI). Structures of those indices are given in Table 2.3 [12]. Most of the individual related sub components of those indices were similar to the facts discussed above.

China's Informatization Level calculation had been done by considering five sub sections which were considered as sub-indices. Out of the indicators considered under each sub-index, there were some measures that have to be done in national level and not directly related to individuals. Therefore, only relevant indicators had been selected out of all the indicators. Out of those selected indicators, what had not been listed in the above sections are; occupied broadcasting time of radio and television, printing sheets of books, newspapers, and periodicals, telephone calls per person, number of people with a college or above education [13]. In this study books,

newspapers, and periodicals were used instead of printing sheets. Occupied broadcasting time for satellite TV was also considered as it was considered for radio and television.

To analysis the “level of Informatization,” with relevant to the working definition of Informatization, level of utilization of sub categories of ICT had been considered. What were the factors considered under those categories will be build in the below section with the help of the available literature.

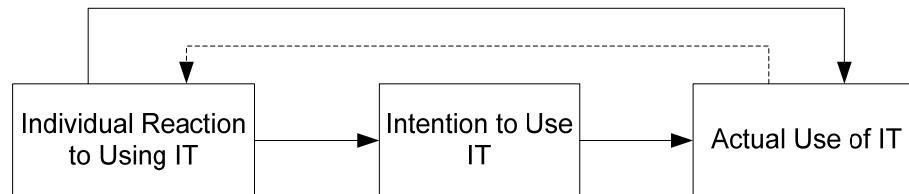


Source: Digital Divide and Social Inclusion [8]

Figure 2.1 – Conceptual Framework of Digital Inclusion

Some of the several factors affecting the level of accessibility and usage for ICT are computer skills/ literacy, having enough money. Such factors not only affect the level of access and usage but also have unique implication to the capacity and potential for individuals to access information. Major factors that are important to accessibility and the degree of usage are affordability, ICT skills/literacy, availability, existence of applications and desired content, and other socio-cultural factors. Connectivity within those factors is illustrated in Figure 2.1 [8]. Those mentioned factors can be used for analyzing the level of Informatization. In the above case accessibility refers to accessibility of computers and internet to use its services. This includes factors such as having a home computer, internet connectivity at home, etc. Usage refers to the actual usage of the computer and services enabled by ICT. Those include accessing information through internet, communicating with others, length and frequency of

using internet and computers, average duration using those each time, etc. Computer skills/literacy refers to self-assessment of the ability to use computer and related technologies. Affordability is the ability to pay for the devices and services received.



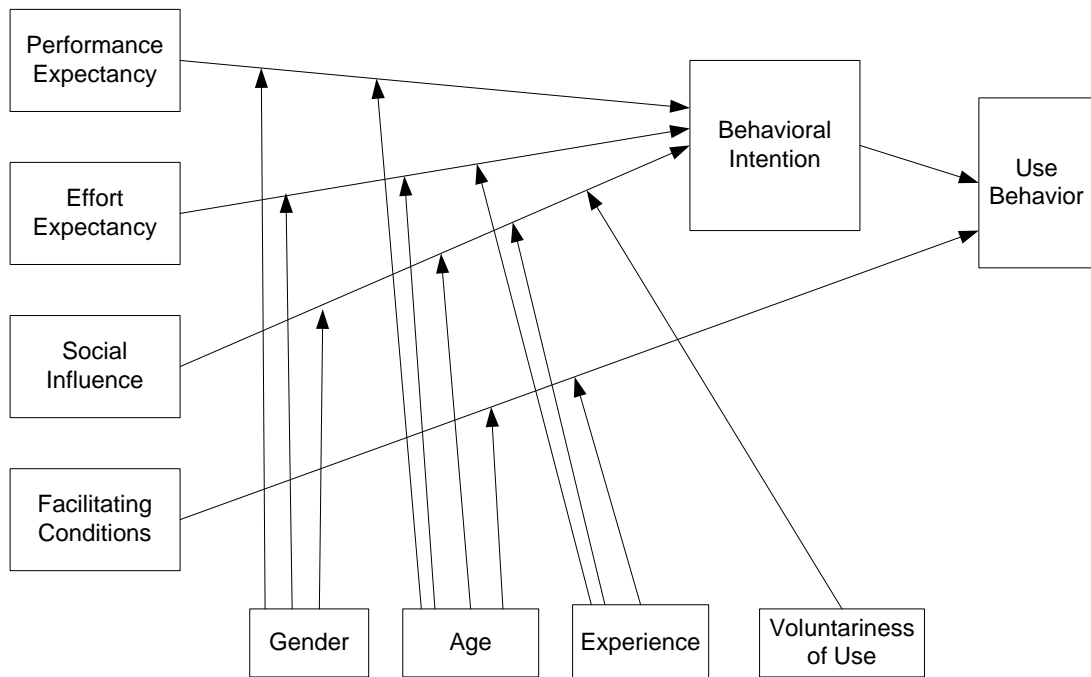
Source: MIS Quarterly [14]

Figure 2.2 – Basic Concept Underlying User Acceptance Models

Basic conceptual framework underlying the models that explain individual acceptance of Information Technology (IT) is shown in Figure 2.2. Using this basic concept and some models including Technology Acceptance Model (TAM) a model was developed which is named as Unified Theory of Acceptance and Use of Technology (UTAUT). This model is shown in Figure 2.3 [14]. Definitions of factors considered in UTAUT are as below;

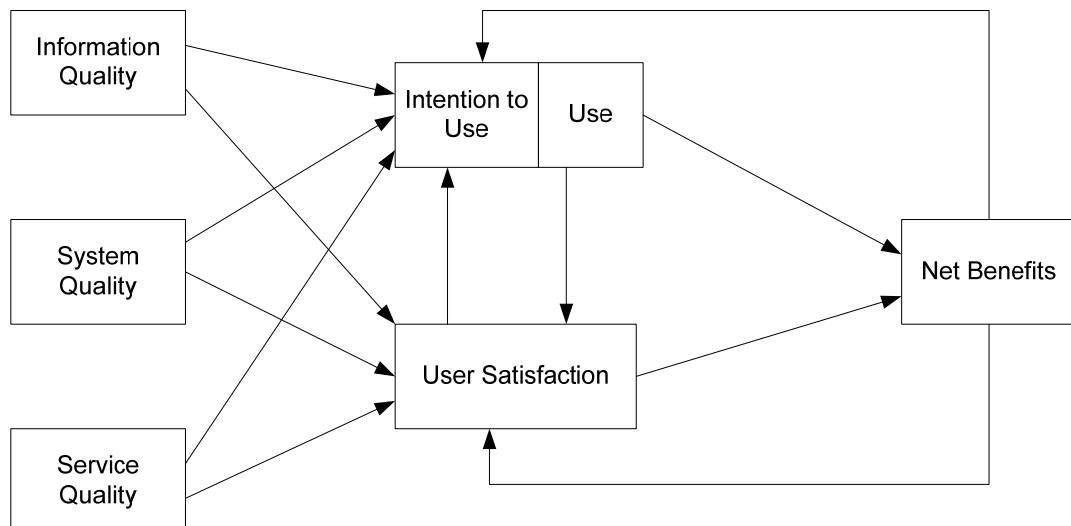
- Performance Expectancy – The degree to which an individual believes that using technology will help to attain gains in performance
- Effort Expectancy – The degree of ease associated with the use of the technology.
- Social Influence – The degree to which an individual perceives that important others believe he / she should use the technology.
- Facilitating Conditions – The degree to which an individual believes that a technical infrastructure exists to support the technology.

Other than those factors, general factors about individuals, Intention and Use were considered with connectivity between those factors.



Source: MIS Quarterly [14]
Figure 2.3 – UTAUT

Updated DeLone and McLean Information System Success Model, which is shown in Figure 2.4, consider user satisfaction and intention to use as main factors that affect net benefits of an Information System [15]. Therefore, to obtain the benefits of ICT those two factors can be considered.



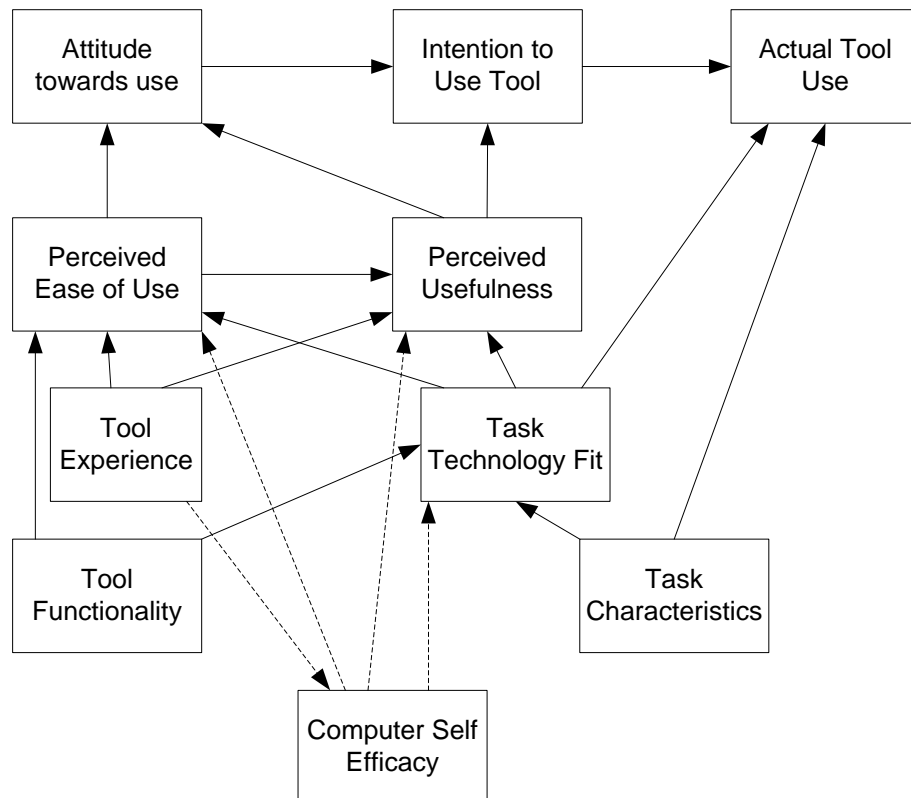
Source: Journal of Management Information Systems [15]
Figure 2.4 – Updated D&M IS Success Model

Technology Acceptance Model (TAM) is a specific adaptation of the Theory of Reasoned Action (TRA) model to study of Information Technology (IT) usage. Generally, TAM state that a behavior is determined by intention to perform the behavior. Intention is determined by attitude towards the behavior. TAM identifies Perceived Ease of Use and Perceived Usefulness as key independent variables [16].

Task-Technology Fit (TTF) model match the capabilities of the technology to the demand of the task. TTF has four key constructs, Task Characteristics, Technology Characteristics, which together affect the third construct Task-Technology Fit, which affects the outcome variable, which is either Performance or Utilization. A common addition to TTF model is Individual Abilities. TAM and TTF model were combined into a comprehensive model with the argument that those two models capture two different aspects of users' choices to utilize IT. Therefore, the combined model is a better model of IT utilization [16].

Computer Self-Efficacy (CSE), which was defined as a judgment of one's ability to use a computer, has also been combined to the above mentioned TAM, TTF integrated model as it also has a relationship to number of components in that model [16]. This combined model of TAM, TTF and CSE is shown in Figure 2.5.

Theoretical model, in Figure 2.6, used in a study of technology acceptance model in academic environment had considered the factors affecting computer usage. Out of those factors Computer literacy does not have a unique definition. Some researchers define and measure Computer Literacy by the number of computer courses completed, the number of time spent on the computer, having a computer at home; while others consider the familiarity with computer technical terms, experience, and ability. Perceived ease of use, which was defined as degree to which a person believes that using a particular system would be free of effort, and perceived usefulness, which was defined as degree to which a person believes that using a particular system would enhance his or her performance, were elements directly taken from TAM. Also some external variables are indicated to have effect on the above mentioned factors as well as computer usage directly [17].

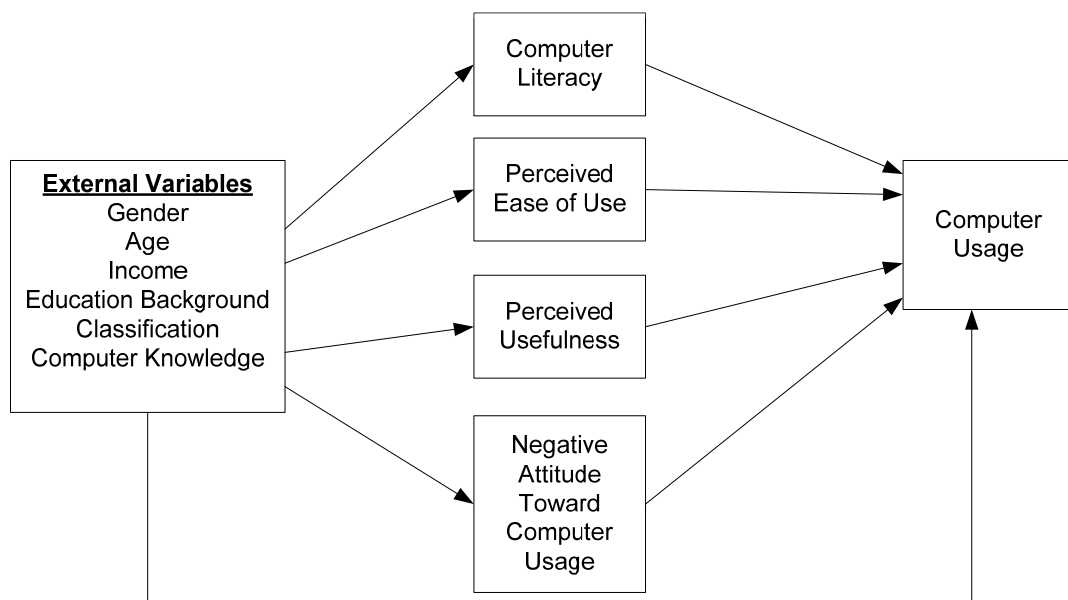


Source: Eighth Americas Conference on Information Systems [16]

Figure 2.5 – Integrated Model of TAM, TTF with CSE Included.



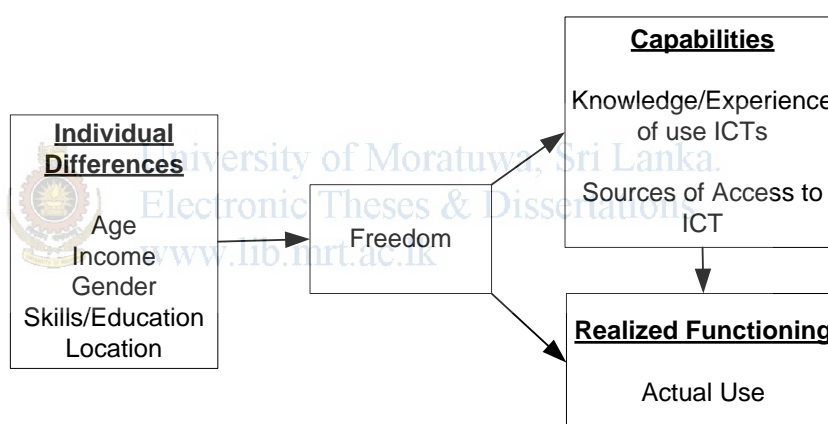
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Source: Journal of Computing Sciences in Colleges Archive [17]

Figure 2.6 – Theoretical Model Used to Study TAM in Academic Environment

As mentioned in the Capability approach applied to ICTs (Figure 2.7), it is not enough to determine whether people have the capability to access ICT. It is also required to understand the purpose and the reasons for why people use ICTs. In some cases age is significant with the use of ICTs while in some cases it is not. For example, in Philippines people in the age group 18 – 39 were the principal users of ICTs while in America for mobile phone usage age is not a significant factor. Poor people tend to have slower adoption of ICTs. For example, there's a positive correlation with respect to income levels and mobile telephone adoption. As social and cultural contexts affect ICTs development and use, ICTs are never gender neutral. As jobs may be lost or created with new ICTs, education and profession (or Job) has to be considered. With respect to location information divide, which is further exacerbated by the slower ICT adaptation in rural communities, exists in urban and rural areas [18].



Source: International Journal of Education and Development using ICT [18]

Figure 2.7 – Capability Approach Applied to Access to ICTs

With the help of above mentioned models and other factors, an analysis framework will be created in the Methodology section.

2.3 Rural Areas of Sri Lanka

For the Rural Payphone Subsidy Scheme promoted by Telecommunication Regulatory Commission of Sri Lanka (TRCSL), “Rural Area” was defined as a territory outside Municipal and Urban Council areas [19]. According the Analysis Population and Housing Censuses 2001, “Urban sector comprises of all Municipal and Urban council areas. Estate sector is defined as plantations of 20 acres or more in extent upon which there are 10 or more resident labourers, rest of the areas was treated as rural sector” [20].

Another definition of rural is given based on the settlements which are divided into two categories as urban and rural. In Sri Lanka, urban settlements are defined as those settlements that are administrated by municipal and urban councils and all the remaining settlements are classed as rural [21].

By considering all the above definitions, for this study working definition for “Rural areas of Sri Lanka” was territory outside the Municipal and Urban council areas, which are the Pradeshiya Saba areas.

3 METHODOLOGY

This study was conducted in focusing two major findings. They were;

1. Calculating of Level of Informatization as an Index value.
2. Analysis the level of Informatization with an analysis framework.

3.1 Informatization Index

As described in the Literature review, there were number of Indices used to measure or compare Informatization and related information. Therefore, it was decided to calculate the “Level of Informatization” as an Index value, which is referred as Informatization Index in the rest of this study. For this calculation Informatization, which was defined for this study as the Utilization of ICTs, was divided into 11 main components as shown in Table 3.1.


Index	Main Component
 Level of Informatization (Utilization of ICTs)	Utilization of Radio
	Utilization of Television
	Utilization of Telephone (Fixed Line, WLL)
	Utilization of Mobile phone
	Utilization of Computer
	Utilization of Internet
	Utilization of e-Mail
	Utilization of Satellite TV
	Utilization of Storage (CD, DVD, Diskette, etc)
	Utilization of Publications (printed/online)
	Utilization of Software

Table 3.1 – Main Components of the Informatization Index

Each of the main components in Table 3.1 was divided into sub sections as in Table 3.2, by considering the facts considered in the indices described in the literature review. The number of sub components for each main component varied and represent the measurable factors affecting the main component.

After having those main components and sub components, it was required to have a method to calculate the index value. For this calculation Integrated mark analysis approach, which was the method adopted to calculate the China’s Informatization Index, was used. In China this method had been selected out of two methods considered to calculate Informatization Index [22].

Index	Main Component	Sub Component
Level of Informatization (Level of Utilization of ICTs)	Utilization of Radio	Available at home
		Occupied broadcasting time
		Use to access information
	Utilization of Television	Available at home
		Occupied broadcasting time
		Use to access information
	Utilization of Satellite TV	Subscription available
		Occupied broadcasting time
		Use to access information
		Available at home
		Expenditure as a percentage of monthly income
	Utilization of Telephone	Available at home
		Number of calls taken
		Use to access information
		Expenditure as a percentage of monthly income
	Utilization of Mobile phone	Ownership
		Number of calls taken
		Use to access information
		Expenditure as a percentage of monthly income
	Utilization of Computer	Available at home
		Frequency of usage
		Length of usage
		Computer Literacy
		Computer Self-Efficacy
		Experience
		Use to access information
	Utilization of Internet	Expenditure as a percentage of monthly income
		Available at home
		Frequency of usage
		Length of usage
		Subscription available
		Years of experience
		Use to access information
	Utilization of e-Mail	Expenditure as a percentage of monthly income
		Available at home
		Frequency of usage
		Length of usage
		Subscription available
		Years of experience
		Use to access information
	Utilization of Storage	Expenditure as a percentage of monthly income
		Ownership
		Use to access information
	Utilization of Publications	Use to access information
		Expenditure as a percentage of monthly income
	Utilization of Software	Use to access information
		Expenditure as a percentage of monthly income

Table 3.2 – Structure of the Informatization Index with Main and Sub Components

Integrated mark analysis approach used a simple linear weighting method. When this method is used the Informatization Index (II) can be calculated as below;

$$II = \sum_{i=1}^n P_i W_i$$

Here P_i is the value of the i^{th} main component of the index and W_i is the weight for P_i . In China weights for the index were used by considering the feedback and then averaging the values. For this study the calculation of the values of Index and Main components of the index the same approach was used. With this method the Informatization Index, to be found in this study, is given by the following equation.

$$II = \sum_{i=1}^n \left[\sum_{j=1}^{m_i} P_{ij} W_{ij} \right] W_i$$

P_{ij} is the value of the j^{th} sub component of the i^{th} main component of the Index. W_{ij} is the weight of the P_{ij} . W_i is the weight of the i^{th} main component of the Index.

For this study, weights for both main components and sub components were calculated by obtaining the ideas of ICT users. Weights for both components types were obtained from more than 30 ICT users. After obtaining those values, in each user's weighting sub component values for each main component and main component values for the Index were standardized. Then those standardized values were averaged to finalize the weights for each sub component and each main component.

3.2 Analysis of the Level of Informatization

3.2.1 Analysis Framework

Analysis framework for this study was developed using the factors considered in the models discussed in the literature review. In the Integrated model of TAM, TTF and CSE (Figure 2.5), "Attitude towards use" and "Perceived Usefulness" were identified as main factors affecting Intention to use, which leads the actual usage. Although in most of the models actual usage was shown as a result of Intention, Updated D&M IS

success model (Figure 2.4) treated those two as a single factor. For this study also Intention to use and actual usage were treated as a single factor as “Usage” which will be treated as the Dependent variable. Therefore, “Attitude towards use” and “Perceived usefulness” were considered as factors that were directly affecting the “Usage.” By considering the updated D&M model, “User satisfaction” was also considered as a factor affecting “Usage.”

Capability approach applied to ICTs (Figure 2.7), had identified “Source of Access to ICT” as a key factor affecting the use of ICT. In this study this factors was used as “Location of Access”, which affect the “Usage”. Another factor that affect the “Usage” was the influence, which is shown in the Unified theory of acceptance and use of technology (Figure 2.3) as “Social Influence.”

Theoretical model used to study TAM in academic environment had considered Computer literacy, Perceived usefulness, and Perceived ease of use as factors affecting computer usage. External variables, which are individual differences, has considered as factors affecting above three factors. Out of those factors, “Perceived usefulness” had already considered as a factor affecting usage. As shown in Integrated model of TAM, TTF and CSE, perceived ease of use affects “Attitude towards use” and “Perceived usefulness” therefore it was not considered in the model used for this study. But “CSE (Computer Self Efficacy)” and “Computer Literacy” were considered only for the Computer usage.

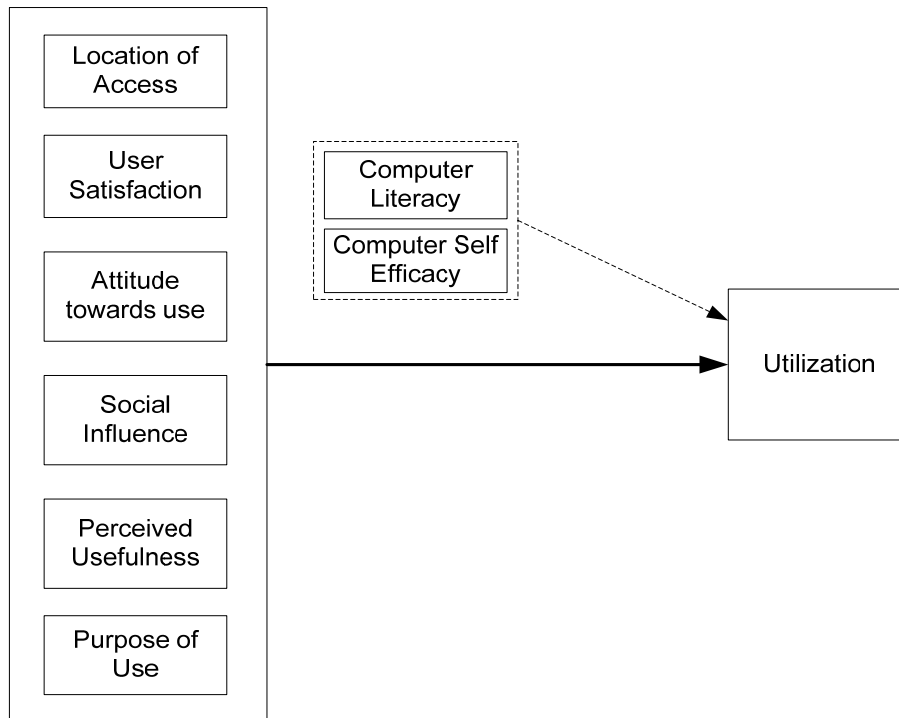


Figure 3.1 – Analysis Framework of This Study.

With all the above considerations, the analysis framework for this study was developed as shown in Figure 3.1. Each of the 11 components of ICT, which had been identified in the literature review, was analyzed with this analysis framework.

3.2.2 Hypothesis Development

General format of the Hypothesis was;

Null hypothesis

H_0 : There is no relationship between Factor_j of ICT_i and the Utilization of ICT_i

Alternate hypothesis

H_a : There is a relationship between Factor_j of ICT_i and the Utilization of ICT_i

In this case ICT_i is one of the ICTs considered; that is one of Radio, Television, Satellite TV, Telephone, Mobile phone, Computer, Internet, Email, Storages, Software, and Publications. Factor_j was the factors in the left hand side of the analysis framework. There are 11 hypotheses by considering the factor “Location of Access”. Similarly, there are 11 hypotheses for each of the other factors; “User satisfaction”,

“Attitude towards use”, “Social Influence”, “Perceived usefulness”, and “Purpose of Use”. Also there are two additional hypotheses, by considering the CSE and “Computer Literacy” for computers. Therefore, totally there are 68 hypotheses in this study.

3.2.3 Operationalization and Questionnaire Development

ICT utilization, divided in to 11 sub concepts with the sub components of the ICT, will be operationalized as shown in Table 3.3, Table 3.4, Table 3.5, Table 3.6, and Table 3.7. Each concept was considered in two sections as usage and affecting factors. Under usage the variable to measure actual usage of the concept was considered while under affecting factors five independent variables in the analysis framework were considered. In this operationalization table, the question numbers of the relevant question in the questionnaire are also listed. The complete questionnaire used is available in Annexure A.



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Concept		Variable	Indicator	Measure	Question
Utilization of Radio	Affecting Factors	Location	Location of Access / Ownership	All the locations of accessing the media	Q7.1
		Satisfaction	User Satisfaction	Level of satisfactory about the media	Q5.1
		Usefulness	Perceived Usefulness	How useful the media, as user feels	Q6.1
		Attitude	Attitude towards use	Attitude of user towards the use of media	Q11.1
		Social Influence	Social Influence	Factors that influence the user to use the media	Q9.1
		Purpose	Main purpose of accessing	What is the main purpose (s) of using	Q8.1
			Favorite program	What is the favorite program (s) of the user	Q10.1
	Usage	Using Radio	Using Radio	Is the respondent using radio	Q2.1
		Occupied Time	Occupied Broadcasting time	Average time spend at a usage	Q13.1
Utilization of Television	Affecting Factors	Location	Location of Access / Ownership	All the locations of accessing the media	Q7.2
		Satisfaction	User Satisfaction	Level of satisfactory about the media	Q5.2
		Usefulness	Perceived Usefulness	How useful the media, as user feels	Q6.2
		Attitude	Attitude towards use	Attitude of user towards the use of media	Q11.2
		Social Influence	Social Influence	Factors that influence the user to use the media	Q9.2
		Purpose	Main purpose of accessing	What is the main purpose (s) of using	Q8.2
			Favorite program	What is the favorite program (s) of the user	Q10.2
	Usage	Using Television	Using Television	Is the respondent using television	Q2.2
		Occupied Time	Occupied Broadcasting time	Average time spend at a usage	Q13.2

Table 3.3 – Operationalization for Utilization of Radio and Television

Concept		Variable	Indicator	Measure	Question
Utilization of Satellite TV	Affecting Factors	Location	Location of Access / Ownership	All the locations of accessing the media	Q7.3
		Satisfaction	User Satisfaction	Level of satisfactory about the media	Q5.3
		Usefulness	Perceived Usefulness	How useful the media, as user feels	Q6.3
		Attitude	Attitude towards use	Attitude of user towards the use of media	Q11.3
		Social Influence	Social Influence	Factors that influence the user to use the media	Q9.3
		Purpose	Main purpose of accessing	What is the main purpose (s) of using	Q8.3
			Favorite program	What is the favorite program (s) of the user	Q10.3
	Usage	Using Satellite TV	Using Satellite TV	Is the respondent using satellite TV	Q2.8
		Expenditure	Percentage of monthly income spend		Q12.9
		Subscription	Availability of Subscription	Is there a subscription available	Q14.3
		Occupied Time	Occupied Broadcasting time	Average time spend at a usage	Q13.6
Utilization of Telephone	Affecting Factors	Location	Location of Access / Ownership	All the locations of accessing the media	Q7.4
		Satisfaction	User Satisfaction	Level of satisfactory about the media	Q5.4
		Usefulness	Perceived Usefulness	How useful the media, as user feels	Q6.4
		Attitude	Attitude towards use	Attitude of user towards the use of media	Q11.4
		Social Influence	Social Influence	Factors that influence the user to use the media	Q9.4
		Purpose	Main purpose of accessing	What is the main purpose (s) of using	Q8.4
	Usage	Using Telephone	Using Telephone	Is the respondent using telephone	Q2.3
		Expenditure	Percentage of monthly income spend		Q12.1
		Occupied Time	Calls per person	Average number of calls taken	Q17.1

Table 3.4 – Operationalization for Utilization of Satellite TV and Telephone

Concept		Variable	Indicator	Measure	Question
Utilization of Mobile phone	Affecting Factors	Location	Location of Access / Ownership	All the locations of accessing the media	Q7.5
		Satisfaction	User Satisfaction	Level of satisfactory about the media	Q5.5
		Usefulness	Perceived Usefulness	How useful the media, as user feels	Q6.5
		Attitude	Attitude towards use	Attitude of user towards the use of media	Q11.5
		Social Influence	Social Influence	Factors that influence the user to use the media	Q9.5
		Purpose	Main purpose of accessing	What is the main purpose (s) of using	Q8.5
	Usage	Using Mobile phone	Using Mobile phone	Is the respondent using mobile phone	Q2.4
		Expenditure	Percentage of monthly income spend		Q12.2
		Occupied Time	Calls per person	Average number of calls taken	Q17.2
Utilization of Computer	Affecting Factors	Location	Location of Access / Ownership	All the locations of accessing the media	Q7.6
		Satisfaction	User Satisfaction	Level of satisfactory about the media	Q5.6
		Usefulness	Perceived Usefulness	How useful the media, as user feels	Q6.6
		Attitude	Attitude towards use	Attitude of user towards the use of media	Q11.6
		Social Influence	Social Influence	Factors that influence the user to use the media	Q9.6
		Literacy	Computer Self-Efficacy	How user categorize him/her self as a user	Q19
			Computer Literacy	What can be done using computer	Q18, Q20
		Purpose	Main purpose of accessing	What is the main purpose (s) of using	Q8.6
	Usage	Using Computer	Using Computer	Is the respondent using computer	Q2.5
		Expenditure	Percentage of monthly income spend		Q12.3
		Occupied Time	Frequency of Usage	Average frequency of usage	Q16.1
			Length of usage	Average time spend at a usage	Q13.3
			Experience	Number of years of experience	Q15.1

Table 3.5 – Operationalization for Utilization Mobile Phone, and Computer

Concept		Variable	Indicator	Measure	Question
Utilization of Internet	Affecting Factors	Location	Location of Access / Ownership	All the locations of accessing the media	Q7.7
		Satisfaction	User Satisfaction	Level of satisfactory about the media	Q5.7
		Usefulness	Perceived Usefulness	How useful the media, as user feels	Q6.7
		Attitude	Attitude towards use	Attitude of user towards the use of media	Q11.7
		Social Influence	Social Influence	Factors that influence the user to use the media	Q9.7
		Purpose	Main purpose of accessing	What is the main purpose (s) of using	Q8.7
	Usage	Using Internet	Using Internet	Is the respondent using internet	Q2.6
		Expenditure	Percentage of monthly income spend		Q12.4
		Occupied Time	Frequency of Usage	Average frequency of usage	Q16.2
			Length of usage	Average time spend at a usage	Q13.4
			Experience	Number of years of experience	Q15.2
		Subscription	Availability of Subscription	Is there a subscription available	Q14.1
Utilization of e-Mail	Affecting Factors	Location	Location of Access / Ownership	All the locations of accessing the media	Q7.8
		Satisfaction	User Satisfaction	Level of satisfactory about the media	Q5.8
		Usefulness	Perceived Usefulness	How useful the media, as user feels	Q6.8
		Attitude	Attitude towards use	Attitude of user towards the use of media	Q11.8
		Social Influence	Social Influence	Factors that influence the user to use the media	Q9.8
		Purpose	Main purpose of accessing	What is the main purpose (s) of using	Q8.8
	Usage	Using e-Mail	Using e-Mail	Is the respondent using email	Q2.7
		Expenditure	Percentage of monthly income spend		Q12.5
		Occupied Time	Frequency of Usage	Average frequency of usage	Q16.3
			Length of usage	Average time spend at a usage	Q13.5
			Experience	Number of years of experience	Q15.3
		Subscription	Availability of Subscription	Is there a subscription available	Q14.2

Table 3.6 – Operationalization for Utilization of Internet and E-Mail

Concept		Variable	Indicator	Measure	Question
Utilization of Storage	Affecting Factors	Location	Location of Access / Ownership	All the locations of accessing the media	Q7.9
		Satisfaction	User Satisfaction	Level of satisfactory about the media	Q5.9
		Usefulness	Perceived Usefulness	How useful the media, as user feels	Q6.9
		Attitude	Attitude towards use	Attitude of user towards the use of media	Q11.9
		Social Influence	Social Influence	Factors that influence the user to use the media	Q9.9
		Purpose	Main purpose of accessing	What is the main purpose (s) of using	Q8.9
	Usage	Using Storages	Using Storages	Is the respondent using storages	Q4
		Expenditure	Percentage of monthly income spend		Q12.6
Utilization of Software	Affecting Factors	Location	Location of Access / Ownership	All the locations of accessing the media	Q7.10
		Satisfaction	User Satisfaction	Level of satisfactory about the media	Q5.10
		Usefulness	Perceived Usefulness	How useful the media, as user feels	Q6.10
		Attitude	Attitude towards use	Attitude of user towards the use of media	Q11.10
		Social Influence	Social Influence	Factors that influence the user to use the media	Q9.10
		Purpose	Main purpose of accessing	What is the main purpose (s) of using	Q8.10
	Usage	Expenditure	Percentage of monthly income spend		Q12.7
Utilization of Publications	Affecting Factors	Location	Location of Access / Ownership	All the locations of accessing the media	Q7.11
		Satisfaction	User Satisfaction	Level of satisfactory about the media	Q5.11
		Usefulness	Perceived Usefulness	How useful the media, as user feels	Q6.11
		Attitude	Attitude towards use	Attitude of user towards the use of media	Q11.11
		Social Influence	Social Influence	Factors that influence the user to use the media	Q9.11
		Purpose	Main purpose of accessing	What is the main purpose (s) of using	Q8.11
	Usage	Using Publications	Using Publications	Is the respondent using publications	Q3
		Expenditure	Percentage of monthly income spend		Q12.8

Table 3.7 – Operationalization for Utilization of Storages, Software, Publications

3.3 Sampling and Data gathering

For this study, the population was the people in the rural areas, with the definition in all the Pradeshiya Saba (PS) divisions. At present there are 270 PS divisions in Sri Lanka as mentioned in the Introduction. But the sampling population was the people in the rural areas of Sri Lanka, excluding those in North and East provinces, as the accessibility to those provinces is very difficult due to the present situation. This has limited the sample population to 205 PS divisions. As it is very difficult to list all the whole sampling population and the sample space is easily clustered, cluster sampling was used. For this clustering the PS divisions will be used. But when a PS division is considered it was decided to do a clustering again due to the same factors considered above. For this clustering Grama Niladari (GN) divisions were used. Within the GN divisions random sampling was used. Population within a GN division was taken from the latest census available that is the Census of Population and Housing 2001 [23]. Therefore, for this study multistage clustering was used. Selecting the clustering for this study is described in the next section.

3.3.1 Calculating the Sample Size

Sample size was calculated using the below equations and for selection a table similar to Table 3.8 was used.

$$S = \frac{ss}{1 + \frac{(ss-1)}{pop}}$$

$$\text{where; } ss = \frac{Z^2 p(1-p)}{c^2}$$

Z is the Z value for the relevant Confidence Level (CL)

p is 0.5 for calculating the sample size

c is the Confidence Interval (CI)

pop is the population size [24]

	CI	0.05	0.10	0.15	0.20	0.25	0.30	0.35
CL	Z							
95	1.96	134	66	36	22	15	11	8
90	1.65	118	52	27	16	11	8	6
85	1.45	105	42	22	13	9	6	5
80	1.30	93	36	18	11	7	5	4
75	1.15	81	29	14	8	6	4	3
70	1.05	72	25	12	7	5	4	3
65	0.95	63	21	10	6	4	3	2

Table 3.8 – Table Used to Select the Number of PS Divisions for the Sample

By considering the available time frame and the resources for the study CI and CL was decided as in the Table 3.8. For the first stage clustering used CI and CL were 0.30 and 85% respectively. With those values the selected number of clusters was 6, out of the 205 available. Those 6 PS divisions were selected randomly out of the 205 divisions. As the outcome selected PS divisions were Thanamalwila, Tissamaharama, Welimada, Kandaketiya, Pannala, and Benthota.


 PS Division	Population	GN Divisions			CI	CL
		Total	%	Selected		
Thanamalwila	23158	14	42.9%	6	0.30	90
Tissamaharama	60941	44	15.9%	7	0.30	90
Welimada	93352	64	10.9%	7	0.30	90
Kandaketiya	22309	26	26.9%	7	0.30	90
Pannala	114174	87	9.2%	8	0.30	90
Benthota	46774	51	13.7%	7	0.30	90

Table 3.9 – Selected Number of GN Divisions within the Selected PS Divisions.

At the second stage clustering, required number of GN divisions for the sample were decided with 0.30 CI and 90% CL. With this the selected number of GN divisions was shown in Table 3.9. GN divisions to consider were selected by listing all the GN divisions within the selected PS division and then randomly selecting the required number.

PS Division	Popul- -ation	No. of GND	No. of People from GND	Selected Popul-- -ation	Selected population %	CI	CL
Thanamalwila	23158	6	11	66	0.28%	0.25	90
Tissamaharama	60941	7	11	77	0.13%	0.25	90
Welimada	93352	7	11	77	0.08%	0.25	90
Kandaketiya	22309	7	11	77	0.35%	0.25	90
Pannala	114174	8	8	64	0.06%	0.30	90
Benthota	46774	7	8	56	0.12%	0.30	90

Table 3.10 – Sample Selection from GN Division Level

From each of those selected GN divisions, number of people to select was done with 0.30 or 0.25 CI and 90% CL (Table 3.10) depending on the population and available resources. With this selection total sample size selected was 417 people. Questionnaires were sent to those selected GN divisions with some known people contacted from the relevant PS division.



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4 ANALYSIS

4.1 Data Gathering

Summary of distribution and collection of questionnaires, for each selected PS division, is given in the Table 4.1. When the total sample is considered response rate was 93%, which was achieved with the return of 388 filled questionnaires out of the 417 distributed. Thanamalwila and Tissamaharama PS divisions had 100% response rate.

PS Division	No. of GND	People from a GND	No. of Questionnaires		Return percentage
			Given out	Returned	
Thanamalwila	6	11	66	66	100.0%
Tissamaharama	7	11	77	77	100.0%
Welimada	7	11	77	68	88.3%
Kandaketiya	7	11	77	60	77.9%
Pannala	8	8	64	62	96.9%
Benthota	7	8	56	55	98.2%
Total			417	388	93.0%

Table 4.1 – Summary of the Responses

As described in the methodology section the analysis will be done on two main sections; Calculating the Informatization Index and Analysis with the Framework.

4.2 Index Calculation

Main index value for the sample with those weights, which is 0.242, is calculated with the help of two tables; 4.12 and Table 4.3.

Index	Index Value	Weight	Value	Sub Component
Level of Informatization (Utilization of ICTs)	0.242	7.1%	0.6444	Utilization of Radio
		9.1%	0.6602	Utilization of Television
		9.5%	0.4187	Utilization of Telephone
		11.2%	0.3028	Utilization of Mobile phone
		13.6%	0.2112	Utilization of Computer
		11.4%	0.0799	Utilization of Internet
		9.5%	0.0640	Utilization of e-Mail
		5.4%	0.0243	Utilization of Satellite TV
		7.7%	0.0888	Utilization of Storage
		6.7%	0.0919	Utilization of Publications
		8.9%	0.0466	Utilization of Software

Table 4.2 – Use of Sub Component Values and Weights to Calculate the Index

Sub component	Sub component Value	Weight	Value	Variable
Utilization of Radio	0.644	44.1%	0.871	Available @ home
		30.0%	0.164	Occupied broadcasting time
		25.9%	0.814	Use to access information
Utilization of Television	0.660	43.3%	0.874	Available @ home
		29.3%	0.178	Occupied broadcasting time
		27.4%	0.838	Use to access information
Utilization of Satellite TV	0.024	21.9%	0.010	Subscription available
		21.0%	0.003	Occupied broadcasting time
		20.2%	0.075	Use to access information
		20.6%	0.028	Available @ home
		16.4%	0.002	Expenditure as a % of monthly income
Utilization of Telephone	0.419	39.0%	0.629	Available @ home
		24.9%	0.152	Number of calls taken
		20.1%	0.616	Use to access information
		16.0%	0.075	Expenditure as a % of monthly income
Utilization of Mobile phone	0.303	30.3%	0.469	Ownership
		26.9%	0.135	Number of calls taken
		23.5%	0.461	Use to access information
		19.3%	0.084	Expenditure as a % of monthly income
Utilization of Computer	0.211	14.4%	0.193	Available @ home
		12.0%	0.198	Frequency of usage
		12.5%	0.077	Length of usage
		16.2%	0.389	Computer Literacy
		13.0%	0.331	Computer Self-Efficacy
		8.3%	0.186	Experience
		17.1%	0.157	Use to access information
		6.5%	0.025	Expenditure as a % of monthly income
Utilization of Internet	0.080	18.2%	0.070	Available @ home
		16.1%	0.108	Frequency of usage
		14.7%	0.035	Length of usage
		13.2%	0.067	Subscription available
		9.8%	0.100	Years of experience
		20.7%	0.119	Use to access information
		7.2%	0.018	Expenditure as a % of monthly income
Utilization of e-Mail	0.064	16.9%	0.054	Available @ home
		16.9%	0.091	Frequency of usage
		14.6%	0.020	Length of usage
		14.2%	0.041	Subscription available
		10.2%	0.095	Years of experience
		20.3%	0.101	Use to access information
		7.0%	0.010	Expenditure as a % of monthly income
Utilization of Storage	0.089	29.8%	0.168	Ownership
		28.7%	0.024	Expenditure as a % of monthly income
		41.5%	0.077	Use to access information
Utilization of Publications	0.092	62.5%	0.137	Use to access information
		37.5%	0.017	Expenditure as a % of monthly income
Utilization of Software	0.047	69.5%	0.062	Use to access information
		30.5%	0.012	Expenditure as a % of monthly income

Table 4.3 – Calculation of Sub Components of the Index with the Variables

Weights for the sub components of the main index and the weights for the variables of the sub components had been calculated using the standardized average values of the feedback of 30 ICT users.

The method used for this calculation was the method used to calculate China's Informatization Index as described in the methodology section. Sub components values and main index values for each Pradeshiya Saba (PS) division considered in the sample are compared in the Table 4.4. The same values are compared with the main Index in the graph in Figure 4.1.

	Thanamalwila	Tissamaharama	Pannala	Benthota	Welimada	Kandaketiya	Total
Utilization of Radio	0.645	0.636	0.657	0.532	0.681	0.703	0.644
Utilization of Television	0.641	0.678	0.655	0.649	0.718	0.608	0.660
Utilization of Satellite TV	0.038	0.027	0.039	0.016	0.016	0.008	0.024
Utilization of Telephone	0.322	0.388	0.427	0.519	0.458	0.421	0.419
Utilization of Mobile phone	0.213	0.241	0.380	0.431	0.345	0.236	0.303
Utilization of Computer	0.159	0.126	0.220	0.444	0.200	0.168	0.211
Utilization of Internet	0.038	0.031	0.112	0.210	0.040	0.081	0.080
Utilization of e-Mail	0.044	0.014	0.070	0.174	0.036	0.074	0.064
Utilization of Storage	0.040	0.015	0.147	0.172	0.090	0.099	0.089
Utilization of Publications	0.107	0.075	0.068	0.116	0.104	0.086	0.092
Utilization of Software	0.053	0.000	0.103	0.045	0.033	0.059	0.047
Informatization	0.206	0.200	0.265	0.321	0.248	0.230	0.242

Table 4.4 – Comparison of Index Values of Each PS Division and Total Sample

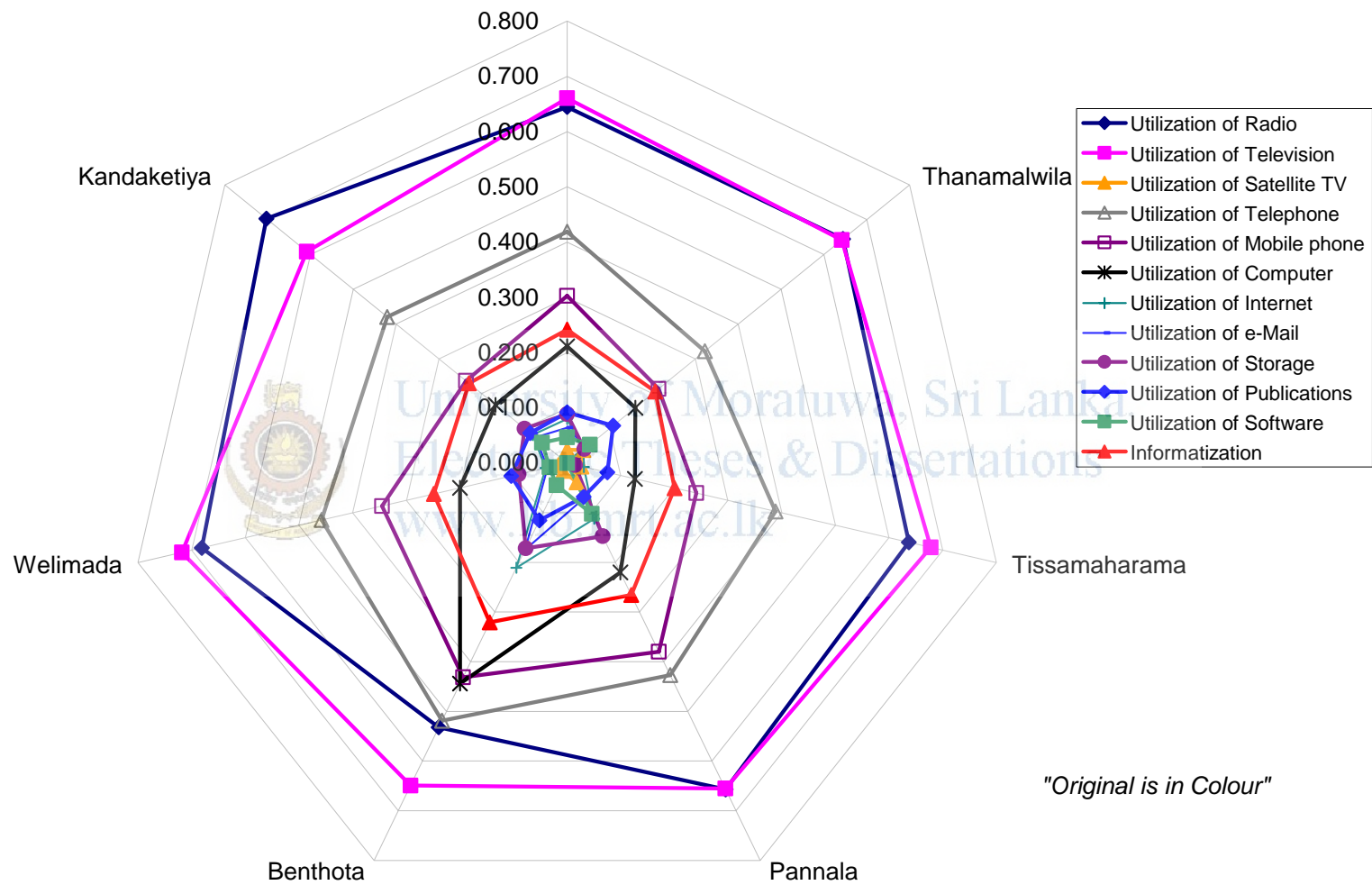


Figure 4.1 – Comparison of Index Values and Sub Components

4.3 Descriptive Analysis

In this section a brief description about the sample used is given. Sample of people used for this study consist of 58.51% of Male and remain 41.49% is Female. The variation of the gender distribution within each PS division and the comparison of this distribution are illustrated in Figure 4.2.

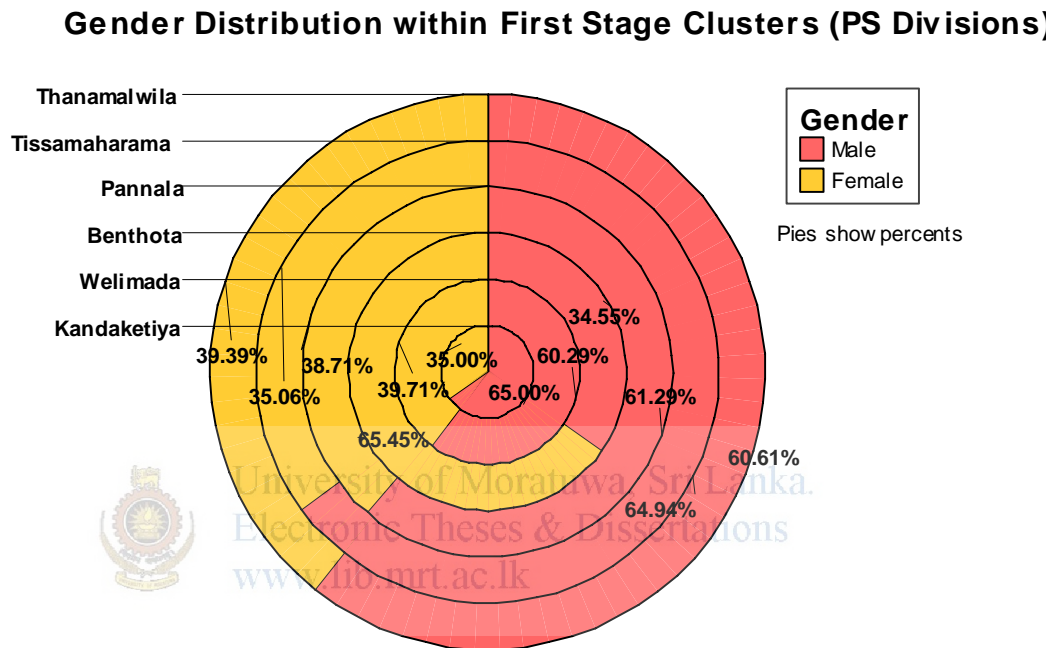


Figure 4.2 – Gender Distribution within PS Divisions

When the total sample is considered, there were three main categories according to the living location and working location. They are;

1. People who are living and working in Rural areas
2. People who are living in Rural areas but working in Urban areas.
3. People who are living in Rural areas but has not mentioned their working areas.

Comparison of those three categories distribution among the PS divisions is given in the Figure 4.3. The people belongs to the third category also includes the students, who has no working place to mentioned.

Live and Work Area comparission of Samples

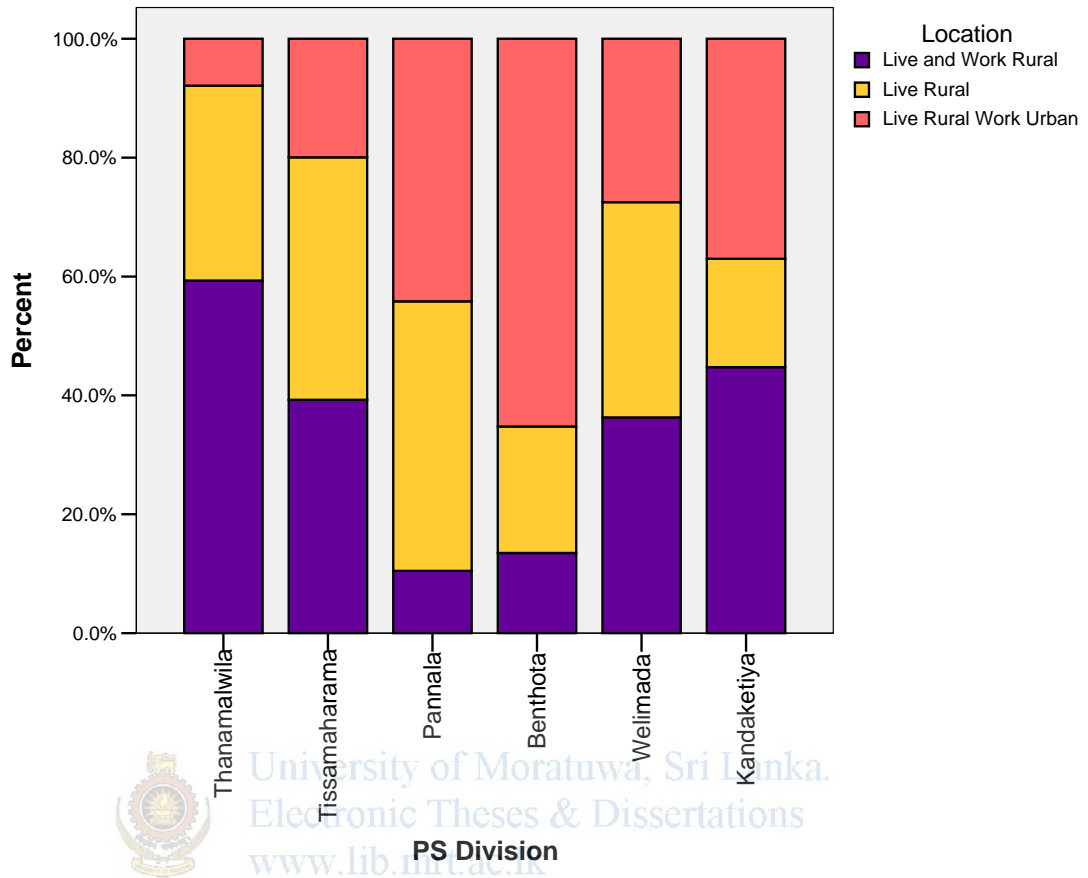


Figure 4.3 – Working and Living Location Distribution of the Sample.

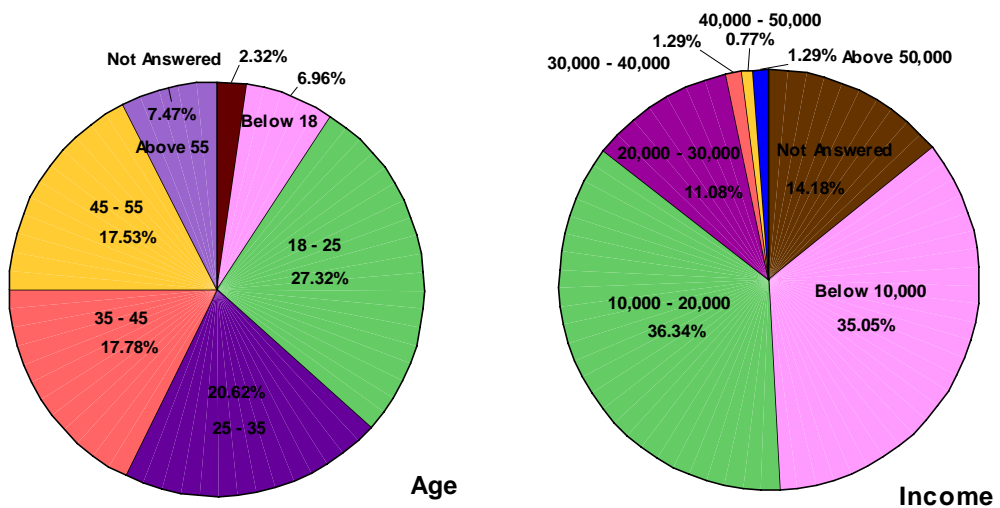


Figure 4.4 – Age and Income Distribution of the Sample

Two graphs in Figure 4.4 illustrate the Age and Income distribution of the sample considered. Although the age was asked in ranges without asking to mention the exact figure, 2.32% of the sample had not answered that question. Comparatively high not answered rate, which is 14.18%, in the income may cause due to two reasons. First one is that some are reluctant to provide their income figures and the second reason is that the students in the sample don't have a monthly income.

	Frequency	Percent	Valid Percent
Valid Not Answered	6	1.5	1.5
Less than OL	84	21.6	21.6
OL	116	29.9	29.9
AL	139	35.8	35.8
Diploma / Certificate	19	4.9	4.9
Degree / Postgraduate	24	6.2	6.2
Total	388	100.0	100.0

Table 4.5 – Frequency Table of the Highest Educational Level of the Sample

	Frequency	Percent	Valid Percent
Valid Not Answered	18	4.6	4.6
Student	37	9.5	9.5
Self Employed	125	32.2	32.2
Non Executive	69	17.8	17.8
Executive	17	4.4	4.4
Management	12	3.1	3.1
Other	110	28.4	28.4
Total	388	100.0	100.0

Table 4.6 – Frequency Table of the Job Category of the Sample

Highest educational level and Job Category distribution within the sample is as in Table 4.5 and Table 4.6 respectively. Workplace of the sample is distributed as in Table 4.7, which shows the majority of them are self employed. Again in the workplace case also the not answered 67 respondents consists the students in the sample. How the civil status of the sample is distributed is illustrated in the pie chart in Figure 4.5.

		Frequency	Percent	Valid Percent
Valid	Not Answered	67	17.3	17.3
	Government	118	30.4	30.4
	Semi Government	19	4.9	4.9
	Private	66	17.0	17.0
	Self Employed	118	30.4	30.4
	Total	388	100.0	100.0

Table 4.7 – Frequency Table of the Workplace

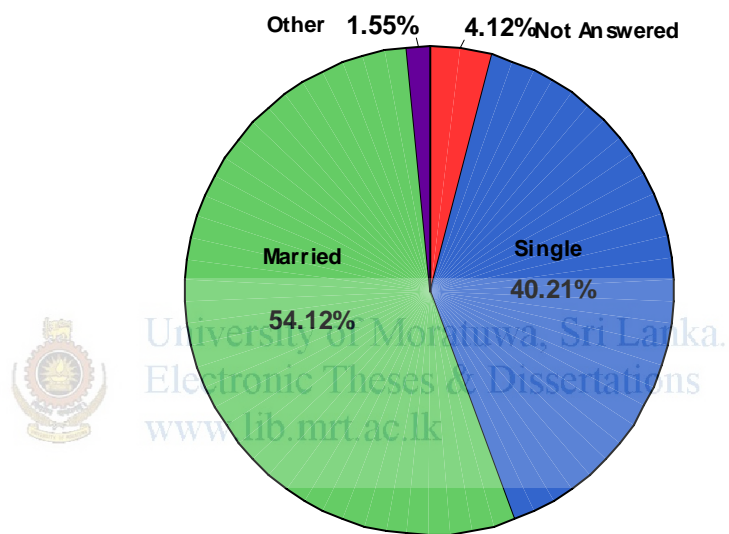


Figure 4.5 – Civil Status Distribution of the Sample

With this brief description about the sample, in the next section the analysis is done with the use of the Analysis framework developed in the methodology section.

4.4 Univariate Analysis

4.4.1 Hypothesis Testing

Hypothesis testing was done by considering the 11 sub types of ICT considered in this study; they are Radio, Television, Satellite TV, Telephone, Mobile phone, Computer, Internet, email, Storages, Software, and Publications.

Location of Access for hypothesis testing was considered as Own location, Free location, Paid location, and Other location. Both User satisfaction and Perceived usefulness are considered in Likert Scale. In this case User satisfaction was categorized as Strongly satisfied, Satisfied, Neutral, Not satisfied, and Strongly not satisfied. Perceived usefulness had Strongly useful, Useful, Sometimes Useful, Not useful, and Not at all useful five categories.

Purpose of using each of those ICTs was considered in four categories named; Information Access or Exchange, Entertainment, Education, and other. Relationship between purpose and utilization was analyzed by considering those categories. Influence for utilizing the ICTs was considered as Self influence, Social Influence, and Influence by other factors.

Help to Personal life (named as Help throughout the study), Harmful to the society or personal life (named as Harm throughout the study), Entertainment source (named as Entertainment through the study), and Other were the four categories considered under Attitude towards use for the hypothesis analysis.

For this hypothesis analysis accepting significant level was taken as 0.200 to reflect the 80% Confidence Level. This was due to the low Confidence Intervals and Confidence Levels used in the sample selection.

4.4.2 Calculating the Utilization

Utilization was calculated for each sub component of ICT as a combination of the variables used to measure the Expenditure, Occupied time (broadcasting time or time used daily), Frequency of usage, Calls per person, and Experience. All those variables were valued as Low, Medium, and High as in Table 4.8. This classification was done with an expert view. Then those were crosschecked by the variable that checks the using or not using of the relevant ICT. With this method utilization variable, which was used for hypothesis testing, was calculated for each ICT.

Measure	Values Used		
	Low	Medium	High
Expenditure (as a % of monthly income)	Below 5%	5% - 20%	Above 20%
Occupied time (daily)	Less than 4hrs	4hrs - 10hrs	More than 10hrs
Frequency of Usage	Less than few times a year	Once a week, few days or once a month	Few days a week, daily
Calls per person	Less than 5	6 - 20	More than 20
Experience	Less than 2yrs	2yrs - 5yrs	More than 5yrs

Table 4.8 – Categorization of Utilization Levels

4.4.3 Utilization of Radio

According to the results, 83.5% of the sample utilized the radio out of which 62.0% had low utilization. Radio utilization summary of the sample is shown in Table 4.9. With the respondents who utilize the radio, hypothesis analysis related to radio was done.

		Frequency	Percent	Valid Percent
Valid	Low	201	51.8	62.0
	Medium	119	30.7	36.7
	High	4	1.0	1.2
	Total	324	83.5	100.0
Missing	Not Using	64	16.5	
Total		388	100.0	

Table 4.9 – Radio Utilization Summary

With the main six factors affecting utilization and the sub categories of the Location of Access, Purpose, Influence, and Attitude for each ICT there are 17 cases considered. For the case of Radio, out of those 17 cases only 5 cases have shown a significance level below 0.200 in the Monte Carlo Exact test, which belongs to the Chi-Square tests.

First significant value below the accepting level considered for this study was 0.003, which was observed for the Perceived usefulness of the Radio and Utilization of the Radio, as given in Table 4.10. With the Radio access at free location and Utilization of the Radio, there was a significance value of 0.082 as in Table 4.11. As in Table 4.12, Utilization of the Radio and the Purpose of Entertainment had a significance value of 0.113. The other two cases with acceptable significance values were for the Utilization of the Radio with Other influence and Other Attitude. Those two cases had significance values 0.020 and 0.004 respectively. Therefore, with those values 5 alternate hypotheses were accepted by rejecting the relevant null hypotheses. In other cases relevant to the utilization of the radio, null hypothesis were accepted.

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	22.539(a)	12	.032	.091(b)	.083	.098
Likelihood Ratio	24.178	12	.019	.007(b)	.005	.009
Fisher's Exact Test	28.794			.003(b)	.002	.005
Linear-by-Linear Association	3.582(c)	1	.058	.066(b)	.060	.073
N of Valid Cases	324					

a 15 cells (71.4%) have expected count less than 5. The minimum expected count is .01.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is 1.893.

Table 4.10 – Test Results for the Perceived Usefulness of Radio and the Utilization

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4.566(a)	2	.102	.096(b)	.089	.104
Likelihood Ratio	4.239	2	.120	.130(b)	.121	.138
Fisher's Exact Test	4.748			.082(b)	.074	.089
Linear-by-Linear Association	4.094(c)	1	.043	.053(b)	.047	.058
N of Valid Cases	324					

a 2 cells (33.3%) have expected count less than 5. The minimum expected count is .89.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is 2.023.

Table 4.11 - Radio Access at Free Location and Utilization

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4.909(a)	2	.086	.101(b)	.094	.109
Likelihood Ratio	5.639	2	.060	.054(b)	.048	.060
Fisher's Exact Test	4.449			.113(b)	.105	.121
Linear-by-Linear Association	4.891(c)	1	.027	.028(b)	.024	.032
N of Valid Cases	324					

a 2 cells (33.3%) have expected count less than 5. The minimum expected count is .46.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is 2.211.

Table 4.12 – Purpose of Entertainment and Radio Utilization

4.4.4 Utilization of TV

According to the results, 84.8% of the sample utilized the Television (TV) out of which 52.9% had low utilization. TV utilization summary of the sample is shown in Table 4.13. With the respondents who utilize the TV, hypothesis analysis related to TV was done.

		Frequency	Percent	Valid Percent
Valid	Low	174	44.8	52.9
	Medium	153	39.4	46.5
	High	2	.5	.6
	Total	329	84.8	100.0
Missing	Not Using	59	15.2	
Total		388	100.0	

Table 4.13 – Summary of Utilization of TV

For the case of TV, out of those 17 cases 8 cases have significance level below 0.200 in the Monte Carlo Exact test. For the utilization of TV, both Perceived usefulness and User satisfaction had a relationship with significance values of 0.103 and 0.013 respectively.

When the purpose of using TV considered, Information access and Educational help had relationships with TV utilization. This was because the significance value for Information access was 0.073 as in Table 4.14, and the Educational help significance was 0.011. Utilization of TV had a relationship with the Social Influence due to the 0.118 significance as in Table 4.15.

Three out of the four cases considered under Attitude towards use had significant relationships with Utilization of TV. Help to life, which is one of the cases under Attitude towards use, had high significance, with a value of 0.000 (Table 4.16). Also Attitudes of Entertainment source and Harmful to personal life or society had relationships with TV utilization with significance values 0.053 and 0.002 respectively. This implies that although there were three attitudes about the TV which had relationships with TV utilization, Help to life had a better relationship.

Out of the hypotheses related to utilization of TV, 8 null hypotheses had been rejected and relevant alternate hypotheses were accepted. For other cases null hypotheses were accepted.

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	5.253(a)	2	.072	.073(b)	.067	.080
Likelihood Ratio	4.002	2	.135	.105(b)	.097	.113
Fisher's Exact Test	5.104			.073(b)	.067	.080
Linear-by-Linear Association	.890(c)	1	.346	.388(b)	.376	.401
N of Valid Cases	329					

a 2 cells (33.3%) have expected count less than 5. The minimum expected count is .21.

b Based on 10000 sampled tables with starting seed 79996689.

c The standardized statistic is .943.

Table 4.14 – Test Results of Purpose of Information Access and Utilization for TV

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	3.483(a)	2	.175	.118(b)	.110	.127
Likelihood Ratio	4.625	2	.099	.118(b)	.110	.127
Fisher's Exact Test	5.266			.118(b)	.110	.127
Linear-by-Linear Association	3.153(c)	1	.076	.114(b)	.106	.122
N of Valid Cases	329					

a 4 cells (66.7%) have expected count less than 5. The minimum expected count is .02.

b Based on 10000 sampled tables with starting seed 79996689.

c The standardized statistic is 1.776.

Table 4.15 – Social Influence and Utilization Test Results for TV

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	12.999(a)	2	.002	.001(b)	.000	.001
Likelihood Ratio	13.282	2	.001	.001(b)	.000	.001
Fisher's Exact Test	13.632			.000(b)	.000	.001
Linear-by-Linear Association	10.430(c)	1	.001	.002(b)	.001	.003
N of Valid Cases	329					

a 2 cells (33.3%) have expected count less than 5. The minimum expected count is .51.

b Based on 10000 sampled tables with starting seed 79996689.

c The standardized statistic is 3.230.

Table 4.16 – Test Results for TV Utilization and Attitude that TV Helps to Life

4.4.5 Utilization of Satellite TV

Utilization summary for Satellite TV is given in Table 4.17. Only 1.0% of the sample utilized the Satellite TV out of which 75.0% had a low utilization. Therefore, no hypothesis analysis was done for Satellite TV.

		Frequency	Percent	Valid Percent
Valid	Low	3	.8	75.0
	Medium	1	.3	25.0
	Total	4	1.0	100.0
Missing	Not Using	384	99.0	
Total		388	100.0	

Table 4.17 – Satellite TV Utilization Summary

4.4.6 Utilization of Telephone

By considering the results, 67.3% of the sample utilized the telephone out of which 64.0% had low utilization and only 3.1% had high utilization. The telephone utilization summary of the sample is shown in Table 4.18. Hypothesis analysis for the Telephone had been done with the respondents who utilize the telephone.

		Frequency	Percent	Valid Percent
Valid	Low	167	43.0	64.0
	Medium	86	22.2	33.0
	High	8	2.1	3.1
	Total	261	67.3	100.0
Missing	Not Using	127	32.7	
Total		388	100.0	

Table 4.18 – Summary of Utilization of Telephone

In the Monte Carlo Exact test, User satisfaction and Telephone utilization had a significance of 0.187 by which the alternate hypothesis was accepted. But the usefulness doesn't had significance with the telephone utilization. In the cases considered under the Location of access, except the paid location all the locations had significance with the telephone utilization. Own location had 0.016 significance value as in Table 4.19, while free location and other location had values 0.000 and 0.037 respectively. When the purpose of using telephone is considered, Information retrieval and exchange and Education had significance with the utilization of telephone. Both those cases were highly significant as they had significance 0.000, as shown in Table 4.20 for Education. Two of sub cases of Attitude had acceptable significance values of 0.167 for Harmful to people or society and 0.028 for other attitude. Self influence had a significance value of 0.035 with the utilization of telephone as in Table 4.21.

With the above mentioned significance values, 9 alternate hypotheses had been accepted by rejecting the relevant null hypotheses. Those accepted alternate hypotheses are listed in Table 4.35 and Table 4.36 at the end of hypothesis testing section.

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	9.203(a)	2	.010	.012(b)	.009	.015
Likelihood Ratio	7.373	2	.025	.023(b)	.019	.027
Fisher's Exact Test	8.021			.016(b)	.012	.019
Linear-by-Linear Association	6.961(c)	1	.008	.009(b)	.007	.012
N of Valid Cases	261					

a 1 cells (16.7%) have expected count less than 5. The minimum expected count is 1.29.

b Based on 10000 sampled tables with starting seed 762367465.

c The standardized statistic is -2.638.

Table 4.19 – Utilization of Telephone and Access at Own Location Test Result

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	15.874(a)	2	.000	.001(b)	.000	.001
Likelihood Ratio	14.893	2	.001	.000(b)	.000	.001
Fisher's Exact Test	15.137			.000(b)	.000	.001
Linear-by-Linear Association	15.605(c)	1	.000	.000(b)	.000	.001
N of Valid Cases	261					

a 1 cells (16.7%) have expected count less than 5. The minimum expected count is 2.02.

b Based on 10000 sampled tables with starting seed 762367465.

c The standardized statistic is 3.950.

Table 4.20 – Telephone Utilization and Education Purpose Crosstab Results

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	8.149(a)	2	.017	.023(b)	.019	.027
Likelihood Ratio	5.839	2	.054	.049(b)	.043	.054
Fisher's Exact Test	6.499			.035(b)	.031	.040
Linear-by-Linear Association	3.326(c)	1	.068	.083(b)	.076	.090
N of Valid Cases	261					

a 1 cells (16.7%) have expected count less than 5. The minimum expected count is 1.20.

b Based on 10000 sampled tables with starting seed 762367465.

c The standardized statistic is -1.824.

Table 4.21 – Telephone Utilization and Self Influence Test Results

4.4.7 Utilization of Mobile Phone

In the sample 53.1% utilized mobile phone and 27.8% of the sample had low utilization. Complete summary of the mobile phone utilization is shown in the Table 4.22.

		Frequency	Percent	Valid Percent
Valid	Low	108	27.8	52.4
	Medium	89	22.9	43.2
	High	9	2.3	4.4
	Total	206	53.1	100.0
Missing	Not Using	182	46.9	
Total		388	100.0	

Table 4.22 – Summary of Utilization of Mobile Phone

In the case of mobile phone utilization, 8 cases out of the 17 considered had significance value within the acceptable range. All those significance values were calculated using the Monte Carlo Exact test. Accessing at free locations had a significance of 0.003 with the utilization of mobile phone. Except the Information access and exchange purpose, all the other considered purposes were significant with the utilization for mobile phone. The values were 0.034 for Entertainment, 0.005 for Education, and 0.015 for other purposes. Social influence was significantly dominant for the utilization of mobile phone with a significance value of 0.001 as in Table 4.23. Other influences had a significance value of 0.034 for mobile phone utilization. Attitude of harmful to society and entertainment source were significance with utilization with values 0.028 and 0.002.

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	20.099(a)	2	.000	.001(b)	.000	.001
Likelihood Ratio	13.251	2	.001	.003(b)	.002	.004
Fisher's Exact Test	13.752			.001(b)	.000	.001
Linear-by-Linear Association	14.376(c)	1	.000	.000(b)	.000	.001
N of Valid Cases	206					

a 2 cells (33.3%) have expected count less than 5. The minimum expected count is .44.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is 3.792.

Table 4.23 – Test Results of Utilization of Mobile Phone and Social Influence

By considering the described significance values, relevant 8 alternate hypotheses were accepted while the null hypotheses were accepted for other cases.

4.4.8 Utilization of Computer

Out of the total sample 34% use Computer, out of which more than 60% had a medium usage. Frequency distribution of the usage is given in the Table 4.24.

		Frequency	Percent	Valid Percent
Valid	Low	5	1.3	3.8
	Medium	84	21.6	63.6
	High	43	11.1	32.6
	Total	132	34.0	100.0
Missing	Not Using	256	66.0	
Total		388	100.0	

Table 4.24 – Summary of Utilization of Computer

For utilization of computer only 4 hypotheses had shown a acceptable significance level in the Monte Carlo Exact test. Out of those four, access of computers at a free location had shown a significance value of 0.001 with utilization, as in Table 4.25. Both Perceived usefulness and Access at own location had significance value of 0.051 with the utilization of computer. Access computer at paid location also had an acceptable significance value (0.184) with the utilization. In the case of utilization of computer, alternate hypotheses relevant to the above mentioned cases were accepted and the null hypotheses for the other cases were accepted.

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	12.347(a)	2	.002	.001(b)	.000	.002
Likelihood Ratio	12.876	2	.002	.001(b)	.000	.002
Fisher's Exact Test	12.642			.001(b)	.000	.001
Linear-by-Linear Association	8.745(c)	1	.003	.005(b)	.003	.007
N of Valid Cases	132					

a 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.23.

b Based on 10000 sampled tables with starting seed 792558341.

c The standardized statistic is 2.957.

Table 4.25 – Test Results of Utilization of Computer and Access at Free Location

4.4.9 Utilization of Internet

As given in the frequency table in Table 4.26, only 18.3% of the sample uses the Internet. Similar to computer use, majority which is 63.4%, of the users had a medium usage of Internet also.

		Frequency	Percent	Valid Percent
Valid	Low	4	1.0	5.6
	Medium	45	11.6	63.4
	High	22	5.7	31.0
	Total	71	18.3	100.0
Missing	Not Using	317	81.7	
Total		388	100.0	

Table 4.26 – Summary of Utilization of Internet

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	6.532(a)	2	.038	.032(b)	.027	.036
Likelihood Ratio	6.841	2	.033	.063(b)	.057	.069
Fisher's Exact Test	6.464			.028(b)	.024	.032
Linear-by-Linear Association	6.419(c)	1	.011	.017(b)	.014	.021
N of Valid Cases	71					

a 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.75.

b Based on 10000 sampled tables with starting seed 1532573741.

c The standardized statistic is 2.534.

Table 4.27 – Test Results of Utilization of Internet and Access at Free Location

Utilization of Internet had significance values 0.014, 0.005, and 0.028 with the user satisfaction, perceived usefulness, and access at a free location respectively in the Monte Carlo Exact test. Test results for the utilization of Internet and Access at free location is given in Table 4.27. Therefore, the alternate hypotheses relevant to those three factors were accepted and null hypotheses were accepted in other cases for the utilization of Internet.

4.4.10 Utilization of Email

In the considered sample, 17.5% uses the email which had a 64.7% medium usage 7.4% had low usage. Table 4.28 shows the frequency distribution for the internet usage and the hypotheses related to email was analyzed using the sample that uses the email.

		Frequency	Percent	Valid Percent
Valid	Low	5	1.3	7.4
	Medium	44	11.3	64.7
	High	19	4.9	27.9
	Total	68	17.5	100.0
Missing	Not Using	320	82.5	
Total		388	100.0	

Table 4.28 – Summary of Utilization of Email

Table 4.29 shows the test results of the Monte Carlo Exact test done for utilization of email and access at free location. This was one of the results within the accepted significance level. Perceived usefulness had a significance value of 0.009 with the utilization for email in the test. In the test, Purpose of using for Entertainment and Education had significance values of 0.152 and 0.033 respectively.

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	8.129(a)	2	.017	.016(b)	.012	.019
Likelihood Ratio	8.424	2	.015	.021(b)	.017	.024
Fisher's Exact Test	7.892			.017(b)	.014	.021
Linear-by-Linear Association	7.699(c)	1	.006	.009(b)	.006	.011
N of Valid Cases	68					

a 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.35.

b Based on 10000 sampled tables with starting seed 297761863.

c The standardized statistic is 2.775.

Table 4.29 – Test Results of Utilization of Email and Access at Free Location

Alternate hypotheses relevant to the above mentioned four factors had been accepted by rejecting the null hypotheses. For other factors null hypotheses were accepted.

4.4.11 Utilization of Storages

Only 49 respondents were using storages, which also had a majority (77.6%) of low use as shown in Table 4.30. Hypotheses analysis for utilization of storages was done with this 12.6% of the respondents.

		Frequency	Percent	Valid Percent
Valid	Low	38	9.8	77.6
	Medium	8	2.1	16.3
	High	3	.8	6.1
	Total	49	12.6	100.0
Missing	Not Using	339	87.4	
Total		388	100.0	

Table 4.30 – Summary of Utilization of Storages

Hypotheses testing results of Monte Carlo Exact test for utilization of storages with self influence is given in Table 4.31. Total of nine alternate hypotheses, out of the 17 considered, were accepted for the utilization of storages. In the remaining 8 cases null hypotheses were accepted. In the test, both User satisfaction and Perceived usefulness had shown acceptable significance values of 0.054 and 0.146 respectively.

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	9.227(a)	2	.010	.009(b)	.006	.011
Likelihood Ratio	10.051	2	.007	.011(b)	.009	.014
Fisher's Exact Test	8.476			.009(b)	.006	.011
Linear-by-Linear Association	9.038(c)	1	.003	.004(b)	.002	.006
N of Valid Cases	49					

a 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.10.

b Based on 10000 sampled tables with starting seed 1325762866.

c The standardized statistic is -3.006.

Table 4.31 – Test Results of Utilization of Storages and Self Influence

When the Location of access considered with utilization of storages, Own location, Paid location and other location had acceptable significance values. In the case of Attitude towards use Help for life and Other attitude had significance values 0.021 and 0.196 which were within the acceptable range.

4.4.12 Utilization of Software

Using software within the considered sample was relatively low as only 36 respondents use software. Out of this 36 also 88.9% had a low utilization (Table 4.32). Similar to the other cases hypotheses testing was done with the respondents who utilize software.

		Frequency	Percent	Valid Percent
Valid	Low	32	8.2	88.9
	Medium	2	.5	5.6
	High	2	.5	5.6
	Total	36	9.3	100.0
Missing	Not Using	352	90.7	
Total		388	100.0	

Table 4.32 – Summary of Utilization of Software

In the Monte Carlo Exact test User satisfaction, Access at own location, and Access at free location had significance values 0.177, 0.167, and 0.107 respectively. Alternate hypotheses relevant to the above three factors had been accepted for utilization of software, while null hypotheses had been accepted for other factors.

4.4.13 Utilization of Publications

Out of the 11 categories of ICT considered, publications had the 6th position based on the number of users with 18.8% of the total respondents. Summary of the utilization of the publications is given in Table 4.33.

		Frequency	Percent	Valid Percent
Valid	Low	67	17.3	91.8
	Medium	5	1.3	6.8
	High	1	.3	1.4
	Total	73	18.8	100.0
Missing	Not Using	315	81.2	
Total		388	100.0	

Table 4.33 – Summary of Utilization of Publications

	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4.068(a)	2	.131	.158(b)	.149	.167
Likelihood Ratio	6.136	2	.047	.091(b)	.083	.098
Fisher's Exact Test	3.764			.158(b)	.149	.167
Linear-by-Linear Association	3.611(c)	1	.057	.072(b)	.066	.079
N of Valid Cases	73					

a 4 cells (66.7%) have expected count less than 5. The minimum expected count is .38.

b Based on 10000 sampled tables with starting seed 210673998.

c The standardized statistic is 1.900.

Table 4.34 – Test Results of Utilization of Publications and Purpose of Education

Results of the Monte Carlo Exact test for Utilization of publications with Using for education purpose is given in the Table 4.34. For this case alternate hypothesis was accepted as the significance value is within the acceptable range. In the test, Utilization of publications had acceptable significance values of 0.092 and 0.044 for User satisfaction and Perceived usefulness respectively. Using publication for other purposes also had an acceptable significance value of 0.033 in the test. With the above results total of four alternate hypotheses were accepted for the utilization of publications.

4.4.14 Summary of Hypothesis testing

Summary of the results of the hypothesis testing is given in the Table 4.35 and Table 4.36. Those tables show only the accepted alternate hypotheses. General format of those accepted alternate hypotheses is;

H_{aij} : There is a relationship between Factor_j of ICT_i and the Utilization of ICT_i

where i and j represent the relevant column of the table

ICT	Factor	Sig.
Radio	Perceived Usefulness	0.003
	Access at Free location	0.082
	Purpose of Entertainment	0.113
	Other Influence	0.020
	Other Attitude	0.004
Television	User Satisfaction	0.103
	Perceived Usefulness	0.013
	Purpose of Information retrieval or exchange	0.073
	Purpose of Education	0.011
	Social Influence	0.118
	Attitude of Help to the life	0.000
	Attitude of Harmful to the society or waste of time	0.002
	Attitude of Entertainment method	0.053
Telephone	User Satisfaction	0.187
	Access at Own location	0.016
	Access at Free location	0.000
	Access at other location	0.037
	Purpose of Information retrieval or exchange	0.000
	Purpose of Education	0.000
	Self Influence	0.035
	Attitude of Harmful to the society or waste of time	0.167
	Other Attitude	0.028
Mobile phone	Access at Free location	0.003
	Purpose of Entertainment	0.034
	Purpose of Education	0.005
	Other purpose	0.015
	Social Influence	0.001
	Other Influence	0.034
	Attitude of Harmful to the society or waste of time	0.028
	Attitude of Entertainment method	0.002
Computer	Perceived Usefulness	0.051
	Access at Own location	0.051
	Access at Free location	0.001
	Access at Paid location	0.184

Table 4.35 – Summary of the Hypothesis Testing Results (Part I)

ICT	Factor	Sig.
Internet	User Satisfaction	0.014
	Perceived Usefulness	0.005
	Access at Free location	0.028
Email	Perceived Usefulness	0.009
	Access at Free location	0.017
	Purpose of Entertainment	0.152
	Purpose of Education	0.033
Storages	User Satisfaction	0.054
	Perceived Usefulness	0.146
	Access at Own location	0.025
	Access at Paid location	0.196
	Access at other location	0.059
	Other purpose	0.140
	Self Influence	0.009
	Attitude of Help to the life	0.021
	Other Attitude	0.196
Software	User Satisfaction	0.177
	Access at Own location	0.167
	Access at Free location	0.107
Publications	User Satisfaction	0.092
	Perceived Usefulness	0.044
	Purpose of Education	0.158
	Other purpose	0.033

Table 4.36 – Summary of the Hypothesis Testing Results (Part II)

In the above tables (Table 4.35 and Table 4.36), sig. column provides the significance value of the Monte Carlo Exact test.

5 DISCUSSION

5.1 Research Findings

Research findings were obtained as finding an Index value and testing hypotheses related to Informatization. Majority of the respondents in the selected sample had GCE (O/L) or less level as their highest education and majority are self employed.

5.1.1 Informatization Index

In the Informatization Index calculated above, all the sample PS divisions had index value very close to the index value of the total sample. The only exceptional case is the Benthota PS division, which had comparatively high index value. When the sub components of the index are considered, utilization of Radio and Television had the highest values. Next highest sub component value was there for the utilization of telephone. Utilization of Mobile phones had the 4th highest sub component value. But the sub component values for other factors considered were relatively low expect for the sample of Benthota PS division.

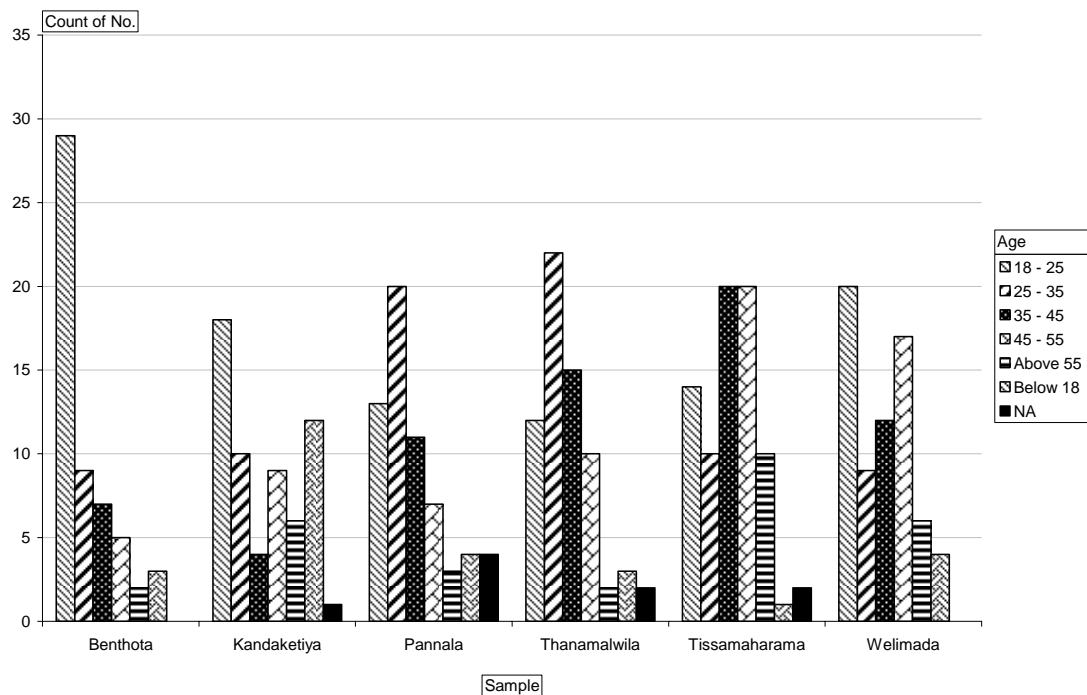


Figure 5.1 – Age Distribution of the Sample within PS Divisions

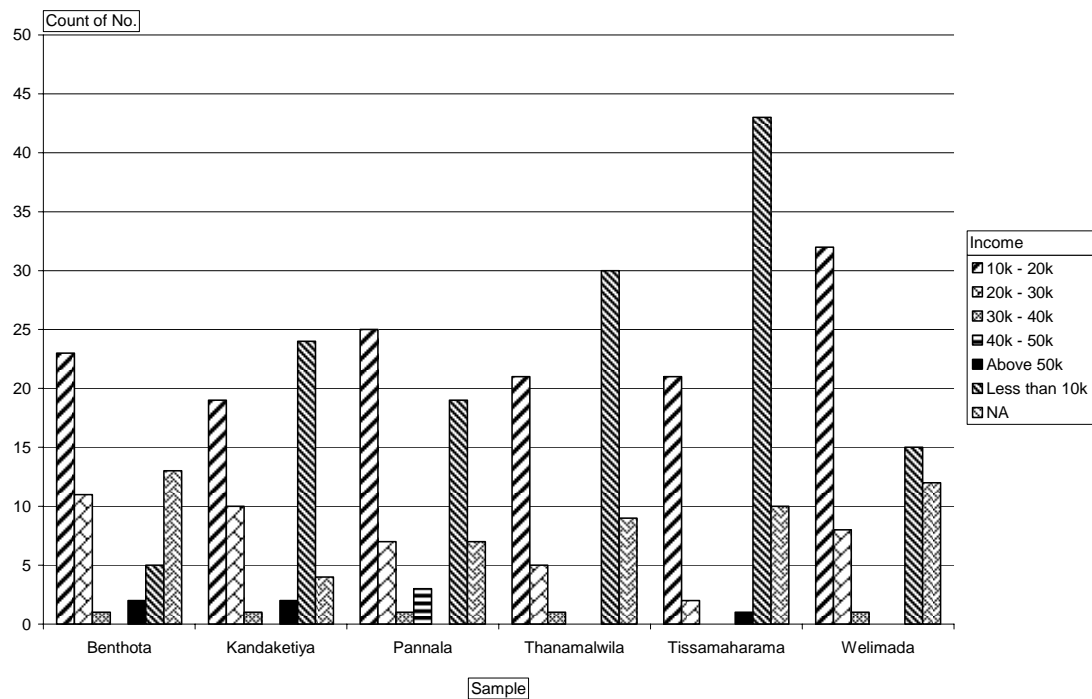


Figure 5.2 – Income Distribution within PS Divisions

There were number of demographic differences in the Benthota PS division sample, when compared with other PS divisions. Majority of the respondents were younger age, as majority is in 18 – 25 age range (Figure 5.1). Income was in the range Rs. 10,000 – Rs. 20,000 (Figure 5.2) and highest education was GCE (A/L) (Figure 5.3) for the majority in the sample. Comparatively a high number of singles (Figure 5.4) were in the sample and majority was working in Urban areas (Figure 4.3). Number of members in the family was low compared to other PS divisions (Figure 5.5). ICT utilization had shown a comparatively high value as a result of variation of all the demographic factors mentioned above.

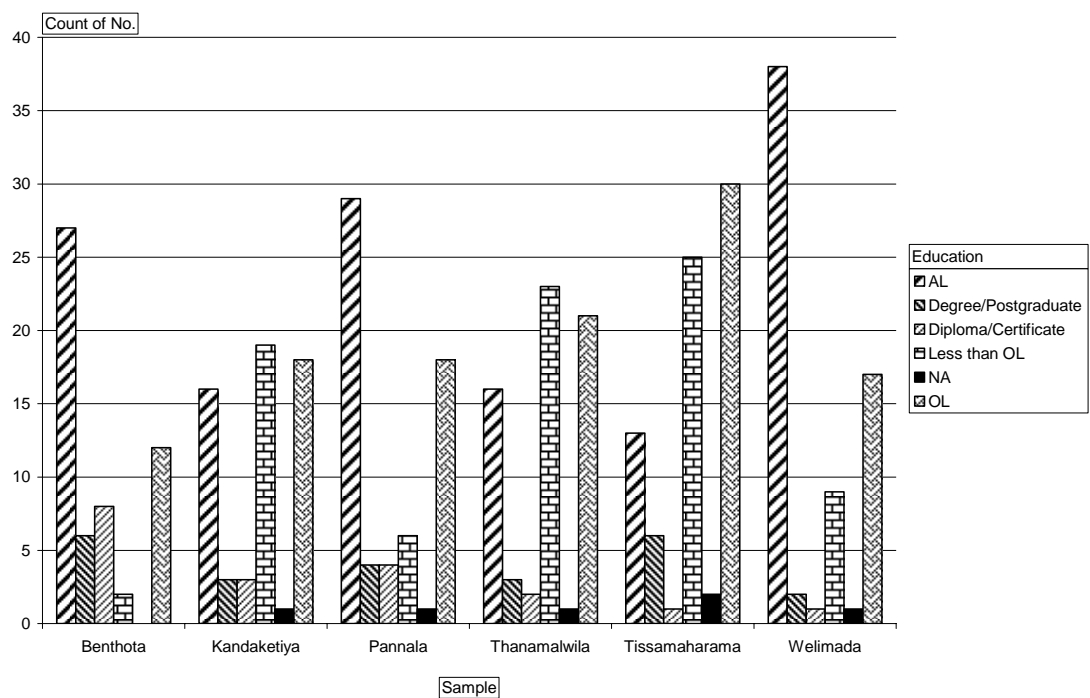


Figure 5.3 – Highest Education Distribution within PS Divisions

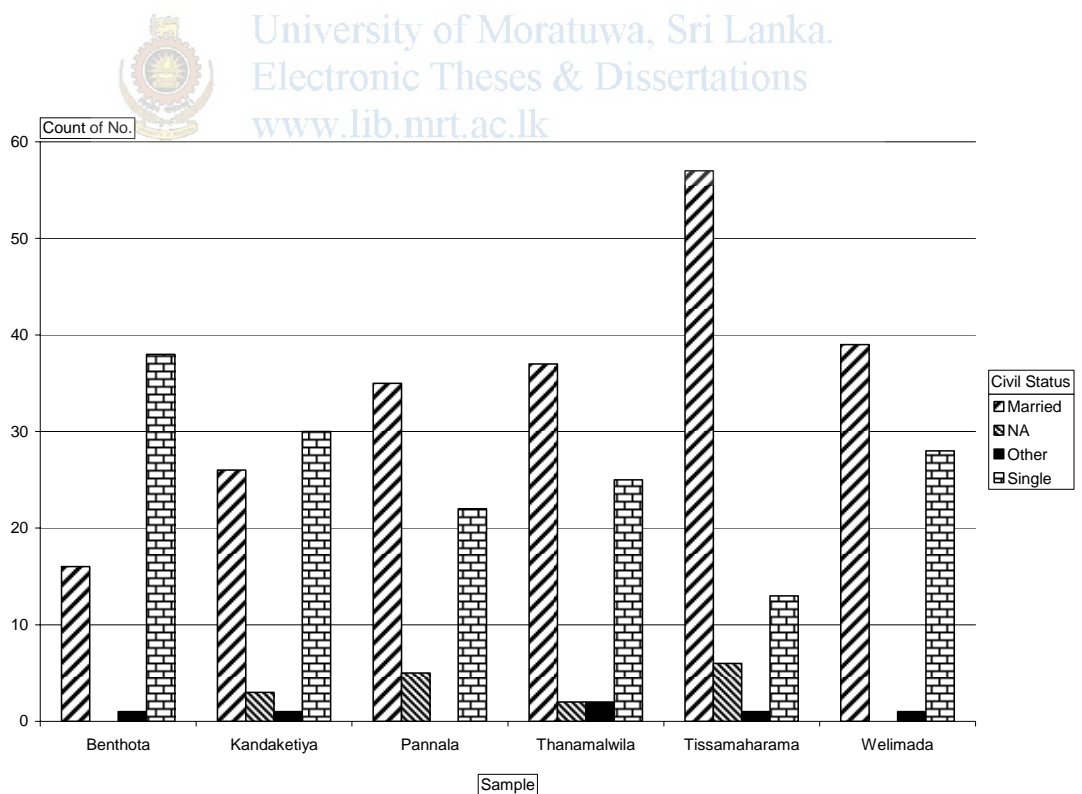


Figure 5.4 – Civil Ststus Distribution within PS Divisions

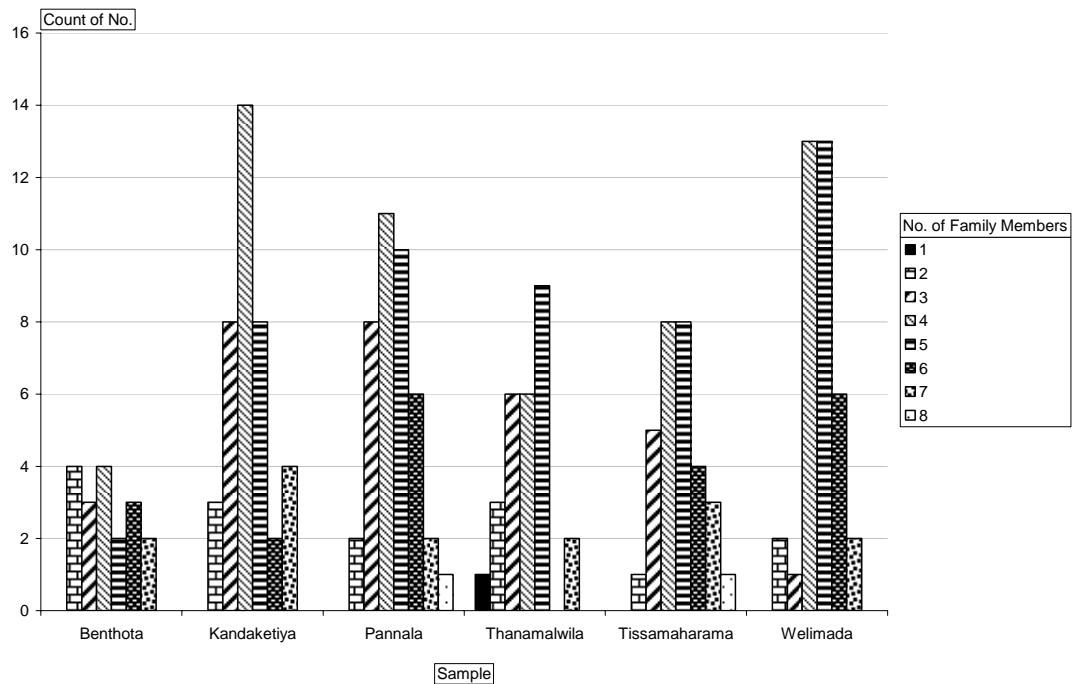


Figure 5.5 – Number of Family Members Comparision within PS Divisions

By considering the index sub components values, sub components that were not discussed had relatively low values. This illustrates that majority of the community in the rural areas are not familiar with the new technologies such as Computers, Internet, email, etc.

To benchmark the index value found in this study it was compared with two indices, which are related to ICT, published by the International Telecommunications Union (ITU). Digital Access Index (DAI) published in 2002 had a value of 0.38 for the Sri Lanka [25]. Sri Lanka had an index value of 0.33 for the Digital Opportunity Index (DOI), published in 2005. Main components of the DOI of that year were 0.9 for opportunity, 0.06 for infrastructure, and 0.03 for utilization [26]. Both DAI and DOI were measured by considering the whole country and were not directly comparable with the index found in this study as it is covering a much broader area. But they can be used to have an idea about the level of Informatization as both the indices measure sub sections of the index found in this study. Therefore, the value of 0.242 of the Informatization Index found in this study shows the low utilization of ICT (Informatization) in rural areas.

5.1.2 Hypothesis Testing

To validate the required hypotheses, initially Chi-Square test was used. But in the case of results, there were more than 20% of cells with expected count less than 5, which made the use of Chi-Square test was not appropriate for the validation of hypotheses. Therefore, Monte Carlo Exact test was used to validate hypotheses.

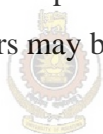
Hypothesis testing was mainly focused on finding out the factors, for each of the ICTs considered, which has a relationship with the relevant ICT. The summary of the hypothesis testing is given in Table 4.35 and Table 4.36. According to the findings, Perceived usefulness and User satisfaction were the two main factors that affect the utilization of most of the ICTs. Below section discuss about the accepted alternate hypotheses that says there is a relationship between the utilization of ICT considered and the factor considered.

Radio is used for the purpose of entertainment while the television is used for information retrieval and education. For the use of television social influence is there. Those factors can be used to improve the level of Informatization. When the attitude is considered in the case of television there are two positive attitudes, they are television is a good entertainment source and it will help to the life. But in the same time attitude that the television is harmful to the society or it's a waste of time is also there.

Telephone usage has relationships with Accessing at own or free location, and user satisfaction. When the purpose is considered information retrieval or exchange and education are the purposes that have relationship with the telephone usage. Only self influence has a visible relationship with the telephone usage. But only social and other influence has relationship with the mobile phone usage. Both telephone usage and mobile phone usage have relationship with the attitude of they are harmful to the society or waste of time while telephone usage have relationship with other attitude also. Mobile phone usage has a relationship with the purpose of entertainment, education and other purposes. Also there's a relationship with access at free location and attitude of entertainment method.

In the case of computer usage, relationship is there for access at own location, free location and paid location. Also relationship is available with the perceived usefulness. With this rural community may be guided to use computers if computer is catering for their requirements at any type of access location. But in the case of access for Internet and email usage have relationship with access at free location only. Both Internet and email also have relationship with the perceived usefulness. If the Internet, email and computer can be used to provide what the user required then they may be easily spread in rural areas.

Utilization of storages has relationships with access at own location, paid location, and other location. Also have relationships with self influence, user satisfaction, and attitude of help to the life and other attitude. This storage utilization may include the usage of CDs and DVDs to watch movies also. Software utilization has relationships with user satisfaction and access at own and free locations. User satisfaction, Perceived usefulness, and the purpose of education have relationships with the utilization of publications. For educating the rural community publications such as newspapers may be used, if they are catering their requirements.



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5.2 Recognition of Future Work

1. Recalculating the Index:

By conducting a study in the same method used for this study, the Informatization Index can be calculated again. By comparing this index values with the values found in this study, increase or decrease of the level of Informatization can be observed.

2. Increasing the accuracy of results:

If this study can be done island wide as a survey with the use of a larger sample with higher confidence interval and confidence level then more accurate result can be obtained. This type of study will require considerable time and higher level of resources. Otherwise this type of study can be done in Province wise as a set of linked studies and then the results can be combined.

3. Find out the relationships for identified factors:

By conducting another detail study, the exact relationships between the identified factors and the relevant ICTs can be found. With this type of finding, necessary improvements to increase the level of Informatization can be found.

4. Find out other factors that guide the identified factors:

It is required to find out the other factors that influence the factors identified as effecting the utilization of each ICT. This finding also can be used to improve the level of Informatization.

5. Benchmarking the Informatization Index

The Informatization Index found in this study is not directly comparable with the other indices related to ICT and ICT utilization. Therefore, a comprehensive study can be done to benchmark exactly this index with related to other indices.

5.3 Limitations of Study

1. Time and resource restrictions:

Target population is a very high value which represents approximately $\frac{3}{4}$ of the population of Sri Lanka. With the available time restriction and resource restrictions, only a small sample was selected by considering low confidence interval and low confidence level. Therefore, the results may not be highly accurate to provide the exact picture of the findings to be done.

2. Literature restrictions:

Although there were literature that are relevant to this study, it was not possible to find those literature as they were not available and it is required to pay a high amounts to obtain those. Specially this restriction was there with the recent reports published by the International Telecommunications Union (ITU).

5.4 Recommendations

1. Get the help of the highly used ICTs such as Radio, Television to make the rural community aware about the other available information access methods. Some suggestions are;
 - a. Educate the community about web and related technologies with the use of Radio and Television. By using those community can be educated how to use the other ICTs and how help those other ICTs in their day to day life. Television will be a more powerful media as the community can observe also.
 - b. Telecasting or broadcast programs about and how to use new ICTs to make the life easier than now.
 - c. These programs have to be telecasted or broadcasted in the time that majority of the listeners are available.
2. Provide the information that are relevant to the rural community through the Radio and the Television and make them feel that those are good sources of information. For example below suggestions can be done to make them feel those sources provide the information required by them.

- a. Providing prices of the main markets will empower the farmers, and other producers in rural areas to sell their products to better prices. This information should be provided by giving some priority, not as a small part of other program, in a specific time every day.
 - b. Providing how to find a better doctor to treat the problems they are suffering and showing the available methods such as e-channeling, which can be done even with the use of a mobile phone.
3. Make the ICT access costs for the rural community to an affordable level or provide more access methods available with close proximity. This can be done by;
- a. Providing computers, internet, and email accessible or used in an easy payment schemes. Computer vendors who have island wide distribution can be used for this purpose with some subsidiary if required.
 - b. Expanding the fee access locations for information such as Nanasala will help to improve the knowledge about what they can do with the information. If a payment has to be done for usage, those amounts should be in affordable range and that range should be decided by considering the user group.

6 CONCLUSION

Conclusion of the study is given with reference to the objectives of the study.

1. To identify the Informatization readiness of the rural community

Informatization readiness can be identified by the purpose of using the ICTs and the attitude of using them. In the case of purpose of using, except the telephone all the other ICTs haven't shown a relationship with the use to access or exchange information. But some of the ICTs have shown they are accessed for the purpose of entertainment. In the case of attitude, none of the ICTs have a relationship with the attitude of an information source. This implies that the rural community is not still feel ICT as an information source or information access method.

2. To identify the impact of Informatization on the rural community

The attitude about the Television, Telephone, and Mobile phone is that they are harmful to the society or waste of time. Although the respondents have shown some positive feedback about those ICTs the above fact shows that there's a negative image about the ICT among the rural community. Users in the rural areas don't think about most of the ICTs as a help to their life. Therefore, Informatization hasn't made any large impact on the rural community.

3. To identify the knowledge among the rural community about the Informatization

Knowledge among the rural community about the Informatization is shown by the Informatization Index. If their usage is high that means they have better knowledge about those ICTs. According to the Informatization Index value found in this study, which has shown a low value which is below 25%, lower level of knowledge about the Informatization is there among the rural community.

4. To identify the barriers that prevents the rural community from accessing the available information

Majority of the respondents were with income below Rs. 10,000 per month. This means they are not in a position to spend much on the information access with the present situations. And some respondents had mentioned as a comment that although they are willing to use the computers and new technologies, the main problem is the high initial costs involved. This is much evident by the hypothesis testing results as

computer, internet, and email utilization having relationship with the accessing at free locations. Society can't influence for all the ICT usages, as social influence has relationship only for the utilization of telephone and mobile phone.

5. Identify best practices and provide recommendations

To improve the level of Informatization in the rural areas, recommendations mentioned under the recommendations sections in the discussion can be used.



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ANNEXURE A – QUESTIONNAIRE



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ශ්‍රී ලංකාවේ ග්‍රාමීය ප්‍රදේශවල තොරතුරු සහ සන්නිවේදන තාක්ෂණය භාවිතාකිරීම පිළිබඳ අධ්‍යයනය
An Assessment of Level of Informatization (Utilization of ICTs) of Rural Areas
of Sri Lanka
[ICT: Information and Communication Technology]

හිතවත් මහත්මයාණනි / මහත්මියනි,

මොරටුව විශ්ව විද්‍යාලයේ තොරතුරු තාක්ෂණය පිළිබඳ ව්‍යාපාර පරිපාලන පන්තියේ උපාධියේ අධ්‍යයන කටයුතුමග කොටසක් ලෙස ඉහත මාතෘකාව යටතේ පර්යේෂණයක් මා විසින් කරනු ලැබේ. එයට අදාළ තොරතුරු ලබා ගැනීම සඳහා මෙම ප්‍රශ්නාවලිය ඔබ වෙත ලබා දෙමි. මේ සඳහා ඔබ ලබාදෙන තොරතුරුවල රහස්‍යභාවය ආරක්ෂාකරනබවට ඔබට සහතික වෙමි.

ස්තූතියි.

තුෂාර සම්පත් අබේසූරිය

Dear Sir / Madam,

This questionnaire is given to you to collect data for the research with the above title, which is done as a part of the Master of Business Administration in Information Technology, conducted by the University of Moratuwa. Information collected with this questionnaire will be kept as confidential.

Thank you,

Thushara Sampath Abeysooriya

වැදගත් : මෙහි විමසා ඇති තොරතුරු එලට අමතර ඔබගේ කිසිදු පෞද්ගලික තොරතුරක් සඳහන් නොකරන මෙන් කාරුණිකව ඉල්ලා සිටිමි.

[Note: Please don't indicate any personal details about you such as your Name]

උපදෙස් [Instructions]:

සෑම ප්‍රශ්නයකම, සෑම කොටසක් සඳහාම අදාළ කොටුව තුළ ☐ ලකුණ හෝ x ලකුණ යොදන්න. පිළිතුරු එකකට වඩා ඇතිවිට හැකිතම 1,2,3,4, ලෙස ප්‍රමුඛතාවය ලකුණු කරන්න (1 - ඉහළම ප්‍රමුඛතාවය)

[Please mark a tick (✓) or cross (x) in the appropriate box under each question, and each question. When there are more than one applicable if possible rank as 1, 2, 3, 4, etc. (1 – Highest rank)]

භාවිතා කර ඇති යෙදුම් [Terms Used]:

දුරකථනය : වෙලිකොම්, සන්ටෙල්, ලංකාබෙල්, ඩයලොග් CDMA ඇදි ස්ථාවර දුරකථනය

[Telephone : SLT, SunTel, LankaBell, and Dialog CDMA phones]

තැන්පත් කිරීමේ මාධ්‍ය : තොරතුරු / දත්ත තැන්පත් කිරීමට භාවිතා කරන මාධ්‍ය

[Storages : Medias used to store data / information related to ICT]

ප්‍රකාශන : තොරතුරු ලබාදීමට ප්‍රකාශයට පත්කරන මාධ්‍ය

[Publications : Medias that are published to provide information]

Q1. ඔබ පිළිබඳ සාමාන්‍ය තොරතුරු
General Details About You

(1.) ස්ත්‍රී / පුරුෂ භාවය [Gender]

☐ පුරුෂ (Male)

☐ ස්ත්‍රී (Female)

(2.) ඔබ ජීවත් වන්නේ; [You are living in;]

☐ මහ නගර සභා / නගර සභා ප්‍රදේශයක
 (Municipal / Urban council area)

☐ වෙනත් ප්‍රදේශයක (Other area)

(3.) ඔබ රැකියාව කරන්නේ; [You are working in;]

☐ මහ නගර සභා / නගර සභා ප්‍රදේශයක
 (Municipal / Urban council area)

☐ වෙනත් ප්‍රදේශයක (Other area)

(4.) ඔබගේ මාසික ආදායම (රු)

Monthly Income (in Rs)

☐ 10,000 ට අඩු (Below 10,000)

☐ 10,001 – 20,000

☐ 20,001 – 30,000

☐ 30,001 – 40,000

☐ 40,001 – 50,000

☐ 50,000 ට වැඩි (Above 50,000)

(5.) ඔබගේ වයස (අවුරුදු)

Age Group (in Years)

☐ 18 ට අඩු (Below 18)

☐ 18 – 25

☐ 25 – 35

☐ 35 – 45

☐ 45 – 55

☐ 55 ට වැඩි (Above 55)

(6.) ඔබගේ ඉහළම අධ්‍යාපන සුදුසුකම් Highest Educational Qualification <input type="checkbox"/> අ.පො.ස. සා. පෙළට අඩු [Less than GCE (O/L)] <input type="checkbox"/> අ.පො.ස. සා. පෙළ [GCE (O/L)] <input type="checkbox"/> අ.පො.ස. උ. පෙළ [GCE (A/L)] <input type="checkbox"/> සහතික පත්‍ර / ඩිප්ලෝමා [Diploma / Certificate] <input type="checkbox"/> උපාධි / පශ්චාත් උපාධි [Degree / Post Graduate]	(7.) ඔබගේ රැකියාව [Job Category] <input type="checkbox"/> ශිෂ්‍ය [Student] <input type="checkbox"/> ස්වයං රැකියා [Self Employment] <input type="checkbox"/> විධායක නොවන [Non Executive] <input type="checkbox"/> විධායක [Executive] <input type="checkbox"/> පරිපාලන [Management] <input type="checkbox"/> වෙනත් [Other]
(8.) ඔබගේ රැකියා ස්ථානය [Workplace] <input type="checkbox"/> රාජ්‍ය ආයතනයක [Government] <input type="checkbox"/> අර්ධ රාජ්‍ය ආයතනයක [Semi-Government] <input type="checkbox"/> පෞද්ගලික ආයතනයක [Private] <input type="checkbox"/> ස්වයං රැකියාවක [Self employed]	(9.) විවාහක / අවිවාහක බව [Civil Status] <input type="checkbox"/> අවිවාහක [Single] <input type="checkbox"/> විවාහක [Married] <input type="checkbox"/> වෙනත් [Other] පවුලේ සාමාජිකයින් ගණන No. of Family Members

Q2. ඔබ භාවිතා කරන මාධ්‍ය සියල්ල ලකුණු කරන්න You are using (mark all applicable) <input type="checkbox"/> රේඩියෝ [Radio] <input type="checkbox"/> රූපවාහිනිය [Television] <input type="checkbox"/> දුරකථනය [Telephone] <input type="checkbox"/> ජංගම දුරකථනය [Mobile phone] <input type="checkbox"/> පරිගණකය [Computer] <input type="checkbox"/> අන්තර් ජාලය [Internet] <input type="checkbox"/> විද්‍යුත් තැපෑල [Email] <input type="checkbox"/> චන්ද්‍රිකා රූපවාහිනිය [Satellite TV]	Q3. ඔබ භාවිතා කරන ප්‍රකාශන සියල්ල ලකුණු කරන්න What publications you are using <input type="checkbox"/> පොත් [Books] <input type="checkbox"/> සඟරා [Periodicals] <input type="checkbox"/> පත්තර [Newspapers] <input type="checkbox"/> වාර සඟරා [News letters] <input type="checkbox"/> වෙනත් [Other]
Q4. ඔබ භාවිතා කරන තැන්පත් කිරීමේ මාධ්‍ය සියල්ල ලකුණු කරන්න What storage media you are using <input type="checkbox"/> Diskettes (Floppy Disks) <input type="checkbox"/> CD <input type="checkbox"/> DVD <input type="checkbox"/> USB Flash (Pen) Drive <input type="checkbox"/> Other	

Q5. පහත මාධ්‍ය භාවිතය පිළිබඳ ඔබ කොපමණ සැතීමකට පත්වේද?
Are you happy with using

	ඉතාම සැතීමකට පත්වේ [Strongly Satisfied]	සැතීමකට පත්වේ [Satisfied]	අදහසක් නොමැත [Neutral]	සැතීමකට පත් නොවේ [Not Satisfied]	ඉතාම සැතීමකට පත් නොවේ [Strongly Not Satisfied]
රේඩියෝ [Radio]					
රූපවාහිනිය [Television]					
චන්ද්‍රිකා රූපවාහිනිය [Satellite TV]					
දුරකථනය [Telephone]					
ජංගම දුරකථනය [Mobile phone]					
පරිගණකය [Computer]					
අන්තර් ජාලය [Internet]					
විද්‍යුත් තැපෑල [E-mail]					
තැන්පත් කිරීමේ මාධ්‍ය [Storages]					
මාදුකාංග [Application Software]					
ප්‍රකාශන [Publications]					

Q6. ඔබගේ දෛනික ජීවිතයට පහත මාධ්‍ය කොපමණ ප්‍රයෝජනවත්ද?

How much useful the below to your daily life?

	ඉතාම ප්‍රයෝජනවත් [Very useful]	ප්‍රයෝජනවත් [Useful]	සමහරවිට ප්‍රයෝජනවත් [Some times]	ප්‍රයෝජනවත් නැත [Not Useful]	කිසිසේත් ප්‍රයෝජනවත් නැත [Not at all]
රේඩියෝ [Radio]					
රූපවාහිනිය [Television]					
චන්ද්‍රිකා රූපවාහිනිය [Satellite TV]					
දුරකථනය [Telephone]					
ජංගම දුරකථනය [Mobile phone]					
පරිගණකය [Computer]					
අන්තර් ජාලය [Internet]					
විද්‍යුත් තැපෑල [E-mail]					
තැන්පත් කිරීමේ මාධ්‍ය [Storages]					
මාදුකාංග [Application Software]					
ප්‍රකාශන [Publications]					

Q7. ඔබ පහත මාධ්‍ය භාවිතා කරන්නේ කුමන ස්ථානවලදීද (අදාළ සියල්ල ලකුණු කරන්න) ?

Where you access (mark all applicable)

	නිවෙසේදී [Home]	රැකියා ස්ථානයේදී [Company (workplace)]	මුදල් ගෙවන පොදු ස්ථානයකදී [Public facility (paid)]	නොමිලේ සපයන පොදු ස්ථානයකදී [Public facility (free)]	පාසලේදී [School]	වෙනත් අධ්‍යාපන ආයතනයකදී [Educational institute]	වෙනත් අයෙකුගේ නිවසකදී [Other person's home]	වාහනයකදී [In a vehicle]	වෙනත් ස්ථානයකදී [Other]
රේඩියෝ [Radio]									
රූපවාහිනිය [Television]									
චන්ද්‍රිකා රූපවාහිනිය [Satellite TV]									
දුරකථනය [Telephone]									
ජංගම දුරකථනය [Mobile phone]									
පරිගණකය [Computer]									
අන්තර් ජාලය [Internet]									
විද්‍යුත් තැපෑල [E-mail]									
තැන්පත් කිරීමේ මාධ්‍ය [Storages]									
මාදුකාංග [Application Software]									
ප්‍රකාශන [Publications]									

Q8. ඔබ පහත මාධ්‍ය භාවිතා කරන්නේ කුමන කාර්යයක් සඳහාද (අදාළ සියල්ල ලකුණු කරන්න) ?
Main Purpose for using (mark all applicable)

	ව්‍යාපාරය / රැකියාව [Business / work]	තොරතුරු බෙදා හැකිම / ග්‍රම්මාරම් [Information Exchange / Retrieval]	අධ්‍යාපන කටයුතු [Educational work]	විනෝදය / විවේකය [Entertainment / Leisure]	වෙනත් [Other]
රේඩියෝ [Radio]					
රූපවාහිනිය [Television]					
චන්ද්‍රිකා රූපවාහිනිය [Satellite TV]					
දුරකථනය [Telephone]					
ජංගම දුරකථනය [Mobile phone]					
පරිගණකය [Computer]					
අන්තර් ජාලය [Internet]					
විද්‍යුත් තැපෑල [E-mail]					
තැන්පත් කිරීමේ මාධ්‍ය [Storages]					
මාදුකාංග [Application Software]					
ප්‍රකාශන [Publications]					

Q9. ඔබ පහත මාධ්‍ය භාවිතා කිරීමට හේතු
What makes you to use

	දැනගැනීම පිණිස [Just to know]	අධ්‍යාපන කටයුතු [Educational use]	ඒදිනද කටයුතුවල පහසුව පිණිස [As it makes my life easy]	අන් අය භාවිතා කරන නිසා [As other's using]	තැන්ගත් ලෙස ලැබුන නිසා [I receive as a gift (someone gave me)]	වෙනත් [Other]
රේඩියෝ [Radio]						
රූපවාහිනිය [Television]						
චන්ද්‍රිකා රූපවාහිනිය [Satellite TV]						
දුරකථනය [Telephone]						
ජංගම දුරකථනය [Mobile phone]						
පරිගණකය [Computer]						
අන්තර් ජාලය [Internet]						
විද්‍යුත් තැපෑල [E-mail]						
තැන්පත් කිරීමේ මාධ්‍ය [Storages]						
මාදුකාංග [Application Software]						
ප්‍රකාශන [Publications]						

Q10. ඔබගේ ප්‍රියතම වැඩසටහන කුමක්ද (හැකිනම් 1,2,3,4, ලෙස ලකුණු කරන්න) ?
What are your favorite programs (if possible rank 1, 2, 3, 4, ...)

	ප්‍රචාරය [News]	සංගීත / විනෝදෝත්සව වැඩසටහන් [Musical / Entertainment Programs]	සාකච්ඡා [Discussions]	ප්‍රේම වැඩසටහන් [Children's programs]	ටෙලි නාට්‍ය / නාට්‍ය [Teledramas / dramas]	අධ්‍යාපන වැඩසටහන් [Educational programs]	ආගමික වැඩසටහන් [Religious programs]	ක්‍රීඩා වැඩසටහන් [Sports programs]	වෙනත් [Other]
රේඩියෝ [Radio]									
රූපවාහිනිය [Television]									
චන්ද්‍රිකා රූපවාහිනිය [Satellite TV]									

Q11. පහත මාධ්‍ය පිළිබඳ ඔබගේ අදහස කුමක්ද ?
What is your opinion about

	අධ්‍යාපනික කටයුතු වලට පහසුකම් [Support for education]	ජීවිතය සාර්ථක කර ගැනීමට උපකාරයකි [Enhancer for life]	නොරහුරු බොහෝතා ආකාරයකි [Great information source]	විනෝදය බොහෝතා ආකාරයකි [Good source of entertainment]	කාලය නාස්ති කිරීමකි [Waste of time]	සමාජයට හානියකි [Harmful to the society]	කැන්සරය / පාර්ශ්ව මගහැරීමට උපකාරයකි [Relief of stress / loneliness]	වෙනත් [Other]
රේඩියෝ [Radio]								
රූපවාහිනිය [Television]								
චන්ද්‍රිකා රූපවාහිනිය [Satellite TV]								
දුරකථනය [Telephone]								
ජංගම දුරකථනය [Mobile phone]								
පරිගණකය [Computer]								
අන්තර් ජාලය [Internet]								
විද්‍යුත් තැපෑල [E-mail]								
තැන්පත් කිරීමේ මාධ්‍ය [Storages]								
මාදුකාංග [Application Software]								
ප්‍රකාශන [Publications]								

Q12. ඔබගේ මාසික ආදායමෙන් කවර ප්‍රතිශතයක් පහත මාධ්‍ය සඳහා යොදවන්නේද ?
How much you spend on below out of your monthly income ?

	0 %	0 – 1 %	1 – 5 %	6 – 10 %	11 – 15 %	16 – 20 %	21 – 25 %	25% ට වැඩි [More than]
දුරකථනය [Telephone]								
ජංගම දුරකථනය [Mobile phone]								
පරිගණකය [Computer]								
අන්තර් ජාලය [Internet]								
විද්‍යුත් තැපෑල [E-mail]								
තැන්පත් කිරීමේ මාධ්‍ය [Storages]								
මාදුකාංග [Application Software]								
ප්‍රකාශන [Publications]								
චන්ද්‍රිකා රූපවාහිනිය [Satellite TV]								

Q13. දිනකට ඔබ කොපමණ කාලයක් පහත මාධ්‍ය භාවිතා කරන්නේද ?
How long you use following per day ?

	පැය 1 ට අඩු [Less than 1 hr]	පැය 1 – 2 [hrs]	පැය 2 – 4 [hrs]	පැය 4 – 6 [hrs]	පැය 6 – 8 [hrs]	පැය 8 – 10 [hrs]	පැය 10 – 12 [hrs]	පැය 12 ට වැඩි [More than 12 hrs]
රේඩියෝ [Radio]								
රූපවාහිනිය [Television]								
පරිගණකය [Computer]								
අන්තර් ජාලය [Internet]								
විද්‍යුත් තැපෑල [E-mail]								
චන්ද්‍රිකා රූපවාහිනිය [Satellite TV]								

Q14. පහත මාධ්‍ය සඳහා මුදල් ගෙවන සම්බන්ධතා ඔබ සතුව තිබේද ?
Do you have subscribed (paid) account for

අන්තර් ජාලය [Internet] ☐ ඔව් [Yes] ☐ නැත [No]
 විද්‍යුත් තැපෑල [E-mail] ☐ ඔව් [Yes] ☐ නැත [No]
 චන්ද්‍රිකා රූපවාහිනිය [Satellite TV] ☐ ඔව් [Yes] ☐ නැත [No]

Q15. ඔබ කොපමණ කාලයක සිට පහත මාධ්‍ය භාවිතා කරන්නේද ?
How long you have been using ?

	අවුරුදු 1 ට අඩු [Less than 1 year]	අවුරුදු 1 – 2 years	අවුරුදු 2 – 3 years	අවුරුදු 3 – 4 years	අවුරුදු 4 – 5 years	අවුරුදු 5 – 6 years	අවුරුදු 6 ට වැඩි [More than 6 years]	භාවිතා කරන්නේ නැත [Not using]
පරිගණකය [Computer]								
අන්තර් ජාලය [Internet]								
විද්‍යුත් තැපෑල [E-mail]								

Q16. ඔබ කොපමණ වාර ගණනක් පහත මාධ්‍ය භාවිතා කරන්නේද ?
Frequency of using

	දිනපතා [Everyday]	සතිසරා දින කිහිපයක් [Few days per week]	සතිසරා වරක් [Once a week]	මසකට දින කිහිපයක් [Few days per month]	මසකට වරක් [Once a month]	වසරකට කිහිපවරක් [Few times a year]	වසරකට වරක් [Once a year]	වෙනත් [Other]
පරිගණකය [Computer]								
අන්තර් ජාලය [Internet]								
විද්‍යුත් තැපෑල [E-mail]								

Q17. During a day how many calls you take?
දිනකට ඔබ කොපමණ දුරකථන ඇමතුම් ප්‍රමාණයක් ලබා ගන්නේද ?

	5 ට අඩු [Less than]	6 – 10	11 – 15	16 – 20	21 – 25	25 ට වැඩි [More than]	භාවිතා කරන්නේ නැත [Not using]
දුරකථනය [Telephone]							
ජංගම දුරකථනය [Mobile phone]							

Q18. ඔබට පරිගණකයක් භාවිතයෙන් සිදුකළ හැකි කාර්යයන් ලකුණු කරන්න
What can you do using a computer? I can;

- ☐ ලියුමක් ලිවීම [Writing a letter]
- ☐ ඉදිරිපත් කිරීමේ වැඩසටහනක් සකසීම [Create a presentation]
- ☐ ප්‍රොග්‍රෑම් කිරීම [Write a program]
- ☐ නාමපුවරුවක් සකසීම [Design a banner / poster]
- ☐ වෙබ් පිටුවක් සකසීම [Develop a web page]
- ☐ වෙනත් [Other]

Q19. ඔබ පිළිබඳ වඩාත්ම ගැලපෙන ප්‍රකාශය
What is most suitable about you

- ☐ පරිගණක භාවිතා නොකරන්නෙකි [Not a computer user]
- ☐ සාමාන්‍ය දැනුමක් ඇති පරිගණක භාවිතා කරන්නෙකි [Entry level computer user (Beginner)]
- ☐ සාමාන්‍ය හැකියාවක් ඇති පරිගණක භාවිතා කරන්නෙකි [Skilled computer user]
- ☐ ඉහළ මට්ටමේ හැකියාවක් ඇති පරිගණක භාවිතා කරන්නෙකි [Advanced computer user]

Q20. ඔබ භාවිතා කරන මෘදුකාංග පමානවෑද ?
What are the software you are using?

- ☐ Microsoft Office (Word, Excel, PowerPoint, etc.)
- ☐ Graphic Packages (Illustrator, Photoshop, etc.)
- ☐ Programming languages
- ☐ Web design tools
- ☐ Other

තොරතුරු සහ සන්නිවේදන තාක්ෂණය භාවිතාකිරීම පිළිබඳ වෙනත් අදහස් / මෙම පර්යේෂණය පිළිබඳ අදහස්:
 Any other comments about ICT utilization / this research

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ඔබ දැක්වූ සහයෝගයට ස්තූතියි
Thank you for your participation