

ICT Model to Overcome Sri Lankan Disability Digital Divide

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Abstract

Fifteen percent (15 %) of the world's population lives with a disability. Information and Communication Technology (ICT) is an umbrella to cover many form of technologies to transfer across the globe. But some people with having different disabilities are not getting the benefitsof ICT. This inequality is known as the disability digital divide. The people who lived in Sri Lanka were suffered from three decades of war and most abled and disabled people are disadvantages of getting real benefits of ICT during this period. As a result of ended war in 2009, government focuses to increases the digital literacy rate in the country. Government focuses it to be 75 % in the year 2015. The motivating behind this research is to overcome disability digital divide in Sri Lanka. The objective of this study is to propose an ICT model to bridging the disability digital divide gap in Sri Lanka and improve the quality of life of differently abled community in Sri Lanka. This study involved different data gathering techniques mainly group discussions, interviews and site visiting to identify SL situations. Sri Lankan Participants for this study was taken including with informal interviews with different communities, different disabled categories and different geographical locations. Study findings were indicated that compare to developed countries Sri Lanka are far behind the ICT usage by the disabled community in Sri Lanka. Proposed model include guidelines to eliminate disability digital divide in Web services, Mobile devises and services and Computer devises.

Keywords: Digital Divide, Persons with Disability, Sri Lanka Disability Divide, Disability Digital Divide.

1. Introduction

Different disability groups and different organizations define disability with many definitions. These interpretations influenced by different interpretations influenced by historical, social, legal and philosophical. In additions to that disability models also having different disability definitions. According to the MDRC(2012) there are different models of disability such as social model, medical model, expert or professional model, right based model, charity model, religious model, economic model, customer model and rehabilitation model of disability. According to the different definitions it is indicated that this community is a disadvantaged group in the society. ICT access by this community also consider as a common problem in the world.

According to the Internet world statistics (2013), states that there is a divide of access of information among the world. It could be happen due to many reasons and disability also one aspects .This divide call as disability digital divide. According to the definitions of inventor and director of www Tim Berners Lee states that “The power of the web is in its universality. Access by everyone regardless of disability is an essential aspect”.

Different solution models have proposed by the different researchers to solve this digital gap. According to the above different models this digital divide solutions basically depend with the culture, political influences, social view point on differently abled community and the technological usage by the country. It is prove that by nations to nations it is vary therefore the objective of this study is to propose an ICT model to bridging the disability digital divide gap in Sri Lanka and improve the quality of life of differently abled community in Sri Lanka.

2. Sections

This section covered with the research methodology, literature review and findings of this research.

2.1 Methodology

Research strategy used for this study is mixed approach. Field and literature survey has been conducted to do this research. In the first phase of this research literature survey conducted to identify the main current problems and issues faced by the disabled community in the world. These findings were categorized in to four phases such as web access related issues, Mobile devises and services related issues and computer devises related issues.

This second study was carried out to identify the issues faced by the Sri Lankan disabled community. Therefore this study involved different data gathering techniques mainly group discussions, interviews and site visiting to identify SL situations. Sri

Lankan Participants for this study was taken including with informal interviews with different communities, different disabled categories and different geographical locations.

Collected data were analyzed based on qualitative approach according to three themes. Analysis techniques used in this research were compared and contrast among the literature survey data with empirical study data. In additions to that frequency counts were used and data were presented in graphically by charts according to the three themes.

2.2 Literature Review

According to the literature the digital age is a period in human history characterized by the change from traditional industry that the industrial revolution brought through industrialization, to an economy based on information computerization. According to the Dobransky(2012) The increasing spread of the Internet holds much potential for enhancing opportunities for people with disabilities. However, scarce evidence exists to suggest that people with disabilities are, in fact, participating in these new developments. Will the spread of Information technologies (IT) increase equality by offering opportunities for people with disabilities? Or will a growing reliance on IT lead to more inequality by leaving behind certain portions of the population including people with disabilities? With considering the above arguments is a proven that disabled people are nothaving equal opportunities to accessing information technology.

In the United Kingdom, for example, people were either discouraged or not actively encouraged to enter the workforce. In 1958, the British government realized the potential economic benefits in having people with disabilities in the workforce. . As a result, sheltered workshop were introduced and shared accommodation was encouraged (Schlesinger & Whelan,1979). Other countries, including Australia, Implemented similar policies shortly after the British Government initiative. In Sri Lanka it has not concern Government Policies at this time.

As a result of many years the disability movement in Sri Lanka has been requesting from the government a national policy on disability in the year 2003 National policy on disability was approved. This was the initial consideration for this community on Technology. Later in 2012 National action plan for disabled was taken in to consideration in Sri Lanka.

Sri Lanka has taken many initiations to bridging the gap of disability digital divide. ICTA the government authorized body on ICT in Sri Lanka has initiated some project to bridging the Sri Lankan digital divide. Accoding to the Dewapura(2013) ICT literacy was 4 % in 2003, now is 40%.ICTA offered its full co-operation for the rehabilitation and reconstruction work in the north and east. e-Sri Lanka revamp and continue e-Sri Lanka development initiations under the name 'Smart Sri Lanka'.

2.3 Findings

Findings of this research was done under two phases. In the first phase literature survey conducted under the three main ICT areas including web services, Mobile

devises and computer devises. From these findings it is indicated that there are many services offered by the ICT for differently abled community. Result of phase 01 shown in the Table 1.

Table 1: ICT products and services available for differently abled community in globe –Literature survey Findings.

Available Web Services(Internet) for disabled users	Available Mobile devisers for disabled users	Supportive Computer Devisers and others Servises for disabled users
<ul style="list-style-type: none"> • Websites: online educational courses, social networking, shopping • Captioned telephone (relay) • Telework: online jobs and training, virtual collaboration • Telemedicine and e-health Sign language interpretation over the web (Video Relay Service, Video Relay Interpreting) • Chat systems: VoIP, audio, video, text, sign language, text to avatar, realtime text 	<ul style="list-style-type: none"> • Smartphones and Tablets • SMS • Emergency service access – voice, text and sign language • Captioned telephone (relay) • Mobile banking services 	<ul style="list-style-type: none"> • Accessibility software: screen reading, voice to text, screen typing • Captions (closed and open) [eg. Youtube] • Captioned telephone (relay) • Accessible e-books and e-documents • Gamified apps for special education and recreation • Open source software • Hearing Aids • Smart homes • Artificial intelligence – robots, digital human modelling, emotion recognition • Emergency communication response – satellite, • “Assistive Bridge to Safety”: emergency call subscriber servicexvi (911, 112, 000, etc.) • Speech to text, text to speech, speech/text to sign language • Natural User Interfaces • Emergency service access – text and sign language relay services

According to the above findings it is indicated that there are different technologies and services offered by the ICT. According to the literature indicated that different tools and technologies available for differently abled community but there are different common barriers faced by them is cause for the disability digital divide. In order to identify the problems faced by the Sri Lankan disabled community second phase of the research was conducted. The second phase findings are summarized in the following Table 2 with the common problems and issued related to the above technologies and services. According to the above findings proposed some guideline to follow were given in the solution column in the Table 2 Solution column.

Table 2: Web Services (Internet) related problems faced by the differently abled community in Sri Lanka.

Highest Priority Technologies	Problems faced by differently abled community in Sri Lanka	Solutions
<ul style="list-style-type: none"> Websites: online educational courses, social networking, shopping 	Most of the web sites are not supporting on line educational courses for Differently abled community	Develop more online educational courses benefits for disabled community
Telework: online jobs and training, virtual collaboration	Not providing any online Jobs for this community and Not having Special training for them. Virtual collaboration is low among the community	Develop a Popular online Job cites to access for disabled community. Provide online training for them and arrange some virtual collaboration among them
Telemedicine and e-health, Sign language interpretation over the web (Video Relay Service, Video Relay Interpreting)	Per capita income is low among the community. Therefore this benefit is not much popular among them both Telemedicine and the Video relay Service.	Develop national level program for Telemedicine and e-health and sign language interpretation with Sinhala and Tamil languages
Chat systems: VoIP, audio, video, text, sign language, text to avatar, realtimetext	Use of Chat systems are comparatively higher than the telemedicine and video relay services	Develop some awareness programme the community to develop the above servises.
Smartphones and Tablets	Cost of smart phones are high and this community is reluctant to use some high technology sometimes touch systems are complicated to them comparing push button system.	Provide low cost Smartphone and tablets and trane them to use these tools to use in their day to day life
Mobile banking system	This technology is not popular among the Disabled community due to the functions are not specifically concern for disabled community concerns. eg. Screen large Facility, Voice output	Add some features to text to voice converters and text enlarge facilities in current mobile banking systems

Accessibility software: screen reading, voice to text, screen typing	Most software's not in Sinhala or Tamil Language. English is not native language and not popular among the Sri Lankans	Encourage young researchers to develop more user friendly accessibility software.
Accessible e-books and e-documents	Most books in libraries are not as an e-books version. Therefore people face difficult in reading books.	Convert many university library books and other important books to accessible way for blind readers.
Open source software	Not popular among Sri Lankan community therefore trainers are not train this community to use low cost open source software.	Encourage and establish national level program to use low cost open source software.
Speech to text, text to speech, speech/text to sign language	Especially among the deaf people they are using sign language to communicate .modern technologies are not popular among the Sri Lankan.	Develop Sinhala and Tamil language support speech and sign language converters.

3. Conclusions

This study has been done to find the solutions to bridging the gap of disability digital divide in Sri Lanka. The objective of this study is to propose an ICT solution model to bridging the disability digital divide gap in Sri Lanka and improve the quality of life of differently abled community in Sri Lanka. According to the findings ICT has provide many technologies for disabled people globally including web services, mobile services and computer devises. According to the findings Indicated that Sri Lankan differently abled community has not highly used this tools and techniques. Therefore solution list provided to implement in Government level, Public sector, university level and other public and private sector authorities,

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