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**Access to ICT for Women with Disabilities in the
Global South**

Rabin Parajuli

Department of Computer Science
Faculty of Technology, Art, and Design

OSLOMET

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Abstract

Even though ICTs hold great potential in transforming society and a country economically, most women and women with disabilities are far from accessing ICT. The thesis findings result from in-depth interviews with a total of 12 participants: 2 women without disabilities, 5 men with disabilities, and 5 women with disabilities.

This study aims to understand the barriers and challenges that women with disabilities encounter while accessing ICT in Mozambique. The research is a comparative study between women with disabilities, women without disabilities, and men with disabilities. This thesis adopts qualitative methods and in-depth interviews for data collection. The data collected were then analyzed using thematic analysis.

The analysis from the qualitative study found that women with disabilities are more likely to face ICT barriers compared to other remaining groups. These were due to various reasons, such as lack of ICT training, knowledge, education, social discrimination, family responsibilities, poor design of ICT, gender disparity, not giving priority to disabilities, not following WCAG guidelines, and relatively high cost of ICT. The findings are supported by the data collected from in-depth interviews with 3 groups. Consequently, this study also proposed possible recommendations and solutions to combat the barriers.

keywords: *ICTs, technology, disabilities, women with disabilities, men with disabilities, women, gender, accessibility, Mozambique*

Table of Contents

Abstract.....	ii
List of Table.....	v
List of Figures	v
List of Abbreviations.....	vi
Chapter 1 Introduction	1
1.1 Thesis Outline	3
1.2 Problem Statement	5
1.3 Research Question.....	7
Chapter 2 Literature Review	8
2.1 Digital Divides.....	8
2.2 Disability and Digital Divide on disability.....	9
2.3 Universal Design, Usability, and Accessibility.....	11
2.4 Access to ICT for people with disabilities	13
2.5 Access to ICT for women and women with disabilities.....	14
2.6 Gender Roles in ICT	16
2.7 ICT accessibility in education	18
Chapter 3 Disability and ICT Background of Mozambique.....	20
Chapter 4 Research Methods, Data Collection, and Analysis	23
4.1 Qualitative Approach.....	23
4.2 In-depth interviews and selection of the participants	24
4.3 Data analysis.....	26
Chapter 5 Ethical Consideration	28
Chapter 6 Findings and Results.....	30
6.1 Summary of the 4 factors and the reasons affecting Participants' usability and accessibility in ICT	30
6.2 Financial Factors	33
6.2.1 Cost.....	33
6.3 Societal Factors	35
6.3.1 Lack of awareness, support, and opportunities	35
6.3.2 Family Responsibilities	37
6.3.3 No electricity	38
6.3.4 Discrimination.....	39
6.4 Educational Factors.....	40

6.4.1 Language Barriers	40
6.5 Technological Factors.....	41
6.5.1 Late use of technologies	41
6.5.2 Shortage of ICT teachers.	42
6.5.3 Not following WCAG guidelines.	44
Chapter 7 Discussion and Recommendations	46
7.1 Interpretations of the key findings	46
7.2 Discussion with the previous related studies	47
7.3 Limitations.....	49
7.4 Possible Recommendations and Solutions	49
Chapter 8 Conclusion	52
8.1 Recommendation for further studies	53
References:	54
Appendices:	60
Appendix A:.....	60
Consent Form:	60
Appendix B.....	64
Interview Guidelines:	64

List of Table

Table 4. 1 Participant Demographics	25
Table 4. 2 Thematic Analysis Steps	27
Table 6. 1 Factors affecting the use and access of ICT.	31

List of Figures

Figure 2. 1 Conceptual framework for gender analysis of ICTs.....	17
Figure 3. 1 ICT indicator and licenses in Mozambique.....	21
Figure 3. 2 Reasons for not using the internet in Mozambique.	22

List of Abbreviations

RIA – Research ICT Africa

ICT – Information and Communication Technology

USAID – United States Agency for International Development

WHO – World Health Organization

PWDs – People with Disabilities

NSD – Norwegian Centre Research Data

UNCRPD – The United Nations Convention on the Rights of Persons with Disabilities

WCAG – Web Content Accessibility Guidelines

FAMOD – Federation of People with Disabilities in Mozambique

My advice to other disabled people would be, concentrate on things your disability doesn't prevent you doing well, and don't regret the things it interferes with. Don't be disabled in spirit as well as physically. – Stephen Hawking

Chapter 1 Introduction

Technology holds great potential to connect people and acts as a mechanism of access to education, commerce, employment, and entertainment (Foley & Ferri, 2012). The advancement and use of Information and Communication Technologies (ICTs) have changed the working and daily life in most countries leading to the transformation of 'industrial' to 'information' society (Goulding & Spacey, 2003). Since the mid-90s, many scholars have commented that ICTs are leading us to the whole new Information Society (Webster, 2014). Webster (2014) argues that because of the swift growth of the Internet there have been positive changes in economic growth, education, and the democratic process. It is well known and accepted widely that ICT not only has the potential of creating economic opportunities, but also promoting political and social changes in society, providing access to knowledge, and act as a field for sharing in all areas of life (Schlichter & Danylchenko, 2014).

Moreover, ICT has a significant impact on the educational field too. The use of educational ICT plays a vital role in assisting economic growth and promoting social development (Kozma, 2008). Obiadazie (2014) notes that the utilization and learning of ICT in the educational sector have been one of the major concerns for both developed and developing countries. Thus, ICT must be implemented effectively in the educational sector to improve access and learning abilities for students with disabilities across different educational, geographical, and social context (Obiadazie, 2014).

The term digital divide refers to the gap between those who have and who do not have access to new information technology (Van Dijk, 2006). Though there's a great availability of ICTs in the world, the concern about their accessibility and usability is still arguable (Dunn, 2010). With the rapidly increased use of the Internet and e-commerce in recent years, the internet usage gap between the poor and rich regions around the globe is also increasing (Chen & Wellman, 2004). The issue is serious for people with disabilities. The usage level of computers or the internet by people with

disabilities is significantly lower compared to the remaining populace (Vicente & Lopez, 2010).

The types of disabilities include physical impairments, hearing impairments, visual impairments, and cognitive impairments (Mishra, Sharma, & Tripathi, 2010). The scholars maintain that due to certain limitations, people with disabilities may encounter certain challenges in using ICT applications and devices (Mishra et al., 2010). Therefore, to ease the difficulties and challenges encountered by physically impaired user in using input devices, a visually impaired user in seeing display devices, hearing impaired user in hearing the audio, and cognitive impaired user in understanding how the system works, the assistive technologies are used to assist them (Mishra et al., 2010).

Ron Mace, North Carolina University, 1998 defines Universal Design as “*the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design*” (Case, 2008).

Universal Design shows great potential in ICT usability by people including people with disabilities (Choi, Yi, Law, & Jacko, 2006). Not only does ICT accessibility positively affect the way people work, shop, learn, reform, and communicate with others, but also helps eradicate or reduce the barriers the people with disabilities experience using ICT (Vicente & Lopez, 2010).

Even though there has been technological advancement, they are inaccessible for most women in the Global South (Huyer & Carr, 2002). Not to mention, many researchers conclude that women with disabilities endure more sexual abuse, harassment, domestic violence more than women without disabilities (Brownridge, 2006; Nosek, Foley, Hughes, & Howland, 2001; Young, Nosek, Howland, Chanpong, & Rintala, 1997). Thus, they are remote from using and accessing ICTs and seeking help (Samant, Matter, & Harniss, 2013).

This master thesis focuses more on the ICTs' access for women with disabilities and the reasons behind the disability disparity. This thesis aims to provide the best possible solution to combat these situations. The thesis research is a comparative study of women with disabilities, women without disabilities, and men with disabilities. The data collection for this study is based on an in-depth qualitative

semi-structured research method and interviews with 12 participants living in Mozambique.

For this research, I got an NSD approval. The interview guide is prepared for collecting and analyzing the data. Also, the consent form was prepared and was given to the participants before the in-depth interview and data collection process. Participants' participation in the in-depth interview is entirely voluntary.

Since this report adopts in-depth interviews with the participants, 3 main strategies of questions related to their experiences, familiarity, and barriers in ICT are prepared to gather the information that helps to formulate answers for research questions.

The overall goal of this project is to understand the effects and needs of access and use of ICT for women with disabilities, men with disabilities, and women without disabilities and further contribute to the concerns and factors regarding ICT.

1.1 Thesis Outline

This thesis starts with eight chapters.

First, it provides an introductory chapter along with a thesis outline, problem statement, and research questions.

Second, the literature reviews on Digital Divides, Disability and Digital Divide on disabilities, Universal Design, Usability, and Accessibility, Access to ICT for people with disabilities, Access to ICT for women and women with disabilities, Gender Roles in ICT, and ICT accessibility in education are presented.

Third, the Disability and ICT background of Mozambique is discussed.

Fourth, the research method, data collection, and analysis of the thesis are discussed.

Fifth, the ethical consideration that needed to be carried out throughout the research process is explained.

Sixth, the findings and results accumulated from in-depth interviews are explored.

Seventh, the discussion and the possible recommendations for the barriers are explained.

Finally, the overall view of the thesis research, findings, and recommendations is summarized.

1.2 Problem Statement

Many empirical studies maintain that when it comes to the accessibility and usability of ICTs, most developing countries are not fortunate enough to experience their advantage compared to developed countries. In the case of Mozambique, the access and usage of the internet by the people is low due to the high cost of the internet which results from the lack of competition (Mabila, 2013). The situation is even worse for women. For example, Antonio and Tuffley (2014) argue that the internet usage of women is relatively lower than that of men in developing countries; hence they suffer gender-related discrimination.

According to World Health Organization, people with disabilities face several challenges while accessing services like health care (medical care, therapy, and assistive technologies), education, employment, and social services due to poor legislation, policies, and strategies, lack of suitable delivery of services, lack of awareness and knowledge about disability, negative attitudes and discrimination, insufficient funding, inaccessibility, lack of participation in decision making (Organization, 2015). Besides, the overall findings of A. H. Eide and Y. Kamaleri (2009) conclude that women with disabilities scored lower on the indicators of the level of living such as education, employment, economy, and access to information which results in the significant gender gap in Mozambique.

Not prioritizing women and women with disabilities in ICT has been a major drawback for the country economically. Scholars maintain that most of the women living in Mozambique are illiterate and do not speak the official language, i.e., Portuguese and also the English language which is important for the information available on the internet (Macueve, Mandlate, Ginger, Gaster, & Macome, 2009). According to the findings of Macueve et al. (2009), women are not using computer-related ICTs in Mozambique because of their poor socio-economic conditions. Also, Ncube (2005) states that the challenging factors that characterize the situation of people with disabilities in Mozambique are extreme poverty, low levels of education and illiteracy, and low self-esteem.

Though ICT acts as tools to empower women, several internal barriers (cultural, patriarchal and attitudinal, language and illiteracy), as well as external barriers (poor

ICT infrastructure, lack of access, lack of ICT skills, and time constraints) prevent women from accessing and using the ICT (Kiondo, 2007).

This study aims to identify and explore access to ICT for women with disabilities living in Mozambique. The qualitative method is used in the interview process. After the data collection via interview, a thematic analysis is adopted for further analysis.

1.3 Research Question

This thesis aims to answer the following questions:

- What common barriers women with disabilities usually experience in Mozambique while accessing educational ICT?
- What are the factors that hinder their access to ICT?
- What steps can be taken to mitigate those ICT barriers?

Chapter 2 Literature Review

The study focuses on the background of the study, literature reviews, and previous related work of different scholars. The seventh section is reviewed starting with Digital Divides; Digital Divide on Disability; Universal Design, Usability, and Accessibility; Access to ICT for people with disabilities; Access to ICT for women and women with disabilities; Gender roles in ICT; and finally, ICT accessibility in education.

First, the review of the digital divide makes a clear indication of the accessibility issues of ICT to those who are far from the reach of enjoying the ICTs because of several barriers.

Second, the review on the digital divide on disability provides a clear explanation of the importance of ICT for people with disabilities and the reason behind why most of them are not accessing the ICT.

Third, the review on Universal Design, Accessibility, and Usability gives the answers on why the ICT products or equipment must be universally designed so that people with disabilities can access and use them without any challenges.

Fourth, the review on access to ICT for people with disabilities examines the barriers while accessing the ICT for those who have disabilities.

Fifth, the review on access to ICT for women and women with disability primarily focus on women and women with disabilities by examining and investigating the barriers they encounter in accessing ICT and find out the reasons for those barriers.

Sixth, the review on gender roles in ICT outlines the importance of gender roles in ICT.

Finally, the review on access to ICT accessibility in education focuses on the benefits and challenges of ICT in the education sector for people and people with disabilities.

2.1 Digital Divides

According to Cooper and Weaver (2003), the term digital divide is defined as a gap between those who have access to technology and those who don't. The scholars further state that the digital divide refers to those who have expertise and training to

utilize technology and those who do not (Cooper & Weaver, 2003). Warschauer (2002) examines the concept of the digital divide by introducing problems in the technology projects in the community and analyzing the access in technological models and suggests an alternate concept of technology since the concept provides a poor framework.

Some scholars note that the digital divide examines demographic and socio-economic factors: income, education, age, gender, infrastructures, products, and services, and how they affect usability and accessibility of the internet (Ragnedda & Muschert, 2013). Despite the role of ICTs in economic growth, providing opportunities, and increasing democracy, many developing countries are not able to take full advantage provided by ICTs (Acilar, 2011).

Goode (2010) notes that whites, males, the wealthy, educated, under the age of 55, and living in urban areas were more likely to use the new technologies. According to evidence inspected by Cooper (2006), females are at a greater disadvantage than men when accessing or learning about computer or computer-assisted software. The scholar further states that the digital divide is a problem of computer anxiety which has an impact on socialization patterns of boys and girls and their differences in computer attitudes and computer performance (Cooper, 2006).

Therefore, for ICT to work effectively for the overall development, the vital problem relating to the digital divide must be addressed in terms of geography, gender, class, age, ethnicity, language, and physical ability (Olatokun, 2008).

Overall, the literature reviewed in this section concludes that there is still a need to come up with a better solution to close the digital divide gap. This thesis reviewed this section intending to explore and examine the barriers women with disabilities experience while accessing ICT because of the digital divide.

2.2 Disability and Digital Divide on disability

Khetarpal (2014) notes that “*disability is not necessarily inability and disability is only a disability when it prevents someone from doing what they want or needs to do*”.

According to World Health Organization, around 15% of the world’s population has a disability (WHO, 2011). An estimated 60-80 million people with disabilities are in Africa, which accounts for 10% or higher of the general African population, at 20% in

poorer regions where the majority of them are excluded from education and employment opportunities (World, 2018). To remove the people with disabilities' inequality to basic health, education, support services, and other services, United Nations (UN) passed the drafted UN Convention on the Rights of Person with Disabilities (UNCRPD) to assure basic human rights and fundamental freedoms of a person with disabilities (Karr, 2011). Not to mention, the UNCRPD started a dynamic new disability rights paradigm that prioritizes disabled people's organizations and disability scholars since its commencement in 2008 (Harpur, 2012).

With the advancement and growing needs of ICT, equal access to ICT has been a major concern for both people with disabilities and society (Vicente & Lopez, 2010). Not to mention, the ICT industry focused more on the people who are not disabled rather than people with disabilities neglecting the Universal Design features of the ICT products (Ransom, 1994). Due to this, people with disabilities do not have equal opportunities and satisfaction to use ICT products compared to people without disabilities.

Also, a subsequent scholar argues that people with disabilities have a lower rate of employment opportunities and lower levels of education compared to other populations (Jaeger, 2012). The author further defines the digital divide as a democratic divide when people with disabilities are excluded from civic participation, social services, and information (Jaeger, 2012).

ICTs have been taken as tools for people with disabilities to escape the isolation and stigma by improving their physical functioning with medical and assistive technology (Dobransky & Hargittai, 2006). However, even though people with disabilities are enthusiastic to use the technologies, most of the assistive technologies are abandoned early and are unused due to lack of training and education, and also they are not adequately designed for people with disabilities (Harris, 2010). The author's further research argues that the barriers people encounter in the case of assistive technologies is due to cost, poor design, and lack of proper training (Harris, 2010).

In sum, the researches reviewed in this section state the efforts of UNCRPD in assuring the basic human rights and fundamental freedoms of persons with disabilities. However, even though there's a high demand for ICT, people with disabilities are still experiencing certain barriers related to ICT because most ICT

industries prioritize people who are not disabled. Those barriers still exist because of the high cost, poor design, and inadequate training to use ICT products. Moreover, people with disabilities are excluded from civic participation, social services, and information that affects them individually and to the whole nation. This section relates to my research to find out the barriers the women with disabilities face while accessing the ICT concerning their disability, gender, knowledge, and economic status.

2.3 Universal Design, Usability, and Accessibility

Fuglerud (2009) defines Universal Design as “a design strategy to make products and services accessible and usable to as many people as possible.” The scholars, Persson, Åhman, Yngling, and Gulliksen (2015) note that design for all, universal access, and inclusive design are different names of approaches but with the same goal focusing on increasing the accessibility of the interactive system. Universal designed products or objects prioritize more on being used for a diverse population including individuals of different ages, and people with physical, mental and cognitive impairments (Lid, 2014). Similarly, subsequent scholars explore the aim of the Universal Design is to promote equal access and use of technology through accounting for human diversity, eradicating the barriers to accessibility and usability, and increasing participation in the design and development of technology (Giannoumis & Stein, 2019).

Seven principles conducted by the Center for Universal Design from 1994 to 1997 were defined with their guidelines aiming to define the concept of Universal Design comprehensively (Story, 2001). The seven principles are:

1. Equitable Use
2. Flexibility in Use
3. Simple and Intuitive Use
4. Perceptible Information
5. Tolerance for Error
6. Low Physical Effort
7. Size and Space for Approach and Use (Story, 2001)

Iwarsson and Ståhl (2003) note that “accessibility is the encounter between the person’s group’s functional capacity and the design and demands of the physical environment”, “usability implies that a person should be able to use, i.e., to move around, be in and use, the environments on equal terms with other citizens”. The authors further maintain that accessibility is a necessary precondition for usability (Iwarsson & Ståhl, 2003).

Since the demand for ICTs is high, the designers and trainers need to understand all the users including the old and disabled who experience various increased challenges while using the system (Whitney et al., 2011). Also, Vicente and Lopez (2010) point out that ICT products are exorbitant for people with disabilities that they cannot afford and even if they somehow manage to afford those technologies, they may be unable to maintain or upgrade them.

Furthermore, Choi et al. (2006) add that ICTs products are less accessible to people with disabilities because the products are not universally designed as per their needs. According to the authors’ heuristic evaluation concludes that universal design resources do not give a clear central idea and fail to assist the learning and reasoning processes of the designers and the result further shows that the content of the resources fails to address the requirements of designers during the development process of the products (Choi et al., 2006).

Thus, the literature reviewed in this section explored the concept of Universal Design and its principles. ICTs products must be universally designed so that people with diverse abilities can easily access those products without any barriers. Moreover, designers and developers must focus more on the preferences of diverse users and update and change the products accordingly. This section aims to delineate the barriers the people with disabilities encounter concerning Universal Design, Usability, and Accessibility of ICT.

2.4 Access to ICT for people with disabilities

The existence of technology has allowed people with disabilities to live independently (Thornett, Langner, & Brown, 1990). ICT address the barriers of communication and interaction by enabling multiple means of communication like voice, text, and gestures (Raja, 2016). However, people with disabilities are less likely to have social interaction with others and they are not exposed or used to ICT, especially older generation people (Khetarpal, 2014). The growing developments in ICT and the internet have a significant impact on changing the knowledge, service, employment, and interactional opportunities of people having disabilities (Chadwick, Wesson, & Fullwood, 2013). Furthermore, disability advocacy organizations argue that ICT should be accessible for people with disabilities so that they can reap the benefits out of it (D'Aubin, 2007).

However, people with disabilities encounter several barriers while accessing ICT. Despite the wide availability of ICT around the world, people with disabilities and older people have more disadvantages in accessing the technologies and the e-society than the rest of the people (Gia, 2013). According to Lazar and Jaeger (2011), people with impairments use the internet or other technologies at a significantly lower level than the rest of the population, not because of lack of interest or education, but because the internet is not friendly enough to several disabilities. However, the authors further argue that accessibility of the internet has the potential to allow people with disabilities in facilitating telework, online education, e-government participation, and forming relationships to combat barriers and challenges in the world (Lazar & Jaeger, 2011).

Subsequent scholars argue that when the learning technologies progressing in the ICT field are available, affordable, and accessible to diverse users including people with disabilities, they provide real opportunities in accessing inclusive education and overcome the barriers of educational systems (Laabidi, Jemni, Ayed, Brahim, & Jemaa, 2014).

Similarly, ICT products or equipment need to be designed and developed in such a way that diverse users' needs can be fulfilled and enjoy the most of it out of those products (Gia, 2013). Also, ICT applications let people with disabilities have more

flexibility to use the products and allow those people to coalesced socially and economically in their communities (Khetarpal, 2014).

Thus, the research on ICT access to people with disabilities provides a valid explanation about the importance of ICT in people with disabilities' lifestyles. Also, the reviewed literature examines the barriers in ICT and the reasons for those barriers regarding people with disabilities and digital skills which relate to this study. The reviewed literature indicates that most people with disabilities are not using the internet because the content on the internet is not friendly enough for them.

2.5 Access to ICT for women and women with disabilities

Rural access to ICT has a significant role in the production, household incomes, eradicating inequalities, and broadening the market (Madanda, Okello, & Bantebya–Kyomuhendo, 2009). While the potential of ICT acts as a tool for promoting gender equality and recognizable empowerment of women, the numbers of women accessing and using ICT are significantly lower compared to men (Sandys, 2005).

According to the scholar, Gurumurthy (2004), the majority of women are excluded from using the internet in both developed and developing countries. The scholar argues that the women who are likely to be illiterate, do not have computer skills, and do not know English experience inaccessibility in ICTs (Gurumurthy, 2004). In addition, Primo and Khan (2003) note that even though women are the main economic factor in developing countries, they are more likely to encounter serious economic, social, and cultural challenges that affect and prevent them from accessing and taking benefits from ICTs.

Fewer women access and use ICT because of adverse conditions related to employment, education, and income (Hilbert, 2011). However, when the variables are controlled, the research has proved that women tend to be more active users of digital tools than men (Hilbert, 2011). The ICT accessibility to women allows combating the gender inequalities in developing countries, giving access to employment, income, education, and health services (Hilbert, 2011).

Antonio and Tuffley (2014) argue that even though access to a computer and the internet is available for all gender, women are not necessarily using it because of four reasons that impede women access to and use of ICT: exclusion from

technology education and design, limited free time, social norms favoring men, and financial and/or institutional constraints. There has been a rapid increase in the development of ICTs, yet female participation in the labor force is stagnant (Nikulin, 2017).

Kizito (2011) investigates several factors such as poor attitude towards the technology profession, gender discrimination by employers, family commitments, and believe the only male is qualified for the IT profession prevents women from accessing and practicing Information technology professions. Besides, scholars argue that the main barriers to Internet use for women are employment, education, and income (Novo-Corti, Varela-Candamio, & García-Álvarez, 2014). The scholars further point out in the case of individuality the barriers arise because of accessibility problems, lack of ICT skills, and negative attitudes towards ICT (Novo-Corti, Varela-Candamio, & García-Álvarez, 2014). Also, other subsequent scholars presented the barriers that occlude women from using ICTs are due to lower levels of literacy and education, language, cost, domestic and reproductive responsibilities, cultural attitudes and practices, geographical location, and lack of relevant and useful content (Huyer & Mitter, 2003).

Since ICTs are an important factor for the socio-economic development of the countries, not prioritizing women to have access to ICT tools will hamper their personal and family income, reduces the skills level of the country, limit productivity, and being competitive in the global market (Dlodlo, 2009).

Nevertheless, some scholars have come up with solutions to eradicate those gender barriers. For example, Terry and Gomez (2010) propose 3 suggestions to strengthen the accessibility of ICTs for women in developing countries: provide ICT training for women, establish a partnership to raise awareness of ICT benefits for women, and develop content relevant to women users. Also, to take maximum benefits of this information age, gender issues must be taken into consideration and should be implemented in ICT policy (Hafkin, 2002). Several studies show that women have a lower rate of technology use than that of men in developing countries due to socio-cultural attitudes about the role of women in society; however, there is a possibility of a wide range of personal, family, and community benefits when women take participation with internet technology (Antonio & Tuffley, 2014).

Though information society plays a major role in empowering people through accessibility and use of knowledge, the problem still arises because women, especially immigrant women, minority women, women with disabilities, destitute women, and older women lack the information resources available to other groups (Goulding & Spacey, 2003). Therefore, those barriers are yet to be overcome to ensure women's participation in the Information Society (Goulding & Spacey, 2003).

Overall, the research reviewed in this section shows the inequalities still exist for women and women with disabilities while accessing the technologies and introduced the reasons behind the barriers for women and women with disabilities encounter accessing or using the ICT. The section aims to illustrate the reasons behind the accessibility of ICT barriers women and women with disabilities experience.

2.6 Gender Roles in ICT

Gender Roles have a major impact on participation and access to ICT. Macueve et al. (2009) argue that young males are more likely to use information and communication technology such as computers, the internet, and emails than women making them a marginal user, and hence suggesting a gender gap in ICT. Other scholars argue that gender and ICT stereotyping provide misleading messages to both genders about ICT as a career discouraging, have an adverse effect on girls' choices, and reduce their interest in ICT, making the ICT field less interesting to girls (Clayton, von Hellens, & Nielsen, 2009).

Women have less access to ICT facilities compared to men because of a social and cultural issue, attitudes towards women trying to study, or using ICT (Hafkin, 2002). Similarly, another scholar points out that the gender divide results in less access to information technology for women than men (Sandys, 2005).

In the case of Mozambique, the usability of the ICT situation is extreme for women. According to the study done by the scholars Gillwald, Mothobi, and Rademan (2019), more than 50% of men have mobile phones that are significantly higher than women sitting at 32%.

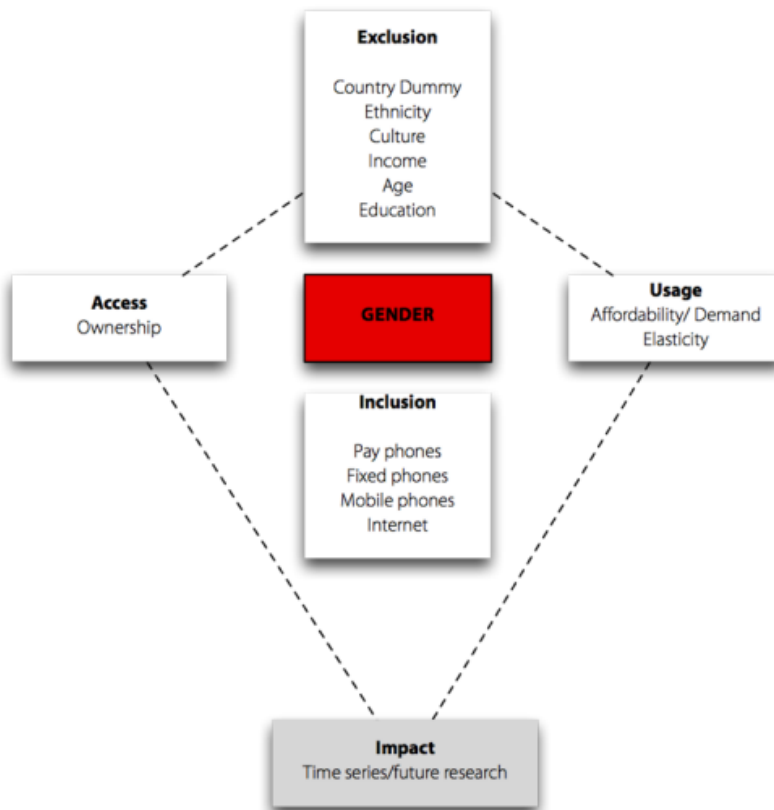


Figure 2. 1 Conceptual framework for gender analysis of ICTs

(source: (Gillwald, Milek, & Stork, 2010))

One scholar argues that ICT plays an imperative role in maintaining gender equality and empowerment, and for overcoming barriers (such as lack of access to physical infrastructure, illiteracy, social and cultural limitations, employment segregation)women encounter while accessing ICT infrastructure (Ikolo, 2013). Equal access to both genders helps close the gender gap and helps women to use technology in inclusive socio-economic (Umukoro et al., 2021).

Overall, the literature and findings reviewed in this section present that women are far behind in accessing and using information-based technologies compared to men. Nevertheless, if given equal opportunities, ICT maintains gender equality and empowerment in society and helps to alleviate several barriers.

2.7 ICT accessibility in education

ICT facilitates great capabilities in increasing access and improving the quality of education in developing countries (Tinio, 2003). Not to mention, the availability of ICT as a means of education increase flexibility in accessing the educational contents regardless of time and geographical barriers and improve the academic achievements of students (Noor-UI-Amin, 2013). Also, scholars conceptualize the capability of ICT in representing a dynamic and proactive teaching and learning environment and suggest teachers should adopt modern tools and facilities to integrate ICT in teaching instead of traditional methods (Ghavifekr et al., 2014).

Technologies assist students having disabilities in academic and employment tasks, improve their participation in discussion, and help them achieve daunting academic tasks by enhancing and improving their independence (Alnahdi, 2014). The scholars, Laabidi et al. (2014) argue that the availability, affordability, accessibility of learning technologies provide real opportunities for inclusive education and reduced the barriers people with disabilities face in the classical education system. The authors further argue that when accessibility in e-learning is prioritized, it has the potential to eradicate the barriers encountered by students with disabilities while accessing digital resources (Laabidi et al., 2014). Moreover, there are several benefits of using ICT in education, such as students' access to digital information effectively and efficiently, support student-centered and self-directed learning, creative learning environment for students, distance learning environment, development of critical thinking, improvement of teaching and learning qualities, and access to the course contents (Fu, 2013).

However, several studies argue there are some barriers to the accessibility of ICT in education. According to Istenic Starcic and Bagon (2014), people with disabilities have not gotten specific attention regarding the research and developments of the ICT learning environments. Salehi and Salehi (2012a) believe that even though the integration of ICT in teaching and learning assist teachers and students with the opportunities to work better in today's information age, certain related barriers prevent teachers from integrating and using ICT materials in the classroom. For

example, lack of sufficient technical support, lack of access to technology and ICT, insufficient time to learn to ICT are some of the factors that preclude teachers from ICT in the curriculum (Salehi & Salehi, 2012b). Other barriers the developing countries encounter because of several reasons such as lack of ICT infrastructures and resources, insufficient funds, poor vision and plan, corruption, poor teachers' attitudes and beliefs about ICT, and lack of knowledge and skills (Khan, Hossain, Hasan, & Clement, 2012).

Overall, the research reviewed in this section shows the importance of ICT accessibility in education. The challenges and barriers the people encounter while accessing ICT are further introduced. This section aims to provide general information and the importance of ICT related to education and the barriers and challenges the people with disabilities encounter accessing educational ICT.

Chapter 3 Disability and ICT Background of Mozambique

Many scholars have presented their studies on Mozambique's ICT background. This chapter describes the disability status and work of other scholars concerning the ICT in Mozambique.

A National Household Survey Among People with Disabilities was conducted by the joint work of Mozambique's National Statistical Office (INE), the Federation of People with Disabilities in Mozambique (FAMOD), and the Stiftelsen for Industriell og Teknisk Forskning (SINTEF), a Norwegian based NGO between 2007 and 2008 in Mozambique (Lopes, 2013). The 2007 Census reported that 475011 people had a disability which accounts for 2.5 percent of Mozambique's population (Lopes, 2013). Out of the total disability populations, 225259 were women whereas 103276 were children up to 15 years old, representing approximately 47 percent and 21 percent of the total populations with disabilities respectively (Lopes, 2013).

The study done by the scholars, A. Eide and Y. Kamaleri (2009) reports that individual with disabilities become disabled early from their birth and due to health problems and many of them do not get services that result in a substantial gap in educational services, vocational education, assistive technologies, and welfare services in Mozambique.

Only approximately 40% of the population is literate, which incorporates quite half the male population in literacy rate compared to 20% literacy rate among the female population in Mozambique (Macome, 2004). A recent study from USAID contemplates that only 11 percent of girls continue their study out of 94 percent of girls enrolled in primary school, in which quite half drop out by the fifth grade (USAID, 2016). Despite the effort made by Mozambique to reduce the gender disparity, female enrollment in attending the school is comparatively low than males (Roby, Lambert, & Lambert, 2009).

Even though the government introduced an ICT policy Commission aiming to lead and guide the national ICT policy and implementation strategy in 1998 (Mabila, 2013), Mozambique only ensured the initial steps to acknowledge Science and

Technology in the country aiming to develop the country in these fields in 2003 (Anjo, Amaro, & MANGANLAL, 2018). Despite, Mozambique is moving forward in the design and implementation of ICT policies, and telecommunication (Muianga et al., 2013), there's a great deal of gender disparity. The number of women phone users is significantly lower, sitting at 32% as compared to more than 50% of men (Gillwald et al., 2019). Also, the gender discrepancy in internet usage is more extreme (Gillwald et al., 2019).

Human development indicators show that internet users account for only 10% of the total population in Mozambique (UNDP, 2020).

ICT Indicators	
Fixed teledensity	0.4%
Mobile penetration	33.1%
Internet users	4.8%
Licences	
Fixed telecommunications operators	1
Mobile operators	3
International broadband access operators	2
National broadband access operators	3
Data and Internet Service Providers	25
Cable TV operators	3
Telecentres/CMCs (community access centres)	33

Figure 3. 1 ICT indicator and licenses in Mozambique

(source: (Mabila, 2013))

With the telecommunication sector booming in Mozambique, the cost is relatively high (Greenberg & Sadowski, 2006). Also, the ICT sector in Mozambique is weak which affects the usability of ICT (Greenberg & Sadowski, 2006). The study done by Mabila (2013) confirms that because of exorbitant prices, people are not accessing and using the internet.

The figure below shows the findings from the 2008 and 2012 RIA ICT survey on Mozambican's use of the internet:

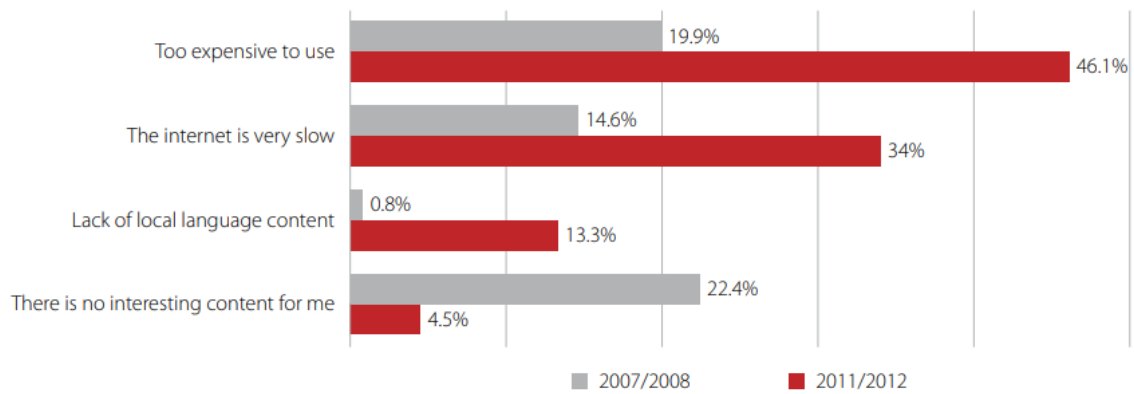


Figure 3. 2 Reasons for not using the internet in Mozambique.

(source: (Mabila, 2013))

Overall, the researches reviewed in this chapter shows the prevalence of disability status in Mozambique according to the 2007 census report. The literature reviewed further maintains that the male population is more likely to be literate than women. Not to mention, the dropout rate in education is higher in girls in Mozambique. Also, women's usage of phones and the internet is comparatively lower than men's.

Chapter 4 Research Methods, Data Collection, and Analysis

4.1 Qualitative Approach

This thesis uses a qualitative research method based on in-depth interviews with the participants. This approach was chosen because qualitative is scientific research that investigates to seek answers to a question, uses predefined procedures to answer the question, gather evidence, and generate findings beyond the study in advance (Mack, 2005). Moreover, this approach helps to identify social norms, socioeconomic status, gender roles, ethnicity, and religion if necessary in a dissertation (Mack, 2005). Gelling (2015) notes that qualitative research is a scientific approach that lets researchers inspect people's personal and social experiences and have a better understanding of the factors influencing those experiences. Also, focus-group and in-depth interviews, the two most used qualitative research methods are used to collect valuable required information with the low-cost advantage over quantitative research and seek to research the question "Why?" (Milena, Dainora, & Alin, 2008).

However, rapport development trouble, self-disclosure, hearing untold stories, guilty and vulnerable feelings of the participant, exhaustion, are some of the challenges researchers can encounter while adopting qualitative research (Dickson-Swift, James, Kippen, & Liamputtong, 2007).

This research aims to find out the accessibility issues and barriers for women with disabilities in Mozambique. The interview with the 3 groups: women with disabilities, women without disabilities, and men with disabilities are carried out to show the comparative study for this research.

4.2 In-depth interviews and selection of the participants

This study is based on in-depth qualitative interviews with the randomly selected participants including women without disabilities, men with disabilities, and women with disabilities. Boyce and Neale (2006) define in-depth interviews as a “*qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation*”. In-depth interviews are the researchers’ interactions to investigate the interviewees’ experiences, their thoughts and feelings, and their significant meaning (Mears, 2012). The features of in-depth interviews include open-ended questions, semi-structured format, understanding and interpretation, and recording responses (Guion, Diehl, & McDonald, 2011).

The target population for this research is the participants who are above 20 years old. Prior to the actual interview, the pilot interview with one of the participants was done as a mock-up to find out the overall structure and how in-depth interviews are carried out. The question patterns remained unchanged for both pilot and actual interviews with the participants. Consequently, the pilot interview helped me to add more questionnaires that are later included for final interviews with the participants. The scholar notes that a pilot study can be used to change research questionnaires and interview schedules which have great importance in ethnographic, approaches to data collection in foretelling research problems and questions (Sampson, 2004). A pilot study is used for developing and testing the research instruments, evaluating the full study, developing and testing the sample and recruitment strategies, collecting preliminary data, and training researchers (Connelly, 2008).

The in-depth interviews help to answer the research questions for this thesis. The interviews were carried with 3 groups, i.e., women with disabilities, women without disabilities, and men with disabilities. A total of 12 people is selected as participants for the interview focusing on educational ICT accessibility, being 5 women with disabilities, 2 women without disabilities, and 5 men with disabilities. There were not any criteria set for selecting the participants. The participants might be or might not be used to accessing the ICTs before. The interviews were taken on the preferences

of the participants' time and location. The interviews with the participants were taken place in Polana High School and the FAMOD office.

Table 4. 1 Participant Demographics

Participant ID	Gender	Age	Disability Type
P1	Female	25	None
P2	Male	28	Hard of hearing
P3	Male	26	Deaf
P4	Female	30	Deaf
P5	Male	26	Physical motor impairment
P6	Female	21	Physical motor impairment
P7	Male	26	Mental and cognitive impairment
P8	Female	20	Visual impairment
P9	Female	Around mid-30s	Cognitive impairment
P10	Female	27	Deaf
P11	Male	31	Blind
P12	Female	32	None

Different groups of participants were selected for this thesis to understand the overall experiences, barriers, and comparison of their access to ICTs. Participants were interviewed individually. This thesis aims to find out how the usage and access of ICT that is concerned with a disability has a significant impact on the gender component and how gender role plays in the use of technology in Mozambique. This study further aims to investigate the difference between women with disabilities and women without a disability in their use of technology in Mozambique and identify the factors that prevent them from using the technologies.

Several interview questions were prepared beforehand to gain the perspective of the participants on their accessibility and usability of ICT. The interview questions were categorized into three interrelated topics. The first topic focuses on their introduction to maintain rapport, their experiences, and history of using ICTs. The second topic focuses if they are familiar with other ICTs. The third topic concern the barriers they

encounter while using ICT and tries to find out the reasons for those barriers. The participants are motivated to answer the questions that are asked based on their history and experiences. Since the questions are open-ended, options were not set. The participants can answer the questions at their free-will depending upon their knowledge, understanding, and experiences. Also, to make them more comfortable and at ease, they are not assigned any time limit to answer the questions.

The interviews were conducted in English and Portuguese as per the preferences of the participants. I hired a native Portuguese speaker who can easily communicate with sign language and have a good command of the English language throughout the interviews. I used an audio recorder for recording. I will destroy all the recordings after the final submission of the thesis to maintain the confidentiality and privacy of the participants.

First, before the interview, informed consent was obtained from the participants. Consent forms were prepared and were signed between two parties. Before starting the interviews, all the participants were told that they can skip the answers if they do not feel like answering. All the answers they provided will be kept confidential and will only be used for educational purposes. Also, their identity will be kept anonymous during and after the thesis. The recordings of their interviews will be destroyed as well.

4.3 Data analysis

Thematic analysis is adopted for the analysis section of the interview. Braun and Clarke (2006) note that thematic analysis provides an accessible and theoretically flexible approach to analyze qualitative data and helps to explore themes or patterns in the context of epistemological and ontological positions of qualitative methods. The thematic analysis gives the researcher to identify, organize, and allows insights into patterns across a data set by identifying unique meanings (Braun & Clarke, 2012). Not only this but the scholars Braun and Clarke (2006) also further introduced six steps for analyzing the data through thematic analysis techniques:

Table 4. 2 Thematic Analysis Steps

SN	Steps	Description
1.	Familiarization with the data	Researchers get familiar with the data collected by themselves or the others.
2.	Generating the codes	After familiarizing with the data, the researchers produce the initial codes from the data by labeling the texts in some form of code.
3.	Searching for themes	After coding the sentences or texts, researchers sort out the different codes into a broader and potential level of themes.
4.	Reviewing themes	In this step, once again the researchers review the themes that are generated and discard the redundant themes.
5.	Defining and naming themes	The researchers define and refine themes that they will present for the analysis.
6.	Writing the report	The researchers finalized the developed themes and present them in the report.

The above steps were followed for the analysis of the collected data. Even though the recorder was used to record the interview, I wrote the main themes on the paper as well. Doing so, helped me to further familiarize myself with existing or collected data and analyze them with the codes. This analysis technique helped me to assist in the overall qualitative method I used for the data collection and the interview. The findings and results were obtained and presented based on the relative aspect of this thesis topic. The results obtained from this analysis assisted in investigating the experiences and the barriers of women with disabilities encounter while accessing the ICT.

Chapter 5 Ethical Consideration

While researching and conducting the interview, the researcher must be aware of the sensitivity and follow certain ethics. According to the scholars, Blandford, Cox, and Cairns (2008), there are 3 important research ethics that the researcher needs to consider while researching.

1. **Vulnerable participants-** Not all participants will show enthusiasm to participate in the research process. In case vulnerable participants refuse to participate or are threatened by the research, concern regarding this issue should be addressed by the researcher.
2. **Informed consent-** Informed consent should be obtained before the interview or research process so that participants are aware of their participation and the purpose of the study and data collection. Also, the participants should be informed that they have the right to withdraw from the research anytime since their participation is entirely voluntary.
3. **Privacy, confidentiality, and maintaining trust-** Privacy, confidentiality, and trust of the participants should be maintained and respected throughout the research. The information and data provided by them should be kept confidential.

NSD (2019a) notes that the researcher must obtain consent before the research and interviews according to Norwegian law. NSD further argues that the consent that is obtained from the participants is only considered valid if it is voluntary, explicit, and informed and the participants should be informed about the sample of the research beforehand.

Furthermore, NSD (2019b) states that in the case of vulnerable participants, the research should only be conducted if there are no options left to answer the research questions other than by involving them and if participants are to be recruited directly from the institutions or hospitals, the research should be carried out confidentially and the participation must be voluntary. Also, NSD states that if the participants become stressed or uneasy during the research, the researcher must limit the strain of the participants and should deal with the problems that arise during and after the research.

For my research, I applied for the NSD and got approved. The consent form is prepared and was distributed to the participants to sign before the interviews. The consent form represents that the participants' participation is entirely voluntary and the answers they provide are only used for educational research purposes.

The participants involved in the interviews were fully assured that the answers they provide will be only used for educational purposes and their identities will remain anonymous. In case they feel stressed during the interview process and if they want to withdraw, they were given the freedom to withdraw or again take part in the interview whenever they feel comfortable. They were not coerced to take part in the interview against their will. Also, the participants were told about my research purposes and aims. All the recordings and personal records I gather from them will be destroyed after the final submission of this thesis.

Chapter 6 Findings and Results

This chapter explains a summary of the factors and reasons for the accessibility and usability barriers of the participants. This chapter also addresses the key findings and results based on in-depth interviews and data collection with the 12 participants. Thematic analysis is the foundation for the results and findings of this research. In-depth interviews with the participants were carried out for the data collection resource.

The participants are selected to show the comparative study on their use of technologies in the in-depth interview. As this thesis research questions are more concerned with the use and accessibility of ICTs, the disability type can be varied. The participants discussed their experiences, and history of using the technology in the interview, and their familiarity with other latest technologies. They also mentioned the barriers they encounter while accessing and learning to use the ICTs. The participants might be visually impaired, hearing impaired, deaf, motor impaired, or who have cognitive or learning disabilities. Each participant is interviewed individually for the data collection. All the interviews were done in Maputo, the capital city of Mozambique.

Before the interviews, the participants were asked to read a consent form that included the purpose and objectives of the study carefully and sign the form. The interviews were entirely voluntary. The participants were told that they can withdraw from the interviews at any time they want if they feel uncomfortable or uneasy. The duration of each interview with participants lasted from 20 to 40 minutes.

From the interviews, 4 emerging factors with their sub-factors were drawn as a conclusion for ICT accessibility issues. The factors include Financial factors, Societal factors, Educational factors, and Technological factors.

6.1 Summary of the 4 factors and the reasons affecting Participants' usability and accessibility in ICT

Overall, the findings from this study show that 4 possible factors hinder not just women with disabilities' but also other remaining population's accessibility and usability in ICT.

The summary of the factors with the reasons that affect participants' usability and accessibility in ICT is presented below in the table.

Table 6. 1 Factors affecting the use and access of ICT.

Factors	Reasons	Women with disabilities' Response	Men with disabilities' Response	Women without disabilities' response
Financial factors/ Cost	• Computer affordability	5	5	2
	• Expensive internet	3	3	-
	• Unemployment	5	4	-
Societal factors	• Lack of awareness, opportunities, and family support	1	4	-
	• Disability discrimination	1	1	-
	• Believing it is too late to learn technology	1	-	1
	• Gender disparity	2	1	-
	• Family responsibility	2	1	-
	• Believing disability is a challenge itself	1	1	-
	• No electricity	-	-	1
Educational factor	• Drop out	3	3	1
	• Not familiar with technology in school	5	5	2
	• Little or no knowledge of the English language	5	5	2
Technological factor	• Web inaccessibility	1	1	-
	• Phone over computer	4	5	2
	• Not learning how to use a computer	1	-	-
	• Shortage of ICT teachers	2	3	-
	• Late use of technology	1	1	1
	• Lack of assistive technology	2	1	-

The above table points out the experiences and factor that affects the participants' accessibility of ICT in no specific order. The reasons presented in the table are the inclusion of the response of the participants in brevity, analysis, and from the key findings. The findings and analysis of the in-depth interviews with the participants show that financial factors, societal factors, educational factors, and technological factors have a direct impact on their use of technology.

The findings indicate that most women with disabilities are backward than the rest of the group in all 4 factors due to various reasons. Out of 12 participants, only 1 male participant having disabilities, and 2 women without disabilities had work. That means only 1 participant with a disability working and fully employed shows the lack of employment opportunities for people with disabilities in Mozambique. That said, unemployment is one of the reasons why they can't afford to learn and use the technology even when they want to. All the participants agreed that the affordability cost of a technological product like a computer is way too expensive for them to afford. Not to mention, using the internet was also expensive according to the participants. Some participants believe disability is itself a challenge for them. It's understandable why they lack the motivation to learn the latest available technologies.

Also, 7 participants, 3 being women with disabilities, 3 being men with disabilities, and 1 woman without disabilities were dropped out from their school or have not completed the secondary level. Though the findings cannot exactly contemplate why they were dropped out, however, it examined how it affects their use in ICTs. The study findings address that majority of the participants didn't have technology in their primary school. Not to mention, the participants had little or no knowledge of the English language which is important in accessing the web content.

The findings further indicate that the women with disabilities' access to ICT are comparatively lower than that of men with a disability.

A detailed analysis of the data collected from the in-depth interviews with the participants are explained below:

6.2 Financial Factors

The interview with the participants revealed that cost was found to be the main barrier to most participants' accessibility and usability in ICT.

6.2.1 Cost

The living standard of Mozambican people is very low. The interview with the participants reported that even though most people showed interest in using the technologies, they couldn't afford them. When asked about the barriers the participants encounter while using the technology, most participants agreed and responded because of the high cost of the technologies, assistive technologies, training to learn technology like computers, and the internet which most of them cannot afford.

Participant P2 responded when asked why he preferred the phone over the computer:

Phone. For computers, the internet data is more expensive to buy than my mobile phone. I only use my laptop for conference meetings when I need to talk with a group of people and when I have to do some work. Not for simple communication (P2).

One deaf participant described her situation why she is unable to buy the new hearing aid when asked if she is using any assistive technology to assist her:

I only used it once. But I lost it last year. I am looking to buy a new one. I met a woman from Finland and asked her to help me. It is expensive for me and my husband to afford. (P4).

Another participant who had hard to hear impairment stated when asked the similar questions:

Yes. Hearing aid. It's expensive here. Though I earn little money, I saved it to buy a hearing aid so that it's easier for me to hear what other people say. I don't hear them fully, but it works. (P3)

According to the same participant P3, not only hearing aid but also using the internet via computer or laptop is expensive. The participants maintained that due to the expensive internet cost in the computer, he was not using the internet:

Because I don't have money to always buy internet data for the computer. The phone is less expensive. I think SMS is very easy to use but the internet is more expensive for me. (P3)

The participant who had cognitive impairment answered when asked if she owns any personal computer or laptop:

I don't own any computer or laptop. I don't know how to use it, also it's very expensive. I can't afford [...] I never had the training to use the computer. I don't have money to pay for the training as well. (P9)

Similarly, another participant gave her response when asked why she is not using a computer:

I don't have a computer and I don't know how to use it also. I want to learn but it's expensive. (P10)

Another participant who had physical and mental impairment gave his response when asked how often he is active in social media:

Almost daily. I don't use it all day but daily. Like a short time on the day when I have time. Sometimes, I have to buy internet data which can be expensive. I only use the internet when I have internet data or when I go to the free Wi-Fi zone. In the place where I live, we don't have wi-fi internet. (P7)

He further addressed the reasons for not using the internet via computer or laptop:

I think it's more economic to use the internet via phone. For example, I don't have a modem (router) to connect to wi-fi. I know that from a computer, it is easier to access information than a phone. Without conditions, my option is my cell phone. I am not working, so it's expensive for me to afford. We have to pay around 4000 to 5000 meticaís. (P7)

Overall, the cost of using the internet on a computer or laptop was found to be expensive for most participants. One participant responded it was more economic to use the internet via phone than the computer which is one of the reasons why

participants prefer a phone over a computer. When asked if they own their personal computer or laptop, all the participants responded not having their computer as they could not afford it. Not to mention, buying a personal computer or laptop was beyond their average earning. One participant maintained that she couldn't afford to pay for the technological training. Similarly, 2 participants having hearing impairment responded that the assistive technology, i.e., the hearing aid was expensive for them to afford.

Thus, the affordability and cost were found to be one the major barrier that prevents not just people with disabilities, but also the people without disabilities to access the ICT and other technologies. Most participants I interviewed were unemployed. That's why they couldn't afford to pay for the latest available technologies and the internet.

6.3 Societal Factors

Another barrier that participants encountered was because of societal factors that inhibit them from accessing, using, and learning ICTs. Lack of awareness, support, and opportunities, family responsibilities in the house, no electricity to use and learn ICTs, attitude towards ICT, limited time, and discrimination in the society were found to be the main barriers that fall under societal factors.

6.3.1 Lack of awareness, support, and opportunities

Another common finding why people were not necessarily using the technologies is because of a lack of awareness, support, and opportunities. The interview results conclude that some participants were not made aware of the importance of technology from their childhood. Not having the opportunity to formal education and opportunities to learn technologies from childhood were also the barriers that prevent them from accessing the ICTs. From one participant's response, it can be arguable that they were not motivated by their parents from an early age as they were not aware of the technology themselves.

One participant shared his experience of using technology for the first time:

I knew about technology before too, but I was not aware of the importance of technology. I didn't ask either. It was in 2015 that I first learned to use technology. The man from India taught me. (P2)

He further explained the reasons for not equally accessing technologies as people without disabilities:

People with disabilities face many barriers because they don't have the opportunity to have formal education, and later opportunities to learn technologies. They don't have work [....] Therefore, people without disabilities can develop easily than the majority. We take much more time to achieve the level than the people without disabilities [...] People without disabilities can learn the technology differently, but we cannot hear. So, we wait for someone to explain in sign language what to do. So, it naturally takes more time. (P2)

One participant described how lack of awareness and opportunities affects her learning to use technology:

When I was a child, I never learned about technology. I didn't know how to use a computer. Even now, at my age, I don't have many opportunities to learn. Even at school, we didn't learn about that. (P4)

Likewise, another participant with physical motor impairment gave his response why people with disabilities are not equally accessing the ICT is because of lack of opportunity:

People with disabilities need to have the opportunity to learn. We have challenges, but people without disabilities have a lot of knowledge. We need to be taught by them. We are all the same, we are no different. If I am disabled, it does not mean I don't have the right to learn. I need opportunities so that I can learn. It's the same for women with disabilities. They need opportunities as well. (P5)

P11 described when asked if he was familiar with the technology as a child:

Like I mentioned before, we had no technology in school, and even in our house. No one was aware of the technology.

The participant P11 addressed the reasons people with disabilities are not equally accessing technologies as people without disabilities:

Sometimes they (society) discriminate against people with disabilities [....] The technologies are used to assist people with disabilities and they are willing to learn and become independent. But people with disabilities are left behind because of a

lack of information and awareness. People with disabilities are not getting equal opportunities. Family overprotects the persons who are disabled and make them stay at home. But we see now that doesn't give any value to the person. In brief, I would say people with disabilities are not getting equal opportunities. (P11)

Some participants were found to be not aware of the importance of technologies from their early age. They were deprived of accessing the technology from their childhood. Lack of opportunity for education and technologies were also barriers that inhibit their access to technology. Also, women with disabilities lack support from their own family which has a significant effect on their use and access to ICTs. A couple of participants have said that they didn't have the opportunity to formal education and to learn technologies from their early age. Also, one participant mentioned that due to lack of opportunities, people with disabilities (both male and female) are not learning technologies. From the participant's responses, it can be clear that most of them had no technologies or opportunities to learn technologies in their primary school. That said, people with disabilities are far from getting equal opportunities to access ICTs due to a lack of information and awareness. Thus, people without disabilities have more advantages and opportunities to learn and access ICTs compared to people without disabilities.

6.3.2 Family Responsibilities

According to the findings from the interviews conducted, most women are not using technologies or have limited time to use the technology due to family responsibilities. That said, most women who have children are busy with household activities, getting their children ready for school, preparing meals.

One participant described the gender-related barriers and family responsibilities that affect her while learning to use the technology:

While we are busy with other things, like a domestic task, taking care of the children. They (men) have more time than us [...] I must take care of my children, wash their clothes, help them to prepare for school, prepare food for my family. So, I don't have more time to learn technologies. (P4)

The participant having hard to hear impairment described when asked if he had family responsibilities that affect his use of technology:

Yes, sometimes I have to create a balance between my responsibilities and the use of technology. I need to communicate with people when I am at home. I am living with my father and mother. They are old. I take care of them. I have a wife too. (P3)

Similarly, P10 described how family responsibilities affect her use of technology:

I have more responsibility in the family. I have to take care of my children, prepare them for school. I make time to use my cell phone only when I finish my duties, I only use my cell phone when I have to. (P10)

A couple of women participants having disabilities mentioned that they have more responsibilities in the house which affects their time to use and learn ICTs. Though women without disabilities have their responsibilities in the family, they made their time to use and learn technology. The situation is different for women with disabilities, especially for those who are married. Naturally, involvement in household work is time-consuming for them. They had to prepare food for the family, prepare their children for school, wash clothes because of which they lack the opportunity to learn and use technologies. The men have fewer responsibilities in household chores compared to women. Therefore, they have more time to learn and use technology. However, that doesn't mean men with disabilities don't have family responsibilities. One participant who had hearing impairment discussed how he had to create a balance between his responsibilities in the family and using the technology.

In sum, women with disabilities are less likely to use ICT than men (with disabilities) and women without disabilities because of family responsibilities, and household activities which limit their time in learning the ICTs.

6.3.3 No electricity

Power cut out is still a problem, especially for people living in the countryside in Mozambique. According to IEA, around 60% of people don't have access to electricity in Mozambique (IEA).

One participant shared her experience:

Sometimes, when I go home from work, there is no power in the house. I cannot charge my phone. I still don't understand why we are having a power cut where I live. In Maputo, the power is cut off only sometimes. (P12)

The participant's response showed that most of the time while returning home from work, there's a power cut in her house. She cannot even charge her most of the time.

Although only one participant addressed the issue of a power cut and how it affects her use of technology, it must be seriously considered as one of the main barriers in ICT accessibility and usability.

6.3.4 Discrimination

Disability disparity and societal discrimination have made an adverse impact on the accessibility of technology in Mozambique. A couple of participants who are disabled shared how discrimination and inequality in society affect their accessibility to ICTs.

P10 shared her reasons why people with disabilities are not equally accessing technologies as people without disabilities:

That's a big issue. People without disabilities can easily access the technology than people without disabilities. The problem is discrimination. For example, a deaf person is not included in our society..... We always talk about equality; we are not doing that [...] Women without a disability have more advantages than women with disabilities. They have the opportunity to learn easily. The problem is education itself. For example, deaf people have fewer opportunities for school or education, that's why it's difficult for them to use technology including the internet. (P10)

The participant P11 addressed the difference between women and women with disabilities:

I think women with disabilities don't have equal opportunities as women without disabilities. Also, I have seen many times in Mozambique that women with disabilities who are unable to have children, got discriminated against by their husbands. Also, women with disabilities don't get full support from their families. (P11)

Thus, one participant's response indicates that people with disabilities are not using technologies, because they got discriminated against in society. They have fewer opportunities to enroll in school.

Also, comparing women without disabilities and women with disabilities, women with disabilities got discriminated against by their husbands and don't get full support from their families. Women with disabilities who couldn't bear to have children were discriminated against more by their own families in Mozambique.

Thus, disability discrimination and gender disparity are another reason why women with disabilities are not accessing ICT as they should be which needs to be addressed to change the accessibility of ICTs.

6.4 Educational Factors

Several barriers are shaped by educational factors as well. Language barriers have been the main issues while accessing web content for some participants. Another barrier is the late use of technologies.

6.4.1 Language Barriers

Almost 70% of the web-related information available on the website is in English which makes it more difficult to access for people who don't speak English or who don't have a good command of English (Sandys, 2005). It's challenging for people in Mozambique to access the web contents and other technologies that are in the English language. Thus, it creates language barriers.

One participant acknowledged the biggest challenge she encounters while accessing the information is because of the English language:

I don't have a good command of English. Although I understand some handy phrases, I know it's not enough to use and access technology. For example, while using an application on my smartphone, I don't understand the apps that are in English. I have to use google translator which can be frustrating and boring. Only a few apps are in the Portuguese language. I think that's my biggest challenge. (P1)

Similarly, one participant who had motor impairment responded when asked if she faced any difficulties while accessing information provided on the internet:

Everything (web contents, apps) is in the English language. I don't understand English. (P6)

The English language speaker in Mozambique is few. Most people do not understand English. Most people speak Portuguese or their native language. Even when I was in Mozambique, it was difficult for me to communicate with the locals. Language barriers have been one of the main issues in technology usage which demotivate users to use the technologies, including the modern ones. Only a few participants I interviewed could understand English to some extent.

6.5 Technological Factors

From the interview, it was found that there were technological factors that affect the usability and accessibility of the participants. The factors and reasons include the late use of technologies, a shortage of ICT teachers to train and teach them, and not following WCAG guidelines.

6.5.1 Late use of technologies

Late use of technologies is another finding of in-depth interviews with the participants. Not learning to use the computer and internet was found to be the reasons that people in Mozambique, including disabilities, encounter accessibility barriers in Mozambique. Not to mention, the mentality of believing it is too late to learn technology leads some participants not necessarily to use the technology to a great extent.

One participant shared why she is not using any technology when asked if she remembers the first-time using technology:

No, I don't use technology. I never used it in my life. I have a cell phone but without internet.

Follow-up question: Don't you want to learn how to use the internet?

I wanted it but I never learned. I still want it, but I think I am already late for it. (P9)

Participant p11 shared his experience using the technology for the first time:

I don't know if my cell phone is termed as technology as well. Yes, I use my cell phone to communicate, send messages, calls, radio, news, music. I can't remember the date, but the year was 2010. No one taught me. I was just curious about it. So, I learned it myself. But for some additional thing, I don't understand, I had to ask others for help. (P11)

Participant P12 gave a response when asked if she was familiar with the latest available technologies:

If you are talking about computers, then I don't know how to use the computer. I want to learn. I don't have a smartphone like others. I use my phone just to call my friends and family. I don't use it for other purposes. (P12)

When asked about the technology in primary school, most participants responded they didn't know about the technologies, also they had no opportunity to use the technology back then. When asked if the participants were familiar with the technologies, most of them answer they were around 18 and above. Some participants acknowledged that the late use of technology is one of the main reasons why they don't feel like using the latest technologies. Some participants are not using ICTs because they think they are already late for modern technologies. Hence, they lack the motivation to use them.

6.5.2 Shortage of ICT teachers.

The interviews with the participants, especially those having disabilities found that one of the reasons why the participants do not have the opportunity to use and access the ICT is due to a shortage of ICT teachers. Even if they have a teacher who can teach technology, they are not able to teach them because most of them don't know how to communicate in sign languages. Therefore, the lack of skilled and experienced ICT teachers made the barriers more unfortunate.

One participant described when asked about the reasons that people with disabilities are not equally accessing technologies compared to people without disabilities:

I cannot say about other disabilities. But deaf people cannot communicate with people who are not deaf easily. But they can communicate easily among them which gives them the advantage to learn new technologies easily. But we can't. The situation is the same for both genders. I think we need some trainers who can understand sign language. (P3)

Participant P4 answered when asked about the same question:

Yes, for us (deaf or hearing impaired) who cannot hear is difficult to learn things. Those people who can teach cannot communicate with us using sign languages. I think there must be someone who can teach us using sign language. Also, I think we should be taught technology from our childhood. (p4)

Another two participants answer confirmed that there's a need for ICT teachers to eradicate the barriers:

I think that if we have the opportunity for training, and teachings on how to use those features, especially for people who do not know the technology, they can have basic knowledge about the internet and technology. (P7)

To help people with disabilities and to remove those barriers, we need to invest in education. For example, for people with hearing impairment, we need to use sign language always because to learn technology, people must be taught in a language they understand. (P10)

Similarly, participant P11 shared his opinion to remove barriers in ICT accessibility:

People who support them must be people who are aware of the problems of people with disabilities and must have an essence of understanding the situations. For example, the training centers, schools, must have technological teachers and trainers. And it's important to have a voice assistant. And the teachers must have the patience to teach people with disabilities. (P11)

The findings from the interviews with some of the participants concluded that there's a need for skilled ICT teachers to train and teach people with disabilities that encounter several barriers while accessing ICT. A couple of participants who were deaf or have hearing impairment mentioned that they cannot communicate with people who are not deaf easily as they don't have any command of sign languages.

Therefore, they are in dire need of trainers or teachers who could teach them ICTs using sign languages.

Moreover, the training centers and schools must adopt ICT trainers from primary school.

6.5.3 Not following WCAG guidelines.

Web Content Accessibility Guidelines (WCAG) 2.0 defines comprehensible recommendations to make web content more accessible to diverse people including people with disabilities (Consortium, 2008). Because of not following the WCAG guidelines, people with disabilities, especially those who are blind or have visual impairment encounter several challenges to access the contents available on the internet.

One participant who had visual impairment articulated the barriers she encounters:

Because of my disability, my eyesight is so weak [...] My sight is reduced to 70%. It means that I have to make effort to see. Those aspects affect my use of technologies. For example, to use smartphones, computers, I have to be more cautious with the light it emits. Sometimes, I can't see the letters appear on the screen. Also, I can't be exposed more time on screen because the effort I make makes it worse. (P8)

She further discussed the reasons why blind people are not equally accessing technologies compared to the remaining population:

Well, I believe that it happens because the technology is not adjusted to the needs of people with disabilities [...] If the web contents change the color or background that fits everyone including us, there is still a possibility of development. But we don't have those access. For people with disabilities, for example, who have a visual impairment, if there is a keyboard that has braille assistance, it could help us to use the internet freely without someone to assist them. So, I can say technology is still not inclusive. I think there is a need to create accessibility so that people with disabilities can access information without any restrictions. (P8)

Participant P11 noted accessibility issues for people with disabilities:

We all want to know what technology is. But people with disabilities are not accessing the technology because they are not made accessible for people with disabilities to learn. For example, I am blind and if I want to learn a computer, I don't know where to start. (P11)

Another reason for not using or accessing the ICTs is web inaccessibility. Two participants responded it's difficult for them to access web content because most web is not universally designed. Lack of assistive technology to assist them while accessing ICT is also a barrier that must be addressed. Many websites are not universally designed. That means, the developers and designers don't follow any WCAG guidelines. Therefore, they must consider adopting WCAG guidelines while developing websites and web content to make it universally applicable for diverse users. From the participant's recommendation, the braille assistance must be included in the keyboard so that they can easily access the web contents.

Chapter 7 Discussion and Recommendations

This chapter presents an interpretation of results and findings; discussion and comparison of the findings with the previous related studies; the limitations of the results that follow up and the possible recommendation and solutions to combat the barriers identified from the findings of this research.

7.1 Interpretations of the key findings

The main objective of this research is to explore the barriers women with disabilities encounter while accessing the educational ICT. This thesis aims to answer the three research questions:

- What common barriers women with disabilities usually experience in Mozambique while accessing educational ICT?
- What are the factors that hinder their access to ICT?
- What steps can be taken to mitigate those ICT barriers?

The findings obtained from the in-depth interviews with the participants indicate that it fits in answering the research questions of this thesis. The findings show that the situation concerning the accessibility and usability of ICT is significantly lower for women with disabilities as compared to other populations and necessary steps must be taken to mitigate the barriers they experience. Not to mention, women without disabilities and men with disabilities also encounter similar technological barriers. The important reason that needs to be addressed why people with disabilities, especially women with disabilities are not using technologies is because of the high cost. They could not afford to pay for the internet or computer with their average income. Moreover, only one participant with disabilities had a job. Also, the majority of participants preferred cell phones over a computer. For most participants I interviewed, technology only means cell phones. Even if they are aware of other existing technologies, they are not necessarily using them. The language barrier is another issue. Only a few participants could understand English to some extent, which makes it difficult for them to grasp the information provided on the internet. The results pointed out that even when they wanted to learn the new technology, there is a lack of ICT teachers who could understand their language (sign language),

which is also one of the main issues that need to be addressed. The results showed that women with disabilities have more family responsibilities that hinder their interest in using the technology. As the responsibility grows for women and women with disabilities doing household chores, there is less time for them to learn extra activities. Thus, financial factors, societal factors, educational factors, and technological factors hinder participants' access to ICT.

7.2 Discussion with the previous related studies

The results and findings of this research show the potential to reduce and mitigate the barriers the people with disabilities encounter in Mozambique. The results showed that both women and women with disabilities don't have equal opportunities while using the technologies as men in Mozambique. It further addressed that Mozambique is way backward in the technological aspect. The situation must be addressed, and the necessary government policies and solutions must be adopted.

This section discusses and compares the findings of this study with previous related studies.

Many scholars have argued and concluded that people with disabilities have several disadvantages because of the disability divide in technology and internet use.

According to the study of the scholars, Dobransky and Hargittai (2006), people with disabilities are less likely to own personal computers and less likely to be online as compared to the rest of the population in the USA that correlates with this study's findings.

Other subsequent scholars delve into the ICT barrier for people with Disabilities in Namibia (Indongo & Pempelani, 2015). Their study explores the people who are blind, autistic, hearing impaired, and mentally disabled have comparatively lower use and access to a computer, internet, and cell phone than people with other disabilities. Although this thesis results support those findings, this study further asserts that most people with disabilities living in Mozambique face several barriers. The barriers do not limit to just classified disabilities the scholars have explored. Their studies further reveal that females with disabilities experience gender inequalities in access to the internet than the male counterparts all of which supports my results.

Similarly, the study done by Elnaggar (2008) explains that women in Oman, do not have the privilege to access ICT in this knowledge-based economy because of various reasons such as male-dominant in the ICT field, illiteracy, unequal access to training, lack of Arabized internet content, and training, socio-cultural norms, and the lack of awareness program and policy advocacy which corresponds with my study findings. However, the study doesn't show the digital disparity among women with disabilities and the remaining population.

Another subsequent scholar's findings of ICT in Nigeria Educational Assessment System presented the barriers taken from 1200 participants, including 300 teachers, 600 students, and 300 examination personnel with survey research (Aworanti, 2016). According to the scholar's study, the barriers arise because of poor computer knowledge among teachers and students, lack of ICT trainers, inadequate ICT infrastructures, high cost of ICT, limitation of internet connectivity, unstable electricity supply, and lack of funding. Although my findings share the similarities of barriers with the scholar's finding, the scholar's study does not cover gender and disability disparity.

The study done by the scholars, Deen-Swarray, Gillwald, Khan, and Morrell (2012) inspected the ICT gender indicator in Africa comprehensively. Their study focused on the gender digital divide and inequalities between men and women's access to ICT in Botswana, Cameroon, Ethiopia, Ghana, Kenya, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Tanzania, and Uganda. Their research contemplated that both men and women are not accessing and using ICTs because of the high cost of services and complexity in communication. However, women's access to ICT is significantly lower. Also, the average income and literacy rate of women (both in urban and rural) is low as compared to men. Their study findings further explored that women are less likely to use computers and the internet than men because of a lack of opportunities and equal access. Though my thesis findings share some similarities of the findings to the researchers' study, there is still a need for more research for my thesis. Nevertheless, the above-mentioned researchers only focused on the gender digital divide, excluding the disabilities divide which is covered in this thesis.

In sum, the findings in this thesis support the previous studies of the scholars' findings and further extends and explore the experiences and barriers people with disabilities encounter while accessing ICT.

7.3 Limitations

Even though the data were successfully collected and were used to present the results of this thesis, there were certain limitations and drawbacks.

Not only the selection process and recruiting participants but also the interviews with the participants were time-consuming. The interviews were done in English, and the translator was hired to translate English into Portuguese for all the participants and English to sign language for deaf and hearing-impaired participants. Participants not understanding the technological question is another limitation of this study. Some participants were unable to understand the term "technology". For some participants technology means cell phones only. Therefore, the question had to be paraphrased according to the participants. There were times when the participant did not understand the question. Even when some participants understood the question, they could not provide the complete information relevant to the questions asked. This might be because they did not want to open and give too much information or might be because of nervousness. Also, the sample size of the participants was just 12 which constitutes one of the limitations of this study. Hence, this thesis cannot tell the findings and results for the whole population. Also, this thesis only recruited women with disabilities, women without disabilities, and men with disabilities. Men without disabilities were not involved in this study. Since all the interviews were conducted only in Maputo, the findings cannot relate to the remaining population of the country. Maputo is the capital, has many advantages of ICT infrastructure, development, education. Therefore, this research mandates further studies.

7.4 Possible Recommendations and Solutions

This section provides the possible recommendations and solutions to combat the barriers encountered by the participants. As it is already mentioned, the language barrier is one of the main issues in ICT. Most information on the internet is in English. Most of the Mozambican population don't know how to speak English, let alone writing and reading. This study suggests that the Mozambican people,

especially people with disabilities must be taught English from their primary school. English language training must be held in society from time to time. The schools must mandate English course from the primary school so that people don't face any difficulties in accessing and using ICT facilities. The developers, designers, and managers who are working on the website must give priority to switch between the languages to ease the language barriers while using ICTs.

This study shows how the shortage of ICT teachers affect the usability and accessibility of people with disabilities. Even when PWDs want to learn technologies like computers, they are not necessarily learning because of a shortage of ICT teachers. The schools must hire a skillful and experienced ICT teacher who can easily communicate with people with disabilities and who have a good command of sign languages, who have the patience to teach the PWDs, and who could easily adapt to their environment. The training center must be open to technology schooling.

The cost of the internet is high, especially for people who live on the average income in Mozambique. To minimize the barriers, the government policy must take into consideration to reduce the internet cost, especially for someone who uses the internet via laptop or computer. Doing so will not only help people with disabilities to access the information available on the internet easily but also have a significant impact on their families' attitudes towards ICT.

The study findings show that the gender disparity and disability gap is still an issue in Mozambique. That said, priority must be given to people with disabilities, especially women who are way backward in the educational sector. Also, most Mozambican people are still not aware of the importance of ICT. The awareness program regarding education, technology, and its importance must be held in school and society.

WCAG guidelines must be followed so that it provides a guide for making web content more accessible to diverse people with disabilities, including blindness and low vision, learning disabilities, cognitive impairment, motor impairment, deafness and hearing loss, speech disabilities, and other impairments (Caldwell et al., 2008). Though this study has a limitation of not focusing on checking the accessibility of the

website, it is certain from the participants' response that certain website lacks the WCAG and accessibility guidelines which need to be addressed.

Not to mention, the Government must provide sufficient funding in the technological field in Mozambique for the overall development of ICTs.

Chapter 8 Conclusion

The research aimed to seek out the accessibility issues, barriers, and challenges in ICT for women with disabilities in Mozambique. This thesis is a comparative study between women with disabilities, women without disabilities, and men with disabilities. This study adopts the qualitative research methods and uses in-depth interviews, and thematic analysis for data collection and answering the 3 research questions.

1. What common barriers women with disabilities usually experience in Mozambique while accessing educational ICT?

This thesis findings corroborate that the barriers arise because of various reasons. Unemployment and the high cost of ICT products and the internet have been a major problem for people with disabilities accessing the ICT. Moreover, lack of awareness, support, and opportunities also challenges their use of technology, especially for women with disabilities in Mozambique. Other barriers that have an adverse effect on their accessibility of ICT are their attitude towards ICT, time factor to learn and use ICT, power cut, and gender and disability discrimination. The findings show that most participants are not necessarily using ICT because of language barriers as most web contents are in English and late use of technologies. Not to mention, the technological barriers such as not necessarily learning to use the technologies, shortage of ICT teachers, and not following WCAG guidelines are also the reasons for not accessing ICTs.

Considering the above barriers, the findings conclude that most women with disabilities fall backward than the rest of the comparative group. Not just women with disabilities, but also men with disabilities are mostly unemployed. That means they cannot afford to pay for the ICT product, internet, or afford to pay to learn technology like a computer. This study further strengthens the position that women without disabilities and women with disabilities have more family responsibilities than other counterparts in Mozambique. However, women without disabilities have more advantages than women with disabilities when it comes to learning, accessing, and using ICTs. That said, women with disabilities who are married have less or no time to use or learn new technologies as compared to other populations.

2. What are the factors that hinder their access to ICT?

From the barriers the participants encountered, this thesis concluded 4 factors that hold them back from accessing ICT. They are financial factors, societal factors, educational factors, and technological factors.

3. What steps can be taken to mitigate those ICT barriers?

Given the certain constraint and barriers to ICT, this research proposed several possible recommendations and solutions that might help in alleviating the ICT barriers encountered by people and women with disabilities living in Mozambique. The solutions entail overcoming the language barriers as most Mozambicans don't have good command in English, availability of ICT teachers, reduction of Internet cost, proper training and early use of technology, priority to people with disabilities, awareness program, and following Accessibility and WCAG guidelines on the website.

8.1 Recommendation for further studies

This thesis research focused on women without disabilities, women with disabilities, and men with disabilities. The data were collected from only 12 participants. Therefore, the research must be conducted on more samples including men without disabilities to gain the perspectives of both genders. In addition, more questions in the interview guidelines must be added and if needed, the prototype must be developed to address the difficulties they encounter on the web. To make this study more profound, more research must be done in other cities of Mozambique.

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Appendices:

Appendix A:

Consent Form:

Are you interested in taking part in the research project “Access to ICT for Women with Disabilities in the Global South”?

This is an inquiry about participation in a research project where the main purpose is to identify the challenges and barriers that women with disabilities encounter while accessing educational ICT in Mozambique. In this letter, we will give you information about the purpose of the project and what your participation will involve.

Purpose of the project

The main goal of this master thesis is to examine the challenges that women with disabilities face while accessing technologies and find out the possible factors that hinder their access to ICT. This thesis uses qualitative methods. A total of 12 participants will be selected for the in-depth interviews, being 5 women with disabilities, 2 women without disabilities, and 5 men with disabilities. The objective of this thesis is to compare the accessibility of the participants living in Mozambique.

Who is responsible for the research project?

Oslo Metropolitan University is responsible for the project.

Rabin Parajuli is responsible for carrying out the project under the supervision of Dr. G. Anthony Giannoumis.

Why are you being asked to participate?

12 participants who are above 20 are selected for the in-depth interviews. All of them might or might not be used to using ICT. The audio recorder will be used to record the interviews. Also, the information provided by the participants will be recorded in the paper as well. To maintain the privacy of the participants, all the recordings will be destroyed after the interviews are transcribed.

What does participation involve for you?

Since this thesis adopts qualitative methods and in-depth interviews, the participants will be interviewed for approximately 45 minutes. Taking into careful ethical consideration, only the information that participants want to provide will be collected and used in the thesis. The interview will be recorded in audio format as well as in the paper. The interview guide includes the question about background information and experience on using technologies of the participants. Not to mention, the interview guide focuses on the challenges and barriers of the participants while accessing ICT to identify the possible solutions to mitigate the barriers.

Participation is voluntary

Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will be no negative consequences for you if you chose not to participate or later decide to withdraw.

Your personal privacy – how we will store and use your personal data

We will only use your personal data for the purpose(s) specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act).

- The project supervisor Dr. G. Anthony Giannoumis will have access to the personal data of the participants. The personal data of the participants will be kept confidential between us.
- I will not use your name and contact details in the final thesis. The name and contact details I acquire from you will be presented with a code in a paper if it is necessary.

What will happen to your personal data at the end of the research project?

The project is scheduled to end in May 2020. At the end of this thesis, all the audio recordings will be destroyed.

Your rights

So long as you can be identified in the collected data, you have the right to:

- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

What gives us the right to process your personal data?

We will process your personal data based on your consent.

Based on an agreement with Oslo Metropolitan University, NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation.

Where can I find out more?

If you have questions about the project, or want to exercise your rights, contact:

- Metropolitan University via Dr. G. Anthony Giannoumis (gagian@oslomet.no) and the researcher Rabin Parajuli (+4748397294).
- Our Data Protection Officer: Ingrid Jacobsen (Ingrid.jackobsen@oslomet.no)
- NSD – The Norwegian Centre for Research Data AS, by email: (personvern@nsd.no) or by telephone: +47 55 58 21 17.

Yours sincerely,

Researcher,

Rabin

Parajuli

Consent form

I have received and understood information about the project *Access to ICT for Women with Disabilities in the Global South* and have been given the opportunity to ask questions. I give consent:

☐ to participate in-depth interview(an interview)

I give consent for my personal data to be processed until the end date of the project.

(Signed by participant, date)

Appendix B

Interview Guidelines:

1. Background Information and experiences:

- a. Can you briefly introduce yourself?
- b. Do you have any formal education?
- c. What language do you speak mostly? Can you speak English or understand English to some extent?
- d. Do you remember the first-time using technology? If yes, who taught you?
- e. How was the technology in your primary school?
- f. What kind of technology do you use on a daily basis?
- g. For what purposes do you use the technology?
- h. Do you use social media as well? If yes, how often are you active on social media?

2. Familiarity with other technologies:

- a. As a child, were you familiar with the technology?
- b. Do you own any personal computer or laptop?
- c. Are you familiar with the latest available technologies?
- d. Do you use assistive technologies to assist you?
- e. What gadgets do you use most? Which one do you prefer? Computer or mobile phone while using the internet?
- f. Are there any reasons for not using the internet via a computer or laptop?

3. Barriers:

- a. Have you faced any difficulties while using the technologies?
- b. What challenges do you encounter while using technologies?
- c. Do you experience gender-related barriers while using technology?
- d. Do you have any family pressure (constraint) or responsibilities that affect your use of technology?
- e. According to you, what might be the reasons that people with disabilities are not equally accessing technologies compared to people

without disabilities? Or women with disabilities compared to women without disabilities?

- f. In your opinion, what must be done to remove or eradicate the challenges you encounter?
- g. Have you faced any difficulties while accessing information provided on the internet?

4. Closing:

- a. Do you like to add anything before we end this interview? Maybe, suggestions or recommendations regarding your use of technologies.

