Nafath

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Digital Accessibility Policy Landscape in the State of Qatar and Beyond

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About Mada

Mada – Assistive Technology Center Qatar, is a private institution for public benefit, which was founded in 2010 as an initiative that aims at promoting digital inclusion and building a technology-based community that meets the needs of persons with disabilities (PWDs). Mada today is the world's Center of Excellence in digital accessibility in Arabic.

The Center works through smart strategic partnerships to enable the education sector to ensure inclusive education, the community sector through ICTs to become more inclusive, and the employment sector to enhance employment opportunities, professional development and entrepreneurship for persons with disabilities.

The Center achieves its goals by building partners' capabilities and supporting the development and accreditation of digital platforms in accordance with international standards of digital accessibility. Mada also raises awareness, provides consulting services, and increases the number of assistive technology solutions in Arabic through the Mada Innovation Program to ensure equal opportunities for the participation of persons with disabilities in the digital society.

About Nafath

Nafath aims to be a key information resource for disseminating the facts about latest trends and innovation in the field of ICT Accessibility. It is published in English and Arabic languages on a quarterly basis and intends to be a window of information to the world, highlighting the pioneering work done in our field to meet the growing demands of ICT Accessibility and Assistive Technology products and services in Qatar and the Arab region.

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Nafath, an open access journal, solicits original research contributions addressing the accessibility, usability, and key information resource for disseminating the facts about latest trends and innovation in the field of ICT Accessibility to enable persons with disabilities and the elderly. Nafath is focusing on theoretical, methodological, and empirical research, of both technological nature, that addresses equitable access and active participation of potentially all citizens in the Information Society.

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Important aspects and topics to be discussed evolve around (but are not limited to):

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- Applications of assistive technologies in the mainstream
- Architectures, development methods and tools for ICT Accessibility
- Design for All accessibility education and training
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Assistive Technology and Dementia Caregiving

A Few Social Considerations & Policy Implications

Suzanne H. Hammad
Independent Research &
Evaluations Consultant
Adjunct Lecturer of Sociology,
Northwestern University Qatar

suzanne_hammad@yahoo.com

Dena Al-Thani
Information and Computing
Technology, College of Science
and Engineering, Hamad Bin
Khalifa University, Doha, Qatar

dalthani@hbku.edu.qa

Abstract

With older persons increasingly wanting to age in familiar places, among community and family, their natural habitat, technological innovations greatly facilitate that. IATs are designed to ease the burden on families and healthcare systems while enhancing the quality of life and independent living of persons with dementia. This article questions the readiness of societies to accept the use of IAT with their older loved ones. It outlines some of the key social considerations that should be better understood in order to mitigate the barriers to AT use from an end-user and community perspective. It proposes policy interventions that could enhance the acceptance and use of IAT among older persons, taking into account sociocultural and prevailing attitudes, especially in Arab Muslim societies, while benefiting from global experiences.

Introduction

Due to the gradually disabling nature of the Alzheimers Disease and Related Dementias (ADRD), those affected will gradually lose their ability to carry out normal everyday tasks. These challenges are compounded by global trends of decreasing caregiver-to-patient ratios on the one hand, and financial and logistical challenges posed on national healthcare systems on the other (Ienca et. al, 2017; Prince et. al, 2015). With older persons increasingly wanting to age in familiar places, among community and family, their natural habitat, enabling older persons with ADRD to stay in their own homes for as long as possible is greatly facilitated by technological innovations (Diaz-Orueta & Konstantinidis, 2020). These are designed to ease the burden on families and healthcare systems while enhancing the quality of life and independent living of the persons living with the disease. According to the World Health Organization (WHO), over two billion people will need at least one assistive technology by 2050 due to ageing populations and associated increases in noncommunicable diseases (WHO, 2012). The question remains: how ready are societies to accept the use of IAT with their older loved one? What are the barriers that could influence the effective utilization of IAT in the field of dementa care? We conclude with recommended policy interventions that can be drawn and considered in future work in this area.

Social considerations pertaining to AT use in dementia care

ADRD does not occur in a vacuum. To be useful, relevant, we must better understand and address barriers from an end-user and community perspective. This entails taking into account social considerations and working holistically to address them or mitigate the barriers.

- **The digital literacy divide:** Despite the benefits of technology, there is a distinct 'digital divide' between generations that puts older persons at a greater disadvantage. It is important to point out that these disparities are magnified for older persons with cognitive impairments and reduced capacities such as ADRD. These disparities are often rooted in self-stigma or ageism which can limit older persons access and use of technology e.g. their own limited experience with ICT, attitudes toward ICT use, lack of confidence or functional limitations, among other personal factors (Rochleau, 2020; Hayden et al, 2012). The Covid-19 pandemic and increasing digital inequalities have put older generations in a more vulnerable position than ever

before due to the added challenges of accessing important health information and online activities (Beaunoyera, et. al, 2020). According to a study by Dishman & Carillo (2016), further barriers to accepting the use of AT for older persons with ADRD in particular include: a) lack of awareness about the value of AT for their condition, b) assumptions that the use of AT requires skills they lack or need additional training courses, c) lack of preparedness among health and social care staff to incorporate IAT into their practice, and d) in some cases stigma and denial about the capacity of older persons to engage with ICT. A number of psychological factors also contribute to low interest among older persons in adopting new technologies. These include lack of knowledge and confidence, feelings of inadequacy, and comparison with younger generations, lack of social interaction and communication (Vaportzis et al., 2017; Delello and McWhorter, 2017). Levels of confidence among older persons in relation to technology will also differ across cultures, socioeconomic status, demographics, and gender: baby boomers more accustomed to hand-held devices

will more readily accept and adapt to more sophisticated developments in IAT.

- **Accessibility and affordability:** According to World Health Organization (WHO), out of over a billion older persons globally who could potentially benefit from assistive technologies, only one in ten has access to them (WHO, 2017). Socioeconomic factors and access to equitable health services and technological advancements exacerbate the digital divide, with older persons and especially those with cognitive impairment the most likely to be left behind (Benett et. al, 2017). Lifetime cost of technology for persons with dementia was estimated at 200,000GBP per person across an average of 4.5 years from diagnosis to end of life (PIRU, 2017). Cost and access considerations should be addressed to avoid the risk that IAT adoption will be limited to 'those who can afford it' and lead to unintended societal consequences. To prevent this risk, integration of IATs for the aging population should be coordinated with health policy plans and health insurance (Ienca et. al, 2017).

- **One size does not fit all:** the need for further evidence: Persons with ADRD do not constitute one homogenous group; they have varying needs and varying symptoms across the stages of disease progression. This is while most,ATs tend to be targeting a vast and clinically heterogeneous end-user population including people with general neurocognitive disabilities (Diaz-Orueta & Konstantinidis, 2020). Future IATs should be adaptive to each specific form of dementia and their different stages and the specific needs of each end-user across the spectrum. Furthermore, sociocultural

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variations, differing public attitudes, caregiving structures and dynamics, knowledge levels (as well as languages) must be taken into account to maximize their acceptability and adoption. In many contexts, there remains a weak evidence base on the lived experiences of persons with dementia, let alone access and use of technological innovation in dementia care. There is a lot to be done in terms of research especially in the Middle East region (WISH report; Kane et. al, in press).

- **Resistance and stigma, community acceptance sociocultural beliefs and attitudes expectations:** Older populations tend to perceive AT positively if it gives them a sense of efficacy for as long as possible and their ease of use, and similarly for caregivers, provided its role is seen as complementary rather than a replacement to formal health care, (Egan & Pot, 2016; Yusif et. al, 2016; PIRU,). However, some social attitudes inhibit their adoption especially in relation to persons with ADRD. The stigma associated with technologies that are marketed for people labeled as "dementia patients" or labeled as "gerontechnologies" has been argued to prevent their use (Yusif et. al, 2016). or being seen using AT in public, There is also the issue of stigma of resorting to the use of AT in some communities or being seen using it in public with their older loved one. In Arab Muslim communities, a strong sense of moral and religious responsibility to dedicate one's life to caregiving for the person with ADRD often limits help-seeking outside of the home (Hammad et. al, 2019). This could affect attitudes towards use of AT and warrants further

research. Additionally, some professionals are reluctant to use IAT with their patients if they do not have enough knowledge about new technologies or reluctant to adopt due to lack of clinical validation of many of them (Egan & Pot, 2016; Diaz-Orueta & Konstantinidis, 2020).

- **Shifting family dynamics and decreasing multi-generational living arrangements**: Intergenerational living in the presence of extended families can be calming for older persons experiencing cognitive decline and also for the caregivers who find solace and reward in supporting their loved ones (Hammad et. al, 2019). However, migration patterns and rapid socioeconomic shifts have been affecting family dynamics and visibly decreasing multi-generational set ups. As a result, many older persons now live alone in different homes, cities, or countries. Those who live with family members are often left at home with a helper or nurse to enable the family caregiver to remain employed. These shifting family dynamics and reportedly smaller caregiver-person ratio calls for innovative solutions to promote safe mobility, independence, decision making, and monitoring and communication (Ienca et. al, 2017). The desire or necessity to remain connected is in fact one of the motivators pushing older persons to accept new technologies (Hasan & Linger, 2016).
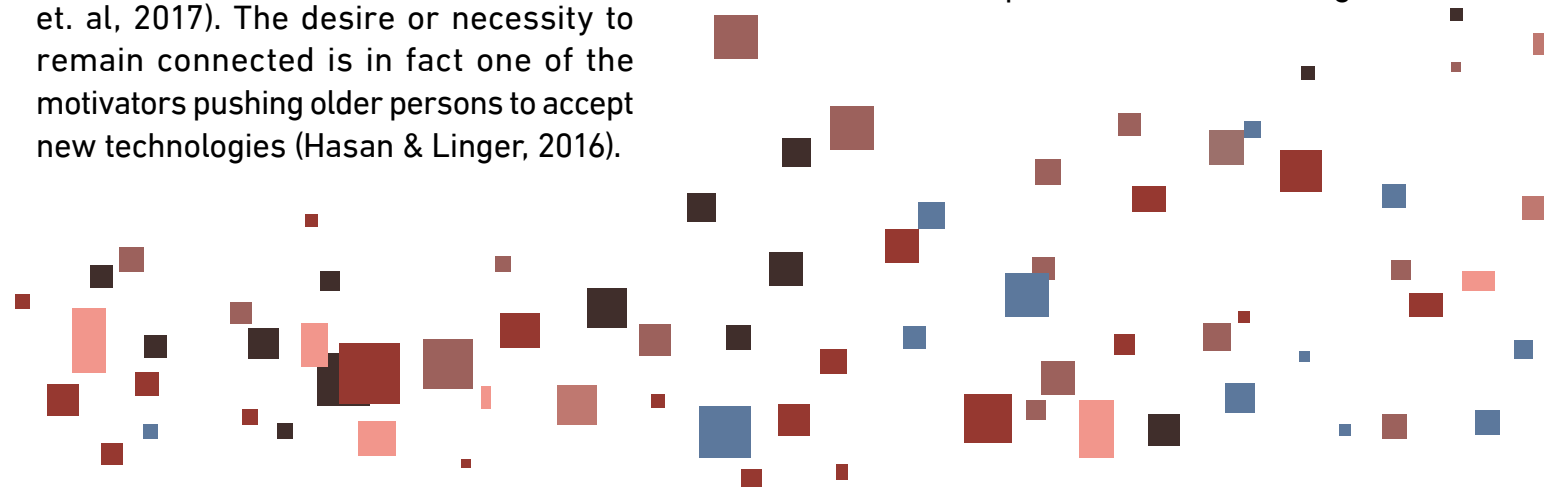
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Policy implications and the way forward

Despite the barriers to societal acceptance and use of AT in dementia care outlined in this paper, IATs can provide older adults with ADRD and their caregivers significant assistance in managing their activities of daily living, preventing and managing risks, and to enhance their social environment and overall wellbeing. To address these social considerations, a systematic and multi-stakeholder approach must be taken whereby the needs and wellbeing of persons with ADRD and their caregivers and the societies in which they live are central to the design and dissemination plan of IAT (Barbarino et. al, 2020). This will require benefiting from global experiences and coordination of efforts through shared platforms to develop user-friendly clinically validated technologies, encourage more evidence-based research to guide developers and practitioners with an emphasis on qualitative insights from end-users, and the development of standardized measures and guidelines to determine the appropriate combination of eHealth and other face-to-face care coupled with public awareness campaigns to encourage community acceptance and reduce stigma.

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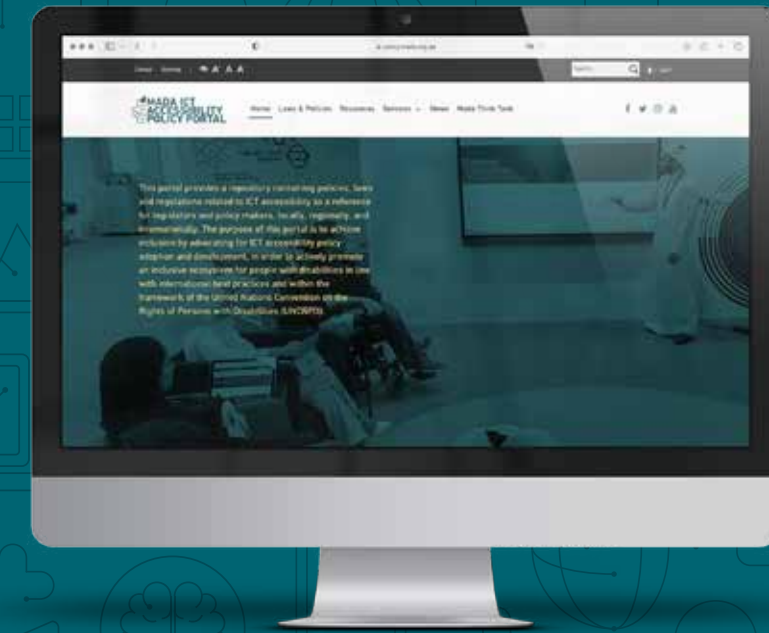
MADA ICT ACCESSIBILITY POLICY PORTAL

We are pleased to invite you to explore MADA's new ICT Accessibility Policy Portal, a comprehensive online platform that serves as a gateway to local, regional, and international laws and policies supporting the rights of persons with disabilities. It also provides a wealth of valuable resources covering various areas related to ICT accessibility policies and best practices in this field.

To access the ICT Accessibility Policy Portal, please visit this link **policy.mada.org.qa**

By accessing the portal, you will have the opportunity to engage with our expert team for personalized consultations on ICT accessibility policies, regulations, and compliance, and take advantage of our comprehensive training programs and workshops focused on various aspects of ICT accessibility policies.

We encourage you to explore the wealth of information and resources available and utilize them to advance accessibility initiatives within your organization.

A Comprehensive Look into Monitoring Disability Rights

A Case of Northern part of Cyprus by Disability Rights Monitoring Committee at Near East University

Near East University, Nicosia,
Northern part of Cyprus

Fahriye Altinay,
fahriye.altinay@neu.edu.tr

Zehra Altinay
zehra.altinaygazi@neu.edu.tr

Dudu Özkum
dudu.ozkum@neu.edu.tr

Mukaddes Sakalli Demirok
mukaddes.sakalli@neu.edu.tr

Nazım Burgul
nazim.burgul@neu.edu.tr

Sahin Akdag
sahin.akdag@neu.edu.tr

Kaan Uyar
kaan.uyar@neu.edu.tr

Ümran Duman
umran.duman@neu.edu.tr

Menil Çelebi
menil.celebi@neu.edu.tr

Inci Genç
20215515@std.neu.edu.tr

Sezer Kanbul
ezer.kanbul@neu.edu.tr

Abstract

All individuals living together in society have equal rights. Users with disabilities maintain their existence in the community with all users and are included in the description of all individuals. However, although this issue has been accepted in various countries, the problems faced by individuals with special needs have not completely disappeared. In this context, studies are carried out by researchers in many countries to raise awareness of the existence and place of users with disabilities in society. This research study as an outcome of the workshop on disability monitoring sheds light to examine activities and scientific reflections of Near East University activities about disability rights on behalf of the Northern part of Cyprus. The workshop is held with the contributions of researchers from different disciplines. Thus, the universal rights of persons with disabilities are discussed from various perspectives. It gives insights on holistic perspective to the services to all and provides valuable reflections to show the best practices within the local context setting an example to other countries.

Keywords
Accessibility, Disability Rights, Monitoring, Services for All

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Introduction

The rights of persons with disabilities have become an area of human rights that has been focused on for the last 150 years, with increasing scope and depth. In particular, as the perception of people with disabilities people in the public improves and public awareness of the rights of people with disabilities increases, countries make changes and developments in their national legislation that focus on the specialized rights of people with disabilities. Although these regulations differ between countries, they are generally intended to guide on creation of suitable environments for everyone, including people with disabilities. Different regulations and laws may exist for different disciplines. For example, there is a regulation titled "Chapter 96 (Fasıl, 96) ROADS AND BUILDINGS" in Northern Cyprus. It involves data regarding application measures and techniques for cities (Duman & Asilsoy, 2022).

In the world in general, and Northern Cyprus in particular, "the people with disability cannot live under equal conditions and are exposed to discrimination." "Although legal regulations have been enacted, "providing and protecting equality after it has been achieved" continues to set the agenda as a serious problem and seems it will. In other words, there is always the risk of violations that may cause the breakdown of equality, and the sustainability of this equality is problematic. The limited studies also show that enacting laws is not enough, and comprehensive patient and persistent advocacy work is required by Non-Governmental Organizations (NGOs) and other parties to the issue for the laws to be implemented. Monitoring studies for the rights of people with disabilities is an issue that comes to the fore at this point.

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Disability Rights Monitoring Projects and Suggestions

The vision of the Monitoring Committee for the Rights of People with Disabilities is to make the rights of people with disabilities visible in all areas, to offer scientific solutions and suggestions in this direction, to observe the full implementation of the rights of the people with disabilities, to create social pressure through scientific projects and suggestions about the deficiencies and misapplications detected, to lead society and institutions to increase the quality of service in all fields such as education, health, sports, law, communications, engineering, architecture, etc. In addition, the mission of the committee is to inform academic and administrative staff and students about the rights of people with disabilities and universal practices and to work towards raising awareness that these rights and practices should be observed. Besides committee aims to organize and carry out informative, educational and guiding activities within the scope of the Faculty Coordinator ships in the committee, the relevant center outside the university and the university, to cooperate with institutions and organizations, to carry out activities aimed at raising awareness of the necessity of surveillance and inspection regarding the rights of the people with disability, and to contribute to the improvement of the quality of life of individuals with disabilities, taking into account the ethical framework.

It is also among the objectives of this committee to identify the "obstacles" that prevent students from continuing their academic lives equally and effectively and to remove these obstacles and create opportunities that will create a campus environment supporting the academic, social and personal development of students.

The working principle of the Near East University People with Disability Rights Monitoring Committee can be listed as identifying students with disabilities and their problems, identifying inequalities in access to academic programs, addressing the problems and priorities related to housing needs, determining the level of equality in participation in university life, and raising awareness of the University and stakeholders about disability.

In order to be able to carry out advocacy work on a healthy basis for the acquisition of the rights of the people with disability, first of all, monitoring studies are needed. Moreover, the issue can be handled and resolved on the right ground. Problems experienced by individuals are in which areas, in what ways and determining the extent to which it is experienced, and the policies developed by the state in this regard with disabilities remain to be seen how effective issues.

Monitoring studies are basically advocacy studies and evidence-gathering activities. In this context, it is possible to make all rights areas such as access, education, health, right to work, right to benefit from rehabilitation services, right to organize, etc. as the subject of monitoring. Field detection studies are in the forms of surveys and statistical studies, data on individuals with disabilities who benefit from public services, news in the media, cases reported by individuals with disabilities to those who do the monitoring work, the status of the legislation for the people with disability and its alternations over time. Within the scope of the workshop, the following concrete answers were presented.

When examined from an international perspective, monitoring and administering the rights of individuals with disabilities is of great importance for equality within the scope of sustainable goals a global perspective and cooperation. In this regard, evaluating active participation, planning the future by evaluating the current situation as well as determining legal policies have an important place in the value of developing a mechanism to monitor the rights of the people with disability.

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This study is important in that it is a workshop outcome that brings together researchers from different disciplines, users with special needs and their families, who share their experiences, in order to emphasize the place of people with disability in the context of universal rights.

Individuals and Families with Special Needs
Individuals with special needs should be able to spend their existence in society together with everyone. They have various rights and responsibilities at different stages of their life. At this point, it is important to realize that the rights of children in the 0-18 age group special needs users are the same as those of other children. Regarding their Rights and Responsibilities, it was emphasized that individuals with special needs are also children and that all parties should take the necessary precautions so that children aged 0-18 can benefit from the rights of other children. It is explained that the Convention on the Rights of the Child, accepted on 20 November 1989, is a document prepared for the protection and development of all children of the world and that the purpose of this convention is to determine universal principles for the protection of children and to protect them against all kinds of neglect, abuse and ill-treatment. In addition, the Convention includes the aim of creating a framework for programs that will enable the development of children's potential and abilities (Akyüz, 2000).

The rights of the child contained in the Convention are mainly based on the concepts in the 1959 declaration of the rights of the child. However, these rights have been developed and expanded to determine the obligations of the state on the subject. It also indicated that some of the rights in the Convention are fundamental principles to be considered in the exercise of all other rights granted to children and in the fulfilment of the duties imposed on the states. The principle of "Prevention of Discrimination", which is one of the basic principles of the convention, is the 2nd article of the convention. In this article of the Convention, the state parties implement the children's rights written in the convention without discrimination and take the necessary measures to prevent all kinds of discrimination (Akyüz, 2000).

It is also explained that in Article 3 of the Convention, stipulates that "the best interests of the child" should be taken into account in every decision regarding the child. This principle is one of the most fundamental principles of the Convention. Furthermore, with this principle, it is emphasized that "what is best for the child should be considered first" in all activities.

Article 6 of the Convention states that every child has the "innate" right to life. In other words, living is a natural right. One of the basic principles of the Convention is that children who have the ability to form their opinions have the right to express their opinions freely during the issue and process that concerns them and to participate in the decisions (Akıllıoğlu, 1995; Akyüz, 2000).

In addition, it is mentioned that children's rights also have titles such as personal rights (civil rights) and economic, social and cultural rights in the Convention. In the Convention on the Rights of the Child, he mentioned the importance of the Right to Education on the Rights of People with Disabilities and stated that education must be right-based and state obligations classified as "respect", "protection" and "fulfilment", which are accepted in relation to the rights in international human rights conventions, should be interpreted in a way that includes several special measures and positive actions specific to the right to education of the people with disability. In Article 28 of the Convention on the Rights of the Child, everyone has the right to education based on equal opportunity and primary education is expressed as a compulsory and free right for everyone. Individuals with disabilities will also benefit from this right. While fulfilling this obligation, the general principles of the contract should be considered. In other words, there should be no discrimination, and whatever the best interests of the child require, education should be provided in that system and

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order. In the General Comment Decision No. 1 of the Committee on the Rights of the Child, "on the purposes of education"; It is also emphasized that teaching methods should be shaped according to the different needs of different children.
It was stated that each child should be structured in a way to ensure that they acquire the necessary life skills and have the power and abilities to cope with various situations that they will encounter in life. The fact that put into the words Education needed to go beyond sending children to school and that education should be provided "child-centered". "Inclusive Education" is preferred in the interpretation of the committee.

UN Tallinn Principles, The Tallinn Principles on the development of human resources in the field of disability were established in 1989. The inadequacy of the Tallinn Principles adopted by the UN in 1989 has taken the right of people to education further than the CRC. The document consists of rules to guide governments and politicians on the education and employment of people with disabilities. Among the education strategies, priority was given to the right of persons with disabilities to work and receive education on an equal basis with others in the labour market.

In general, the right to education in the Disability Rights Convention focuses on Equal opportunity (equality-justice), Prohibition of discrimination, Integrative (inclusive education) education, and Lifelong education issues.

As for the Northern Cyprus Law on the Education of Individuals with Special Needs, the Law includes individuals with special needs, their families and the education and training services to be provided directly or indirectly to them, the work of the schools and/or institutions that will provide these services and the principles and programs to be implemented.

The right to education is expressed as follows; Special education is an integral part of general education, and the right of individuals with special needs to receive an education cannot be prevented for any reason. The parent has the right to object to the placement decision. Family education and family involvement are important. It is stated that family education includes all kinds of guidance and education services to be given to the family to contribute to the education of individuals with special needs at all types and levels.

It is stated that early childhood special education services cover the 0-3 age period, and Family Service Plans will be implemented to inform and support the family and to enable them to participate in the education of their children. It is declared that the family will take part in the IEP team. Instructional adaptations are changes that enable children with different needs and learning characteristics to participate in the activity or learning process by making changes in the classroom environment, materials used, learning content and process. When the adaptations are evaluated with a broad perspective; considering the principles of universal design for learning with differentiated instruction, it can be seen that it includes suggestions which support the participation of all children in learning processes in line with their individual characteristics, not only for children with developmental disabilities. None of the adaptations and learning process arrangements is independent of each other. Material, environment, learning content, learning process and reactions/products as a result of learning are related to each other; It should not be forgotten that they should be considered holistically in supporting the learning processes of all individuals.

In the adaptations that can be made in universities, it is stated that there should not be discrimination against students in any disability group, Emotional approach towards students with disabilities, being privileged in exams, and exemption from some academic studies or courses are within

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the scope of positive discrimination and positive discrimination is also an attitude that should not be taken. It is important to equalize the services and opportunities offered by the instructor to the student and to include people with disability students and other students on equal terms (Demirok,2022).

Stating that there are 6,500 people with people with disability living in the country, and all of these people receive a salary of 50, 60 and 100 percent of the minimum wage. Although each workplace is obliged to employ 1 person with a disability employee for 25 employees within the framework of a 4 percent quota there has not been employment since 2006. 650 people with people with disability are waiting to be employed. Since 2006, not a single person with a person with disability has been employed as government staff (Kibrit,2022).

It is seen that there are also problems related to transportation -mobility. Despite the issuance of the People with disability Standards Regulation under the Zoning Law in 2016, no local administration or municipality has provided the desired level of service for people with disability.

Awareness Training in Different Service Areas
All over the world, awareness is being created for the employment, education, participation of the people with disability in social and cultural life, but it has been revealed that this should not be limited to only 3 intervals. At the same time, it is an inescapable right to help them to be present in society as a whole, not as the other, and to give the individuals with special needs what they deserve in the social field. Setting the standards for web accessibility through awareness training is an important initiative. Within the framework of the UN (United Nation) Convention on the Rights of Individuals with Disabilities, approved by the Northern Cyprus Republican Assembly (Law no: 38/2010) and EU (European Union) resolutions regarding the subject, it is seen that web accessibility is of great importance in terms of ensuring the full participation of people with disability people in society and the economy.

In their examinations, it has been shown that there are accessibility problems in the Northern Cyprus central and local governments, non-governmental organizations and private company websites. It has been reported that there are no statutes, regulations and guides in the Northern Cyprus that set standards for website preparation and application development for central and local governments, and that the technical personnel working in the state and private companies mostly ignore accessibility due to ignorance. It is seen necessary that the awareness of technical personnel regarding web accessibility should definitely be increased. In addition to software courses such as web design and programming, web application development, etc. offered in the Departments of Software, Information Systems and Computer Engineering at the Faculty of Engineering of NEU (Near East University), there are subjects explained to the students in the e-government course, and individual and team projects with assignments in order to raise awareness about the subject. In addition to the courses, they provide their students, the faculty members working in the faculty have studies to raise awareness about web accessibility in the society.

It should also be emphasized that making necessary updates to increase students' awareness about accessibility in the content of web-related courses given at universities in the Northern Cyprus should be brought to the agenda of Higher Education Council. In order to create conscious awareness about the existence of people with disability people in the diversity of users, it must first be comprehended that all individuals have equal rights. Accessibility, as a broad concept that can be counted among human needs, refers to ensuring the full and effective participation of all individuals in all areas of life. To provide all these, the concept of universal design can be suggested. It is important to understand this concept during architectural education. In this way,

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Monitoring Committee at Near East University

architects who are aware of the diversity of users can be trained. During the design, students with disabilities naturally become considered among users. After getting acquainted with the concept of Universal Design, the student starts to examine the environments they are involved in daily life from the perspective of universal design. The student learns to use disability standards as a resource from the design stage to the implementation stage. Thus, professionals can be trained who will design accessible spaces for everyone and contribute to social sustainability.

Deans Roundtable Meeting: Action Study
In this meeting, which was held with the participation of deans, institute and dean representatives, in-house action studies were discussed. In this context, it has been suggested to include inventory studies prepared in the faculty administrative boards, and to evaluate the suitability of the service in physical, educational and social dimensions and to conduct a needs analysis in order to increase the service quality. Similar to the Awareness Training session in Different Service Areas, a proposal was developed to include the expectations of non-governmental organizations and to include the disability and service quality issues in the faculty structure and activities as a priority.

Conclusion and Suggestions for the Future in Monitoring the Rights of People with Disabilities

As the diversity of individuals increases in the world, universal design is given more importance by different disciplines in both developed and developing countries. Recently, there has been a rising focus on providing equal opportunities for all people, including those with disabilities, for everyone to participate in social and communal life (Duman & Asilsoy, 2022). The Rights of People with Disabilities Monitoring Commission carries out studies aiming to strengthen the visibility and accessibility of individuals with vital differences by acting from the sustainability of the rights of all individuals without discrimination among individuals living in society, based on human rights.

As a higher education institution, our university has undertaken an important role in providing this equipment as the Disability Rights Commission in order to support the development of qualified teachers and students who will contribute to the welfare of the society. Studies are being developed that have adopted the concept of a barrier-free university and aim to provide facilities for the benefit of students who have vital differences
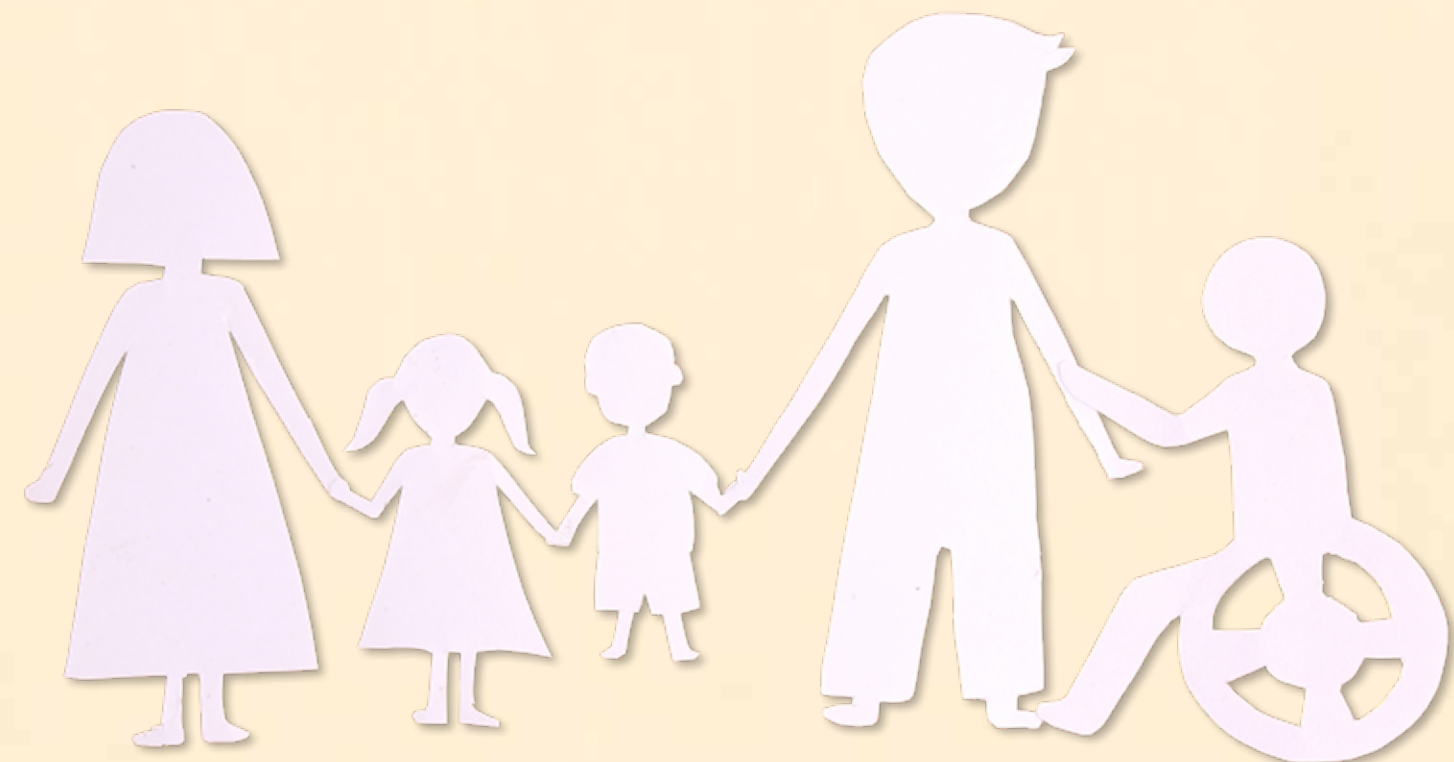
by addressing the existing problems in order to expand this scope. While reaching the targeted service quality, the experiences of the students who have vital differences are consulted. These units, which were established on the basis of expressing the information, support, guidance and difficulties experienced by our students who are guests on our campus within the scope of university education, actually provide great support in order to facilitate vital activities. The medical and social model, which is described as the disability model in the resources regarding disability, has played a significant role in shaping the social positions of individuals with vital differences. The social model, which is defined as the most equipped model today, emphasizes that social environments make disability more visible rather than the medical aspect of disability (Pakkan, C.2021). The inability of individuals with vital differences to reach their rights is an important factor that brings the social model to life. The Disability Rights Monitoring Committee, which proceeds from the philosophy of eliminating the obstacles built by people in social life and building a livable free world "for everyone", adopts the solution-oriented aspect of the social model.

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قـامـوس مـدى
Mada Glossary
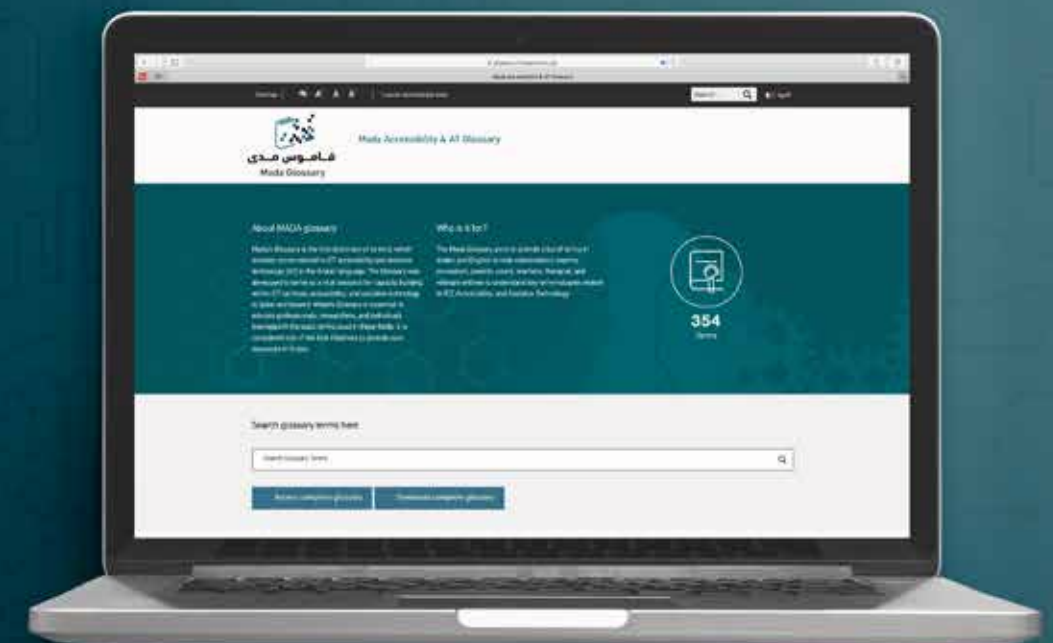
Mada Accessibility & AT Glossary

Mada's Glossary is considered the first dictionary of its kind, which includes terminologies relevant to ICT, & Assistive Technologies in the Arabic language. It is considered a vital resource for terms that serve experts, innovators, researchers, and others.

The translation of these terms has been accredited by the Translation and Interpreting Institute at HBKU.

To view the glossary, please visit
glossary.mada.org.qa

Assistive Technology and Mental Health

Hamed Al Sinawi,
Sultan Qaboos University
Hospital, Muscat, Oman

senawi@squ.edu.om

Abstract

This manuscript discusses the potential use of assistive technology in promoting the mental health and well-being of the growing elderly population in the Arab world. While the use of assistive technology to address physical needs has been around for some time, its use in enhancing mental health and well-being is still in its early days. The manuscript highlights that assistive technology interventions have been shown to benefit the mental health of older adults. However, there are limited publications on the use of assistive technology in the Arab world, and certain assumptions held by healthcare professionals may hinder the access of older adults to these programs. The manuscript suggests introducing the topic of assistive technology in the medical and nursing undergraduate curriculum to address any misconceptions and make the technology more user-friendly. The manuscript also describes two specific types of assistive technology, mental health chatbots, and GPS trackers, and their potential benefits for older adults.

Keywords
Assistive technology, elderly population

Introduction

The elderly population is increasing worldwide, and the middle east is not an exception (Rudnicka et al., 2020). This increase is often attributed to improvements in health care and social welfare. According to a report published by the United nation in 2017, it is anticipated that the population of the Arab world will increase from 281 million in 2000 to a virtually astonishing 659 million in 2050, or from 6.02 percent to 15.2 percent of the world's population. This will increase by 60% over the 35 years from 2015 to 2050. This increase calls for more need to establish specialized services that cater to both the health and social welfare needs of older adults (GBD 2019 Dementia Forecasting Collaborators, 2022).

Assisted Technology in Mental Health

Assistive technology refers to any products or pieces of equipment that enhance any day-to-day activities for those living with a disability and older adults, such technology can prevent, compensate or alleviate a disability, functional incapacity, or disadvantage and improve autonomy and quality of life (QOL) (Shanmugam & Marimuthu, 2021). In healthcare, Assistive products are used to maintain or improve individuals functioning and independence which eventually promotes their well-being. This includes Hearing aid devices, wheelchairs, communication aids, spectacles, prostheses, pill organizers, and memory aids.

While the use of Assisted technology in addressing physical needs has been used for some time, its use in enhancing mental health and well-being is still in its early days (Scoglio et al., 2019). This can be attributed to certain assumptions held by some members of the healthcare team such as "older adults fear technology and do not want to learn how to use it" or "the elderly would never be Internet savvy so it's pointless to teach them" such assumptions if not addressed and challenged my deny older adults from accessing internet-based assistive technology programs.
The aging process includes changes in cognition, perception, and physical function which can impair the person's ability to process information (Uddin, 2021). This eventually affects the older person's ability to communicate effectively with others. Older people who live alone are more likely to experience solitude and loneliness. Assistive Technol can help older adults remain independent and more involved in society for as long as possible (Moyle, 2019). There are also more specialized products to

enhance the mental health and well-being of people of all ages that can be used by older adults. According to recent research, assistive technology interventions have been demonstrated to benefit older adults' mental health specifically in conditions such as depression, anxiety, and even dementia. Smartphone applications using CBT are becoming very popular and easy to use. Such applications provide daily tips on managing mild to moderate depressive symptoms and encourage individuals to adopt and maintain a healthy lifestyle (Kruse et al., 2020). The research of Cotton et al. suggests that computer use by retirees can reduce the risk of depression by more than 30%. that the most important benefits came not from the type of Internet activity (e.g., shopping, e-mail), but from the ability to communicate and obtain needed information (Scoglio et al., 2019).

The situation in the Arab world

The Middle East is experiencing a significant increase in the number of elderly individuals, with a corresponding rise in the prevalence of mental health conditions. A systematic review aims to evaluate the existing literature on the use of assistive technology in elderly mental health care in the Middle East found 22 studies conducted in different countries such as Iran, Saudi Arabia, and the United Arab Emirates. The studies investigated various types of assistive technology, such as telemedicine, mobile apps, and virtual reality (Pedrozo Campos Antunes et al., 2019). The findings suggest that assistive technology can improve the mental health outcomes of elderly individuals in the Middle East. For example, telemedicine has been shown to increase access to mental health services, reduce stigma, and improve the

quality of care. Mobile apps have been found to be effective in managing depression and anxiety symptoms. Virtual reality has been shown to reduce stress and improve the cognitive function of elderly individuals. However, the implementation of assistive technology faces various challenges related to cultural attitudes, lack of resources, and limited awareness of available technologies other obstacles include the affordability of computers and smartphones by some older adults in lower- and middle-income countries. Some family members and people working in mental health toward older adults may hold negative attitudes toward older adults' use of the internet which may hinder the advance in this fried in terms of introducing the technology or making it more user-friendly for non-English speakers. Some healthcare workers perceive assistive technology as a threat to traditional care practices which may hinder the adoption of these technologies in their clinics. These obstacles can be addressed by introducing the topic of assistive technology to the medical and nursing undergraduate curriculum. This would help address any misconceptions and introduce the students to the potential use of assertive technology. Most of the applications described above are limited to English so speakers of other languages who are not fluent in English by not be able to use them widely. Therefore, it's essential to start working on an application that uses another language and makes them culturally relevant. Enabling older adults to use computers and smartphones by making them more affordable and accessible to people with visual impairment and conducting training sessions and making would prompt their use. Below is a summary of types of assistive technology used to provide mental health care for the elderly.

Mental Health Chatbots
These are types of Artificial Intelligence-based online services that you access via websites or mobile apps. The user types of his questions and comments into a text box and the 'bot' responds to you almost immediately. The chatbot does a similar job to a therapist or coach although being operated by a computer that communicates in a friendly manner that makes it easier to connect with. Mental health chatbots can provide support and advice to people experiencing mild to moderate psychological distress (Assessing the Usability of a Chatbot for Mental Health Care — Ulster University, n.d.). They can track users' responses over time and offer tips to manage symptoms of anxiety and sad mood. When the user is experiencing more severe symptoms, the chatbot will recommend nearby mental health services, hotlines, and support groups.

Psychotherapy based Smartphone Applications
Recent research has shown that assistive technology interventions have been demonstrated to benefit older adults' mental health, specifically in conditions such as depression, anxiety, and even dementia. Smartphone applications using Cognitive-Behavioral Therapy (CBT) are becoming very popular and easy to use. Such applications provide daily tips on managing mild to moderate depressive symptoms and encourage individuals to adopt and maintain a healthy lifestyle. Research by Cotton et al. suggests that computer use by retirees can reduce the risk of depression by more than 30%. The most important benefits came not from the type of internet activity (e.g., shopping, e-mail) but from the ability to communicate and obtain needed information.

GPS Trackers

Dementia is a group of cognitive disorders that usually affect the elderly and impair their memory , social behavior and over all functioning .As the disease progresses, a person with dementia would walk out of his home and find it difficult to return. This is known as wandering, and it is common in people who have Alzheimer's and other cognitive disorders. This puts him at risk of getting lost, being involved in a traffic accident, or getting exposed to extreme weather conditions. It is also distressing for the caregiver who would spend time and effort to locate their missing loved one. GPS tracking devices are worn like a wristband or a watch and would send a notification to a registered mobile phone informing them of the location of their loved one. There are few ethical concerns about this technology especially when the tracked person is unable to consent but the overall impression that their benefit outweighs any ethical issues especially when the person wanders frequently. The technology can be provided at a low-cost so it can be affordable to people from lower socioeconomic backgrounds.

Communication Aids

Mobile phone applications are used for communication such as what's up and are useful in helping older adults keep in touch with friends and family. The voice-recorded messages provide a choice for people who are unable to type a text message which makes it easier for the person to express his feelings. Other social media applications such as Facebook and Instagram provide an opportunity for the person to make virtual friends and communicate with friends and families. Other applications allow for the person to develop a private room where family members sharif their photos with their loved one who has early dementia and use such photos to stimulate their meteorites about past events and share good moments with them. Such applications are easy to navigate and more secure which protects people who may be vulnerable to internet fraud.

Memory Aids

Memory aids are devices that remind the person to take their medications or attend a particular appointment. These are extremely helpful for people who have memory impairment and would depend on their caregivers to remind them to attend to a particular task which keeps the person more independent and reduce the burden on their caregivers.

Conclusion and recommendations

The use of assistive technology has been shown to be beneficial in promoting the mental health and well-being of older adults. However, its use in the Arab world is still in its early days, and there are limited publications on its potential benefits. Addressing misconceptions and introducing the topic of assistive technology in the medical and nursing undergraduate curriculum can help make it more user-friendly and accessible to older adults. Mental health chatbots and GPS trackers are examples of specific types of assistive technology that can be used to enhance the mental health and well-being of older adults. It is important to continue to explore the potential of assistive technology in promoting the mental health and well-being of older adults in the Arab world and beyond.

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The Importance of Digital Accessibility Policies in Promoting Inclusivity and Diversity

Maryam Al-Jabir,
Mada Center, Doha,
P.O. Box 24230, Qatar

maljabir@mada.org.qa

Abstract
In today's world, with technological advancement, it is important to have policies that can guide and provide a clear roadmap for everyone to follow, especially in the field of digital accessibility. This is due to the significance of digital accessibility in terms of inclusiveness and diversity, as well as the major benefits it provides to all communities. The importance and benefits include but are not limited to meeting legal obligations and reaching a larger audience. This article demonstrates the importance of having digital accessibility policies and how implementing these policies benefits everyone, including people with disabilities.

Keywords
Digital Accessibility;
Policy; Disabilities.

Introduction

What do you do when the technology that is meant to make your life easier makes it harder instead? Do you feel that it is fair that People with Disabilities (PWD) continue to face difficulties, obtaining basic products and services in this era of digitization?

Over the past few years, there has been an increasing demand for people to access and utilize digital information and services. This shift is largely since digital systems and services have transformed the way we live, work, and communicate, becoming an integral part of our daily lives. Unfortunately, people with disabilities continue to face difficulties in using and benefiting from services in many countries because many of these services and products are not designed with accessibility in mind. For example, poor color contrast and missing alternative text can make a website difficult to access for visually impaired. A video without captions, for example, may be inaccessible to people who are deaf or hard of hearing. People with cognitive impairments might have difficulties comprehending complex information or navigating complex interfaces, thus, a person suffering from a learning disability may have difficulty understanding instructions on a website or completing forms. It is worth noting that these are just a few examples of the difficulties that people with disabilities might face when they try to use digital products or services.

Today, an estimated 1.3 billion people, or 16% of the global population, have a significant disability (World Health Organization, 2023). Given the large number of people with disabilities, there is a need for establishing policies that would support them and ensure that their rights are being protected.

The concept of accessibility is a term that refers to the extent to which a product, device, service, and environment are accessible and navigable for those with disabilities as well as for those with other special needs or functional limitations. (Mada Accessibility and AT Glossary).

Digital accessibility focuses on access to technology products, resources and services that span hardware and software. The primary aim of digital accessibility is to enable equitable access to diverse kinds of digital resources to the widest range of individuals, including those with disabilities (Sharma et al., 2019). These digital resources encompass a broad range of systems and services, such as websites, software, mobile applications, electronic platforms, programs, and e-documents. It is important to recognize that digital accessibility pertains to a variety of disabilities, including but not limited to auditory, cognitive, physical, speech, and visual impairments, as well as age-related limitations that may hinder or diminish one's capacity to effectively utilize digital systems and services (Web Accessibility Initiative, 2022).

The establishment of policies in general will ensure consistency and fairness, along with compliance with relevant regulations and best practices, whereas accessibility policies, in particular, ensure that digital content, services, and technologies are available to all people, including those with disabilities. These polices are especially important in this era, when so many products and services are being delivered via digital channels such as mobile apps or websites. With the difficulties that many people with disabilities face in accessing digital content, leading to feelings of exclusion and frustration, digital accessibility policies come in to guarantee that everyone, regardless of ability, has equal access to digital contents and services.

In the first part of this essay, we will provide an overview of the importance of digital accessibility policies and their significance in terms of inclusion and diversity, and finally, possible future directions.

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The Importance of Digital Accessibility

Access For Everyone

In today's world, where digital technology is ubiquitous, digital accessibility policies are critical for promoting inclusivity and diversity. These policies ensure that digital resources, such as websites, mobile applications, and other digital tools, are accessible to everyone, regardless of their abilities or conditions. One of the benefits of implementing these policies is that it guarantees equal access to digital resources for all individuals.

The United Nations (n.d.) defines access for all as the importance of ensuring that digital communication and services are available to everyone, regardless of their age, gender, ability, or location. Thus, to create a digital world that is inclusive and diverse, it is crucial for legislators, policymakers, ICT providers, and other stakeholders implement accessibility measures in all countries. By doing so, we can ensure that everyone has equal access to digital resources and opportunities, promoting digital accessibility for all.

Meeting Legal Obligations

Digital accessibility policies are highly significant because they ensure adherence to legal requirements. Several countries have enacted legislation to guarantee digital accessibility for people with disabilities, including the United States, Canada, and member states of the European Union. Americans with Disabilities Act (ADA), for example, requires both public and private entities in the United States to provide equal access to goods, services, and information, including digital content (Americans with Disabilities Act, 2023). Non-compliance with the ADA can lead to legal penalties and reputational damage.

Similar to this, Section 508 of the Rehabilitation Act requires federal agencies to make their electronic and information technology accessible and usable by individuals with disabilities (Section 508, 2022). Likewise, Qatar has policy that ensures and guarantees equitable access to technologies for people with disabilities in the country (Ministry of Transport and Communications, 2011). This policy is referred as Qatar's The policy is referred as Qatar's e-Accessibility policy, and it was updated in 2023, It focuses on a wide range of e-Accessibility issues, including those related to websites, telecommunications services, handsets, ATMs, government services, access

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to assistive technologies and digital content. Making digital content accessible to people with disabilities not only avoids legal ramifications like lawsuits and fines, but it also promotes a culture of diversity and inclusivity. Therefore, policymakers and decision-makers can turn to the Mada Policy portal (Mada ICT Accessibility Policy portal), which provides information on laws and regulations from local, regional, and global sources, to ensure compliance with legal obligations.

Reaching Wider Audience

Knowing that a large percentage of the global population has some form of disability, it only makes sense from a marketing perspective to adopt digital policies that enable people with disabilities to use and benefit from their respective products and services. This will indeed make the marketing teams truly effective with their campaigns, because they will reach all their targeted audience. Doing so results in increased sales and revenues given that such action will include a large group of our communities. Not only that, but when business owners, organizations, and others prioritize inclusivity and diversity, they can improve their products and services to better meet a diverse audience, which ultimately increases engagement and loyalty from these audiences, resulting in increased expansion and success.

Better User Experience

The concept of experience extends beyond simply owning a device, website, or app. It includes all aspects of how you perceive the world, interact with others, and interact with services or technological systems. In essence, experience is a comprehensive system. The term "user experience," or "UX," refers to a person's perceptions and reactions as a result of using or anticipating using a product, system, or service (International Organization for Standardization, 2010). As a matter of fact, user experience and accessibility are connected in some way. Accessibility features can greatly enhance the usability and satisfaction of a product or service for a wide range of people. That is, designing a system or a product with accessibility in mind can significantly improve the overall user experience. This brings us to the concept of accessible universal design. Accessible universal design refers to the design of products and environments to be accessible to the greatest number of people without requiring adaptation or specialized design. (Persson et al., 2014). The following seven principles can be used to elaborate on this concept:

- **Equitable Use:** The design is useful and marketable to a variety of individuals with varying abilities.

- **Flexibility in Use:** This design is capable of accommodating a wide range of individual preferences and abilities.

- Simple and Intuitive use: It is easy for the user to understand how to use the design regardless of their prior experience, knowledge, or skill level

- **Perceptible Information:** The design communicates necessary information to the user effectively, regardless of ambient conditions or the level of sensory ability of the user.

- **Tolerance for Error:** The design minimizes the possibility of accidents and unintended actions.

- **Low Physical Effort:** This design is created to be used efficiently and comfortably and with a minimum amount of fatigue.

- **Size and Space or Approach and Use:** This design ensures regardless of a user's body size, posture, or mobility things are designed to fit them properly.

Accessible, usable, and universal design are critical components in creating an inclusive society. Policies help make this possible by promoting and enforcing these design principles. That said, UX designers should imbed accessibility within the day-to-day creations to show the least amount of empathy for disabled users. This requires acknowledging that not everyone uses services or products the same way.

To gain access to the service, some people may need to use assistive technologies (AT). Any item or software program that assists people with disabilities in increasing, maintaining, or improving their functional abilities is referred to as assistive technology (AT). Assistive technologies include screen readers and screen magnifiers (Okonji & Ogwezzy, 2018). Let's consider now an example of

how improving accessibility can enhance the user experience, including captions and transcripts to a video will not only benefit people who are deaf or have hearing impairments, but it will also enhance the overall user experience. This is evident when looking at how people act when they watch a video in either a quiet or a noisy environment. Specifically, when people watch videos in a quiet environment, such as libraries, they will not be allowed to watch the video in its normal volume. Instead, they will have to decrease the volume and rely heavily on the captions. Similarly, people who watch videos in a noisy setting, such as shopping malls, no matter how increased the volume is, they will not be able to hear and will have to thus rely heavily on the captions. Therefore, accessible design will not only improve the overall usability but will also aid in reaching a larger audience, as services coded to accessibility standards have higher prominence on search engines, making the product easier to find.

Conclusion and Future Directions

Given the large number of people with disabilities worldwide, as well as the importance of technology in the present era, having digital policies in place to ensure compliance is essential. Digital accessibility policies play an important role in ensuring equal access for all individuals, as well as ensuring adherence to legal requirements. By implementing these policies, organizations and business owners can benefit by reaching a larger audience, which increases their expansion and success. Not only that, but ensuring digital policies can improve the overall user experience. Thus, given the importance of these policies, it is critical for all countries to have policies in this field, or at the very least to follow the ones that exist.

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Evaluating ICT Accessibility in Qatari Public Institutions
The Role of the MARSAD Tool in Fostering Inclusion
and Sustainability

Achraf Othman
Mada Center, Doha,
P.O. Box 24230, Qatar
aothman@mada.org.qa

Evaluating ICT Accessibility in Qatari Public Institutions

The Role of the MARSAD Tool in Fostering Inclusion and Sustainability

Abstract Technology has made social inclusion possible for people with disabilities worldwide. It ensures access to media, education, employment through assistive technology. To create inclusive policies and laws, decision makers must understand ICT products and services, their compliance with international accessibility requirements, and their use in the country. This study presents MARSAD, an e-readiness assessment instrument developed and implemented by Mada Center to discover factors that influence ICT accessibility for persons with disabilities living in the State of Qatar. It measures the national ICT accessibility adoption rate and makes recommendations to increase digital access for government and semi-government organisations' digital platforms. 14 educational and cultural institutions used the tool. Participating institutions have significant ICT infrastructure gaps to provide an inclusive digital environment, which is in line with sustainability and SDG 11, to make cities and human settlements inclusive, safe, resilient, and sustainable. Based on MARSAD outcomes, member institutions were willing to invest in making improvements. The method can be used as a basis for e-readiness assessment studies to provide accessible ICT products and services for persons with disabilities and the elderly.

Introduction The UN Convention for the Rights of Persons with Disabilities (UNCRPD) states that the provision of accessible ICT is a fundamental obligation for all State parties (Ferreras et al. 2017). It is important to ensure that the needs of persons with disabilities are met in a sustainable manner and that the provision of accessible ICT can contribute to achieving the Sustainable Development Goal 11 (Oncins 2020). Qatar has been taking steps to make technology accessible for all, ranking first worldwide in the Digital Access Rights Evaluation Index (DARE Index). This study considered country laws and regulations and the country's ability to implement existing ICT access programs and policies (Qatar - G3ict: The Global Initiative for Inclusive ICTs n.d.). The DARE Index conducted in 2020 identified 137 countries from the 182 State Parties to the UNCRPD in eight regions.

Qatar ranked second highest among Arab countries and 38th worldwide in the Network Readiness Index. The digital divide, which refers to the unequal access and utilization of technology between different populations, is a pressing sustainability issue. Mada designed and implemented an ICT Accessibility Adoption Rate (MARSAD) to measure the adoption rate of accessible ICT and develop key recommendations to improve digital access (Othman et al. 2023). The primary focus area requiring enhancement was to enable persons with disabilities through ICT within the domains of education, community, and culture in addition to the measure the impact on the Elderly as an indirect-goal (Al-Thani et al. 2022). MARSAD is a tool focused on ICT accessibility standards that facilitate ICT adoption by organizations and institutions in Qatar.

Qatar is committed to maximizing Internet utilization and has an Internet penetration rate of 94% (QATAR'S ICT LANDSCAPE 2019 n.d.). This paper discusses the factors that influence the adoption of ICT accessibility and the importance of having an e-readiness tool to measure digital accessibility. Our study focuses on the adoption of ICT accessibility for persons with disabilities and the factors that influence this adoption. MARSAD is an e-readiness assessment tool that measures the national ICT accessibility adoption rate and provides key recommendations for improving digital access. It can serve as a foundation for future e-readiness assessment studies.

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The E-Readiness Concept and E-Readiness Assessment Tools

E-readiness is a concept that measures the capacity of nations to participate in the digital economy and leverage digital channels for communication, commerce, and government. It is also measured as a community's relative advancement in the most critical areas for ICT adoption and the essential applications of ICTs. E-readiness can be explained as the nations' readiness or the ability of organizations to provide access to inclusive and accessible ICT digital platforms suitable for use by persons with disabilities. This definition of e-readiness can be categorized to impact both social welfare and economic factors (Lahiri 2021). E-Readiness Assessment Initiatives and Tools are essential for governments and policymakers to understand the state of ICT infrastructure, access, and services within a country (Metaxiotis, Larios, and Assimakopoulos 2010).

These assessments measure various aspects of ICT, society, and the economy, and can provide governments and policymakers with vital information to develop impactful national ICT strategies and improve specific aspects of e-readiness. The maximum potential of ICT usage can be achieved by acquiring a high degree of e-readiness, which reflects the country's ability to provide accessible ICTs to the population, the effectiveness of the implemented legal and regulatory ICT framework, and progress related to ICT-driven projects and initiatives. E-readiness assessment tools are designed to measure ICT utilization and penetration among communities, organizations, and populations. They can be classified into e-society and e-economy, with e-society focusing on social welfare and e-economy focusing on e-business, e-commerce, and ICT infrastructure.

The results of DARE Index revealed the need to measure the ICT adoption rate among various institutions in Qatar and develop recommendations to improve the state of digital inclusion. E-readiness tools exist in the modern world of ICT, and global companies have devised them to be easily used in grading exercises. Examples include the UN e-government publication and its grading by the Economic Intelligence Unit (EIU), the Centre for International Development (CID), and the Asia-Pacific Economic Cooperation (APEC) e-readiness results. The World Bank's Knowledge Assessment Methodology targets migration to knowledge-based communities. The Risk E-business Tool and Mosaic's Global Internet Diffusion Framework assess the nation's capacities to delve into digital economic activities. The Information Society Index, Global Technology Index, and Index of ICT Diffusion all assess the capacity of communities to remain digital despite the dynamicity of the global social and economic systems. The APEC E-Commerce Readiness Assessment Guide targets major businesses that drive the rising Asian economies. All three e-economy readiness assessment tools focus on exploring the critical infrastructure and state implementations of the latest technologies to ensure economic prosperity. The lack of inclusion in e-readiness assessment tools has led to the need for accessibility standards in digital platforms.

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Most e-readiness assessment tools are meant to measure aspects such as policy making and national ICT development strategy impacts (Mutula 2009). Policymakers must be at the forefront of formulating guidelines to increase the magnitude of e-readiness measures to address the needs of persons with disabilities. E-readiness assessments provide policymakers with a model of the economy's competitiveness concerning ICT performance, but have yet to emphasize social inclusion factors such as the challenges facing people with disabilities in accessing information and communication technologies. Accessible ICT includes the availability of an ICT infrastructure that incorporates the relevant accessibility standards. Nations need to acquire optimal e-readiness to accommodate the adequate availability of ICT and related services for persons with disabilities.

The E-Readiness Assessment Framework "MARSAD" by Mada

The MARSAD e-readiness assessment framework is grounded in factors related to implementing ICT infrastructure and policies (Othman et al. 2023). It is part the ecosystem "Mada Innovation Program" that aims to increase the number of the digital accessibility solutions and innovative assistive technology (Al-Thani et al. 2019). It identifies 13 critical components of the E-Readiness Assessment related to implementing an accessible ICT ecosystem based on the research outcome of Averweg in 2009. Additionally, it identifies policies, processes, and standards necessary to implement these e-readiness assessment components effectively. Finally, ten outcome indicator areas that will be impacted because of adequate provision of accessible ICT have been included in the framework. These outcome indicators include web, TV and multimedia, mobile telephony, e-books, and digital contents, Internet availability and usage among persons with disabilities, inclusive ICTs for all in education, enabling ICTs for all in employment, e-government, and smart cities for all, enabling assistive technologies and ICTs for independent living, and procurement of accessible public goods and services for all citizens. The web part is monitored through the Mada Web Accessibility Monitor (Al Jabor et al. 2021). Here are the 13 critical components of the E-Readiness Assessment related to accessibility:

- Government: plays a key role in successful ICT adoption by funding the development, maintenance, and improvement of national ICT infrastructure. Pro-active government investments in the implementation and regulation of ICT infrastructure and services can lead to early adoption and high levels of e-readiness.

- Policy and regulations are essential for achieving a digital economy. They reduce barriers such as cost, access, and capacity, and provide diversified business opportunities. An overarching policy is necessary to coordinate and harmonize the ICT direction across all sectors. Additionally, ICT accessibility must be made accessible to persons living with disabilities.

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- Internet and public access are essential for accessing information and communication services and e-commerce services, and public Internet access enables more significant ICT usage. Equitable access to information, communication, and government services is essential for digital economies.

- Hardware and software industries are essential for building an ICT infrastructure, providing cutting-edge technologies and products and services to SMEs in the digital economy. National ICT policy and regulation frameworks need to provide an incentivized business ecosystem to achieve high levels of e-readiness.

- Telecommunications industries provides essential services to an ICT-based society and economy, as well as the global information infrastructure.

- Digital service providers: provide services over the Internet, support e-commerce features, and generate revenue for a digital economy.

- Information and Knowledge Management Systems provide access to appropriate information and knowledge is essential for traditional businesses to transition to e-businesses. Knowledge management systems are essential for businesses to operate successfully in a knowledge-based economy. Knowledge sharing is highly valued and is an essential element in competitions between public bodies.

- E-Business and E-Commerce Industry facilities allow businesses to communicate cost-effectively and transact with clients transparently, reducing customer response time and increasing customer satisfaction.

- Intellectual Property Rights are essential for SMEs to protect their ICT innovations and digital products, while also protecting and managing digital rights.

- Human Capital and Knowledge are important for SMEs to compete in international markets, and knowledge-based digital economies rely on human capital investment in knowledge workers to develop new designs, ideas, and innovations.

- Research and Development is essential for governments and economies to promote innovation and create new products and services. It requires networking mechanisms and knowledge exchange, as well as ICT business incubation centers and support services.

- Emerging Technologies: Nations must be involved in developing and early adopting emerging technologies to improve their efficiency and quality of products and services. Recent emerging technologies such as AI, VR, blockchain, and robotic process automation are widely used.

- Innovation and Entrepreneurship are used for a growing digital economy, and the success of the ICT industry relies on funding streams, community and market access, support for solution providers, effective policy and best practices, collaborations, networking opportunities, innovation and design capabilities, a strong private sector, informed decision-making, and improved delivery and capacity.
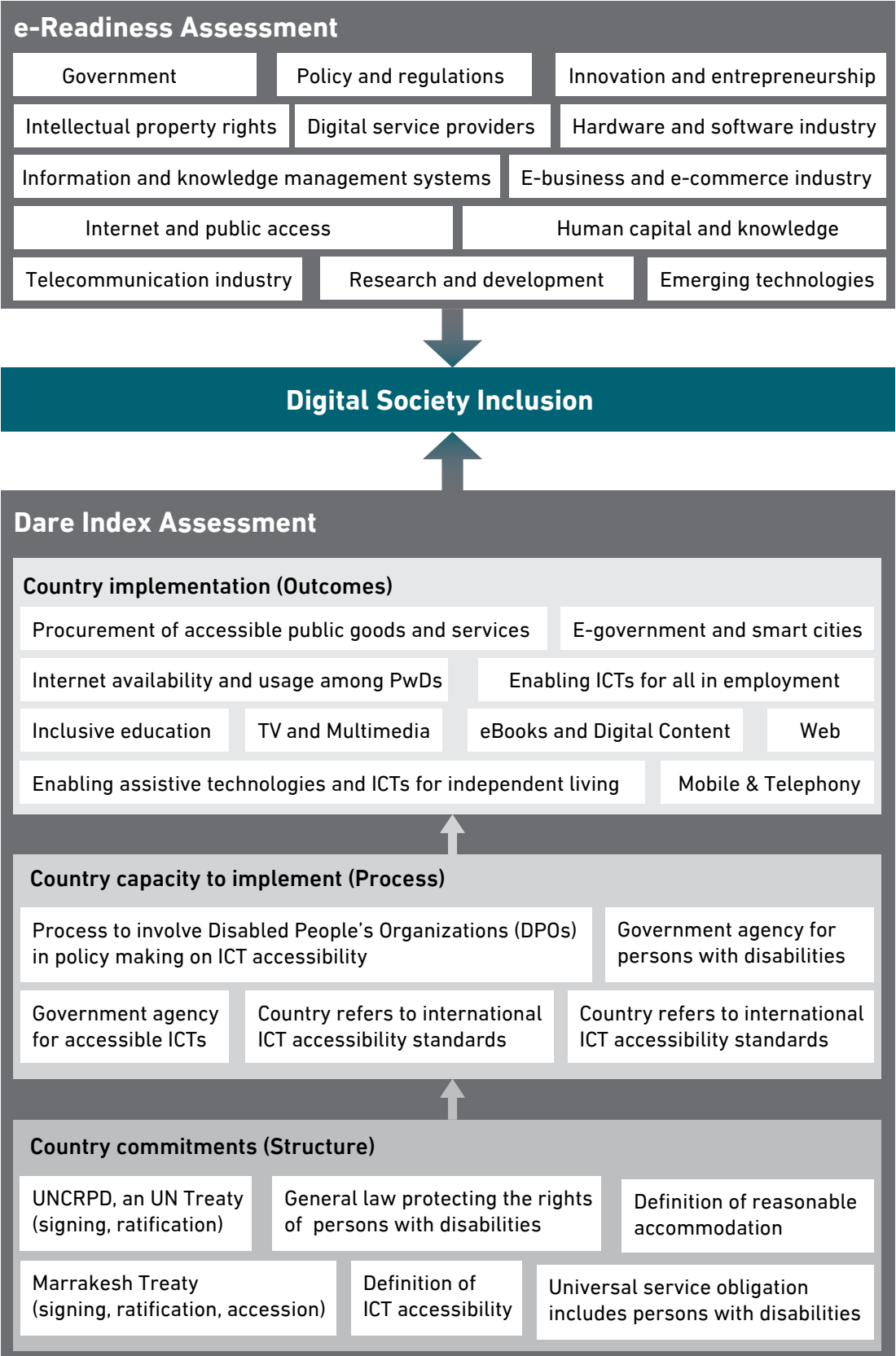

Figure 1.
Overview of the e-readiness assessment framework

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Theoretical Model

The MARSAD e-readiness tool was used to measure the state's ability of institutions in Qatar to provide accessible digital platforms for persons with disabilities [4]. The primary focus areas of ICT usage by persons with disabilities are within the domains of education, culture, and community. The study followed the socio-technical system (STS) theoretical framework to understand the factors influencing the adoption of ICT accessibility and to develop recommendations for improving digital access for persons with disabilities and providing recommendations for creating an inclusive and sustainable digital environment. As a first step, several focus groups were conducted to provide information about the institution's digital platforms and relevant e-government services most accessed/used by them and rate the impact of its access/usage availability on their quality of life. This study explores how a person with disability uses or will use digital platforms of the organization or/and use the available e-government services.

It suggests that two of the possible and immediate consequences of inadequate implementation of digital accessibility policy are the ignorance about the policy and the loss of control over how they develop and update their digital platforms. Additionally, two additional factors that may influence the engagement are the public relations and IT policy restrictions enacted as part of corporate governance and the inclination of individual employees to engage in implementing digital accessibility guidelines that transcend normative job-role requirements. The adapted theoretical model is presented in Figure 2.
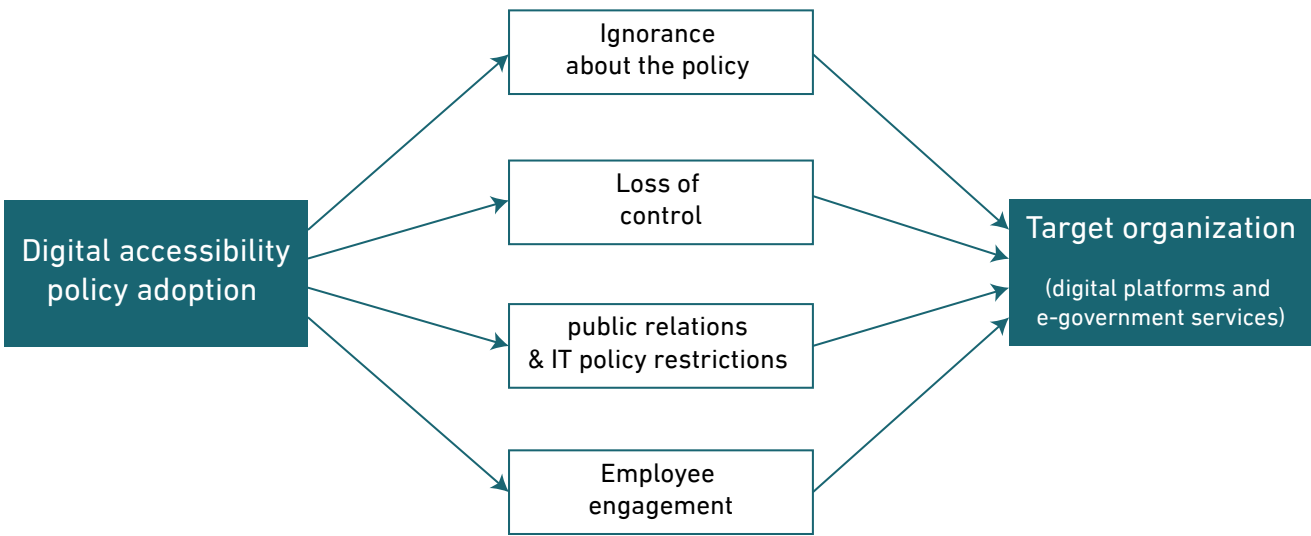

Figure 2.
Adapted theoretical model based on socio-technical theory.

Overview of the results

The results of implementing MARSAD in 2019 Q2 and 2021 Q2 within participating institutions highlighted an improved state of ICT accessibility by reflecting higher scores during the second round of the survey implementation. The participating institutions can be distinguished into two groups. The first group consists of institutions that scored equal to or above the overall baseline during 2019 Q2 (Figure 3). Their scores reflected that they were already committed to providing accessible ICT by implementing some related policies and procedures. Participating institutions belonging to this group attained considerably higher scores while implementing the tool in 2021 Q2 and thus, offering an excelled quality of ICT accessibility services within the institution.

The second group comprises institutions that scored significantly below the overall baseline in 2019 Q2 (Figure 4), and the scores achieved by them indicated that they did not have any current policies or procedures for providing inclusive ICT access. However, these institutions also attained comparatively higher scores during the second round of implementation in 2021 Q2. They improved the provision of accessible ICT platforms and services within the institutions. After implementing the first round during 2019 Q2, all participating institutions were provided with recommendations and staff training to offer accessible ICT platforms and services. These activities have received positive feedback from all the institutions. It was observed that the primary factors influencing the provision of institutional accessible ICT services were gaining awareness, receiving appropriate ICT accessibility advice, and technical knowledge among relevant staff members to implement inclusive ICT services. It was noticed that many of the participating institutions in Group 2 were vaguely aware of the concept of ICT accessibility. These institutions gained awareness about the concept while working to implement the tool, which initiated their interest in providing accessible ICT for all users. It was complemented by the advice and training offered to them after the initial round in 2019 Q2, which led them to have an improved capacity to deliver accessible ICT services.

Based on this study, there are several key elements that are necessary for achieving the successful provision of accessible ICT. These elements include:
- A clear understanding of the needs and requirements of users with disabilities: In order to provide accessible ICT, it is essential to have a deep understanding of the specific needs and requirements of users with disabilities. This could include understanding the different types of disabilities and how they impact a person's ability to access and use ICT, as well as consulting with users with disabilities to gather input and feedback on their experiences and needs;

- Adoption of accessibility standards and guidelines: To ensure that ICT is accessible to users with disabilities, it is important to adopt and adhere to relevant accessibility standards and guidelines. These standards and guidelines provide a framework for designing and developing accessible ICT, and can help ensure that the technology is usable and accessible to all users;

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- Training and support for users with disabilities: Providing accessible ICT is not just about the technology itself, but also about ensuring that users with disabilities have the necessary training and support to use the technology effectively. This could include providing training on how to use the technology, as well as ongoing support and assistance to help users with disabilities to overcome any barriers or challenges they may encounter;

- Ongoing evaluation and improvement: Providing accessible ICT is an ongoing process, and it is important to regularly evaluate and improve the technology to ensure that it continues to meet the needs of users with disabilities. This could include conducting user testing and feedback sessions, as well as staying up-to-date on the latest accessibility standards and guidelines, to ensure that the technology remains accessible and usable for all users.
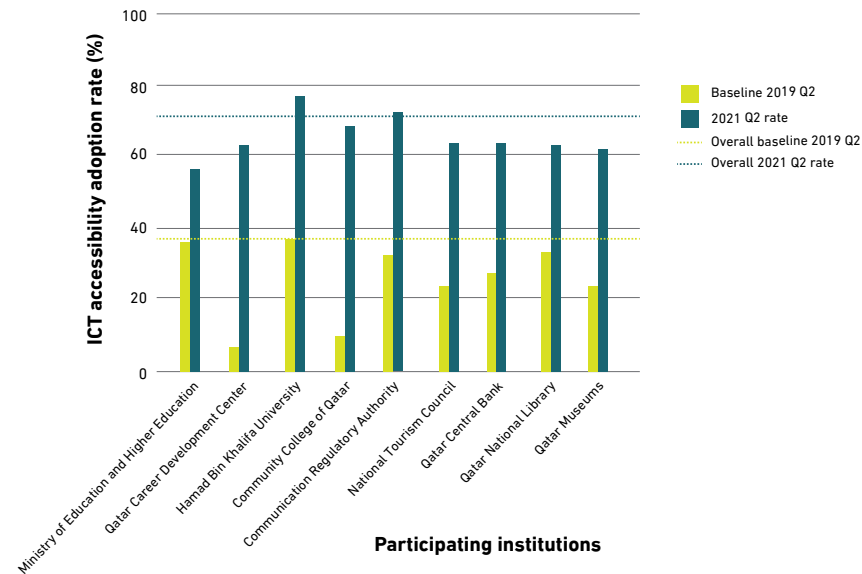

Figure 3.
Group 1 participating institutions that scored above the overall baseline in 2019 Q2 and already had current policies and procedures in place to provide accessible ICT.
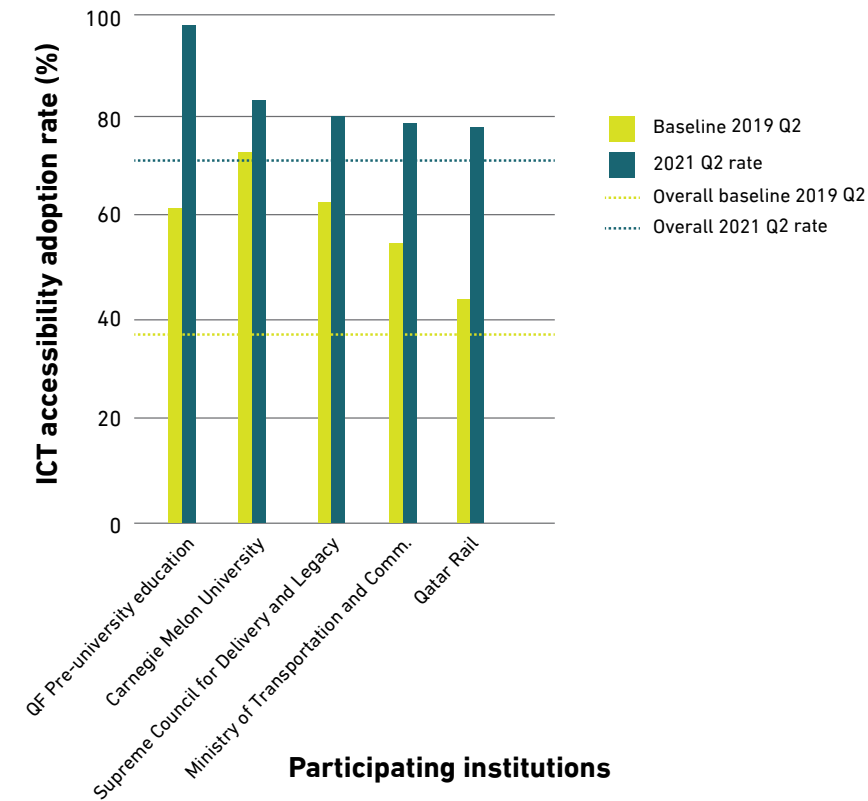

Figure 4.
Group 2 participating institutions that scored below the overall baseline in 2019 Q2 and did not have policies and procedures in place to provide accessible ICT.

Conclusion and future directions

The e-readiness assessment tool (MARSAD) measures the utilization of accessible ICT in various domains and identifies gaps in the ICT infrastructure of government and semi-government institutions in Qatar. The results of the assessment show a genuine willingness to invest in implementing the required changes. MARSAD was effective in capturing data about the overall state of ICT accessibility in the participating organizations and provided decision-makers with the necessary information to take action to improve the accessibility of ICT platforms and services offered by the organizations. It is designed to be used within an environment where the ICT accessibility ecosystem is in its infancy. The absence of an ICT accessibility readiness tool can be difficult for organizations to assess and evaluate their current level of accessibility.

This can lead to a lack of progress in making ICT accessible and a suboptimal user experience for individuals with disabilities. Mada Center will provide the necessary support to empower organizations in Qatar and the Arab region to make the shift towards a digital ecosystem accessible to all. Extending the study to additional domains could offer new perspectives on the results of the research.

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Mada Center recognizes the significance of accessibility in procurement and its impact on creating equal opportunities for all individuals, irrespective of their abilities or disabilities. We firmly believe that by integrating accessibility standards into our procurement practices, we can not only meet legal requirements but also foster inclusivity and enhance user experiences.

We are pleased to announce that MADA center has launched the Accessible Procurement best practice report which provides a practical framework for evaluating, selecting, and procuring goods, services, and technology with accessibility at the forefront.

Please visit the policy portal:
www.policy.mada.org.qa/en/resources/

We encourage you to explore and utilize the report, implement them within your procurement processes, and leverage the report to spread awareness.

Your active involvement as a stakeholder is vital to empower people with disabilities. Together, we can make a substantial impact in advancing procurement practices and fostering inclusivity in accordance with the UN convention on the rights of persons with disabilities.

Digital Accessibility Policy Landscape in the State of Qatar

Amnah AlMutawaa
Mada Center, Doha,
P.O. Box 24230, Qatar

aalmutawaa@mada.org.qa

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Abstract

Ensuring accessibility has become a crucial element in promoting inclusivity for everyone, including Persons with Disabilities (PWDs). Qatar has undergone a huge transformation in the realm of inclusive Information and Communication Technology (ICT) towards cultivating an ecosystem that promotes ICT accessibility and embraces diversity in line with the UN Convention on the Rights of Persons with Disabilities (UNCRPD), to which the State of Qatar is a signatory and a ratifying party. This article delves into Qatar's dynamic policy and regulatory framework and its adaptive response to the evolving landscape of digital access technology and trends, and the proactive approach taken by the country to ensure that individuals have adequate access to digital platforms and services.

Keywords Persons with Disabilities, ICT Accessibility, Inclusive Information Communication Technology, Digital Platforms, UNCRPD
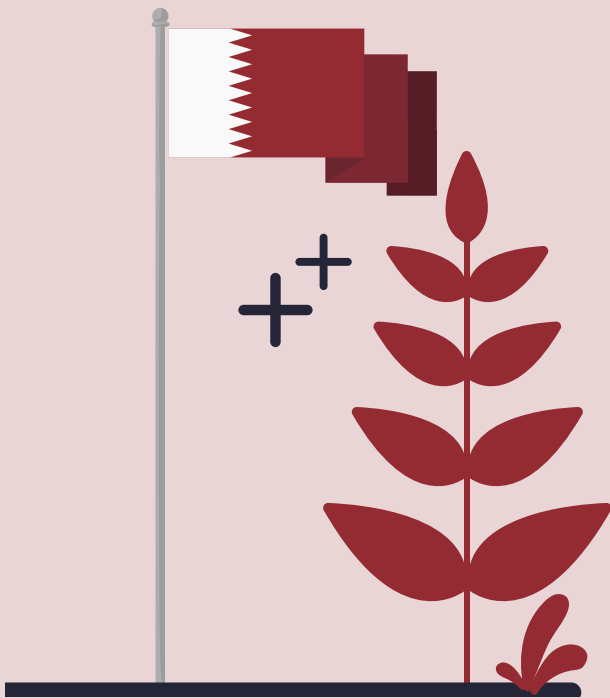
Introduction

The Qatar National e-Accessibility Policy, the first of its kind document for the MENA region, promotes the adoption of international standards such as WCAG 2.1 across various digital platforms (e.g., websites, mobile applications, digital kiosks, public telephones, mobile handsets, and digital content) (Qatar National Vision 2030, n.d.). The policy outlines specific requirements for accessibility for web developers and content creators to ensure that their products and services are inclusive and comply with Universal Design Standards. Formally launched in 2011 by the Ministry of Communications and Information Technology (MCIT), the policy underwent an extensive consultation process to assess its potential impact on key stakeholders including persons with disabilities and the organizations representing them. Since its implementation, the policy has catalyzed advancements in ICT accessibility across various domains. Its influence has been felt not only in Qatar but also throughout the region and has been widely recognized as a best practice within the Arab world and stands as a pioneering initiative that has propelled accessibility efforts, and established Qatar as a leading advocate for digital inclusion in the MENA region.

Being at the forefront of e-accessibility initiatives in the country, Mada Center has played a crucial role in actively supporting the implementation and advancement of the national policy (Mada Assistive Technology Center., n.d.). With a keen understanding of the ever-evolving technological trends and advancements shaping the digital accessibility landscape in Qatar, Mada Center has effectively utilized its expertise and knowledge to provide valuable insights and recommendations for updating and enhancing the existing policy.

Addressing Accessibility Gaps with Progressive Policy Provisions

The evaluation and results of the Digital Accessibility Rights Evaluation Index (DARE) 2020 served as a valuable benchmark for identifying the areas in which improvements were most needed within the policy (Qatar - G3ict: The Global Initiative for Inclusive ICTs, n.d.). The key improvements introduced to the policy encompass various domains, including: the incorporation of accessible procurement practices, addressing media and multimedia accessibility, and promoting the provision of reasonable accommodation in education, employment, and community settings. These specific provisions were identified as crucial areas of focus based on the evaluation and results of the DARE Index, which highlighted existing gaps and shortcomings in these domains (Qatar - G3ict: The Global Initiative for Inclusive ICTs, n.d.).

The identification of these provisions as key areas of focus demonstrates a commitment to rectifying the gaps in the policy landscape. Through targeted improvements, the aim is to ensure that individuals with disabilities are not hindered by inaccessible ICT solutions, media, or environments. By addressing these deficiencies, the policy endeavors to create an inclusive and equitable society that embraces diversity and promotes equal opportunities for all

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Accessible Procurement Requirements

Accessible procurement guarantees that ICT products, services, and solutions acquired by governments and organizations meet specific accessibility standards. By considering accessibility from the initial stages of procurement, barriers that individuals with disabilities face are effectively eliminated, resulting in the acquisition of ICT solutions that are usable by all. This update represents a significant step toward creating a more inclusive society.

The public sector's adoption of accessible ICT will have a significant positive impact on the national ICT accessibility landscape, leading to the provision of universal access and increased opportunities for education and employment for PWD. The integration of accessible procurement requirements within the policy aims to incentivize manufacturers and vendors in the industry to acknowledge the market demand and importance of creating solutions that comply with accessibility standards. The enforcement of such policies will serve as a strong motivation for the industry to focus on developing accessible solutions right from the early stages of their conceptualization. This approach is crucial for future success and the sustainable integration of accessibility compliance. The consistent demand for accessible ICT goods and services generated by the policy will provide greater stability for the industry to invest in and compete in the implementation and supply of accessible ICT solutions to meet market needs.

Media and Multimedia Accessibility

In today's interconnected world, digital platforms serve as vital channels for communication, education, and cultural expression. Thus, addressing media and multimedia accessibility within policies is crucial in today's digital landscape to ensure that individuals with disabilities can fully engage with and benefit from digital content, including videos, audio files, and interactive media. Media accessibility guidelines encompass various aspects to make digital content more inclusive. This includes providing closed captions or subtitles for videos to assist individuals with hearing impairments, audio descriptions to aid individuals with visual impairments, and accessible interfaces for interactive media. These guidelines consider the diverse needs of individuals with disabilities, enabling them to perceive, understand, and navigate multimedia content effectively.

Reasonable Accommodation within Education, Employment, and Community

Promoting reasonable accommodation in education, employment, and community settings is another significant update to the policy as per the guidance of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) (Convention on the Rights of Persons with Disabilities (CRPD) | Division for Inclusive Social Development (DISD), n.d.). This recognizes the importance of creating an inclusive environment where individuals with disabilities have equal opportunities for education, employment, and participation in the community. "Reasonable Accommodation," is understood to mean making necessary, proportionate, and appropriate modifications and adjustments to ensure that Persons with Disabilities are empowered, in this case through ICT, to enjoy independent living, human rights and fundamental freedoms on an equal basis. In the context of the National e-Accessibility Policy (Qatar E-Accessibility Policy, 2011); this will mean that all public sector organizations employing or providing services to Persons with Disabilities are encouraged to make accommodations, as per the standards outlined in the policy, to the way people with disabilities interact with or use websites, web content for mobile devices, telecommunication services, ATMs and public access terminals or kiosks so that People with Disabilities are able to use these technologies on equal basis with their peers.

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Future Expectations Towards Qatar's Digital Access Landscape

In the coming years, it is expected that Qatar will continue to invest in cutting-edge technologies, innovative policies, and infrastructure improvements to enhance digital access for its citizens. However, it is crucial to ensure that the digital accessibility policy keeps pace with the technological advancements and is adaptable to new technologies, platforms, and devices, ensuring that individuals with disabilities have equal access and usability across different digital environments.

It is worth noting that the ongoing evaluation and monitoring of the policy's implementation will play a vital role in assessing its effectiveness and identifying any further gaps that require attention. By continuously analyzing the impact and outcomes of these improvements, policymakers can refine and strengthen the policy framework, ensuring its responsiveness to the evolving needs of individuals with disabilities. Besides, meeting the objectives set out in the UNCRPD (Convention on the Rights of Persons with Disabilities (CRPD) | Division for Inclusive Social Development (DISD), n.d.) is in fact dependent on the early implementation of policies and regulations that explicitly address ICT accessibility matters. Thus, incorporating and actively promoting digital accessibility on a national level is a fundamental step to achieve inclusivity and to act in response to the right to access information within the framework of the Convention, and to promote the three pillars of sustainable development – economic development, social integration, and environmental protection (Web Content Accessibility Guidelines (WCAG) 2.1, n.d.), in line with Qatar's National Vision 2030

Conclusion

The State of Qatar's Digital Accessibility Policy landscape reflects a commitment to fostering inclusivity and equal access to digital services for all citizens, including individuals with disabilities. Through the establishment of legal frameworks, collaboration with stakeholders, awareness campaigns, and training programs, Qatar has made significant progress in creating a digitally accessible environment and positioned itself as a leader in the field of digital accessibility. The impact of these initiatives is evident in the increased accessibility of government websites and services, as well as the growing awareness and understanding of accessibility principles among stakeholders which contributed to achieving 1st place globally and regionally in the Dare index 2020 (Convention on the Rights of Persons with Disabilities (CRPD) | Division for Inclusive Social Development (DISD), n.d.). Nevertheless, to maintain its position as a leader in digital accessibility, Qatar must continue to intensify its efforts and stay abreast of the latest developments and best practices in the field.

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