

ICT FOR EMPOWERING ACCESSIBILITY/INCLUSION:

THE IMPACT OF DIGITAL
INTEGRATION ON THE LIVES OF
PERSONS WITH DISABILITIES
(PWDS)

A STUDY OF DIGITAL
ENABLEMENT OF 300+ PWD
CHANGEMAKERS



The poster on the wall is titled 'DEF' and 'DIGITAL EMPLOYMENT SERVICES'. It lists various services and their rates. The visible text on the poster includes:

S. No.	Services	Rate
1.	Aadhaar card print	
2.	Passport card	
3.	Driving licence	
4.	Caste certificate	
5.	Result	
6.	Mobile recharge	
7.	Dish recharge	
8.	Aayushman bharaat	
9.	Computer course	
10.	Insurance	
	Health scheme	
	Financial service	
	Disability UDID card	
	Identity card	
	Certificate	
	Registration	
	Without generation	

ICT FOR EMPOWERING ACCESSIBILITY/INCLUSION:

THE IMPACT OF DIGITAL
INTEGRATION ON THE LIVES OF
PERSONS WITH DISABILITIES
(PWDS)

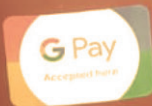
SoochnaPreneur Centre

Strengthening Digital Information Ecosystem

MANAGEMENT TRAINING | ENTREPRENEURSHIP | DIGITAL SKILLING

SoochnaPreneur Centre
amazon pay
G Pay
CIRC
DIGITAL SKILLING

Simanata Mondal,
Murshidabad, West Bengal



ICT FOR EMPOWERING ACCESSIBILITY/INCLUSION: THE IMPACT OF DIGITAL INTEGRATION ON THE LIVES OF PERSONS WITH DISABILITIES (PWDS)

A Study of Digital Enablement of 300+ PwD Changemakers

This comprehensive report presents an impact study aimed at assessing and evaluating the role of ICTs in the socio-economic empowerment of Persons with Disabilities (PwDs)



Year of Publication: 2024

Authors: Osama Manzar, Dr. Arpita Kanjilal

Advisor: Osama Manzar, Dr. Nirmita Narasimhan, Arun Mukarji

Editorial Assistance: Pratiksha Kamble

Design and Layout: Saurabh Srivastava

Reviewed and Published by: Centre for Development Policy and Practice

DOI No: 10.5281/zenodo.12632061

This work is under a creative common attribution 4.0 international license



All rights reserved. No part of this publication may be reprinted, reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publishers in written form. For permission requests, write to the publisher at the address below.

This report is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, resold, hired out, or otherwise circulated without the publisher's prior consent in any form of binding or cover other than that in which it is published.

For more information write to info@defindia.org

CONTENTS

Acknowledgement	6
Executive Summary	7
Introduction	9
Disability and Inclusion	9
Role of Information and communications technology (ICT)	11
Why this Study?	12
Intervention Description	13
Research Design	15
Literature review	16
Global Efforts	16
Best Practices from Developed and Developing Countries	20
Persons with Disabilities (PwDs) in India	27
The Role of ICTs in the lives of PwDs: Insights from the Ground	37
Digital Adoption and Meaningful Connectivity	40
Solution Seekers to Solution Providers: The Journey of Digital Empowerment	44
Personal Growth and Family Engagement	46
Community Engagement	47
Conclusion	48
The Role of Digital Service Providers in Enhancing Socio-Economic Inclusion for Persons with Disabilities (PwDs)	51
Need for Adequate Digital Infrastructure and Capacity Building	53
Digital Accessibility, Outreach & Empowerment	54
Conclusion	56
Recommendations	57
References	58

ACKNOWLEDGEMENT

This report is an outcome of the collaborative efforts and pursuit of the Broadband India Forum (BIF) and Digital Empowerment Foundation (DEF). The commitment to advancing inclusion and accessibility for Persons with Disabilities (PwDs) in the digital ecosystem has been instrumental in initiating this research endeavor. This report would not have been possible without the inputs, feedback and guidance of Dr. Nirmita Narasimhan, Accessibility and Inclusion Committee Chair, Broadband India Forum.

Special thanks are extended to the dedicated Research and Field teams of DEF for their tireless efforts in conducting the large-scale, two-phased surveys that formed the foundation of this report. Their professionalism, diligence, and dedication ensured the collection of valuable insights and data crucial for understanding the challenges and opportunities faced by PwDs in leveraging digital technologies.



We would also like to acknowledge the Center for Development Policy and Practice (CDPP) for their invaluable contribution in reviewing and publishing this report. Their expertise and guidance have played a significant role in shaping the quality and credibility of our findings.

Most importantly, we express our deepest appreciation and respect for the PwDs and the Samarth SoochnaPreneurs who willingly participated in the study and shared their personal journeys and experiences with such honesty, clarity, and detail. Without their invaluable insights and contributions, this report would not have been possible. Their voices and perspectives have been central to our understanding of the issues at hand and have served as a guiding force in working towards the shared vision of promoting digital empowerment and inclusivity, and building a resilient digital ecosystem.

We express our sincere and heartfelt gratitude to the community for steadfast cooperation and support throughout the study.

EXECUTIVE SUMMARY

The 2011 Census of India was a crucial milestone in accounting for 2.68 Cr Persons with Disabilities (PwDs), constituting 2.21% of the country's population. While the next census is yet to give us a realistic picture of the number of PwDs and the types of disabilities in accordance with the RPwd Act, 2016, a sizeable portion of the population still faces social and economic marginalisation, as well as apathy from the government and society. There is a lot of stigma, societal indifference, and systemic exclusion that continue to shape the lives of PwDs in today's India. There are several ongoing efforts at global, national, and local levels, to make inclusive policies, schemes and practices that ensure the dignity, rights, and equal participation of disabled populations in society. One among many, is the relative accessibility to digital technologies, which include the ICTs, assistive technologies, and accessibility features, which have played a significant role in the lives of PwDs with different disabilities pertaining to mobility, visual, hearing, etc. The collaborative efforts of the Government, civil society, private sector, and Tech-for-Good are playing a crucial role in tackling the issue of digital divide and lack of access to necessary infrastructural support thus enabling scores of citizens, including PwDs, who have been at the edge of information.

It is in this context that this study has been pursued to document the unprecedented

shifts that have been witnessed, with ICTs now being seen as enablers in the lives of the PwDs. However, there is no large-scale policy intervention made yet, with the primary objective of enabling meaningful connectivity in the lives of the PwDs. This study, conducted in two phases with a total of 300+ PwDs, therefore, becomes instrumental in assessing and evaluating if and how the digital ecosystem, especially with the use of ICTs, impacts the lives of PwDs in terms of their personal well-being, and social and economic standing in society.

In the first phase, **the study focuses on evaluating the socio-economic impact of digital integration** by surveying 243 PwDs across 17 states. In the face of prevalent challenges and exclusion faced by PwDs in terms of accessing basic citizen entitlements, including education, health, employment, etc., the use of ICTs demonstrated promising outcomes such as access to the internet, social welfare schemes and policies, employment, and entrepreneurial opportunities, and increased social and community engagement thus enabling their overall personal, financial, and social growth. The impact of digital integration can additionally be seen in how there has been a shift in family and community perceptions towards the PwDs, who were otherwise pitied or made to feel like a burden.

To enhance the ICT/digital accessibility and inclusion, the efforts should be directed towards improving internet connectivity especially in remote and underserved regions, enforcing accessibility standards to make user-friendly digital platforms, and making affordable assistive technologies. The role of the Government is crucial in providing subsidies and collaborating with the private sector in developing cost-effective digital solutions. The preparation of a comprehensive inventory of tailored solutions to meet the specific needs of PwDs will be an important step towards assessing the status of the digital ecosystem.

There is a pertinent need for strengthening the local digital ecosystem, whereby the Digital Service Centers are equipped with adequate accessibility and assistive technologies, and are made accessible to the PwDs remotely. It is additionally important to develop tailored digital literacy and skill development training programmes to facilitate inclusive education, skill training, and employment generation for PwDs. The literacy programmes should be extended to the local communities for enhanced awareness and understanding of the lives and needs of PwDs. Most importantly, an in-depth research and evaluation of the ongoing efforts are necessary for measuring the impact, efficiency, and effectiveness of the policy-level decisions and interventions.

In the second phase, **the study examines the role of the localised digital service providers in steering the socio-economic inclusion of PwDs** through capacity-building efforts, including facilitating access to infrastructure and information. A survey of 112 PwDs across 7 states, highlights the range of diverse services that are

provided by the digital service providers, including enhanced and sustained access to ICT tools, stable internet, networks of information dissemination, and capacity building through digital literacy programs and trainings. The digital service providers play a pivotal role, particularly in serving as a platform to bring together PwDs from the local communities to inspire and help each other pursue similar learnings and opportunities.

Once seen as those dependent and in search of solutions, the comprehensive analysis highlights the transformative potential of digital integration in the lives of PwDs, facilitated by the increased accessibility to ICT tools and the digital infrastructure. The study demonstrates that the digital integration of PwDs has played a key role in enabling their social and economic integration, with a complete shift in societal perceptions about PwDs thus treating them as respectful stakeholders in their families, communities, and the larger society.

While we are witnessing the progress of digitalisation efforts in many noticeable ways, a careful and thorough scrutiny is required to identify and address the gaps, challenges, and shortcomings in building a disabled-inclusive digital ecosystem. The two-phased study has unequivocally demonstrated the need for furthering access to ICT tools, accessibility features, curating and developing functional digital literacy curriculum and training programs that particularly cater to the PwDs, broadening efforts of outreach and networking, ensuring a continual feedback mechanism for scope of improvement, and incorporating these learnings in building policies and practices that cater to the diverse needs of disabled populations in India.

INTRODUCTION

DISABILITY AND INCLUSION

Departing from earlier medicalised views of disability as an inherent human condition affecting physicality, the UN Convention on the Rights of Persons with Disabilities (CRPD) defines it as an evolving concept (Division for Inclusive Social Development, n.d.), whereby Persons with Disabilities (PwDs) may “have long-term physical, mental, intellectual or sensory impairments which, in interaction with various barriers, may hinder their full and effective participation in society on an equal basis with others.” According to the projection by WHO in 2023, an estimate of 1.3 billion people, constituting 16 per cent of the global population, live with significant disabilities². There is a huge data gap in today’s India owing to the delayed census. The last Census³ exercise pursued in 2011 accounts for 2.68 Cr persons with disabilities, constituting 2.21% of the total population⁴.

The disabled populations are diverse,

with experiences shaped by different disabilities, social, economic, and regional factors, including age, caste, class, gender identity, sexuality, religion, race, ethnicity, nationalities, and region. These factors heavily influence their social, economic, and political life, and pose numerous challenges, with the question of access being the core concern. While there has been a rapid rise of digital technologies and the influence of the internet in our daily personal and professional lives, the inequalities have further deepened owing to unequal access to internet connectivity, ICT tools, and the digital public infrastructure, thus, severely impacting the marginalised and underserved communities.

In a world largely built on ableism among other dominant social systems, there are different kinds of systemic barriers that continue to persist, leading to adverse socioeconomic outcomes and severe forms of social exclusion of PwDs. We see it in the form of various disparities, including accessing fundamental entitlements such as education, healthcare, housing, employment, infrastructure, information, etc. The lived experiences of PwDs in today’s digital world underscore the pressing need for inclusive policies and support systems to address the deep-

1 <https://social.desa.un.org/issues/disability/crpd/article-1-purpose>

2 <https://www.who.int/news-room/fact-sheets/detail/disability-and-health>

3 <https://www.thequint.com/news/india/census-2021-delay-population-policy#read-more>

4 <http://www.ccdisabilities.nic.in/resources/disability-india>

rooted inequalities and enhance their overall socio-economic well-being, including their engagement at community and society level.

Olkin's (2002) classification of models - moral, medical, and social - provide three different conceptual frameworks of how the society treats 'impairments'. These models help understand how, and in what ways PwDs are perceived and treated in an ableist society. While stigma and prejudices are socio-culturally attached to disability in the moral model thus portraying it as an aberration and 'a mark of wrongdoing', the medical model treats disability as a pathological question, requiring clinical solutions to achieve as close to 'normalcy'. The determining factor for the medical model of disability is limited to one's physical or health condition. Treating disability as a 'personal' and an 'individual' medical problem, medical interventions and rehabilitative measures are suggested as solutions. The disability rights movement across the globe have rejected these models, and instead are advocating for a social model that operates on the premise that disability is one of several aspects of a person's identity, and the way to address disability is to make the environment and society inclusive. In the social model, the focus of intervention is to empower PwDs by facilitating, enabling, and enhancing their access to basic citizen entitlements and guarantees provided in legislations and policies. This conceptual framework emphasises that the social environment's lack of accessibility and inclusion influences the experiences of disability, which is otherwise is seen as an 'inherent' characteristic of a person. Moving away from medicalised solutions and interventions, the focus is on the

social - that accommodates the diverse needs of PwDs with different disabilities, positioned differently in the ladder of social hierarchies. It necessitates removing barriers, changing attitude, tailored policies and programs, and disabled-friendly physical environments to enable PwDs to fully participate in all aspects of life.

The academic field of Disability Studies as well as policymaking across the globe have been heavily influenced by the medical and social models, with the social model being instrumental in holding institutions and society accountable, and

To examine the factors influencing our understanding about disability, the moral, medical and social models provide three different conceptions of how the society considers impairments.

promoting disability rights for meaningful integration and accessibility. It is in this context that this impact study situated in India wants to examine if and how the use of ICT tools and the ongoing global project of digitalisation can break down these systemic barriers by providing digital access, digital tools, digital literacy, and necessary infrastructure to empower PwDs to not just avail digital services as well as to use digital technologies to leverage their equal and meaningful participation in social, economic, political, and cultural aspects of life. With increased digitalisation of the welfare state, it is imperative to ensure the digital integration of Persons with Disabilities (PwDs), which in turn will enable their socio-economic integration thus contributing to a robust digital economy.

ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)

ICTs hold immense potential in advancing the socio-economic inclusion and empowerment of PwDs (Technology and Disability: Trends and Opportunities in the Digital Economy in ASEAN, n.d.). The proliferation of digital platforms and the emergence of tech-driven sectors, including the IT sector, edtech, healthtech, etc., transcends the limitations of physical and manual settings thus digitally enabling PwDs to access the same from any location with internet connectivity and necessary accessibility features. This flexibility represents a significant step in breaking down a few barriers that hinder their physical participation in the workforce. The significant impact of ICTs is in generating employment and entrepreneurship opportunities through digital platforms. Using Artificial Intelligence (AI)-driven tools can help mitigate biases in the hiring process, improving the opportunities for PwDs. To ensure equitable access to the ICTs, it is imperative to design scalable policies and build commensurate infrastructure that cater to the specific needs of disabled populations.

One of the most effective ways to ensure inclusion is by creating tech-enabled working environments. These settings provide assistive technologies and tools, which help in equalising the opportunities and providing necessary virtual and

adaptable work arrangements for PwDs to participate in the workforce effectively. A case in point is the collaboration between a social enterprise named Steps and IKEA in Thailand, which illustrates how inclusive offices can be designed using IKEA products, debunking the misconception that accommodations for PwDs are inherently complicated and expensive. Moreover, ICTs facilitate the establishment of flexible working arrangements, enabling PwDs to work remotely or from accessible locations.

Although ICTs have been lauded for its potential to foster social and economic inclusion by enabling real-time services that facilitate learning, work, entrepreneurship, travel, social interaction, shopping, and community engagement, the full integration of Information Technology (IT) in promoting socio-economic integration of PwDs has yet to be fully achieved owing to the rapidly growing and deepening digital divide. As a result, technology-based applications and initiatives have not been widely utilised as universal tools to facilitate social and economic inclusion among this demographic. At the core of all these initiatives lies the crucial question of access and the urgent need for an inclusive digital design that enables PwDs to avail the opportunities created by the ICTs.

WHY THIS STUDY?

The context of this study, India, among middle- and low-income economies, has been in the midst of a digital transformation, and claims to have made remarkable progress in the last decade in terms of building digital public infrastructure and its adaptability among citizens. In 2015, the Ministry of Electronics and Information Technology (MeitY) launched the Digital India flagship programme, which made technology central to enabling change, with the aim to create diverse avenues for socio-economic empowerment of its citizens through the use of the Internet, ICT tools, digital platforms and digital financial services. While this initiative has been a crucial step towards facilitating seamless integration across ministries, departments and jurisdictions to transform India into a digitally empowered society and knowledge economy, the replication of offline manual systems by digital systems have created barriers to accessing public and private services, especially for the marginalised and underserved sections of the society. While India tops among the G20 countries in having the largest number of users, cheapest smartphones and data plans, and being the highest exporter of IT services, the country also has the largest number of unconnected

people and communities.¹

The persisting digital divide is a reflection of the existing socio-economic inequalities based on gender, caste and class hierarchies, rural-urban divide, religion-based exclusions, regional hierarchies, etc., all of which continue to determine one's standing vis-a-vis the rapidly shifting and growing digital ecosystem. The Digital India programme is deploying emerging technologies to enhance the delivery of digital services to the citizens, it is failing relatively in ensuring the needed infrastructural development, especially among unconnected and underserved communities thus benefiting the privileged, who already own ICTs and have the knowledge to navigate the complexities in the ever-evolving digital landscape of India². One such community that continues to be subjected to digital exclusion among other forms of systemic social and bureaucratic exclusion is the Persons with Disabilities (PwDs) in India.

¹ State of India's Digital Economy (SIDE) Report, 2024, Indian Council for Research on International Economic Relations (ICRIER), Retrieved from:

² India Inequality Report 2022: Digital Divide, OXFAM India, Retrieved from: <https://www.oxfamindia.org/knowledgehub/workingpaper/india-inequality-report-2022-digital-divide>

INTERVENTION DESCRIPTION

Persons with Disabilities (PwDs) in India face substantial marginalisation owing to the apathy of society and the state, which is exacerbated by factors such as low literacy levels, stigma, indifference towards PwDs, and lack of access to public infrastructure and assistive technologies. Although efforts have been underway to build a disabled-friendly and inclusive society, the digital divide has deepened the inequalities, especially among citizens in semi-urban and rural India. The lack of access to internet connectivity and ICTs, as well as the lack of affordability, has created barriers that further marginalised PwDs, making it difficult for them to participate in the digital landscape of India (Chase India et al., 2023). To tackle the same, ICTs have the potential for transformative change through meaningful connectivity (Alliance for Affordable Internet, 2022). It can act as a bridge to bring transition from being seen as dependent beneficiaries to independent citizens, some of them transforming to become providers of digital solutions themselves, addressing both personal and community needs. In this context, this report conducts an impact study to explore if and how digital integration has had implications on the socio-economic empowerment of PwDs,

and address broader societal challenges, positioning them as solution providers rather than solution seekers.

The study aims to evaluate the impact of digital integration on the lives of People with Disabilities (PwDs) in India. The evaluation of digital enablement is grounded in several overarching principles aimed at comprehensively assessing their effectiveness and impact. Firstly, the study seeks to evaluate if and how ICT tools can play the role of an enabler and empower PwDs to navigate the digital world independently. Secondly, it focuses on how the journey of digital empowerment brought socio-economic changes in the lives of PwDs, including improvements in employment status, income levels, and access to entrepreneurial opportunities. The study further examines how the social standing and community involvement of PwDs, including their interactions with family members and local communities,

ICT tools can play the role of an enabler and empower PwDs to navigate the digital world independently

are enhanced by digital integration. Through field-based assessments, this study further examines the role played by localised digital service providers in digitally empowering PwDs with ICT tools, digital infrastructure, digital literacy, and other capacity-building efforts to use the internet meaningfully and avail employment and entrepreneurial opportunities, thereby enhancing their own autonomy and societal standing. Moreover, the ripple effects of digital enablement extend beyond individual PwDs, inspiring fellow PwDs to embark on this journey, influencing how the state, family, social networks, and communities start to perceive them, ultimately furthering a model of inclusivity for PwDs in Indian society. By considering both immediate outcomes and long-term implications, the study aims to provide a holistic assessment of the overall impact of digital integration on the well-being, autonomy, and quality of life of PwDs.

Overall, the study attempts to explore the following questions to shed light on the impact and effects of integrating PwDs into the digital ecosystem, as well as effectiveness and implications on their socio-economic development and community engagement:

1. What is the impact of ICTs on the lives of PwDs in India? Does digital enablement have implications on their personal and socio-economic growth?

2. What are the socio-economic changes experienced by PwDs after navigating the digital landscape? Has digital integration contributed to the social integration of PwDs, including their interactions with family members, local stakeholders, and communities?

3. What has been the role of digital service providers in facilitating the journey of digital empowerment of PwDs? What are the gaps and challenges that need to be addressed to build scalable inclusive policies that enable PwDs in India to access ICTs and meaningful connectivity?

- ICT tools can play the role of an enabler and empower PwDs to navigate the digital world independently.
- The study further examines the role played by localised digital service providers in digitally empowering PwDs with ICT tools, digital infrastructure, digital literacy, and other capacity-building efforts to use the internet meaningfully
- Considering both immediate outcomes and long-term implications, the study aims to provide a holistic assessment of the overall impact of digital integration on the well-being, autonomy, and quality of life of PwDs.

RESEARCH DESIGN

The first part of the two-phased study evaluates the impact and outcomes of digital integration using ICTs across 17 states in India, encompassing 243 PwDs. The second part of the study delves into the journeys of PwDs who avail digital services in a sustained manner, involving 112 PwDs in total. The study employs a comprehensive research approach, integrating quantitative and qualitative data collection methods. Bilingual questionnaires, available in both English and Hindi, were crafted to enable a thorough examination of participants' experiences. These questionnaires incorporated a mix of closed-ended and semi-open-ended questions, facilitating a nuanced analysis through a mixed-methods approach. Additionally, the research utilised structured interviews, the Rapid Impact Assessment Matrix (RIAM) tool, which is a systemic approach using qualitative data that can be expressed in a semi-quantitative way, and Focus Group Discussions (FGDs) to capture diverse perspectives and interactions, ensuring a holistic understanding of the research subject.

Data collection for the study was facilitated by integration of the questionnaires into the Digital Empowerment Foundation's KoBo Collect Survey App, ensuring efficient data collection. The research team, comprising District Coordinators (DCs) who run DEF's Communication Information Resource Centres (CIRCs), underwent thorough training to execute the study effectively. Accessibility measures were implemented for participants with physical disabilities, including alternative interview

formats and assistance for those with mobility challenges. Additionally, informed consent was obtained from all participants, and surveyors received specialised training on disability sensitivity, ensuring ethical conduct throughout the data collection process.

Pilot surveys were conducted to evaluate the questionnaires' relevance and quality, addressing any identified issues. Feedback from the pilot surveys was utilised to revise the questionnaires and enhance technical aspects of the data collection app, aiming to improve its reliability and efficiency. These revisions ensured the survey instrument's effectiveness in gathering accurate and valuable data.

Throughout the study's implementation, a dedicated research team closely monitored the process of data collection to address challenges and uphold data quality and accuracy. Feedback mechanisms were established to facilitate communication between the research and field teams, enabling prompt resolution of any issues that arose during the survey process. Additionally, data in the KoBo Collect App underwent rigorous backchecks to verify accuracy, ensuring the maintenance of high-quality data throughout the study.

- Evaluates the impact and outcomes of digital integration using ICTs across 17 states in India, encompassing 243 PwDs. The second part of the study delves into the journeys of PwDs who avail digital services in a sustained manner, involving 112 PwDs in total.




LITERATURE REVIEW

GLOBAL EFFORTS

WORLD HEALTH ORGANISATION

The **World Health Organisation (WHO)** has been actively involved in meeting the requirements of Persons with Disabilities (PwDs) by advocating for, and facilitating access to assistive technologies (Assistive Technology, 2024) to cater to different disabilities and demographics. Assistive technologies refer to a wide array of products and services designed to support and enhance one's cognitive abilities, communication skills, hearing, mobility, vision, and self-care. These encompass physical products like wheelchairs, glasses, and hearing aids, as well as digital solutions like captioning and speech recognition software. According to WHO, an estimate of 2.5 billion people across the globe needs assistive products, and an estimated 3.5 billion projected by 2050. Aligning with UN Sustainable Development Group's slogan - no one is left behind - WHO recognises the urgent need to bridge the gap in access to these essential tools (Leave No One Behind, n.d.).



Despite the evident benefits of flexibility, accessibility and upward social mobility, there exists a significant unmet need for assistive technologies across the world. The Global Report on Assistive Technology highlights the considerable inequity in access, with only 3% of people in low-income countries having access to necessary products in contrast to 90% in high-income countries. Barriers to access include low literacy, high costs, restricted mobility, lack of diversity of product range, and gaps in policies (World Health Organization & United Nations Children’s Fund, 2022). As a response to these challenges, the World Health Organisation (WHO) has outlined ten priority recommendations, emphasising the importance of improving access across all sectors of development, ensuring the safety and affordability of products, enhancing the capacity of the workforce, involving users and families in the access pathway, raising public awareness, investing in data-driven policies, promoting research and innovation, and strengthening international cooperation. To address the inequalities and the complexities at a global scale, WHO proposed the WHO-GATE 5P framework – policy, products, provisions, personnel, and people – and formulated guidelines that offer technical support to the member states (World Health Organisation, 2018).

Europe is a prominent global leader in terms of Internet connectivity, with an impressive household penetration rate of 85% in 2019, which surpassed the global average of 57% (International Telecommunication Union, 2021). The strong and reliable internet connectivity has enabled substantial progress in digital transformation, particularly in the realm of accessibility to public services. Despite the advanced levels of e-government and digital infrastructure, digital inclusion continues to remain a pressing issue across the European Union (EU). Only slightly more than half of the population uses the Internet to interact with public authorities and access services (Eurostat, 2019). In the last decade, the European institutions have implemented several innovating strategies and digital inclusion programs to ensure equitable access to digital tools and services. An example of such an initiative is the Digital Inclusion Program implemented by the National Family Allowances Fund (CNAF) in France. Although the online service delivery mechanisms are widespread, a considerable section of the French population encountered challenges in fully leveraging digital tools. To bridge this disparity, the CNAF’s initiative centered on identifying and assisting people who lack digital literacy, and needed help with navigating the internet, referring them to appropriate tailored tutorials and training resources (Corbobesse, 2022). This comprehensive approach, guided by ISSA¹ guidelines, emphasised personalised support and accessibility, thereby facilitating greater participation in the digital ecosystem.

The State Social Insurance Agency (SSIA) in **Latvia** has introduced an “e-assistant” feature to facilitate access to e-services for customers lacking digital literacy skills. This program enabled individuals to seek assistance from designated personnel at Service Centres, who would thereafter submit applications, for required services, on their behalf (State Social Insurance Agency, 2022). The SSIA successfully enhanced service

¹ “The ISSA Guidelines offer social security managers access to concise and practical knowledge of international best practice in key areas of social security administration.”

accessibility while reducing administrative burdens by integrating digital and non-digital methods.

Germany's Social Insurance for Agriculture, Forestry, and Horticulture (SVLFG) focused on linguistic and cultural inclusivity in its digital initiatives. Recognizing the diverse backgrounds of seasonal workers, the SVLFG developed a web platform available in nine languages, accompanied by targeted outreach efforts to ensure widespread awareness and engagement (Social Insurance for Agriculture, Forestry, and Horticulture, 2022). This emphasis on clear communication and accessibility underscored the importance of catering to diverse user needs.

Finland's Social Insurance Institution (Kela) adopted an inclusive approach to digitalization, leveraging multi-channel service delivery strategies to accommodate varying levels of digital adoption among clients (Social Insurance Institution, 2021). The institution's commitment to continuous refinement and user-centric design, exemplified by the development of a chatbot with contextual capabilities, facilitated seamless interactions and enhanced accessibility.

Estonia's National Social Insurance Board (ENSIB) addressed digital disparities among distinct client segments, offering tailored solutions to accommodate varying levels of digital adoption and trust (Vaikmaa, 2021). ENSIB ensured equitable access to digital services across demographic groups by prioritising alternative authentication methods and proactive communication strategies.

These initiatives (Leaving No One Behind: Experiences in Digital Inclusion from Europe, 2022) underscore the critical success factors in promoting digital inclusion, including user-centered design, targeted outreach, and multi-channel service delivery. By prioritising inclusivity and accessibility, European institutions have demonstrated how digitalisation can truly benefit all members of society, paving the way for a more equitable and inclusive digital future. As Europe continues to lead in digital innovation, these lessons serve as invaluable guides for fostering meaningful digital inclusion initiatives worldwide.

The **United Nations (UN)** recognizes the challenges faced by persons with disabilities, particularly in humanitarian contexts such as displacement due to conflict, persecution, or climate-induced events. With an estimated 10.6 million displaced persons with disabilities worldwide², the UN acknowledges the critical need to address accessibility barriers, including digital exclusion, to ensure the full inclusion and participation of this vulnerable group in society. While technology has many advantages, the lack of affordability and adequate accessibility features in the digital ecosystem has deepened the digital divide for persons with disabilities.

In April 2020³, a study by the UN Refugee Agency (UNHCR) and GSMA M4H program

² <https://www.unhcr.org/innovation/wp-content/uploads/2021/03/Digital-Access-and-Inclusion-of-People-with-Disabilities.pdf>

³ https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/04/M4H_Annual_Report_Spreads.pdf

revealed the range of barriers in accessing ICTs, faced by refugee PwDs with hearing and visual disabilities. The barriers leading to their social exclusion included communication barriers, limited access to information and services due to lack of affordability, and little or no digital literacy. To tackle the same, UNHCR promoted “meaningful participation and leadership of people with disabilities through their engagement in the development and implementation of an inclusive and universally accessible response.”

The COVID-19 pandemic further underscored the importance of ICTS and internet connectivity for accessing information and assistance. Digital inclusion became crucial for refugees with disabilities to “access vital protection services, participation in humanitarian programming, increasing livelihood opportunities, and facilitates integration.” UNHCR’s Innovation Service launched a Digital Inclusion Program to address specific challenges faced by persons with disabilities in displacement contexts. The program aims to tackle access and affordability roadblocks, ensure accessible information and engagement mechanisms, build digital skills, and enhance livelihood opportunities for persons with disabilities. Priority areas encompass tackling access and affordability roadblocks through partnerships with local service providers and manufacturers to facilitate access to connectivity. Additionally, efforts are directed towards developing accessible information and engagement mechanisms to ensure effective communication and participation among persons with disabilities, their families, and service providers. Furthermore, initiatives aim to enhance livelihood opportunities through online income generation activities and job opportunities in the digital labour market.

The UNCHR Innovation Service⁴ invites proposals from operations aiming to address digital access and inclusion challenges for persons with disabilities in displacement contexts. While evidence around such interventions is limited, operations are encouraged to provide data demonstrating the potential success of their approach. This includes information on community needs, ongoing initiatives with local organisations, and support from third-party entities such as mobile operators and technology companies.

The UN’s initiatives underscore its commitment to promoting digital inclusion for persons with disabilities, particularly in displacement contexts. By addressing barriers to access and affordability, ensuring accessible information and engagement, building digital skills, and enhancing livelihood opportunities, the UN aims to empower persons with disabilities to fully participate in society and realise their rights and potential. Through collaborative efforts and innovative approaches, the UN strives to create a more inclusive and equitable world for all (UNHCR Innovation, n.d.)

4 <https://www.unhcr.org/innovation/digital-inclusion/>

BEST PRACTICES FROM DEVELOPED AND DEVELOPING COUNTRIES

This section delves into the best practices employed by both developed and developing countries to empower PwDs through digital inclusion and vocational training. Highlighting initiatives from different countries across the world, it showcases diverse approaches aimed at fostering inclusivity, independence, and economic participation for PwDs. Each country's efforts reflect a commitment to bridging the digital divide and providing tailored support to enhance the lives and opportunities of PwDs.

In the **United States**, efforts to empower PwDs through digital inclusion and vocational training have been central to fostering greater independence, economic opportunity, and social inclusion. With a



Nawab Khan
Barmer, Rajasthan

commitment to equality and accessibility, initiatives aimed at bridging the digital divide and providing vocational training have not only transformed the lives of PwDs but have also enriched society. Digital inclusion initiatives in the USA have played a pivotal role in ensuring that PwDs have equal access to technology and online resources. Through various programs and partnerships, efforts have been made to provide assistive technologies, accessible websites, and digital literacy training tailored to the needs of PwDs (Reinkensmeyer et al., 2017).

One notable example is the Rehabilitation Engineering Research Center for Wireless Inclusive Technologies (Wireless RERC), funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR). This centre focuses on developing accessible wireless technologies and promoting their adoption among PwDs, thus enabling greater participation in the digital realm. Moreover, federal laws such as the Americans with Disabilities Act (ADA) and the Rehabilitation Act have played a crucial role in promoting digital accessibility (Goldstein & Taylor, 2015). These laws require public entities and businesses to ensure that their digital content and services are accessible to PwDs, thereby fostering greater inclusivity in the digital sphere.

Vocational training programs tailored to the needs of PwDs have been instrumental in enhancing their employability and economic independence. Organisations such as the National Technical Institute for the Deaf (NTID) and the American Foundation for the Blind (AFB) offer vocational training programs specifically designed to equip PwDs with the skills

and knowledge needed to succeed in various industries (Rochester Institute of Technology, n.d.). Internet training programs targeted at PwDs have been instrumental in promoting digital literacy and enhancing access to online resources. Organisations such as the World Institute on Disability (WID) and the National Federation of the Blind (NFB) offer internet training courses and workshops designed to teach PwDs how to navigate the internet safely and effectively (Disnmore, 1966). These programs cover topics such as web browsing, email communication, online banking, and social media usage, thereby empowering PwDs to connect with others, access information, and engage in online activities independently. By equipping them with the necessary skills and knowledge, internet training initiatives enable PwDs to fully participate in the digital age and leverage technology to enhance their lives.

Digital inclusion and vocational training initiatives in the USA play a crucial role in empowering PwDs and promoting their full participation in society. By providing access to technology, skills development opportunities, and support services, society enables PwDs to achieve their goals, pursue meaningful careers, and make valuable contributions to their communities. As efforts to promote inclusion and equality continue, it is essential to recognize the importance of empowering PwDs and ensuring that they have equal opportunities to thrive in the digital age.

Australia, like many developed nations, recognizes the importance of empowering PwDs to actively participate in society. Through comprehensive initiatives focusing on digital inclusion,

vocational training, and internet literacy, the country has made significant strides in enhancing opportunities for PwDs. By leveraging technology and skill-building programs, disabled individuals not only gain greater independence and self-sufficiency but also contribute meaningfully to society in various capacities. The Australian government has implemented various initiatives aimed at bridging the digital divide. These initiatives encompass accessibility standards for digital platforms, funding for assistive technology, and training programs tailored to the needs of PwDs (Olney & Dickinson, 2019). One such initiative is the National Disability Insurance Scheme (NDIS), which provides funding for assistive technology devices and services to eligible participants. Through the NDIS, PwDs can access essential tools such as screen readers, speech recognition software, and alternative input devices, enabling them to navigate digital platforms with greater ease and independence.

Moreover, Australia's commitment to digital accessibility extends to public sector websites and services. The Web Content Accessibility Guidelines (WCAG) outline standards for web accessibility, ensuring that online content is perceivable, operable, and understandable for all users, including those with disabilities (Wan Mohd Isa et al., 2016). By prioritising accessibility in digital design and development, Australia aims to create an inclusive online environment where people of all abilities can participate fully. In addition to digital inclusion, vocational training plays a pivotal role in empowering PwDs to enter the workforce and pursue meaningful careers. Through targeted programs and initiatives, Australia provides vocational

training opportunities that cater to the diverse needs and aspirations of PwDs.

The Disability Employment Services (DES) program, for example, offers job seekers with disabilities personalised support and assistance to find and maintain employment. This includes vocational assessments, skills development, job placement services, and ongoing support in the workplace. By equipping individuals with the necessary skills and support networks, DES enables them to overcome barriers to employment and achieve economic independence (Hayward et al., 2022). Furthermore, Australia's commitment to inclusive education and training extends to initiatives such as the National Disability Coordination Officer (NDCO) program. NDCOs work collaboratively with education and training providers to ensure that students with disabilities have equal access to educational opportunities and vocational training pathways. By fostering partnerships between stakeholders and promoting inclusive practices, the NDCO program facilitates smoother transitions from education to employment for persons with disabilities (McInnis, 2011).

Internet training and digital literacy programs are essential components of Australia's efforts to empower PwDs in the digital age. Recognizing the importance of digital skills for social inclusion and economic participation, the government and various organisations offer training programs tailored to the diverse needs of PwDs. The Australian Digital Health Agency (Biggs et al., 2019), for instance, provides resources and training materials to help PwDs navigate digital health platforms and access online healthcare services. By promoting digital literacy and awareness,

these initiatives empower individuals to take control of their health and well-being, regardless of their physical or cognitive abilities.

Empowering PwDs through digital inclusion and vocational training not only enhances their quality of life but also enables them to make valuable contributions to society. By gaining access to education, employment, and community participation opportunities, PwDs can leverage their skills, talents, and lived experiences to enrich their communities and drive positive social change.

In **Brazil**, efforts to empower PwDs through digital inclusion and vocational training have gained momentum in recent years, marking significant strides towards fostering inclusivity and enhancing opportunities for marginalised communities. Recognizing the importance of equitable access to digital resources and skills development, Brazil has embarked on initiatives aimed at bridging the digital divide and leveraging the unique talents and capabilities of PwDs to contribute meaningfully to society (Costin, 2015).

Digital inclusion serves as a cornerstone in Brazil's efforts to empower PwDs and promote their active participation in the digital economy. The government, in collaboration with Non-governmental Organisations (NGOs) and private sector partners, has implemented various programs to provide access to technology and digital literacy training for PwDs across the country. One notable initiative is the "Digital Inclusion for All" program, which focuses on providing accessible digital infrastructure and training resources tailored to the needs of PwDs.

Through partnerships with community centres, schools, and disability advocacy organisations, this program aims to ensure that PwDs have access to computers, assistive technologies, and comprehensive digital skills training. By equipping PwDs with the necessary digital competencies, Brazil seeks to empower them to navigate online platforms, access educational resources, and pursue employment opportunities in the digital age.

Additionally, the government has implemented policies to promote the development of accessible websites, software, and digital content, ensuring that PwDs can fully engage with online resources and services (De Souza Cruz Ravaglio, 2023). These efforts align with international standards of web accessibility, promoting a more inclusive digital environment where PwDs can participate actively in social, economic, and cultural spheres. In tandem with digital inclusion efforts, Brazil has prioritised vocational training programs designed to enhance the employability and economic independence of PwDs. These initiatives aim to equip individuals with practical skills and knowledge relevant to various industries, enabling them to pursue sustainable livelihoods and contribute to the workforce.

One such program is the "Skills for Inclusion" initiative, which offers vocational training courses specifically tailored to the needs and abilities of PwDs. Through partnerships with vocational schools, training centres, and employers, this program provides hands-on training in fields such as information technology, hospitality, healthcare, and manufacturing. By focusing on skill development and job readiness, Brazil seeks to empower

PwDs to secure gainful employment and achieve financial stability. Moreover, vocational training programs often incorporate elements of entrepreneurship and self-employment, encouraging PwDs to explore alternative pathways to economic empowerment. By fostering a culture of innovation and creativity, Brazil aims to unleash the potential of PwDs as entrepreneurs and business owners, driving economic growth and social inclusion.

Recognizing the transformative power of the Internet in facilitating access to information, education, and employment opportunities, Brazil has launched targeted internet training initiatives for PwDs. These programs aim to build digital literacy skills and promote responsible online behaviour among PwDs, empowering them to harness the full potential of the digital landscape. One such initiative is the “Digital Citizenship” program, which provides interactive workshops and online resources to educate PwDs about internet safety, privacy, and digital rights. Through practical exercises and real-world scenarios, participants learn how to navigate online platforms safely, discern credible information from misinformation, and protect their data online. By promoting digital citizenship and responsible online engagement, Brazil seeks to empower PwDs to fully participate in the digital society while safeguarding their rights and well-being.

The efforts to empower PwDs through digital inclusion and vocational training have yielded tangible benefits for both individuals and society at large. PwDs who have undergone training and gained digital skills are better equipped to pursue educational and employment

opportunities, thereby enhancing their economic independence and quality of life. By fostering a more inclusive workforce, Brazil leverages the diverse talents and perspectives of PwDs to drive innovation, creativity, and productivity across various sectors.

Japan has been at the forefront of empowering PwDs through various initiatives focusing on digital inclusion, vocational training, and internet training. These efforts stem from both government policies and initiatives in collaboration with Non-Governmental Organisations (NGOs). By providing comprehensive support and opportunities, Japan aims to enhance the participation and contribution of PwDs to society. The legislation mandates companies in Japan to ensure a certain percentage of their workforce comprises PwDs (Manullang, 2023). To support the implementation of this law, the government provides subsidies and incentives to businesses that hire PwDs. Moreover, vocational training programs are funded to equip PwDs with the necessary skills to enter the workforce successfully.

Japan prioritises universal design principles, ensuring that products, services, and environments are accessible to everyone, including PwDs. From public transportation and infrastructure to digital platforms and buildings, Japan’s commitment to universal design fosters inclusivity and accessibility for all citizens. The Japanese government invests in digital inclusion initiatives to ensure that PwDs have access to technology and online resources. This includes funding for assistive technologies, accessible websites, and digital literacy programs tailored to the needs of PwDs. Special education and training centers are run across the

country, providing specialised support and vocational training for PwDs. These centers offer a range of programs focusing on skill development, job readiness, and career advancement, empowering PwDs to pursue meaningful employment opportunities. The Japan Information Access Project for Persons with Disabilities (JIAP) is one such initiative that provides internet training and resources for PwDs. JIAP offers online tutorials, workshops, and training sessions on topics such as web accessibility, assistive technology usage, and online safety. Additionally, the government collaborates with NGOs and community organisations to offer internet training programs tailored to the specific needs and preferences of PwDs.

The Nippon Foundation is one of Japan's leading philanthropic organisations dedicated to promoting social inclusion and empowerment for PwDs. Through initiatives such as the Paralympic Support Center and the Zero Project Japan, the foundation advocates for the rights of PwDs, provides access to sports and recreation activities, and supports employment opportunities. Barrier-Free Japan is an advocacy group focused on promoting accessibility and inclusivity for PwDs. Through campaigns, awareness-raising activities, and policy advocacy, the organisation works to eliminate physical, communication, and digital barriers in Japanese society (The Nippon Foundation, 2022).

Through digital inclusion, vocational training, and internet training initiatives, PwDs in Japan are empowered to make significant contributions to society across various sectors. In the workforce, PwDs bring diverse skills, perspectives, and talents, enhancing innovation, productivity,

and organisational performance. They contribute to economic growth and social development by participating in meaningful employment, entrepreneurship, and civic engagement activities.

The **South African** government has recognized the importance of digital inclusion for PwDs and has taken steps to ensure their access to digital technologies and online resources. Through initiatives such as the National Integrated ICT Policy White Paper (Senaji, 2019), the government aims to bridge the digital divide by providing affordable internet access and promoting the development of accessible digital content and services. Additionally, the Universal Service and Access Obligation (USAO) ensures that telecommunication service providers extend their networks to underserved areas, including rural communities where many PwDs reside. By improving connectivity and expanding internet infrastructure, the government enhances PwDs' ability to access online education, employment opportunities, and essential services (Hanass-Hancock, 2017).

South Africa's Department of Social Development, in collaboration with other government agencies and stakeholders, implements vocational training programs tailored to the needs of PwDs. These programs focus on skill development, job readiness, and placement assistance to facilitate PwDs' integration into the workforce. Furthermore, the Employment Equity Act promotes the inclusion of PwDs in the labor market by requiring employers to adopt affirmative action measures and eliminate barriers to employment. This legislation encourages businesses to provide reasonable accommodations and create inclusive workplaces that

accommodate the diverse needs of PwDs (Steenkamp, 2023).

The government, through the Department of Communications and Digital Technologies, supports internet training initiatives aimed at improving digital literacy among PwDs. Community-based training centres, public libraries, and disability organizations offer workshops and courses on basic computer skills, internet navigation, and assistive technology use. NGOs such as Disability Rights South Africa (DRSA) and Disabled People South Africa (DPSA) play a crucial role in advocating for the rights and inclusion of PwDs (Disability Info SA, n.d.). These organizations raise awareness about disability issues, challenge discrimination, and lobby for policy reforms to promote equal opportunities and accessibility.

DRSA and DPSA engage in community outreach programs, legal advocacy, and public education campaigns to empower PwDs and promote their participation in decision-making processes. Through their efforts, they strive to create a more inclusive society that values and respects the rights of all individuals, regardless of their abilities. NGOs collaborate with government agencies and corporate partners to offer skills development programs specifically designed for PwDs. For example, organizations like the Association for the Physically Disabled (APD) and the South African Disability

Alliance (SADA) run vocational training centres and workshops that cater to the unique needs and abilities of PwDs (SADA, n.d.). These initiatives not only enhance PwDs' employability but also promote their economic independence and social inclusion.

NGOs actively promote digital accessibility and assistive technology adoption among PwDs to ensure their full participation in the digital society. They collaborate with software developers, website designers, and policymakers to advocate for the development of accessible digital content and technologies. Initiatives such as the South African National Council for the Blind (SANCB, n.d.) Accessibility Program provide training and resources to enhance the accessibility of websites, mobile applications, and electronic documents. By advocating for inclusive design practices and raising awareness about digital accessibility standards, NGOs contribute to creating a more inclusive online environment for PwDs.

PwDs in South Africa make valuable contributions to society across various sectors, including education, healthcare, arts, and advocacy. Through their participation in the workforce, PwDs contribute to economic growth and diversity, bringing unique skills, perspectives, and talents to their respective fields.

PERSONS WITH DISABILITIES (PWDS) IN INDIA

According to data from the Census of 2011¹ and the 76th round of the National Sample Survey (NSS), the rate of disability in India stood at 2.2%. Over the course of a decade, the population of PwDs in India experienced a slight increase, rising from 21.9 million in 2001 to 26.8 million in 2011. However, recent secondary data analysis of the NFHS-5 surveys (2019–21) suggests a higher prevalence of disability, with an estimated rate of 4.52% across the country (Pattnaik et al., 2023).

According to Census 2011, among the disabled population in India, it comprises 1.5 crore males and 1.18 crore females, with males constituting 56% and females 44%. This contrasts with the general population, where males represent 51% and females 49%. The majority of disabled individuals, around 69%, reside in rural areas, totalling 1.86 crore, while 0.81 crore live in urban regions. Census data from 2011

¹ <http://www.ccdisabilities.nic.in/resources/disability-india>



Bandana kumari
West Champaran, Bihar

also indicates that 8.3% of households, comprising 207.8 lakh households, have disabled members, with 71% of these households located in rural regions. Within the disabled population, literacy rates vary significantly. Overall, 45% are illiterate,

while 13% have secondary education, and 5% are graduates or above. Notably, among male disabled individuals, 38% are illiterate, compared to 55% of females. Rural areas exhibit lower literacy rates among disabled individuals, with 49% being literate, compared to 67% in urban areas. Among non-working disabled individuals, totalling 1.7 crore, among which, females are 54% and 46% are males. Dependency on family support is common among disabled non-workers, with 50% relying on their families for support. Additionally, a significant portion of male non-workers, around 33%, are students, while 22% of females fall into the same category.

Due to the various socio-economic, political, and cultural obstacles faced by PwDs in India, the Rights of Persons with Disabilities (RPD) Act, enacted in December 2016, aims to operationalise the rights and responsibilities outlined in the United Nations Convention on the Rights of Persons with Disabilities, which India ratified nearly a decade earlier. This Act introduces several significant features that are expected to greatly impact the inclusion of Indians with disabilities. It acknowledges the critical importance of accessibility for inclusion, highlighting it as a cross-sectoral issue to be addressed by various stakeholders across different government departments, ministries, and agencies.

Throughout the Act's document, the terms "access" or "accessibility" are mentioned 48 times, reflecting its importance across various sectors such as judicial, political, cultural, economic, educational, housing, institutional, employment, health, infrastructural reforms, and access to art. Expanding the number of recognised

conditions to 19 from the 7 disabilities acknowledged under the 1995 legislation, the Act also empowers the Central Government to designate additional conditions as disabilities. A notable provision of the Act is the requirement for mandatory adherence to accessibility standards. It emphasises the significance of reasonable accommodation and universal design in facilitating equitable access and establishing an accessible framework for India's future. Unlike the previous Act, which allowed governments to make facilities accessible within economic constraints, the new Act extends this requirement to the private sector, private service providers, and private establishments, defining public services and buildings broadly to encompass those used by the public, regardless of ownership.

Another critical aspect is the Act's recognition that accessibility encompasses both environmental and information technology accessibility (ICT accessibility). It defines various barriers, communication modes, reasonable accommodation, and universal design to ensure comprehensive coverage. Furthermore, the Act mandates the formulation of standards for different areas, including physical environment and transportation, and requires measures for provision of accessible facilities and content. It also emphasises capacity building and training initiatives for various stakeholders. The Act establishes Central and State Advisory Boards, a Chief Commissioner for persons with disabilities, and special courts for the speedy trial of offences. It specifies punishments for contraventions and holds individuals liable for offences committed by companies. Overall, the Act underscores

the critical role of accessibility, both digital and environmental, in ensuring that persons with disabilities can exercise their rights and freedoms on par with others. Achieving the envisioned level of accessibility requires collaborative efforts from various stakeholders (Narasimhan, 2017).

As mentioned earlier, the 2016 Disability Act places a strong emphasis on accessibility, extending beyond physical environments to encompass digital inclusion, the significant impact of digital technologies on everyday life, particularly for PwDs. However, the public discourse has largely neglected this aspect. The Act mandates that all forms of media must be accessible, electronic goods designed universally, and television programs provided with sign language interpretation or subtitles. However, the implementation of previous policies aimed at enhancing electronic accessibility has been lacking, with many government websites and popular applications failing to meet basic accessibility standards. This is alarming given the increasing digitisation of services worldwide. India's rapid internet growth and the push towards a digital economy must consider the needs of PwDs. With the number of disabilities recognized under the Act expanding from seven to twenty-one, digital inclusion becomes even more crucial. Access to information and communication technologies is not only a human right but also essential for ensuring equality in the digital age. The Rights of Persons with Disabilities Act represents a significant step towards achieving this goal (Sharma, 2017).

In a country like India, where almost half of the population lacks proper internet access, the digital divide poses an even

greater challenge, particularly for Persons with Disabilities (PWD). This shift towards digital technology brings forth many issues beyond internet access, further exacerbating the barriers faced by PwDs. Among these challenges, the inadequate internet infrastructure stands out prominently. Even today, approximately 70 percent of the population has poor or no connectivity to digital services, with rural areas bearing the brunt of this disparity. This is particularly concerning given that close to 70% of PwDs reside in rural regions, as highlighted by the 'Disabled Persons in India-A Statistical Profile 2016' report. For the approximately 1 crore PwD population aged between 10 and 29, education and skill development are vital. Yet, the grim reality is that without proper internet access, the potential for skill development and employability among this significant demographic remains severely limited. Moreover, the accessibility to assistive technology poses another significant hurdle. Screen readers, magnification devices, and augmentative and alternative communication (AAC) devices are essential tools for PwD to access digital information. However, their availability remains low, particularly in developing countries like India, mainly due to their high cost. Without access to such assistive technology, a visually impaired individual, for instance, cannot effectively consume most of their digital content. Thus, the lack of affordable assistive technology compounds the challenges faced by PwD in accessing digital information.

Furthermore, even if PwDs manage to overcome the barriers of internet access and acquire assistive technology, they encounter yet another obstacle: disability-friendly content. Many educational and skill

development resources fail to consider the needs of people with disabilities. For example, the absence of sign language interpretation renders educational videos inaccessible to those with hearing impairments. It is imperative to transform digital platforms, such as PM eVIDYA, into disability-friendly environments by ensuring accessibility features for all users. Hence, bridging the digital divide for Persons with Disabilities goes beyond addressing internet infrastructure challenges. It requires a comprehensive approach that encompasses ensuring access to affordable assistive technology and making digital content inclusive and accessible. Only by tackling these interconnected issues can we truly empower PwDs to participate fully in the digital age and unlock their potential for education, skill development, and employment.

In addition to the Right of Persons with Disabilities Act of 2016, India has showcased its commitment to accessibility both domestically and internationally, by complying with national laws and international agreements. India's international commitments regarding accessibility are shaped by significant agreements such as the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) of 2006, the Incheon Strategy, the Beijing Declaration, the Sendai Framework, and the Sustainable Development Goals (SDGs). These commitments encompass accessibility holistically and extend beyond just ICT accessibility.

India ratified the UNCRPD on March 30,

2007, ensuring that the responsibility for implementing the rights of Persons with Disabilities (PwDs) is shared among state, private, and civil society entities. The Convention mandates state parties to implement its provisions, align country laws with its principles, and submit country reports to enhance accountability. India adopted the Incheon Strategy in 2012, aiming to realise inclusive development goals for persons with disabilities in the Asia-Pacific region. ICT accessibility is emphasised in goal 3, which emphasises the need to improve access to the physical environment, public transportation, knowledge, information, and communication. Adopted in March 2015, the Sendai Framework underscores the importance of involving persons with disabilities in disaster risk reduction and response activities. India has subsequently developed guidelines for disaster risk reduction and management that consider the needs of persons with disabilities.

The United Nations has identified 17 Sustainable Development Goals (SDGs) to achieve a more sustainable future by 2030. Disability is addressed across various SDGs, particularly in areas related to education, economic growth, employment, reducing inequality, inclusive cities, and data collection and monitoring. The SDGs stress the importance of ensuring that persons with disabilities are included in development efforts, leaving no one behind. These international commitments reflect India's commitment to fostering inclusivity and accessibility for persons with disabilities on both national and global scales (Chase India et al., 2023).

CURRENT STATUS

Over the years, India has demonstrated a steadfast commitment to enhancing accessibility and inclusivity for persons with disabilities (PwDs) through a myriad of governance initiatives. From establishing national databases to promoting research on disability-related technology, the Indian government has been proactive in addressing the diverse needs of PwDs. Noteworthy projects such as the Unique Disability Identification (UDID) Project and advancements in

ICT accessibility guidelines reflect a concerted effort to ensure equitable access to essential services and opportunities. In this context, this section explores key governance initiatives undertaken by India to empower and integrate persons with disabilities into mainstream society, fostering a more inclusive and accessible environment for all (Chase India et al., 2023; Kumbhar, 2022).

CONSTITUTIONAL RIGHTS OF DISABLED PERSONS

The constitutional framework of India recognizes and upholds the rights of disabled persons through specific articles:

Article 41: Ensures protection of rights to work, education, and social and economic development for all citizens, including disabled persons. States are mandated to establish adequate provisions to safeguard these rights.

Article 243-G: Emphasises the social welfare of disabled persons, ensuring their inclusion and welfare alongside other citizens of the nation.

Article 243-W: Aims at protecting the interests of weaker sections of society, encompassing the intellectual disabled population. This provision underscores the importance of ensuring the well-being and rights of all individuals, including those with intellectual disabilities, within the broader framework of social welfare and protection.

LEGAL PROTECTION FOR PWDS

Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995: This act aims to ensure equal opportunities in education, employment, and rehabilitation for disabled persons. It endeavors to eliminate discrimination and provide proper social security to PwDs.

Rehabilitation Council of India Act, 1992: The purpose of this act is to facilitate research, training, and special education to develop human resources catering to the needs of the disabled population. It aims to empower PwDs through education and specialised training.

National Trust Act, 1999: This act aims to empower disabled persons by providing them with vocational training and financial support to promote self-reliance. It endeavors to facilitate the inclusion and independence of PwDs in society.

Mental Health Act 2017: This act seeks to provide proper treatment and care for mentally ill persons, including those in rural and remote areas under Primary Health Centers (PHCs). It aims to ensure accessible mental health services and support for all individuals, regardless of their location.

Draft National Policy for Persons with Disabilities (2022): This proposed policy by the Department of Empowerment of Persons with Disabilities (DEPwD) updates the 2006 policy to address emerging causes of disabilities and reaffirm the government's commitment to empowerment and inclusion. It outlines strategies for intervention in disability prevention, education, healthcare, social welfare, sports, and culture.

The National Policy on Universal Electronic Accessibility (2013): aims to eliminate discrimination against PwDs by ensuring equal access to electronics and Information and Communication Technologies (ICTs). It advocates for universal accessibility, provides implementation guidelines, and emphasises awareness, capacity building, research, and procurement guidelines to meet accessibility needs.

WELFARE SCHEMES FOR PERSONS WITH DISABILITIES (PWDS)

Deen Dayal Disabled Rehabilitation Scheme (DDRS): Aimed at fostering an inclusive environment to ensure equal opportunity, equity, social justice, and employment for persons with disabilities.

Assistance to Disabled Persons for Purchase/Fitting of Aids/Appliances (ADIP): Designed to comprehensively rehabilitate disabled individuals, particularly those facing social and economic challenges, by providing them with necessary appliances to enhance their economic well-being.

Establishment of Disability Rehabilitation Centres: Schemes focused on capacity-building for disabled individuals through awareness campaigns, training, and guidance by professional experts to facilitate their comprehensive rehabilitation.

National Fellowship Programme: Intended to expand educational opportunities for students with disabilities, supporting their pursuit of higher education degrees such as M. Phil and Ph.D. in recognized universities.

Pre-Matric and Post-Matric Scholarships for Students with Disabilities: Providing financial assistance to disabled students for their education at pre-matric (Class IX and X) and post-matric levels (Class XI, XII, and up to Graduate Degree/Diploma levels).

National Overseas Scholarship for Students with Disabilities: Offering financial support for disabled students to pursue Master's and Ph.D. degrees globally.

Incentives to Private Sector Employees for Employing Persons with Disabilities (2008-2009): Aims to promote the employment of disabled individuals within the private sector.

Scheme for Awareness Generation and Publicity (2014): Geared towards sensitizing people, particularly in rural and remote areas, about the causes of disability and early prevention measures.

National Awards for the Empowerment of Persons with Disabilities, 2014: Recognizing individuals, institutions, districts, etc., for their significant contributions to the development and empowerment of disabled individuals.

Trust Fund for Empowerment of Persons with Disabilities: Established to implement various provisions of the Persons with Disabilities (Equal Opportunity, Protection of Rights and Full Participation) Act, 1995.

ACCESSIBILITY INITIATIVES

Accessible India Campaign (Sugamya Bharat Abhiyan): Launched by the Department of Empowerment of Persons with Disabilities (DEPwD) in December 2015, this nationwide campaign aims to build an accessible and inclusive environment for Persons with Disabilities (PwDs). It focuses on enhancing physical infrastructure, transportation, and Information and Communication Technology (ICT) accessibility. Highlighting the crucial role of ICT in daily decision-making, the campaign targets to increase the accessibility of documents, websites, sign language interpreters, and audio-visual media. Specific targets include conducting accessibility audits for 50% of government websites and ensuring that at least 50% of public documents meet accessibility standards by June 2022.

NITI Aayog on Assistive Devices Industry: NITI Aayog convened discussions on leveraging emerging technologies in assistive devices. Stakeholders explored challenges, opportunities, and the necessity for policy interventions such as capacity building and incentivization to encourage private sector investment in the industry. This initiative facilitated collaboration among diverse stakeholders and provided a platform for future advancements in assistive technology.

GOVERNANCE TOWARDS DISABILITY

Unique Disability Identification (UDID) Project: Initiated by the Department of Empowerment of Persons with Disabilities, this project aims to establish a national database of Persons with Disabilities (PwDs) and issue unique identity cards to them. The application software, hosted on the NIC cloud since May 2016, facilitates online issuance of disability certificates. The database enhances transparency, efficiency, and ease of government benefit delivery by capturing personal, identity, disability, education, employment, and income details.

Research on Disability-Related Technology, Products, and Issues: Launched by the DEPwD in January 2015 and aligned with the Rights of Persons with Disabilities (RPwD) Act, 2016, this scheme focuses on research and development in disability-related areas for evidence-based policy decisions and rehabilitation.

ICT ACCESSIBILITY GUIDELINES

Guidelines for Indian Government Websites (GIGW): Released by the National Informatics Centre (NIC) in three versions, GIGW aims to enhance accessibility of government websites. GIGW 1.0 focused on Web Content Accessibility Guidelines (WCAG) 1.0, while GIGW 2.0 improved upon it with WCAG 2.0 standards. GIGW 3.0 incorporates advanced features for improved user experience and mobile accessibility.

Bureau of Indian Standards 17802: Released in two parts, these standards specify accessibility requirements for ICT products and services. Part 1 (December 2021) covers a range of products like mobile phones and software applications, while Part 2 (April 2022) outlines testing procedures and evaluation methodologies.

Knowledge & Resource Centre for Accessibility in ICT (KAI): Funded by MeitY, this project aims to develop procurement guidelines for accessible hardware and software, conducting accessibility testing for various products.

While the initiatives outlined above exist, their effectiveness and impact remain uncertain. It is unclear whether these programs are operating efficiently and producing the desired outcomes. Furthermore, it is uncertain if there are robust monitoring and evaluation mechanisms in place to assess their performance accurately. Additionally, there is a lack of comprehensive data available to gauge the return on investment made through these policies. Therefore, there is a need for improved monitoring and evaluation frameworks to better understand the efficacy of these initiatives and their contribution to the intended goals.

For instance, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), designed to prioritise employment opportunities for PwDs residing in rural India, requires a substantial

allocation of two lakh crore rupees to fully restore its operational capacity. However, funding for this vital scheme has been significantly reduced in recent years, with severe consequences felt this year, affecting approximately 18 million disabled villagers who are now deprived of MGNREGA employment opportunities.

The mandatory implementation of the National Mobile Monitoring System app by the central government on January 1, 2023, for overseeing MGNREGA employment has additionally posed significant challenges to the livelihoods of numerous disadvantaged rural workers, especially those with disabilities. Issues such as inadequate internet connectivity, unreliable electricity supply, frequent internet shutdowns, and limited digital literacy have hindered many workers from registering their attendance for workdays through the app. Moreover, the app fails

to accommodate the special provisions intended for PwDs under the MGNREGA scheme.

Furthermore, the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA), launched in 2017 to bridge the digital divide and promote digital literacy in rural areas, including among marginalised groups such as Scheduled Castes (SC), Scheduled Tribes (ST), Below Poverty Line (BPL) individuals, women, PwDs, and minorities, has faced discontinuation of government funding as of 2023.

Chase India (2023) also conducted a technical assessment of government websites and apps. This study revealed deficiencies in meeting accessibility standards, impacting user experiences. While 89% of users accessed government portals, accessibility varied across platforms. High-traffic sites are IRCTC, Income Tax, MyGov, Aarogya Setu, DigiLocker and Co-Win. Although the state is the primary agency to provide critical services, a smaller number of users were seen visiting the state portals/apps. This may have been partly due to lack of accessibility and partly due to lack of awareness among users about these apps and websites.

User feedback receiving low ratings for accessibility. 26 users rated the Umang App/Website as 'not accessible'. The most accessible rated websites indicated through the survey are MyGov, IRCTC, Income Tax and Co-Win. Many other applications and websites were given low ratings for meeting users' accessibility needs, suggesting a lack of extensive user testing in their development.

Key user suggestions for improvement include mandatory compliance with accessibility guidelines, replacing CAPTCHA with OTP, designated email-ID to report inaccessible content, and enhanced engagement of users with disabilities in the development process. Compulsory private sector compliance, increased accountability, and regular website audits were also recommended. Addressing these recommendations is essential to bridge accessibility gaps and ensure digital inclusivity for all individuals, regardless of ability.

In response to these difficulties and recommendations, the civil society and Tech-for-Good have played a crucial role in tackle the impending questions of the impending digital divide and its impact on PwDs in India.

THE ROLE OF ICTS IN THE LIVES OF PWDS: INSIGHTS FROM THE GROUND

In the first phase of the survey, a total of 243 PwDs were surveyed to evaluate the impact of the digital integration in enhancing their social and economic standing in society. The findings provide insights into their demographic characteristics, geographical distribution, types of physical disabilities, educational attainment, participation in pension schemes. The respondents in the study, aged 18 to 55 years, consisted of 189 males and 54 females, reflecting a gender distribution of 77.8% males and 22.22% females. Geographically, the survey covered a total of 17 states across India, including West Bengal, Bihar, Jharkhand, Uttar Pradesh, Odisha, Assam, Rajasthan, Delhi, Madhya Pradesh, Telangana, Haryana, Maharashtra, Chhattisgarh, Jammu and Kashmir, Andhra Pradesh, Uttarakhand, and Karnataka. Mobility issues were predominant among the respondents, with 84.36% reporting such disabilities, followed by 13.58% with visual disabilities and 2.06% with hearing disabilities. In terms of educational attainment, 41.15% had obtained a Bachelor's degree, while 38.27% had completed high school or obtained lower qualifications, and 16.46% had attended

college. Additionally, a significant portion reported diverse educational journeys, including post-graduate programs and specialized degrees. Regarding government pension schemes, 85.6% of respondents reported receiving pension benefits, while 14.4% stated that they did not receive any government pension.

To evaluate the impact of digital integration in terms of their socio-economic growth, the status of educational attainment, employment condition, monthly income, sector of employment, and access to necessary digital infrastructure for the PwDs prior to little or no access to the ICT tools was surveyed among the respondents. It was observed that a considerable portion of respondents, 54.32%, were not enrolled in any



Almost 85 percent of surveyed PwDs found to be mobility challenged.



Only 41 percent of PwDs could manage to be graduates; while 38 percent were high school or lower qualification.



54 percent of the surveyed PwDs found to have not been enrolled in any educational program, blaming lack of awareness, knowledge and access.



Almost 86 percent of the PwDs surveyed and talked found to be availing government pension benefits, clearly indicating that their extreme poor economic condition to be dependent on as meagre amount as government pension meant for disables.

educational program, indicating limited access to educational opportunities. In terms of monthly income, 11.11% of respondents had no stable monthly income, while 36.63% earned less than 1000 per month. Only a small fraction, 10.29%, earned more than 5000 per month. Employment opportunities were scarce, with only 11.93% of respondents reporting employment. The primary sector, particularly agriculture, dominated employment opportunities, followed by sectors such as education, healthcare, and entertainment. Access to necessary infrastructure and support was also limited, with 81.07% of respondents lacking access to basic facilities like PwD vehicles, wheelchairs, and family support. Moreover, a majority, 73.25%, did not have access to a personal vehicle for transportation, and 82.3% reported insufficient access to health funds for necessary treatment. These findings underscore the challenges faced by PwDs prior to accessing the digital infrastructure.

The study further evaluated the status of their access to ICT tools/digital devices, proficiency in operating devices, internet access, using online modes of payment and social media. While a majority, 96.71%, had access to smartphones, they primarily utilized digital devices for entertainment and online services rather than education or business purposes. Concerning online payment, 78.6% used online modes, and 62.55% were aware of and used internet banking services. However, 46.5% had no access to any other digital devices, and 30.86% faced challenges, including physical disabilities (43.21%) and difficulties in learning to use digital devices (43.21%). Social media was widely used for entertainment (79.01%)

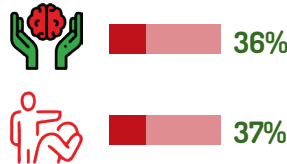


About 96 percent of the PwDs agreed that they have had access to smartphones but they used the access for either entertainment or online services but not for education or for doing business.



78 percent of the PwDs found to have had experience of online transactions or knowledge of internet banking. This clearly indicates that the disabilities of the PwDs like inability to travel and transport, essentially needed the support of the Internet’s mobility functionality through the smartphones.

and education (76.54%), but awareness of social welfare schemes through digital media was low, with only 37.45% aware of them. Additionally, respondents encountered various social barriers and challenges, including physical disabilities (43.21%), mental challenges (37.86%), and social barriers (36.63%).



Unfortunately only 37 percent of the PwDs were found to have any knowledge of welfare schemes provided by the governments.

36 percent of the PwDs explicitly said they suffered mental health challenges; while another 37 percent complained of social stigma

DIGITAL ADOPTION AND MEANINGFUL CONNECTIVITY

The process of digital integration among Persons with Disabilities (PwDs) reveals the transformative journey of PwD respondents, empowering them with necessary digital access and skillset thus enabling them to use internet meaningfully and avail employment opportunities or a career in entrepreneurship. Initially, respondents encountered various challenges in adapting to digital technology, including hesitancy to learn, lack of understanding, limited access to necessary devices and internet connectivity, and competing daily priorities. A substantial 77.37% expressed hesitancy toward learning and adopting new technology, while 64.2% faced challenges in understanding it. Furthermore, 47.33% lacked access to computers or laptops necessary for mastering digital skills, and 38.68% lacked internet connectivity. Additionally, 22.63% cited competing daily challenges as a barrier to engaging with new technology. These findings underscore the multifaceted obstacles faced by individuals with disabilities in accessing and utilizing digital tools for empowerment and inclusion. However, driven by diverse motivations such as interactions with fellow PwDs who share a similar journey, social work aspirations, intrinsic drive for self-improvement, and the pursuit of financial independence, they embarked on the journey of digital empowerment.

The digital adoption proved instrumental in laying a strong foundation for respondents to acquire essential skills and knowledge. Respondents reported significant gains in digital literacy, entrepreneurial skills, operation of ICT tools, and awareness of social welfare schemes. The findings show the need for equipping PwDs with essential digital infrastructure, including printers, laptops, computers, smartphones, and tablets, to enable respondents to acquire and hone their digital skills.



77 percent expressed hesitancy in learning new tech tools, said they are fearful of new technologies



64 percent faced serious challenges in understanding digital skill or digital functional skills



More than 47 percent PwDs found to have no access to any of the digital devices like computers or laptops in order to learn any possible digital courses

developed the ability to search for relevant information on the internet and leverage it to their advantage. Notably, a considerable number of respondents (62.55% and 53.91%, respectively) embraced online transactions and shopping, demonstrating increased comfort and confidence in conducting financial transactions digitally. Moreover, respondents demonstrated proficiency in utilizing Microsoft Office applications and developed an understanding of digital marketing and Artificial Intelligence (AI). Additionally, a significant majority (78.6%) were able to access social welfare schemes and citizen entitlements.



Close to 37 percent of the PwDs found to have no means to access the Internet as they live in data dark conditions

The study shows that the digital adoption and increased use of ICT tools have not only played a crucial role in the lives of respondents but also among their peers and the community they reside in. This transformation at an individual level has in turn contributed to the broader goal of fostering digital inclusion and accessibility for wider community.

Furthermore, the findings overwhelmingly demonstrated the effectiveness of digital integration, with 96.3% of respondents finding them helpful in acquiring new digital skills. A significant majority (88.48%) gained proficiency in operating various digital devices, including computers, printers, laptops, and tablets, enhancing their technological literacy. Additionally, a substantial portion (76.13%) acquired proficiency in utilizing online meeting platforms such as Zoom and Google Meet, facilitating virtual communication and collaboration. Furthermore, over two-thirds of respondents (66.26%)



37 percent of the PwDs said acquiring digital skill was extremely helpful, and they adopted the skills to become digital entrepreneurs



88 percent of the PwDs who went through digital skills said the functional and contextual understanding of the digital tools and access to internet helped them to operate all kind of digital tools for a meaningful ways including earning through them



76 percent of the PwDs who went through rigorous digital skilling, adopted digital proficiency to the level of using communication tools like Zoom, Google Meet, and other digital collaboration systems including WhatsApp, especially through audio-visual functionalities of the tools



66 percent of the PwDs, after digital adoption, claimed they could search the Internet meticulously so they could search anything that was relevant to the needs of the customers who came to ask them or needed.



More than 54 percent of the PwDs excelled in online transactions, banking, and offering the online services to their village level customers



78 percent of the PwDs went through digital adoption and skilling, learnt how to access and know about the welfare schemes, specially those directly relevant to PwDs so that they could offer them as a service and means to avail them for their fellow villagers.



81 percent of the PwDs expressed that they did not have any of the basic facilities that a person with disabilities needed, such as vehicle or wheelchair, or a family member always available as a support system



While 11 percent of the PwDs claimed to have sources of earning 5000 per month; 12 percents said they have regular employment



82 percent of the PwDs complained that they lack either free access to health facilities or resources to avail health support, considering that most of the PwDs always need essential health services.



Almost 37 percent of the PwDs who were supposed to be breadwinner of the family claimed to have been earning less than Rs. 1000



11 percent of the PwDs had no regular or stable monthly income

SOLUTION SEEKERS TO SOLUTION PROVIDERS: THE JOURNEY OF DIGITAL EMPOWERMENT

The journey of digital empowerment from being solution seekers to solution providers has significantly transformed the lives of the PwDs. By acquiring digital skills and engaging in entrepreneurship, PwDs have experienced various positive impacts. These include increased financial independence, enhanced self-esteem, confidence, expanded social networks, and improved access to livelihood opportunities. Additionally, their newfound abilities and roles as digital entrepreneurs have helped challenge societal perceptions and stereotypes about disability, fostering a more inclusive environment.



90.95% of PwDs started using social media as a source of education.



83.54% of PwDs started using social media handles to gather information.

The digital empowerment further enabled the PwDs to play a crucial role in advancing digital inclusion and community development. The study shows that the respondents, with their knowledge of using ICT tools, are further assisting their family and community members in accessing essential digital services such as helping with filling government document applications, facilitating online transactions, and sharing information about educational and employment opportunities. With adequate access to ICT tools and meaningful connectivity, PwDs are serving as agents of change, leveraging

technology to create more accessible and inclusive societies.

The digital integration has brought several changes in the lives of PwDs, profoundly impacting their lives in numerous ways. Firstly, it vastly improved accessibility and connectivity, with the majority of PwDs now having access to mobile phones, smartphones, and the internet. The data showed us that 97.94% had access to a smartphone. This increased connectivity has facilitated greater communication, access to information, and participation in various online activities. While 12.76% of PwDs still do not have access to digital devices, a significant majority of 87.24% of PwDs had access to either a tablet, a laptop or a computer. The findings further show that 93% of the PwDs reported that they were comfortable using a laptop or a computer during the survey. However, the remaining 7% faced challenges in using a laptop or computer and felt uncomfortable in operating digital devices.

Additionally, digital integration has empowered PwDs by providing opportunities for skill development and entrepreneurship. PwDs acquired new skills, including digital literacy,

entrepreneurship, and proficiency in using digital tools and platforms. For instance, the findings reveal a huge shift in the purpose of social media use for PwDs. Before, social media was used for entertainment purposes by the majority of these respondents. However, after the digital integration, it shifted to education and 90.95% of PwDs started using social media as a source of education. Moreover, 83.54% of PwDs started using social media handles to gather information. Additionally, 46.09% and 45.27% of PwDs started using social media for online marketing and online business, respectively. One of the PwDs used YouTube to start a YouTube channel named to share her motivational story. As a result, PwDs have been able to explore new avenues for education, employment, and economic independence, contributing to their overall empowerment and socio-economic inclusion. Furthermore, social media engagement has emerged as a powerful tool for PwDs, enabling them to connect with others, share their experiences, and advocate for their rights and interests.

PERSONAL GROWTH AND FAMILY ENGAGEMENT

The digital integration of PwDs has not only impacted their individual lives but has also brought about positive changes within their families. Family support plays a crucial role in the journey of digital empowerment, with 41.15% of respondents acknowledging moral support from their families. Moreover, the socio-economic growth of PwDs following the digital adoption has had significant implications for their family's financial situation, with 66.67% reporting a positive impact on financial stability. This improvement in income has, in turn, contributed to enhanced overall well-being, as reported by 71.19% of respondents. Furthermore, families have expressed pride and support for the PwDs' efforts in assisting others in accessing government schemes and services, with 83.95% of respondents indicating familial support for their social work initiatives. The influence of ICT tools in the lives of PwDs extends beyond their immediate families, inspiring 93.83% of respondents to encourage other family members and close friends to pursue similar paths of digital empowerment. Additionally, the community at large has benefited from the digital enablement of PwDs, with 87.65% of respondents



41 percent say their families good will is back and moral support have increased



67 percent say their family's financial situation is improved



71 percent say significant improvement of their "overall wellbeing"



94 percent of the PwDs are spreading positive vibes to influence all kind of PwDs to adopt digital empowerment as a means to social empowerment

noting improved access to government schemes and services for various segments, including women, adolescent girls, children, men, and transgender individuals. Overall, the digital integration of PwDs has not only uplifted their own lives but has also brought about positive ripple effects within their families and communities.

COMMUNITY ENGAGEMENT

The positioning of PwDs within their communities has undergone significant transformation following digital adoption. The survey findings reveal a notable increase in social activity among digitally equipped PwDs, with 87.24% reporting heightened engagement compared to pre-digital adoption. This surge in social interaction has also extended to community events, with 84.36% of respondents actively participating in various local gatherings. Moreover, digital adoption has bolstered the self-confidence of PwDs, evidenced by 98.35% of respondents noting an improvement in their self-assurance. Importantly, there has been a perceptible shift in how PwDs are perceived by others, with all respondents acknowledging a positive change in people's attitudes towards them, reflecting increased respect and appreciation for their contributions to their communities. Additionally, 80% of respondents believe they have made a positive impact on their community, while



87 percent of the PwDs express that there has been heightened social activities, and social engagements



84 percent report that they now participate in all kind of social gatherings freely and with proactive invitations and acceptance



80 percent felt they have been able to create huge social impact

86% feel they have inspired other PwDs to embark on similar journeys of digital empowerment. Economically, digital enablement has translated into tangible benefits, with 93% of respondents reporting an improvement in their income. Furthermore, 60% of respondents have capitalized on new economic opportunities facilitated by their digital skills, highlighting the transformative impact of digital integration on their financial stability and independence. Overall, digital empowerment has not only enhanced the social standing and economic prospects of PwDs but has also empowered them to actively participate and contribute meaningfully to their communities.

CONCLUSION

The issue of disabilities affects millions of individuals worldwide, placing them at significant disadvantages across various aspects of life. In India, this challenge is particularly acute, with a vast number of people grappling with disabilities. The scale of this problem is immense, encompassing diverse disabilities ranging from physical impairments to cognitive and sensory limitations. Historically, the approach to addressing the plight of persons with disabilities has been conventional, focusing primarily on providing assistance and support. However, the most glaring observation from our study is that PwDs endure profound challenges stemming from stigma, societal indifference, and a pervasive lack of confidence. These obstacles, compounded by the diverse nature of disabilities, exacerbate their marginalisation and hinder their opportunities for socio-economic advancement.

Amidst these challenges, one notable initiative has emerged as a beacon of hope: the use of digital tools to empower PwDs. Mobile phones, in particular, have emerged as powerful enablers, offering audio-visual capabilities that cater to diverse needs. Leveraging these digital tools, an innovative initiative has identified PwDs

with drive, willingness, and entrepreneurial spirit, assembling them into a cohesive cohort. Through comprehensive training, skills development, and a transformative mindset shift—from being seekers of assistance to providers of value - this initiative has yielded remarkable results. PwDs, equipped with digital skills and newfound confidence, have emerged as proactive contributors to society, defying stereotypes, and reshaping perceptions of disability.

In conclusion, while the challenges facing PwDs remain formidable, the transformative potential of digital empowerment offers a promising avenue for change. By harnessing the power of digital tools and fostering a culture of inclusivity and empowerment, we can create a more equitable society where every individual, regardless of disability, has the opportunity to thrive and contribute meaningfully.

To effectively address the multifaceted challenges faced by Persons with Disabilities (PwDs) in leveraging ICT tools, collaboration among the government, private sector, and civil society is paramount. Here's a revised version integrating their roles:

1. **Enhanced Access to Digital Infrastructure:**

The government can spearhead initiatives aimed at enhancing access to essential digital infrastructure by providing subsidies or grants for digital devices such as smartphones, laptops, and tablets. Collaborating with the private sector, it can facilitate the production and distribution of accessible ICT devices at affordable prices. Civil society organizations can play a crucial role in advocating for the rights of PwDs and ensuring that government policies and programs prioritize their digital inclusion needs.

2. **Tailored Digital Literacy Programs:**

The government, in partnership with the private sector and civil society, should develop tailored digital literacy programs catering to the diverse educational backgrounds and needs of PwDs. These programs should encompass basic and advanced digital skills relevant to employment, entrepreneurship, and social integration. Civil society organizations can assist in the design and delivery of inclusive training modules, while the private sector can contribute expertise and resources to enhance program effectiveness.

3. **Accessibility Standards and Guidelines:**

Governments should enforce regulations mandating accessibility standards in ICT products and services, with active involvement from the private sector and civil society in their development and implementation. Private sector companies developing digital solutions should prioritize accessibility in their design and development processes,

guided by established standards and guidelines. Civil society organizations can advocate for the adoption and enforcement of accessibility regulations, as well as provide training and support to ensure compliance.

4. **Financial Support for Skill Development:**

The government, private sector, and civil society should collaborate to provide financial support mechanisms for PwDs to access skill development programs related to digital technology. This can include scholarships, grants, and sponsorship opportunities for courses on digital marketing, e-commerce, programming, and other relevant areas. By pooling resources and expertise, stakeholders can maximize the impact of skill development initiatives and empower PwDs to succeed in the digital economy.

5. **Promotion of Entrepreneurship:**

Governments can incentivize entrepreneurship among PwDs through tax incentives, grants, and preferential procurement policies, with support from the private sector and civil society in providing mentorship, training, and access to funding. Civil society organizations can facilitate networking opportunities and promote the visibility of PwD-owned businesses, while the private sector can collaborate on joint initiatives to create inclusive entrepreneurial ecosystems. By fostering an enabling environment for PwD entrepreneurship, stakeholders can drive economic empowerment and social inclusion.

6. **Awareness Campaigns and Sensitization Programs:**

government, private sector, and civil society should collaborate on awareness campaigns and sensitization programs to combat stigma and misconceptions surrounding disability. These initiatives should highlight the capabilities and contributions of PwDs in the digital age, leveraging diverse communication channels and platforms. Civil society organizations can lead grassroots advocacy efforts, while the government and private sector can provide funding and logistical support. By working together, stakeholders can promote a culture of inclusivity and respect for diversity.

7. Collaborative Partnerships:

Collaboration among the government, private sector, and civil society is essential to address the complex challenges faced by PwDs in accessing and leveraging ICT tools. By pooling resources, expertise, and networks, stakeholders can develop holistic solutions that address the diverse needs of PwDs and promote their meaningful participation in the digital society. Public-private-civil

society partnerships can leverage complementary strengths and perspectives to maximize impact and sustainability.

8. Continuous Monitoring and Evaluation:

Governments, private sector entities, and civil society organizations should collaborate on monitoring and evaluating the impact of ICT initiatives on the lives of PwDs. This involves collecting data on access, usage, and outcomes of digital interventions, as well as soliciting feedback from PwDs and relevant stakeholders. By conducting regular assessments and adapting interventions based on feedback, stakeholders can ensure that their efforts are effective, responsive, and inclusive.

By integrating the roles of government, private sector, and civil society, stakeholders can leverage their respective strengths and resources to create a more inclusive and equitable digital society for PwDs. This collaborative approach is essential for addressing the complex challenges faced by PwDs and unlocking their full potential in the digital age.

THE ROLE OF DIGITAL SERVICE PROVIDERS IN ENHANCING SOCIO-ECONOMIC INCLUSION OF PERSONS WITH DISABILITIES (PWDS)

The second phase of the study delves deeper into understanding the impact of digital integration on the lives of PwDs, with a specific focus on their interaction with local, accessible digital service providers¹. Through the analysis of 112 surveys, the objective is to examine the extent to which PwDs have benefited from these service providers and the role they play in enhancing the socio-economic inclusion of PwDs within their communities and bridging the digital divide. By exploring the experiences and perspectives of PwDs in accessing and utilizing local digital services, the study aims to bring forth an analysis that can inform policies and interventions aimed at facilitating greater digital empowerment and accessibility for PwDs. Through this phase of the study, we seek to contribute to the ongoing discourse on digital inclusion and disability rights,

¹ The digital service providers are either Common Service Centers (CSCs) [<https://csc.gov.in/>] that are access points created by the Government of India for delivery of Government-to-Citizen (G2C) e-Services, or the Communication Information Resource Centers (CIRCs) [<https://circindia.org/>] run by Digital Empowerment Foundation in more than 2000 locations across the country.

ultimately striving towards a more inclusive and equitable society for all.

The respondents of the study hail from seven different states in India, namely Rajasthan, Uttar Pradesh, Jharkhand, West Bengal, Madhya Pradesh, Maharashtra, and Bihar. Out of the total 112 respondents, the majority, constituting 75%, were males, while 24.78% were females. The age range of the respondents varied from 19 to 89 years, indicating a wide representation across different age groups within the PwD community. In terms of educational attainment, the study revealed diverse levels of education among the respondents. Half of the respondents, accounting for 50%, had completed high school education or had attained lower qualifications. Furthermore, 39.29% of the PwD respondents had achieved a bachelor's degree, indicating a significant portion with higher educational qualifications. However, the number of respondents who completed their college education was notably low, comprising only 8.93% of the total. A minority of respondents, representing 1.79%, indicated that they had completed a diploma, showcasing the variety of educational journeys pursued by PwDs.

NEED FOR ADEQUATE DIGITAL INFRASTRUCTURE AND CAPACITY BUILDING

Out of 112 PwDs surveyed, a significant portion of respondents, totaling 36.61%, reported visiting digital service providers on a weekly basis, indicating regular utilization of their services. Additionally, 27.68% of the population visits these centers monthly, while 18.75% visit daily, suggesting a consistent reliance on the support provided by the digital service providers. However, a notable percentage, comprising 16.96% of respondents, indicated that they rarely avail themselves of these services.

A variety of motivations drove the respondents to approach digital service providers. Nearly half of the respondents, accounting for 48.21%, sought information on government schemes and policies, indicating a significant interest in accessing essential services and support. Additionally, 35.71% of participants were motivated by the desire to learn digital skills, highlighting a proactive approach towards self-improvement and empowerment. Furthermore, 15.18% of respondents expressed an interest in exploring entrepreneurial opportunities, underscoring a desire for economic independence and advancement.

The respondents who visited extensively utilised various online services provided by digital service providers to meet their diverse needs. These services included essential tasks such as photocopying and printing documents, facilitating the completion of application forms for government schemes and services, and providing information and training on digital skills, safety, and security, as well as the use of ICT tools and different government schemes. The

comprehensive range of services offered by digital service providers underscores their role in addressing the multifaceted needs of PwDs, ranging from administrative support to capacity building and empowerment.

When asked about potential areas for improvement in the design of digital service providers to better meet the needs of persons with disabilities, several suggestions were put forth by respondents. The majority of participants, comprising 54.46%, emphasised the importance of increased accessibility features. This indicates a critical need for digital platforms and services to be more inclusive and accommodating of various disabilities, ensuring that PwDs can navigate and utilise these platforms effectively. Additionally, 33.04% of respondents suggested the development of more tailored digital training materials. This recommendation highlights the importance of providing training content that is specifically designed to address the unique learning styles, needs, and capabilities of PwDs, thereby enhancing their ability to acquire digital skills effectively.

Furthermore, 12.5% of participants proposed additional staff training on disability awareness. This suggestion underscores the importance of equipping staff members at digital service centers with the knowledge and understanding necessary to effectively interact with and support PwD customers. By enhancing staff awareness and sensitivity towards disabilities, digital service providers can create a more inclusive and supportive environment for PwDs, thereby improving the overall quality of service delivery.

DIGITAL ACCESSIBILITY, OUTREACH & EMPOWERMENT

The findings among those respondents who avail the services of digital service providers indicate that it has played a significant role in digitally empowering PwDs and enabling their socio-economic empowerment. A notable majority, comprising 88.39% of the respondents, reported availing social welfare schemes through digital service providers, highlighting the crucial role they play in facilitating access to essential government schemes and policies. However, a smaller proportion of respondents, 11.61%, indicated that such services were not available, suggesting a need for broader accessibility and outreach efforts to cater to the diverse and particular needs for PwD population.

Regarding the availability of ICT tools, the findings reveal a wide array of tools made accessible to PwDs by the digital service providers. A vast majority, 89.29% of respondents had access to computers, followed by printers (84.82%), smartphones (79.46%), tablets (36.61%), and laptops (34.82%). This comprehensive availability of digital devices underscores

the commitment of service providers to cater to the diverse needs and preferences of PwDs, enabling them to access digital services effectively.

While a majority of respondents did not identify specific areas of training particularly beneficial for PwDs, 35.71% of them highlighted the importance of tailored capacity building to address the unique challenges faced by this demographic. These areas of capacity building include basic digital literacy, utilization of ICT tools such as computers and printers, understanding of Artificial Intelligence, and knowledge about government procedures related to disability pension plans and employment opportunities. This highlights the importance of customised training programs that cater to the specific needs and capabilities of PwDs, empowering them to leverage digital tools for financial independence and socio-economic inclusion.

Furthermore, initiatives implemented by digital service providers have been instrumental in catering to the needs of the PwD population. A significant

A vast majority, 89.29% of respondents had access to computers, followed by printers (84.82%), smartphones (79.46%), tablets (36.61%), and laptops (34.82%).

proportion of respondents, 71.68%, noted initiatives such as education about government schemes, awareness creation about employment and entrepreneurship opportunities, facilitation of joining such opportunities, establishment of WhatsApp groups for local PwDs to communicate and support each other, assistance in acquiring tricycles through government schemes, and general accessibility assistance for mobility-constrained individuals. The majority of respondents, constituting 98.21%, reported experiencing a positive change in their ability to access and understand government schemes after availing support from digital service providers. These initiatives reflect a proactive approach by service providers in addressing the unique challenges faced by PwDs and promoting their overall empowerment and inclusion within society.

The feedback from respondents with regard to the measure of impact of digital service providers on their community has been mixed. While a substantial portion, accounting for 54.46% of respondents, strongly believe that digital service providers have positively impacted the PwD community through their work, a notable percentage holds a contrary opinion. Specifically, 20.54% of respondents strongly disagree with the notion that digital service providers have had a positive impact, indicating a level of dissatisfaction or scepticism about the effectiveness of these providers in addressing the needs of the PwD community. However, the study clearly indicated that the digital enablement of PwDs has had a positive influence on fellow PwDs in their communities. While 41.07% of respondents reported that their digital empowerment significantly inspired other PwDs to seek similar employment opportunities, 31.25% of them stated that they were considerably inspired, further highlighting the positive influence of digital enablement. 13.39% of respondents mentioned that their digital empowerment moderately inspired other PwDs to pursue employment opportunities. Overall

CONCLUSION

The second phase of the study brings forth the crucial role played by digital service providers in advancing socio-economic inclusion for PwDs. Through the analysis of the data from 112 surveys, valuable insights were gained into how PwDs interact with local digital service providers. The demographic diversity of respondents across seven Indian states underscores the varied needs within the PwD communities. While males dominated the respondents, the age range and educational backgrounds varied widely, emphasizing the necessity for tailored support. A significant proportion of respondents availed digital services regularly, driven by motivations such as accessing government schemes and acquiring digital skills. The range of online services utilised by respondents reflects the comprehensive support offered by digital service providers. Suggestions for improvement include enhancing accessibility features, providing tailored training, and increasing staff awareness of disability issues. Despite some mixed feedback on the overall impact, the majority reported positive changes in their ability to access government schemes, with their digital empowerment inspiring other PwDs to pursue similar opportunities. In conclusion, digital service providers play a vital role in bridging the digital divide and building inclusivity, but ongoing efforts are needed to ensure equitable access and support for all PwDs.

RECOMMENDATIONS

THE WAY FORWARD

Appeal for the Census of 2021

The Census exercise is crucial to make a realistic assessment of the socio-economic data of PwDs. The demographic, social and economic factors, as well as the different categories of disabilities that need tailored solutions, will determine the changes in policy making and the societal approach to disability.

Enhancing ICT Accessibility

Efforts by the Government, private sector and Tech-for-Good must be directed towards furthering the access to ICT tools by increasing its affordability, and making it a disabled user-friendly experience with the support of accessibility technologies.

Digital Design for Meaningful Connectivity

Through collaborative efforts of the government, private sector, and civil society, tailored digital literacy and skill development training programs and capacity building initiatives should be implemented so PwDs can leverage their ICT accessibility for their socio-economic empowerment. The curriculums and programs should particularly cater to the diverse needs of the PwD population along with adequate infrastructural support.

Strengthen the Local Digital Ecosystem

1. The Digital Service Providers should be made accessible to PwDs, making it flexible for them to access services,

trainings, and support from a remote location with stable internet connectivity.

2. The collaborative efforts of the Government, private sector, civil society and the Tech-for-Good must ensure that the digital service providers are equipped with assistive technologies and accessibility features to cater to the diverse needs of different categories of disabilities.

3. Efforts should be directed towards strengthening the digital ecosystem especially in underserved and unconnected regions.

4. Sensitisation programs should be integrated in trainings to create awareness about disability among the larger community, and fight the stigma and indifference that is prevalent towards PwDs.

Assessment, Feedback and Evaluation

The impact of ICTs and the digital integration on the lives of PwDs must be assessed from time to time, and the feedback from PwDs as well as other relevant stakeholders should inform the legislations and policies that are governing their lives. There is need for an effective, responsive, and inclusive redressal mechanism to address the grievances of the PwDs.

To read the Policy Brief, please access the following link: https://www.defindia.org/wp-content/uploads/2024/07/Policy-Brief_16-July-2024.pdf

REFERENCES

1. Article 1 - Purpose I Division for Inclusive Social Development (DISD). (n.d.). Retrieved from <https://social.desa.un.org/issues/disability/crpd/article-1-purpose>
2. Assistive technology. (2024). World Health Organisation. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/assistive-technology>
3. Biggs, J.S., Willcocks, A., Burger, M. and Makeham, M.A. (2019). Digital health benefits evaluation frameworks: building the evidence to support Australia's National Digital Health Strategy. *Med. J. Aust.*, 210: S9-S11. Retrieved from <https://doi.org/10.5694/mja2.50034>
4. Chase India, NAB Delhi, & Sumatak Technologies. (2023). Inclusive Digital India: Comprehensive Review of ICT Accessibility in Platforms . Retrieved from <https://www.chase-india.com/media/vgydoxbm/ict-accessibility-report-accessible-version.pdf>
5. Chase India, NAB Delhi and Sumatak Technologies. (2023). Inclusive Digital India: Comprehensive Review of ICT Accessibility in Platforms. Retrieved from <https://www.chase-india.com/media/vgydoxbm/ict-accessibility-report-accessible-version.pdf>
6. Convention on the Rights of Persons with Disabilities (CRPD). (2006). New York: United Nations Department of Economic and Social Affairs. Retrieved from <https://www.un.org/development/desa/disabilities/convention-on-the-Rights-of-persons-with-disabilities.html>
7. Corbobbesse, O. (2022). Family branch digital inclusion programme (Presentation at the 16th International Conference on Information and Communication Technology in Social Security (ICT 2022), Tallinn, 4–6 May). Geneva, International Social Security Association.
8. Costin, C. (2015). Insights from Brazil for skills development in rapidly transforming African countries. Retrieved from <https://blogs.worldbank.org/en/education/insights-brazil-skills-development-rapidly-transforming-african-countries>

9. De Souza Cruz Ravaglio, A. et al. (2023). The Idiosyncrasies of Digital Divide in Brazil: A Literature Review on Initiatives of Digital Inclusion. In: Tomczyk, Ł., Guillén-Gámez, F.D., Ruiz-Palmero, J., Habibi, A. (eds) *From Digital Divide to Digital Inclusion. Lecture Notes in Educational Technology*. Springer, Singapore. https://doi.org/10.1007/978-981-99-7645-4_4
10. Digital Inclusion Programme | UNHCR Innovation. (n.d.). Retrieved from <https://www.unhcr.org/innovation/digital-inclusion/>
11. Digital trends in Europe 2021: ICT trends and developments in Europe, 2017-2020. (2021). International Telecommunication Union. Retrieved from https://www.itu.int/dms_pub/itu-d/opb/ind/D-IND-DIG_TRENDS_EUR.01-2021-PDF-E.pdf
12. Dinsmore, A. (1966). Services for Deaf-Blind Adults and Children: The Role of the American Foundation for the Blind. *Journal of Visual Impairment & Blindness*, 60(4), 123-128. Retrieved from <https://doi.org/10.1177/0145482X6606000409>
13. Disability in India | Office of Chief Commissioner for Persons with Disabilities. (n.d.). Retrieved from <http://www.ccdisabilities.nic.in/resources/disability-india>
14. Disability Info SA. (n.d.). Mobility impairments organizations. Retrieved from <http://disabilityinfosa.co.za/mobility-impairments/organizations/>
15. Disability. (2023). World Health Organisation. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/disability-and-health>
16. Global Disability and Diversity Fact Sheet for CEOs. (2022). The Nippon Foundation. Retrieved from <https://www.nippon-foundation.or.jp/en/news/articles/2022/20221031-81042.html>
17. Hanass-Hancock, J., & McKenzie, T. (2017). People with disabilities and income-related social protection measures in South Africa: Where is the gap? *AJOD. Advance online publication*. Retrieved from <https://doi.org/10.4102/ajod.v6i0.300>
18. Hayward, S., Flower, R., Denney, K., Bury, S., Richdale, A., Dissanayake, C., & Hedley, D. (2022). The efficacy of Disability Employment Service (DES) providers working with autistic clients. *Journal of Autism and Developmental Disorders*, 53. Retrieved from <https://doi.org/10.1007/s10803-022-05762-1>
19. IKEA collaborates with STEPS to set up an “Inclusive Office” creating a world that welcomes all diversity. (2023). Steps. Retrieved from <https://stepscommunity.com/ikea-collaborates-steps-for-inclusive-office/>
20. India Inequality Report 2022: Digital Divide. (2022). OXFAM India. Retrieved from <https://www.oxfamindia.org/knowledgehub/workingpaper/india-inequality-report-2022-digital-divide>
21. Kumbhar, P. K. S. (2022). Inclusive Development of Persons with Disabilities in India: A Situational Analysis. *Shanlax International Journal of Arts, Science and Humanities*, 9(4), 36-41. Retrieved from <https://doi.org/10.34293/sijash.v9i4.4665>

22. Lazar, J., Goldstein, D., & Taylor, A. (2015). International disability law. In J. Lazar, D. Goldstein, & A. Taylor (Eds.). *Ensuring Digital Accessibility Through Process and Policy*, 101-120. Morgan Kaufmann. Retrieved from <https://doi.org/10.1016/B978-0-12-800646-7.00006-X>
23. Leave No One Behind. (n.d.). United Nations Sustainable Development Group. Retrieved from <https://unsdg.un.org/2030-agenda/universal-values/leave-no-one-behind>
24. Leaving no one behind: Experiences in digital inclusion from Europe. (2022). International Social Security Association (ISSA). Retrieved from <https://www.issa.int/analysis/leaving-no-one-behind-experiences-digital-inclusion-europe>
25. Manullang, A. J., Sudrajat, J. A., & Stephen, E. (2023). On the Road towards Grand Inclusivity: The Development of Japan's Treatment towards Its Disability Community's Security. *Jurnal Transformasi Global*, 10(1). Universitas Brawijaya. Retrieved from https://www.jica.go.jp/publication/pamph/issues/ku57pq00002izs5g-att/activities_on_disability_and_development_en.pdf
26. McInnis, C. (2011). National Disability Coordination Officer Program Evaluation. Retrieved from https://www.researchgate.net/publication/310124013_National_Disability_Coordination_Officer_Program_Evaluation
27. Meaningful Connectivity — unlocking the full power of internet access - Alliance for Affordable Internet. (2022, September 15). Alliance for Affordable Internet. Retrieved from <https://a4ai.org/meaningful-connectivity/>
28. Mobile for Development - Mobile for Humanitarian Innovation. (2024). Mobile for Development. Retrieved from <https://www.gsma.com/mobilefordevelopment/mobile-for-humanitarian-innovation/>
29. National Archives. (n.d.). South Africa - Strategic Review of Policing - Country Report. Retrieved from <https://assets.publishing.service.gov.uk/media/57a08b46ed915d622c000be3/South-Africa-SRP-Country-Report.pdf>
30. Olkin, R. (2002). Could you hold the door for me? Including disability in diversity. *Cultural Diversity and Ethnic Minority Psychology*, 8, No. 130-137.
31. Olney, S., & Dickinson, H. (2019). Australia's New National Disability Insurance Scheme: Implications for Policy and Practice. *Policy Design and Practice*, 2(3), 275-290. Retrieved from <https://doi.org/10.1080/25741292.2019.1586083>
32. Pattnaik, S., Murmu, J., Agrawal, R., Rehman, T., Kanungo, S., & Pati, S. (2023). Prevalence, pattern and determinants of disabilities in India: Insights from NFHS-5 (2019-21). *Frontiers in Public Health*, 11. Retrieved from <https://doi.org/10.3389/fpubh.2023.1036499>

33. Reinkensmeyer, D. J., Blackstone, S., Bodine, C., Brabyn, J., Brienza, D., Caves, K., DeRuyter, F., Durfee, E., Fatone, S., Fernie, G., Gard, S., Karg, P., Kuiken, T. A., Harris, G. F., Jones, M., Li, Y., Maisel, J., McCue, M., Meade, M. A., ... Corfman, T. (2017). How a diverse research ecosystem has generated new rehabilitation technologies: Review of NIDILRR's Rehabilitation Engineering Research Centers. *Journal of Neuroengineering and Rehabilitation*, 14(1), Article 109. <https://doi.org/10.1186/s12984-017-0321-3>
34. Saju, N., & Saju, N. (2024). The Next Census is Nowhere in Sight and the Delay is Costing More and More. *The Quint*. Retrieved from <https://www.thequint.com/news/india/census-2021-delay-population-policy#read-more>
35. Senaji, T. A. (2019). Regional Economic Dialogue on Telecommunications/ICT for Africa // Dialogue économique régional de l'UIT sur les Télécommunications/TIC pour l'Afrique (RED-AFR19). Lomé, Republic of Togo, September 9-11, 2019. ITU Consultant. Retrieved from https://www.itu.int/en/ITU-D/Regulatory-Market/Documents/Events2019/Togo/Ses5_Thomas%20Senaji.pdf
36. Sharma, D. (2017). Why Does Mainstream Indian Discourse On Digital Inclusion Leave Out Disability? *The Wire*. Retrieved from <https://thewire.in/rights/mainstream-indian-discourse-digital-inclusion-leave-disability>
37. Singh, R. (2022). Inclusive Education in ASEAN: Fostering Belonging for Students with Disabilities. ERIA Research Project Reports. No. 2022-03. Retrieved from <https://www.eria.org/uploads/media/Research-Project-Report/RPR-2022-03/Inclusive-Education-in-ASEAN-Fostering-Belonging-for-Students-with-Disabilities.pdf>
38. Social Insurance for Agriculture, Forestry and Horticulture. (2022). An occupational safety and health web app for seasonal workers (Good practices in social security). Geneva, International Social Security Association.
39. Social Insurance Institution. (2022). Kela chatbot: Bilingual help for online customers, 24/7 (Good practices in social security). Geneva, International Social Security Association.
40. South African Disability Alliance. (n.d.). Retrieved from <https://sada.org.za/>
41. South African National Council for the Blind. (n.d.). Retrieved from <https://sancb.org.za/?kovsieapp=true>
42. State of India's Digital Economy (SIDE) Report. (2024). Indian Council for Research on International Economic Relations (ICRIER), Retrieved from: https://icrier.org/pdf/State_of_India_Digital_Economy_Report_2024.pdf
43. State Social Insurance Agency. (2022). E-assistant: Assistant in receiving e-services (Good practices in social security). Geneva, International Social Security Association.

44. Statistical requirements compendium. (2019). Eurostat. Retrieved from <https://ec.europa.eu/eurostat/documents/3859598/10276257/KS-GQ-19-012-EN-N.pdf/f7c1b8dd-7246-01a3-dcec-328d2f38acd9?t=1575018024000>
45. Steenkamp, I. (2023). Employment Equity Act (EEA) in South Africa: An Analytical Review from 1998–2022. Parallel Session 4.4: Labour Rights: Assessing Effectiveness and Performance. Retrieved from https://www.researchgate.net/publication/372518779_Employment_Equity_Act_EEA_in_South_Africa_An_Analytical_Review_from_1998-2022_Parallel_Session_44_Labour_Rights_Assessing_Effectiveness_and_Performance/citation/download
46. Sugawara, M., Nagano, H., Beppu, T., & Inagaki, T. (2021). Practical Challenges of Creating and Managing the “Barrier-Free Basic Plan” for Better Accessibility in Cities by Local Governments in Japan. In *Studies in Health Technology and Informatics* (Vol. 282). <https://doi.org/10.3233/SHTI210408>
47. Technology and Disability: Trends and Opportunities in the Digital Economy in ASEAN. (n.d.). Retrieved from <https://www.eria.org/publications/technology-and-disability-trends-and-opportunities-in-the-digital-economy-in-asean/>
48. The ISSA Guidelines. (n.d.). International Social Security Association (ISSA). Retrieved from <https://www.issa.int/excellence/guidelines>
49. Vaikmaa, K. (2021). How we do it in Estonia (ISSA Webinar: Fostering digital inclusion in social security services: Challenges and good practice solution). Geneva, International Social Security Association.
50. Vocational Rehabilitation (VR). (n.d.). Rochester Institute of Technology, National Technical Institute for the Deaf. Retrieved from <https://www.rit.edu/ntid/tuition/vr>
51. Vocational Rehabilitation | National Technical Institute for the Deaf | RIT. (n.d.). Retrieved from <https://www.rit.edu/ntid/tuition/vr>
52. Wan Mohd Isa, Suhaimi, Ariffn, Ishak, & Mohd Ralim. (2016). Accessibility evaluation using Web Content Accessibility Guidelines (WCAG) 2.0. <https://ieeexplore.ieee.org/abstract/document/7857924/authors#authors>
53. World Health Assembly. Resolution on improving access to assistive technology. (2018). World Health Organisation. Retrieved from <https://www.who.int/publications/i/item/WHO-MHP-HPS-ATM-2022.01>
54. World Health Organization & United Nations Children’s Fund. (2022). Global report on Assistive Technology. Retrieved from <https://www.who.int/publications/i/item/9789240049451>

This comprehensive report is an impact study to assess and evaluate how digital enablement of Persons with Disabilities (PwDs) can strengthen the digital ecosystem, wherein the PwDs are not merely seen as solution seekers, but as solution providers. Shedding light on national and international efforts, as well as getting empirical insights from India, this report seeks to examine how the use of ICT tools has had an impact on the lives of PwDs in terms of their socio-economic development as well as their positioning in the society. From reviewing existing literature to examining the situation in India, the report navigates through challenges and opportunities in ensuring digital inclusion for PwDs. Through field-based assessment of ground impacts, learnings, and examples, it explores the role of ICTs in enabling the socio-economic empowerment of PwDs through digital literacy, skill development, and inclusive technologies.

The multidimensional impact is assessed through the study of the assessment and its impact of ICT tools on the lives of the PwDs. The survey, grounded in field-based assessment, evaluates social, economic, personal growth, and digital factors, employing a mixed-methods approach with in-depth interviews, Rapid Impact Assessment (RIAM) tools, and both quantitative and qualitative data collection methods. The study of the impact and the outputs through a measure called the Social Return on Investment (SROI), brings out the various ways in which PwDs have been digitally and socially empowered, the key aspect of which is also to understand their family's moral, social and community standing in society.

Guided by these insights, the report presents recommendations for advancing digital enablement for PwDs, emphasizing the need for collaborative efforts among governments, civil society, and private sectors. By embracing inclusivity in the digital landscape, we pave the way for a future where everyone can thrive, regardless of ability.

DOI No: [10.5281/zenodo.12632061](https://doi.org/10.5281/zenodo.12632061)

