

## Ensuring Digital Access: Impediments and Potentials for PWDs in Rural E-Governance.

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### ABSTRACT

India's digital governance transformation undoubtedly changed the delivery of public service, but according to the Telecom Regulatory Authority of India, only about 34% of rural population had internet access. This study examines how people with disabilities (PWDs) in rural Odisha-specifically in Balangir district, deal with the improving digital technology of government services. The ground study reveals that there are ongoing barriers that prevent PWDs from accessing the most basic digital services, despite the fact that programs like Digital India and state e-governance initiatives guarantee inclusive development. The complex interplay between inadequate infrastructure, inaccessible interface design, low levels of digital literacy and deeply rooted social attitudes that collectively prevent PWDs from engaging with technology in remote and rural areas of Balangir district. Substantial inclusion is made possible by expanding opportunities brought about by mobile technology reach, community-based support systems and enlightened policy environments. Based on empirical study and one to one interaction about individual perspectives, the research contributes to policy discussions by demonstrating how inclusive e-governance can serve as an encouragement for more extensive social transformation, ensuring that India's digital transformation truly leaves no one behind...

**Key Words:** Digital inclusion, e-governance, persons with disabilities, rural development, accessibility, assistive technology.

### INTRODUCTION

India's incredible digital transformation journey has completely changed the way citizens participate with their government by putting services that previously required long waiting times and numerous visits right at people's fingertips. Launched with a lot of excitement in 2015, the Digital India initiative aimed to close the digital divide and establish an inclusive society where everyone has equal access to technology (Ministry of Electronics and Information Technology, 2015). The reality behind this digital revolution is more complicated, especially for PWDs in rural areas who still face major obstacles in obtaining these transformative digital services.

Recent data shows that, despite relatively high internet usage in urban areas, rural connectivity still lags far behind, making the digital divide in rural India a persistent problem. When taking into consideration PWDs in rural areas, who experience what scholars refer to as a "double disadvantage" the confluence of geographic isolation and exclusion related to disability, this disparity becomes even more noticeable (Sharma & Kumar, 2023). The promise of digital governance frequently seems more like a far-off dream than an approachable reality for the 2.68 crore PWDs listed in India's 2011 Census, approximately 74.81% of PWDs population live in rural areas.

With its largely agrarian economy and rich cultural legacy, rural Odisha offers a fascinating example for comprehending these issues of digital inclusion. With programs like the Mo Sarkar program showcasing creative methods of citizen engagement, the state has made impressive progress in e-governance (Government of Odisha, 2019). However, not every societal segment has benefited equally from these digital innovations. This paradox is best illustrated by the Balangir district in western Odisha, where new digital platforms coexist with established governance structures, posing both opportunities and challenges for PWDs looking to access government services.

Ten years ago, it would have been impossible to imagine the new avenues for digital inclusion that have been made possible by the explosive growth of mobile technology in rural areas (Telecom Regulatory Authority of India, 2024). As more people realise how important digital literacy and accessibility are community-based organizations, self-help groups and local leaders are starting

grassroots movements to support government programs. Notwithstanding its serious effects, the COVID-19 pandemic has also speed up the introduction of digital services in rural regions, proving that quick technological adoption is possible when needed (Kumar et al., 2021). The potential for technology to act as a powerful equalizer is what makes the situation so fascinating. Digital platforms can remove the physical barriers that have historically prevented PWDs from accessing government services, mobile apps can offer step-by-step audio guidance for complicated procedures and screen readers can provide voice to written content for those who are blind or visually impaired (Accessibility Research Foundation, 2023). How can we make sure that digital solutions are created with inclusion at their core rather than as an afterthought? That is the question, not whether technology can solve these issues.

The study's findings are based on in-depth fieldwork conducted in the Balangir district, where discussions with PWDs, their families, government representatives and community leaders have exposed the harsh realities of digital exclusion as well as the heartwarming tales of people who have come up with creative solutions to these problems. We learn a lot from their experiences about what genuinely inclusive e-governance could entail and how to rethink policy frameworks to effectively serve all citizens.

This introduction lays the groundwork for a thorough analysis of the barriers that PWDs currently face when trying to access digital resources in rural e-governance, while also examining the enormous opportunities presented by cutting-edge technologies and progressive policies for building a more inclusive digital future. Our emphasis on the Balangir district offers a realistic viewpoint on these more general issues, showing that, despite its difficulties, the road to digital inclusion is neither unattainable nor impracticable; rather, it just requires consistent dedication, creative problem-solving approach and above all the sincere involvement of PWDs in forming the landscape of digital governance.

## LITERATURE REVIEW: A THEMATIC WAY

### Digital Governance and Inclusive Development in India

In India, digital governance has been a revolutionary endeavor to fill gaps in service delivery, especially as part of the Digital India Mission (MeitY, 2021). It aims to empower citizens with internet-enabled access to public services and provide “faceless, paperless and cashless” governance. Even though the mission calls for universal access, there is still a noticeable digital divide between rural and urban areas. As of 2023, only roughly 34% of Indians living in rural areas had internet access, while over 70% of those living in urban areas did so, according to the Telecom Regulatory Authority of India (TRAI) (TRAI, 2023) Moreover, a number of studies have argued that inclusion is not guaranteed by simply having infrastructure access to digital services; meaningful participation is shaped by digital literacy, affordability and usability (Banerjee & Sharma, 2020) and this divide is exacerbated when combined with caste, gender and disability (Jain, 2018).

### Disability and Digital Exclusion

People with disabilities (PwDs) frequently experience caused disadvantages in the digital sphere. According to World Bank (2020) estimates, PwDs are almost twice as likely as their peers without disabilities to be prohibited access to technology. In India, the Rights of Persons with Disabilities Act (2016) requires that information and communication technologies be accessible but enforcement of this law is inequitable (Singh & Mahapatra, 2019). In rural India, there are few accessible technologies, such as voice navigation, screen readers and simplified user interfaces, and public digital platforms frequently fall short of accessibility requirements (NCPEDP, 2022). Because PwDs are expected to use systems that were not designed with their needs in mind, the absence of accessible design in Common Service Centers (CSCs), e-Government portals and mobile applications further alienates them (Rao, 2021).

### Policy Landscape: Right, Access and Gaps

At the national level, programs like UDID (Unique Disability ID), PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan), and e-SHRAM are intended to digitally include PwDs and informal workers. Indians are signatories to the UN Convention on the Rights of Persons with Disabilities (UNCRPD), which requires the state to ensure equal participation of PwDs in digital life. But according to some academics, the majority of schemes are not implemented or designed with disabilities in mind (Das & Ghosh, 2021). For instance, personal experience indicates significant delays, a lack of mobile friendliness and low communication in rural districts such as Balangir district of Odisha, despite UDID's goal of providing a unified identity and allowing online certification (Behera & Tripathy, 2023). PMGDISHA is also ineffective for the sizable segment of the population it is intended to serve since it does not provide tailored training to those who are blind or hard of hearing (Kumar & Meena, 2020). Consequently, the policy vision and the actual situation on the ground are not aligned.

### Rural Disability and E- Governance: The Odisha Context

Although Odisha has made strides in the direction of disability inclusion (such as creating the Odisha State Policy for PwDs, 2022), the state still lags behind in terms of digital inclusion, particularly in districts with aspirations like Balangir. Over 12 lakh people with disabilities reside in Odisha, according to the 2011 Census, with a large percentage of them residing in rural

and tribal areas with poor public infrastructure and internet access (Census of India, 2011). Rural PwDs in Odisha frequently experience “invisibility” in Gram Panchayat E-Governance initiatives, according to empirical research from grassroots organizations (Pattnaik, 2022). Digital literacy, biometric verification and Aadhaar linkage are requirements of many schemes that systematically disadvantage PwDs who may be cognitively or physically impaired. According to recent research, digital inclusion requires a rights-based strategy that prioritizes empowerment and participation in addition to access (Chandrashekar, 2022). This entails using NGOs and SHGs to help PwDs navigate e-governance technologies, integrating universal design and creating community-based digital facilitation centers and localizing material in native languages. Further study shows that accessible technology, such as voice-enabled IVR systems, mobile-first apps and tactile-based learning modules, can be revolutionary when adapted to local contexts (Bhattacharya & Sen, 2020). To be sustainable, these innovations must be accepted by policymakers and supported by grassroots funding.

## METHODOLOGY

The Balangir district of Odisha, which highlights the digital and infrastructure marginalities faced by PwDs in rural India, is the focus of this study’s case study methodology. To fully understand the challenges and opportunities of digital access and rural e-governance mechanisms for PwDs, a mixed-methods approach has been used.

### Selection of the Study Area-

Balangir, designated as one of India’s Aspirational Districts by NITI Aayog, has poor levels of health, education and digital infrastructure indices, making it an ideal location for exploring accessibility challenges. There are two important reasons for selecting this district.

Firstly, it has High Disability Region (under KBK region). PwDs, including illnesses like sickle cell anemia, impaired vision, hearing impairments and locomotor disabilities are highly concentrated, especially in rural areas, according to Census 2011 and state-level disability records.

Secondly, Limitation of Digital Access- Internet penetration is still extremely low in rural areas like Balangir, despite the government’s efforts to promote digital inclusion through programs like Digital India and Bharat Net. Only 52 villages out of 271 of Balangir villages have access to operational Common Service Centers (CSCs) or dependable broadband connectivity, according to TRAI findings and the Odisha State IT Department. Digital access is irregular and inefficient in many hamlets since mobile network coverage is still lacking or there are frequent outages. Even in places with access, remote areas are frequently underserved since the computer network is concentrated in block headquarters

### Research Design and Sampling

The study combined both quantitative and qualitative data using a mixed method approach. Muribahal Block, Lebeda Panchayat a rural area in the Balangir district is chosen as the primary fieldwork site because of its large concentration of marginalized communities, poor level of digital inclusion and numerous different forms of disabilities. According to 2011 census Lebeda, Gandpadar, Makripara, Pitapadar and Tatopara are the five villages that make up the Lebeda Gram Panchayat in the Muribahal block of the Balangir district of Odisha. As per the 2011 Census, the total population of Lebeda Gram Panchayat in Sindhekela Tehsil, Balangir district, Odisha is 1,954 people, among them 134 people are Disabled. Each of the village is having a population standard of varied community’s inhabiting in different locations. With 1,954 residents living in 502 houses, the panchayat exhibits a diverse range of cultures, with notable Scheduled Caste (678 people) and Scheduled Tribe (277 people) groupings. The overall literacy rate is 44.98%, but there is a big difference between men and women: 55.98% of men can read and write, while only 33.58% of women can. There are a lot of people under the age of six and the child sex ratio of 885 is lower than the state average. According to employment statistics, most residents work in seasonal or marginal jobs, mostly in agriculture. Lebeda has good connectivity, with both bus and train service within 10 km and access to Titlagarh town, which is about 16 km away. Lebeda Panchayat is a unique and important part of the Muribahal administrative block because of its potential for growth, cultural heritage and access to infrastructure. A purposeful sample of 104 respondents was drawn from all villages of the Lebeda Gram Panchayats in the Muribahal block. Age, gender, disability type and access to digital governance services were among the selection criterias.

A variety of disability classifications were represented by the respondents;

Low Vision

Hearing Impairment

Sickle Cell

Locomotor Disability

Speech and Language

Mentally Retardation

### Data Collection tools and Techniques

**Paper-Based Survey Schedule:** A systematic questionnaire was carried out using the local language (Sambalpuri) to collect data on awareness, access to digital services, use of government apps, digital literacy and scheme enrollment.

**Key Informant Interviews (KIIs):** Undertaken with grassroots government functionaries (e.g., Village Level Workers such as Sarpanch, Panchayat Executive Officer, Yogan Sahayak and Anganwadi Workers, CSC operators) and school to comprehend systemic holdups and grassroots-level bottlenecks.

**Field Observation-** To gather information on the actualities of implementing digital governance in rural areas, an in-depth field observation has been carried out in addition to official surveys and interviews. In order to assess the physical accessibility of Panchayat offices, Common Service Centers (CSCs) and medical facilities where digital services have been provided. Digital intermediaries’ responsiveness, empathy for PwDs and knowledge of disability-specific programs were among the other behaviors that were observed. Among them one male respondent replied that he along with his wife were not provided the wheel chair or house under the scheme of PMGAY. Both of them received only 1200 rupees per month through MPPWD pension. Additionally, the state of the infrastructure, including the availability of accessible technologies, internet speed, advertisements, ramps and seats was often monitored.

**Findings and Suggestions:**

**Table: 1**

**Digital Access and Barriers in both Urban and Rural India: General vs Pwd**

	Rural (General)%	Urban (General)%	Pwd%
Use of Internet	20	40	10
Broadband	71	86	60
Use of computer	4	23	3
Digital Literacy	25	61	15
Issues of Digital Accessibility	High	Moderate	Very High

Sources: *TRAI and CAMS Survey (2022–2023)*

“Consumer Attitudes and Media Study (CAMS)” by Lokniti-CSDS -National Sample Survey Office (NSSO) 75th Round (2018)

Ministry of Statistics and Programme Implementation (MoSPI), Government of India. Digital Empowerment Foundation (DEF) Reports (2021–2023)

*Special focus on PwD digital access, service usage, and accessibility challenges.*

According to above table 1, it cleared that digital India continues to grow decisively, the actual situation is quite different, particularly for people with disabilities (PwDs). A glaring digital divide emerges when we separate the data by rural versus urban areas, then by general population versus PwDs. More than 60% of people in urban areas are digitally literate, which means they can send emails, use smartphones and access online government services. However, that figure drastically decreases to about 38% when we consider PwDs in urban areas. Accessibility, awareness and training gaps for people with disabilities are the main issues here rather than the infrastructure.

The contrast becomes more obvious in rural areas. Only 12-15% of PwDs have access to or are skilled with digital tools, compared to roughly 30-35% of the rural population as a whole. Why? Because Poor internet access, a lack of accessible tools (such as screen readers or speech recognition software) and a limited reach of digital awareness initiatives. Since the majority of India’s essential services, such as health cards, pensions and employment programs (like UDID and e-SHRAM), are now digital, this disparity is significant. PwDs are essentially excluded from the welfare system, particularly in rural areas, if they lack the digital skills or resources to access them.

**Table: 2**

**Digital Access and Barriers in both Urban and Rural Odisha: General vs Pwd**

	Urban %	Rural%	Pwd %	
			Urban	Rural
Use of internet	29.3	5.4	40	20
Wireless access	62	34	Average	low
Computer access	17.2	1.8	low	low
Digital literacy	25.5	13.4	20	8
Village without mobile/ internet	3853 villages	-	-	-

Sources: *Disability, Ekta- Koraput, TRAI/Odisha Economics Survey*

In India, the digital revolution has changed communication, education, health and public services. The advantages are not, however, shared fairly, particularly in states like Odisha where rural communities and people with disabilities (PwDs) are disproportionately disadvantaged. The table illustrates the sharp differences in digital access between PwDs and the general population as well as between urban and rural areas. One important measure of digital inclusion is still internet usage. According to the table, only 5.4% of people in rural Odisha use the internet, compared to 29.3% of people in urban areas. Even in cities, access among PwDs declines to 40%, while in rural areas, it is only 20%. The disparity is a result of socioeconomic limitations, a lack of accessibility features in digital interfaces and infrastructure limitations.

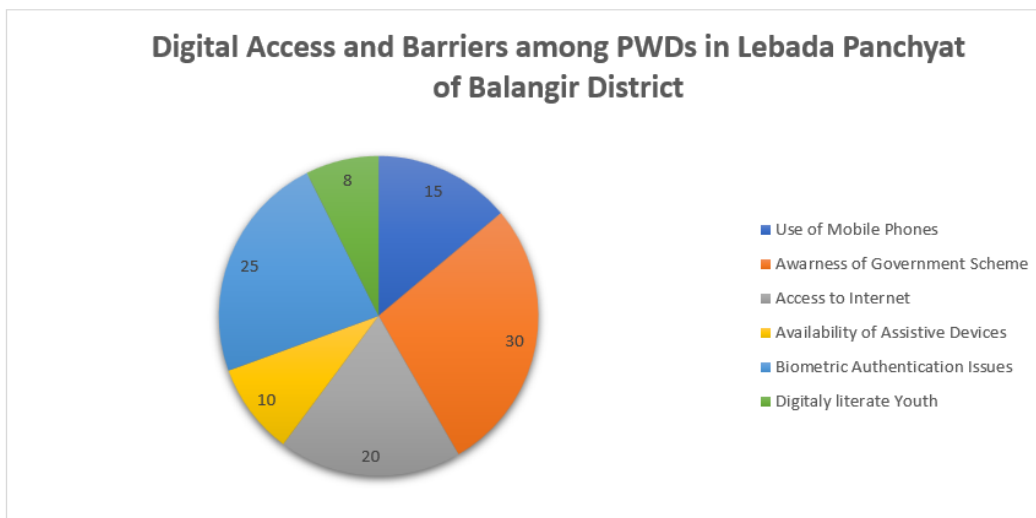
There is a clear urban-rural divide in Odisha’s wireless penetration. While rural areas only have 34 connections per 100 people, urban areas report 62 connections per 100 people, pointing to high multiple SIM usage and data penetration. The situation is even more difficult for PwDs. Field observations show that access is average in urban PwD households and low in rural ones.

Computers are necessary for both professional and educational purposes. But it’s extremely limited. In cities, just 17.2% of people have access to a computer and in rural areas, the percentage drops to a terrible 1.8%. The levels remain consistently low for PwDs in both urban and rural areas because accessible technologies, training and affordability are either nonexistent or challenging to maintain, especially among areas with limited services.

The basis for using technology in a meaningful way is digital literacy. 13.4% of people in rural areas and 25.5% of people in urban areas are digitally literate. Just 20% of PwDs in cities and 8% in rural areas are fluent in digital technologies. This displays the systematic exclusion of PwDs from digital skilling programs, as well as the absence of regional language training and assistive content.

According to official government data, 3,853 villages in Odisha still lack internet or mobile service. The majority of these villages are tribal and located in the interior, where policy outreach and infrastructure are lacking. Digital access is still an unattainable goal for PwDs in these regions, which further restricts their ability to participate in entitlements, education and governance

**Pie chart- 1**



**Digital Access**

According to field data, only 15% of the PwDs in Lebada Panchyat of Balangir on whom survey was conducted use cell phones in daily routine. The majority of these users use feature-rich phones instead of smartphones that can access digital apps or government portals. Additionally, just 20% of the respondents were found occasionally using the internet, frequently through shared or community connections. Another significant issue is device availability, as very few households have computers or phones with internet access.

**Barriers to Digital Literacy and Use**

Besides from inadequate infrastructure, digital literacy is still a significant obstacle. More than 70% of them were not aware about it and had never utilised important digital programs like ABHA, PMGDISHA, or e-SHRAM, SAMS, OSDS, BHULEKH Odisha and OSSTA etc. The majority of them were identified with the lack of assistive technology (such as screen readers or hearing aids), low levels of formal education and language hurdles. Furthermore, the absence of institutional support erodes digital engagement even more. In the villages examined, there were no operational training facilities, Grama Panchayats were mainly disengaged and there was little outreach or awareness raising for PwDs who could be benefitted

from digital technology.

### **Lack of E – Governance Services**

Digital government services are yet hardly used in practice. The majority of participants were unaware of digital platforms like e-SHRAM or health-linked IDs like ABHA and other Digital platform like IFMS, HRMS and e-Nijukti while some had used CSCs (Common Service Centres) to access pensions or ration-related services. In a number of instances, biometric inconsistencies, missing paperwork or inadequate internet access caused registration attempts to fail. Others had their records deemed useless due to incomplete registration and lack of follow-up support. These problems highlight a structural gap between e-governance platforms and rural PwDs actual lives.

### **Positive Case**

There are two NGOs active in Muribahal block in Balangir District namely **Nidhi** and **Janamukti**. They have taken the initiative to aware the local youngsters about government programs. Yet, they did not work on e-governance programs such as PMGDISHA, E SHRAMA, ABHA, UDID and E Nijukti etc.

But by creating a welcoming and courteous atmosphere for people with disabilities (PwDs), the Common Service Centers (CSCs) in Lebada Panchayat are leading by example. Every CSC in the region treats PwDs with respect, making sure they are comfortable and treated with dignity. PwDs service needs are consistently given priority at these centers, which have made considerate arrangements for them. Such actions improve accessibility and trust in digital governance in addition to showing a strong sense of social responsibility. All things considered, the CSCs in Lebada Panchayat are exhibiting that they are both beneficial and considerate of the needs of the community of people with disabilities.

In recognition of its teacher's admirable treatment of students with disabilities (PwDs), PM Shri Pataneswari Government Higher Secondary School has become a shining example of inclusive education. When working with students who have special needs, the teachers at this school demonstrate a great deal of empathy, tolerance and accountability. They make sure that every child in the classroom, regardless of ability, feels appreciated, included and respected. The faculty takes great care to understand the unique learning requirements of PwD students and adjust their pedagogy accordingly. The faculty always goes above and beyond to make sure that these students don't fall behind, whether it's by providing clear explanations, clear illustrations or extra time for assignments. Teachers also communicate with parents on a regular basis to provide emotional support and feedback. Significantly, the school creates a culture of equality where PwD students are not discriminated against or neglected. Rather, they are encouraged to be involved in all activities, ranging from academics, cultural programs and sports.

### **Role of Bhima Bhoi Bhinnakshyama Mela in Rural E- governance in Odisha**

Through inclusive programs and services, the Bhima Bhoi Bhinnakshyama Mela in Odisha transforms the lives of people with disabilities. In accordance with the **Bhima Bhoi Bhinnakshyama Samarthya Abhiyan (BBSA)**, this mela provides a one-stop shop for medical evaluations, disability certification and assistance with rehabilitation. It provides social justice to underserved communities and aids in the implementation of the Rights of Persons with Disabilities Act, 2016. To improve livelihood options, events such as **Samarthya Sibirs** offer smart cards, assistive equipment and kits for self-employment. Additionally, in the mela job fairs are organized and vocational training with an emphasis on skill development. Volunteers, NGOs and local organizations all actively engage, fostering a feeling of belonging and a common goal. Fundamentally, the mela is organized as a tribute to the heritage of the famed saint-poet Bhima Bhoi, who fought for spiritual liberation and equality. All things considered, it is a potent representation of respect, inclusivity and solidarity for Odisha's disabled population.

### **Policy Gaps and Limitation:**

A focused lens for field research is provided by field reports and previous academic findings that point to obvious problems in the implementation of programs like PMGDISHA, e-SHRAM and the Unique Disability ID (UDID) in blocks like Muribahal. Due to inadequate outreach by local authorities, complicated documentation procedures and a lack of awareness, many eligible persons with disabilities (PwDs) are still unregistered under UDID. Due to insufficient help at Common Service Centres (CSCs) and digital illiteracy, disabled people in rural areas rarely access the e-SHRAM portal, which is designed to provide social security to unorganised workers. Similarly, PMGDISHA, which aims to promote digital literacy, has relatively few PwDs enrolled due to inaccessible training modules and a lack of teachers who are disability-sensitive. Furthermore, there is evidence of ineffective interdepartmental cooperation at the grassroots level and underspending. As a result, the most vulnerable members of society are left behind when well-intentioned policies like these fail to provide inclusive results in practice.

### **Challenges: Internet Penetration and E-governance in Odisha**

Under national initiatives like Digital India and e-Kranti, Odisha, a state with sizable tribal populations and vast rural belts, has been making progress towards implementing digital governance. However, internet access, which is still uneven throughout the state is crucial to the effective implementation of e-governance. The full implementation of e-governance initiatives and the efficient penetration of internet services are hampered by a number of structural, socioeconomic and political issues.

Through programs like Digital India and e-Kranti, Odisha has been pushing for digital governance with the goal of enhancing citizen participation, transparency and public service delivery. However, low internet penetration, especially in rural and tribal areas, is a significant obstacle to the state's adoption of e-governance. The Telecom Regulatory Authority of India (TRAI) reports that rural Odisha has a tele-density of only 42.7%, while urban Odisha has a tele-density of 171% (TRAI, 2023). Broadband and mobile connectivity are costly and logistically challenging due to the districts' remote location, forest cover and challenging terrain in areas like Malkangiri and Kandhamal (MeitY, 2022). Security issues are a major factor in restricting the growth of digital technology. The threat of Maoist violence has deterred both public and private investment in communication infrastructure in a number of southern Odisha districts that are categorised as being affected by Left-Wing Extremism (LWE) (Ministry of Home Affairs, 2023). Fear of tower, cable and equipment sabotage prevents digital networks from spreading in these areas, thereby denying locals access to vital e-governance services like digital grievance redressal, online welfare programs and Aadhaar-linked benefits. Furthermore, regular floods and cyclones, especially in coastal districts, frequently interfere with digital connectivity, underscoring how susceptible Odisha's e-governance model is to external influences (Odisha SDMA, 2023). The ongoing digital divide, which is fueled by socioeconomic factors, exacerbates these structural problems. In Odisha, just 1.8% of rural households own a computer and lack of digital literacy and affordability continue to be barriers to internet access (NSSO, 2021).

### **Initiatives in Odisha to Enhance Internet Access for People with Disabilities**

The government of Odisha has launched a number of initiatives to increase internet access throughout the state, with particular implications for marginalized communities, including persons with disabilities (PwDs), in recognition of the crucial role that digital inclusion plays in attaining equitable development. Under the Bharat Net Phase-II initiative, Odisha has made significant progress in digital connectivity by laying 20,000 kilometers of overhead optical fiber cable to connect 2,932 Gram panchayats and 133 block headquarters (Department of Telecommunications, 2023). For PwDs, who frequently depend on digital means to access programs like Swavalamban, SSEPD and online disability certification platforms, this infrastructure development is indispensable in providing e-governance services in education, healthcare, social security and banking (Ministry of social Justice and Empowerment, 2023).

Further, the state has made free Wi-Fi available to all college students, including those with disabilities. In order to close the digital learning gap, the Odisha Higher Education Department announced that universities, colleges and vocational schools would be offering free Wi-Fi access with one gigabyte of free data per student (Odisha Higher Education Dept., 2024). Students with disabilities, who encounter additional social and physical obstacles in conventional classroom environments, will particularly benefit from this change. By enabling them to use assistive technologies like speech to text tools, screen readers and accessible learning management systems, internet-enabled learning improves their inclusion and academic engagement.

### **CONCLUSION**

In Global context especially when compared to Scandinavian nations like Sweden, Denmark and Norway, the level of digital development for PwDs in rural Odisha seems sadly low. Many people consider these countries to be world leaders in digital inclusion and accessibility. The universal design principle, which guarantees that all public digital services are accessible by default rather than as an afterthought, is the foundation of their policies (United Nations, 2020). It is standard practice to fully integrate assistive technologies, including voice recognition software, screen readers and inclusive apps, into the public infrastructure (World Economic Forum, 2021). For instance, all digital public services must be easy to use and available to everyone, including those with physical and cognitive impairments, according to Sweden's Digital First strategy (Government of Sweden, 2018). Moreover, substantial public investments and inclusive technology laws demonstrate that digital inclusion is seen as a fundamental right rather than just a service (European Commission, 2022). However, this intersectional and rights-based approach is frequently absent from India's rural digital policies, which restricts PwDs actual accessibility in places like Balangir.

The Indian approach, on the other hand, is still primarily programmatic and infrastructure-based, frequently lacking the intersectional approach that disability inclusion necessitates, especially in rural states like Odisha. For instance, even though Bharat Net has installed miles of optical fibre throughout the state, PwDs are still not able to take advantage of its advantages because it lacks assistive technology, last-mile connectivity and localised digital content (such as regional language voice interfaces). Policy reform that puts PwDs lived realities in rural areas like Muribahal front and center is obviously necessary.

The vision of a digitally empowered India, as pursued by flagship programs such as Digital India, is still a far-off dream for many rural populations, particularly for persons with disabilities (PwDs). The research on digital inclusion and e-governance in Balangir district more precisely in Muribahal block and Lebada Panchayat indicates that in spite of laudable investments in infrastructure and policy focus, the ground situation for PwDs continues to be highly difficult. This study has highlighted not just the infrastructural and educational shortcomings but also the systemic and attitudinal obstacles that prevent the complete integration of PwDs in online government procedures.

In Balangir, as in most western Odisha districts, the digital infrastructure is unevenly established. Though Bharat Net and

CSC programs have extended connectivity to most Gram Panchayats, its penetration into inner villages such as those in the Muribahal block is patchy. Lebada Panchayat, while relatively better situated than some other surrounding areas, lacks stable connectivity, paucity of smartphones and low digital literacy among its citizens conditions that disproportionately impact PwDs. Internet based service delivery is typically affected by poor mobile connectivity, non-reliable electricity power supply and absence of technical support, particularly for physically, hearing or visually impaired persons.

In addition of the field research indicates that 15% PwDs in Muribahal own smartphones or utilize digital government services on a regular basis. There is little awareness of initiatives like e-SHRAM, PMGDISHA, UDID, or ABHA and a number of participants reported cases of unfinished registrations, biometric authentication failures and unresponsive centers. The digital divide in this case is not merely technological, it is structural and socio-economic. PwDs are also subject to further marginalization based on considerations such as caste, gender, poverty and low literacy rates.

A number of suggestions are made to close this gap. In order to facilitate active, inclusive usage, government agencies must first go beyond infrastructure rollouts. This entails funding digital literacy initiatives served to various disability types, expanding the accessibility of assistive technology at the Panchayat and school levels, and making sure CSCs are prepared and trained to provide PwDs with respectable care. Second, since local champions and grassroots organisations possess the contextual knowledge and trust required for successful promotion, focused collaborations with them must be encouraged. Third, all digital platforms must conform to inclusive design guidelines and go through frequent accessibility audits, regardless of whether they are used for welfare, health, or education.

Lastly, it is critical to incorporate PwDs' digital inclusion into the larger rural development plan. No one should be left behind as India strives to develop into a trillion-dollar digital economy. In addition to being welfare recipients, PwDs in rural areas need to be empowered as engaged digital citizens who can influence their own destiny. Change is achievable, but only if it is fuelled by inclusive policies, community involvement and a vision that values justice just as much as efficiency, as demonstrated by the stories of Lebada Panchayat, (Balangir) of state of Odisha.

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