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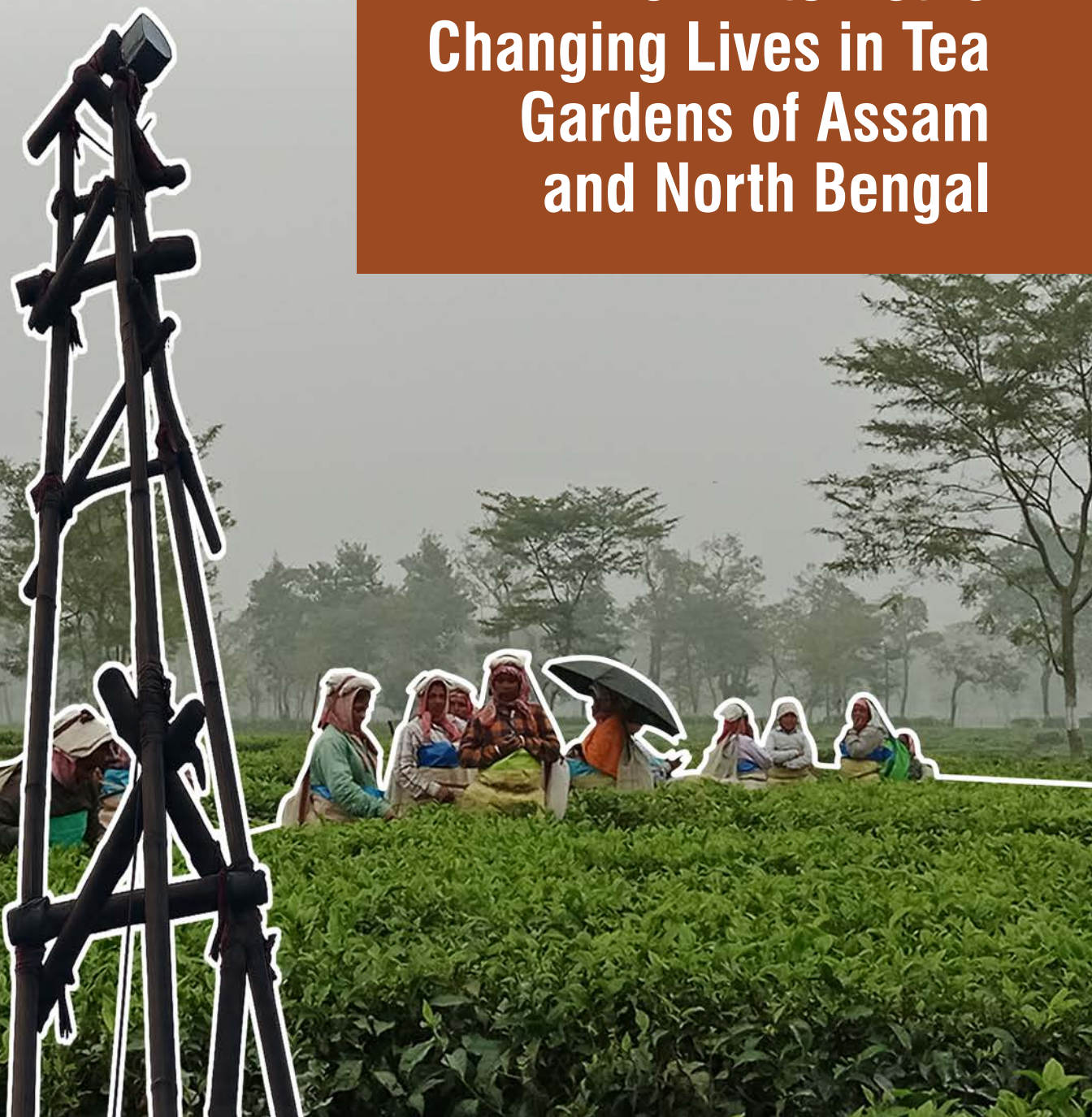
How Internet is Changing Lives in Tea Gardens of Assam and North Bengal



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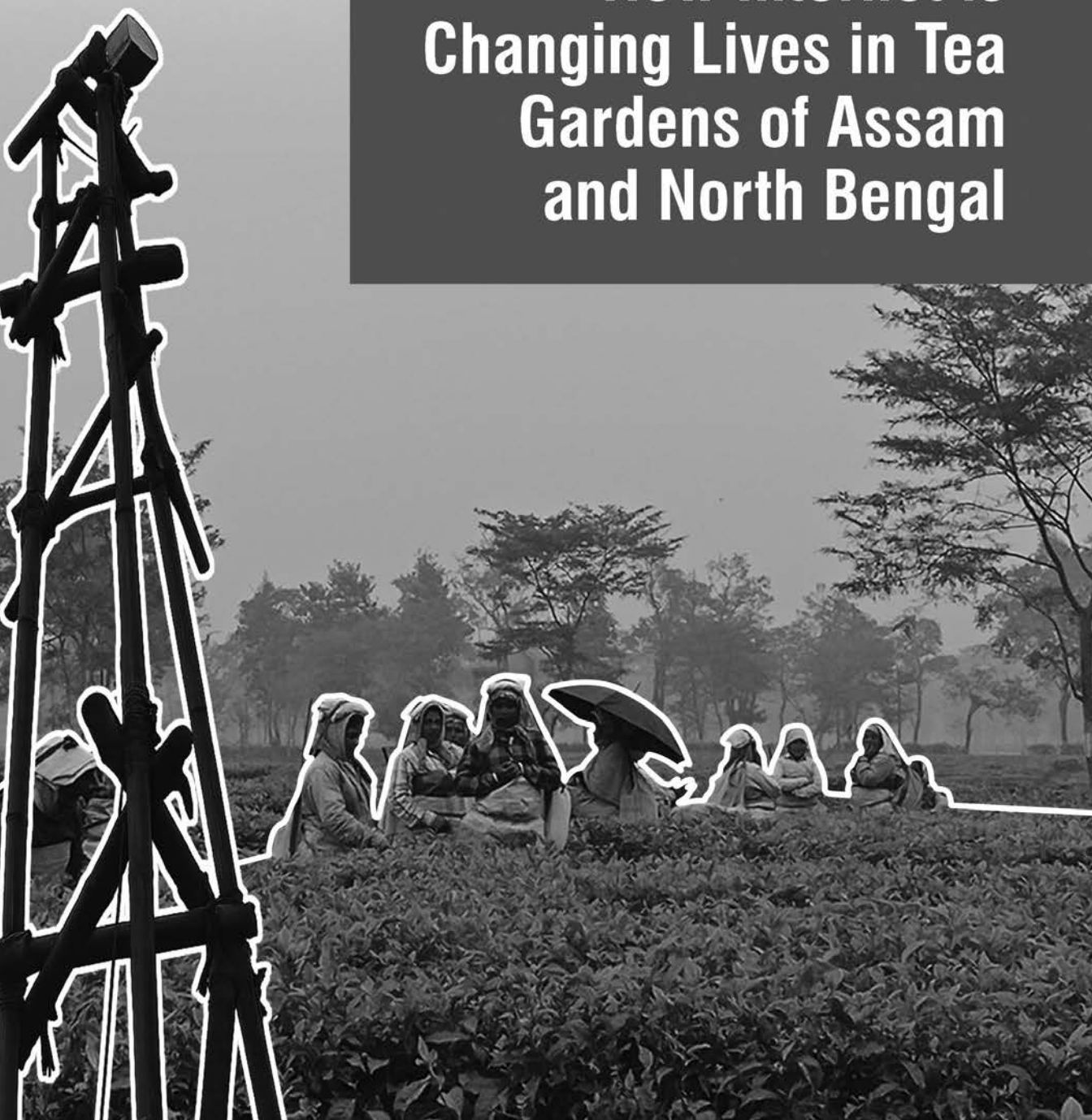

How Internet is Changing Lives in Tea Gardens of Assam and North Bengal

An Endline Report of Project Internet Roshni, Phase II (2023-2024)

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This report is based on Endline Study conducted by the DEF under the project, titled 'Expanding Internet Roshni (Light) for the vulnerable tea tribe &Adivasi Community in Assam and West Bengal in India', supported by the Internet Society Foundation (ISOC Foundation).

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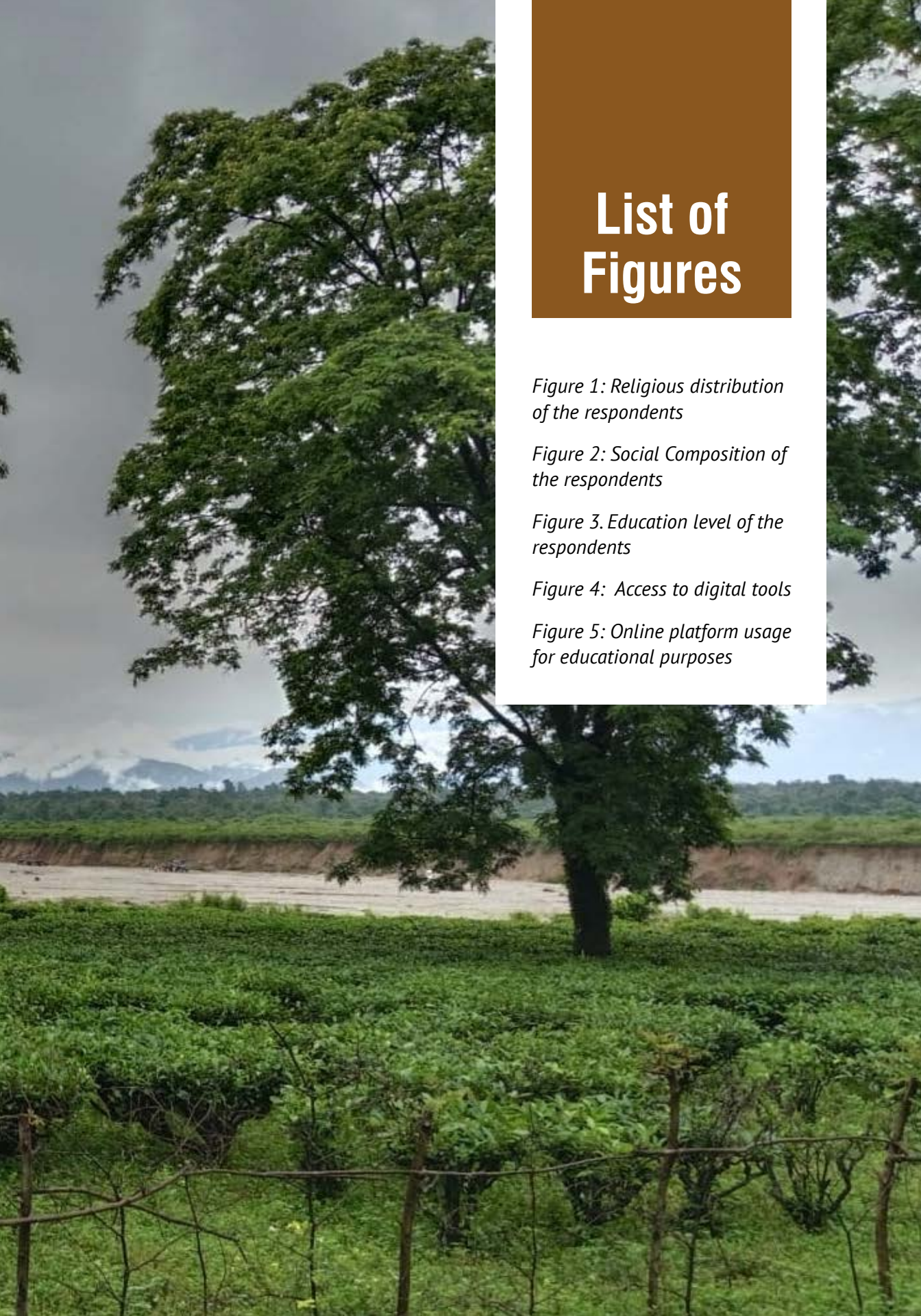

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This report evaluates the second phase of Internet Roshni, supported under the Internet Society Foundation's BOLT Programme and implemented by the Digital Empowerment Foundation in Assam and West Bengal. Building on earlier pilots, the initiative strengthens last-mile connectivity, digital skills, and community institutions. The field teams and participants have been highly acknowledged.

Preface & Acknowledgement

The Internet Roshni project evaluated in this report has been supported under the BOLT (Building Opportunities through Leadership and Technology) Programme of the Internet Society Foundation. Under this support, the project titled "Expanding Internet Roshni (Light) for the vulnerable tea tribe and Adivasi community in Assam and West Bengal, India" was implemented by the Digital Empowerment Foundation in three phases, with a duration of twelve months each.

This 2nd extended phase builds upon DEF's earlier pilot implementation of Internet Roshni carried out during 2022–2023. This extension aims to focus on strengthening last-mile internet connectivity, reinforcing community-based internet institutions, enhancing digital skills, and improving access to information and services related to health, education, livelihoods, government schemes and entitlements, and entrepreneurship. The project was designed in alignment with national digital infrastructure initiatives, including the Government of India's PM-WANI framework, while maintaining a strong emphasis on community ownership, local capacity building, and long-term sustainability.

The findings, interpretations, and conclusions presented in this report are those of the author and the Digital Empowerment Foundation. They do not necessarily reflect the views or policies of the Internet Society Foundation or any other supporting institutions. While due care has been taken to ensure methodological rigour and data accuracy, the analysis is based on self-reported survey responses. This report is intended to contribute to learning, programmatic reflection, and policy dialogue. Any reference to or use of the findings should acknowledge the source and contextual framework of the Internet Roshni and BOLT initiatives.

Finally, this report is sincerely indedted to the support of district coordinators and SoochnaPreneurs for collecting data and the respondents who participated in this study. Their commitment to work are greatly appreciated.

This endline evaluation examines the impact of Internet Roshni Phase II (2023–2024) across tea garden communities in Assam and northern West Bengal - among India's most digitally excluded populations. The Digital Empowerment Foundation established community-led connectivity, digital literacy programs, and local information centers serving over 50,000 residents.

Executive Summary

This endline evaluation report examines the impact of the Internet Roshni (Light) Project Phase II (2023-2024) on digital empowerment within tea garden communities across Assam and northern West Bengal, India. These communities, primarily comprising descendants of colonial-era plantation workers from tribal backgrounds, represent one of India's most geographically isolated and economically vulnerable populations, having remained largely excluded from mainstream digital infrastructure development.

The Digital Empowerment Foundation (DEF) implemented this comprehensive digital intervention to address the specific challenges facing tea tribe and Adivasi populations living within plantation systems. The project established community-led internet connectivity, digital literacy programs, and information resource centers across 100 tea garden communities, directly serving over 50,000 community members through a network of trained local facilitators called "Soochnapreneurs."

This cross-sectional evaluation employed purposive sampling to survey 389 respondents across four districts: Jorhat in Assam (87 respondents) and three districts in northern West Bengal—Alipurduar (120), Coochbehar (61), and Jalpaiguri (121). The study utilized Computer-Assisted Personal Interviewing techniques to assess project impact across multiple domains including digital technology adoption, educational access, health information-seeking behavior, government welfare scheme awareness, and entrepreneurial aspirations. Multivariate logistic regression analysis was employed to establish causal relationships between interventions and outcomes.

Findings demonstrate transformative impacts within tea garden communities. Digital device access reached near-universal levels in intervention areas (90.5%) compared to control sites (74%), with smartphones emerging as the primary gateway to digital services. Educational benefits proved particularly significant, with 85.8% of intervention participants accessing online learning materials versus

36% in control areas. Critical digital literacy familiarity reached 94.8% in intervention communities compared to 32.3% in control areas, indicating successful knowledge transfer through community-based training models.

The project substantially enhanced engagement with government welfare systems, a historically challenging area for tea garden communities due to documentation barriers and geographical isolation. Awareness of government schemes reached 98.5% in intervention areas versus 70.1% in control areas, while actual access to these schemes increased to 96% compared to 38.7% in non-intervention sites. Health information-seeking behavior similarly improved, with 72.2% of intervention participants actively searching for health information online compared to 33.3% in control areas.

Entrepreneurial aspirations within plantation communities showed marked improvement, with 93.7% of intervention participants reporting digital inspiration for future business ventures versus 75% in control areas. This finding carries particular significance given the historical economic dependence of tea garden communities on plantation wage labor and their limited exposure to alternative livelihood models.

However, the evaluation also identified persistent challenges requiring sustained attention. Online harassment affected 55.2% of intervention participants, reflecting broader vulnerabilities faced by marginalized communities in digital spaces. Technical difficulties with internet usage were reported by 71% of intervention participants, indicating the need for continued technical support and infrastructure improvements. Exposure to misinformation reached 64.4% among intervention participants, highlighting the critical importance of ongoing digital literacy education.

Multivariate analysis confirmed causal relationships across key outcome domains. Participants from intervention sites demonstrated 4.81 times greater likelihood of positive attitudes toward online learning, 10.07 times higher awareness of government welfare schemes, and 2.97 times stronger entrepreneurial aspirations compared to control areas. These findings provide robust evidence that community-led digital interventions can effectively address historical exclusions facing tea garden populations.

The study concludes that the Internet Roshni Project successfully demonstrates how culturally appropriate, community-managed digital infrastructure can bridge persistent development gaps in plantation communities. The intervention's success in enhancing access to education, healthcare information, government services, and economic opportunities offers a replicable model for similar marginalized communities globally.

However, sustainable impact requires continued investment in digital safety education, technical support systems, and advocacy for policy frameworks that address the unique governance challenges facing plantation communities.

> Survey and multivariate analysis confirm significant gains in digital access, online learning, welfare awareness, health information-seeking, and entrepreneurial aspirations. While challenges such as misinformation, online harassment, and technical barriers persist, the findings demonstrate that community-managed digital ecosystems can meaningfully engage with the long-standing structural exclusion in plantation communities.


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In remote tea estates of Assam and North Bengal, only 24% of households have internet, leaving communities cut off from essential services like education and healthcare

Introduction

In the villages, 'ghettoized' in large tea estates of North Bengal and Assam, a cluster of people huddles around a place, eyes glued to their screens: some are watching downloaded learning materials, some are applying for jobs or their entitlements, some are talking to their acquaintances, some watching movies or even playing games. Thanks to an initiative aptly named Internet Roshni ("Roshni" meaning light) that is bringing digital connectivity to these communities.

Scenes like these are increasingly becoming common in these tea garden villages, especially in times where glaring evidences of digital divide can be found across rural India. Only about 24% of rural households have access to the internet, compared to 66% in urban areas. Alarmingly, the gap seems to be widening in its usages. Oxfam's 2022 India Inequality Report (Digital Divide) points out that 31% people in rural areas uses internet in comparison to 67% in urban.

The villages in lush tea estates of this region are emblematic of such deep digital divide. The problem is not simply with irregular or unstable connectivity; the bigger problem lies with the ways problems are approached to be solved. The Comprehensive Annual Surveys from 2022–23 to 2025 demonstrate that access is slowly getting better, although experts say that big differences still exist between social groups. People who are still not connected to the internet are often the most disadvantaged, and this lack of access to important services like education, health care, and banking. Despite flagship efforts like Digital India, BharatNet, and the PM-WANI public Wi-Fi scheme, internet is still a luxury for lot of people, not something they need. People often say that broadband should be treated like electricity, as a public good. But that involves paying for access, teaching people how to use technology, and making sure that technologies work for everyone, even the poorest.

Launched in 2020, PM-WANI scheme was implemented with the idea to democratize connectivity, to enable anyone who could set up a Public Data

Office (PDO) and offer internet access to the public. However, the progress has been uneven. One major roadblock was cost. Small shopkeepers, the very people expected to run these PDOs, found the high-priced leased lines required for backhaul connections expensive. It was not until mid-2024 that the government stepped in to cap these tariffs in hopes of encouraging wider adoption.

But cost was not the only problem. Many hotspots that were put in place were never used. Uptake stayed low, especially among the disenfranchised, mostly because they didn't know much about computers. In essence, PM-WANI put the technical backbone, such as wires, routers, and bandwidth, ahead of the social side of connectivity. And that's when the true job of inclusion usually starts.

Complementing PM-WANI's hardware-heavy approach, the Digital Empowerment Foundation, with support from the Internet Society Foundation, implemented Internet Roshni program in 2023-24: a low-cost, last-mile network designed to bring meaningful connectivity to tea garden communities in Assam and West Bengal.

The model has been strategic in leveraging PM-WANI scheme, in creating localized Wi-Fi zones. It creates localized Wi-Fi zones anchored around Community Internet Libraries (CILs) - village resource centers stocked with tablets and digital learning content - and trains local youth and women to serve as "SoochnaPreneurs". These SoochnaPreneurs act as digital guides for their neighbors, helping people get online, teaching them basic skills, and assisting them in navigating e-government services safely.

With over 50,000 beneficiaries targeted across 100 tea gardens, the project focused not only on connectivity, but on what that accessible connectivity could enable. The idea is to use these hotspots into community assets - a place where students could download learning materials, aspirants could learn new techniques online, and workers could access to their entitlements. In essence, Internet Roshni invested in human infrastructure alongside tech - by designing the program with local needs in mind and providing on-the-ground mediation through the SoochnaPreneurs, Internet Roshni hoped to turn connectivity into a catalyst for affecting multiple dimensions of development.

What really changed when people get internet connectivity? That was the question at the heart of an evaluation conducted after a year of Internet Roshni on the ground. The initiative's architects wanted to know: Does giving a woman Wi-Fi, curated content, and a role of SoochnaPreneur who help her

neighbors learn more, earn more, stay healthy, or access government services better?

This report aims to present an evaluation of the intervention and document the kind of impact it had. A cross-sectional endline study has been conducted in this regard, revealing about the extent to which the intervention have enabled community people to have information and resources for critical health, education, alternative livelihood, government schemes and entitlements, and entrepreneurial needs. In otherwords, it to demonstrate why and how the digital representational divide of the most vulnerable community can be overcome through a last-mile, low-cost environmentally sustainable network model, managed by the community, and led by the youths.

> The study selected 389 respondents from four districts in Assam and West Bengal. The sample was initially planned to be evenly distributed, but practical challenges led to 87, 120, 61, and 121 respondents from Jorhat, Alipurduar, Coochbehar, and Jalpaiguri, respectively

> The study used multiple indicators to assess the Internet Roshni project's impact, referencing baseline survey objectives to measure changes and evaluate the intervention's effectiveness

Data & Method

A random sampling process was employed to select 389 potential respondents from Jorhat district in Assam, and Jalpaiguri, Cooch Behar, and Alipurduar districts in West Bengal. At the preliminary stage plan, the sample size was evenly allocated across the districts to ensure equitable representation. However, maintaining this distribution was a challenging task during data collection. Thus, 87, 120, 61, and 121 respondents were sampled from Jorhat, Alipurduar, Coochbehar, and Jalpaiguri districts, respectively.

This endline survey was conducted in the beginning of 2025 in the four districts in Assam and West Bengal. The study adopted the purposive sampling method for selecting participants and conducting the data collection using the survey questionnaires. The survey questionnaires were prepared through a brainstorming exercise among the research team at DEF. The survey questionnaires were converted into CAPI (Computer-Assisted Personal Interviewing) format using Kobo Toolbox software. District coordinators and the SoochnaPreneurs (recruited and trained womens under the project) conducted the household surveys in both the states. The study adopted multiple domains, sub-domains, indicators, and sub-indicators in order to evaluate the Internet Roshni (Light) project. All major outcome variables considered at the endline evaluation are drawn from reference to the baseline survey objectives (2024) conducted prior to the project implementation.

The study has been strategic for maintaining the quality of data collection and analysis. Before conducting the data collection, the survey teams underwent rigorous online training conducted by the research team over multiple sessions. A special session was conducted specifically to train the survey team on how to carry out the data entry and interview with participants. In order to ensure the data quality, the endline evaluation an expert team frequently checks the data quality and addresses the errors shortly. Such steps ensured the data quality and the major argument of findings around intervention activities and themes covered in the Internet Roshni endline survey.

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The survey included 389 participants across four districts. Jalpaiguri (121) and Alipurduar (120) had the highest engagement, while Coochbehar (61) had fewer respondents, which could impact the reliability of comparisons. In Assam, 87 respondents from Jorhat have contributed.

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In Assam, Jorhat had 96.55% Hindu respondents, reflecting a religiously homogeneous population. In contrast, Coochbehar had more religious diversity, with 22.95% identifying as Christian and 1.64% as Muslim.

Profile of the Respondents

As mentioned, the survey participants are from four districts: Jorhat, Alipurduar, Coochbehar, and Jalpaiguri. Jalpaiguri had the highest number of respondents (121), closely followed by Alipurduar (120). This suggests a robust level of community engagement or more intensive data collection in these districts. Coochbehar recorded the fewest respondents (61), which may affect the reliability of comparative insights for this district unless adjustments are made for sampling weights.

Figure 1 shows the religious composition of the survey participants in each district. Hinduism is the dominant religion, particularly in Alipurduar (98.33%), Jorhat (96.55%), and Jalpaiguri (96.69%). Coochbehar shows more religious diversity, with 22.95% identifying as Christian and 1.64% as Muslim. Alipurduar had no respondents from the Islamic faith. The presence of religious minorities, especially in Coochbehar, may influence community-specific digital inclusion needs and should be considered in intervention strategies.

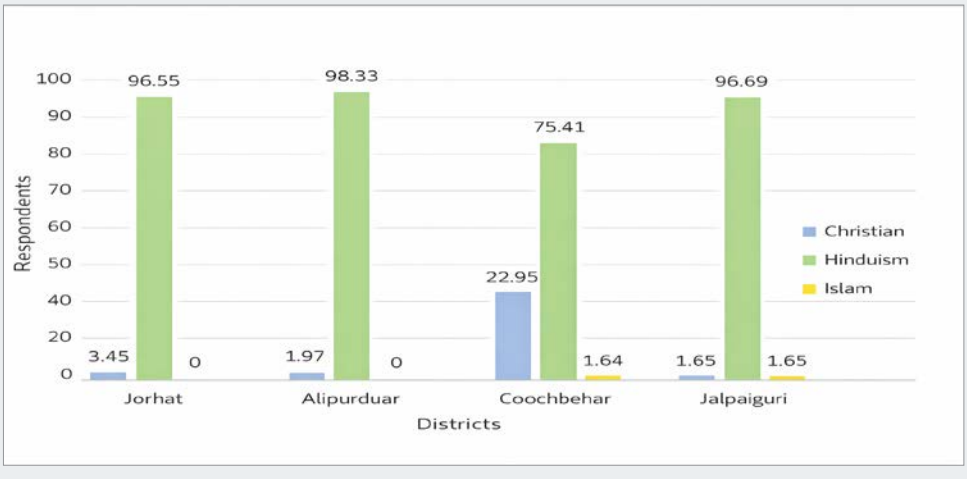


Figure 1: Religious distribution of the respondents

Figure 2 presents the social category distribution of respondents across four districts. In Jorhat, all participants belong to the OBC (Other Backward

Classes) group (100%), with no representation from Scheduled Castes (SC) or Scheduled Tribes (ST). In contrast, Alipurduar, Coochbehar, and Jalpaiguri are predominantly represented by Scheduled Tribes: 94.17%, 91.8%, and 93.39%, respectively. These districts also include small percentages from the Scheduled Castes and marginal representation from OBC and others. This categorical representation reflects demographic patterns and may influence digital access strategies and government scheme targeting, as affirmative action and outreach programs often differ by social category.

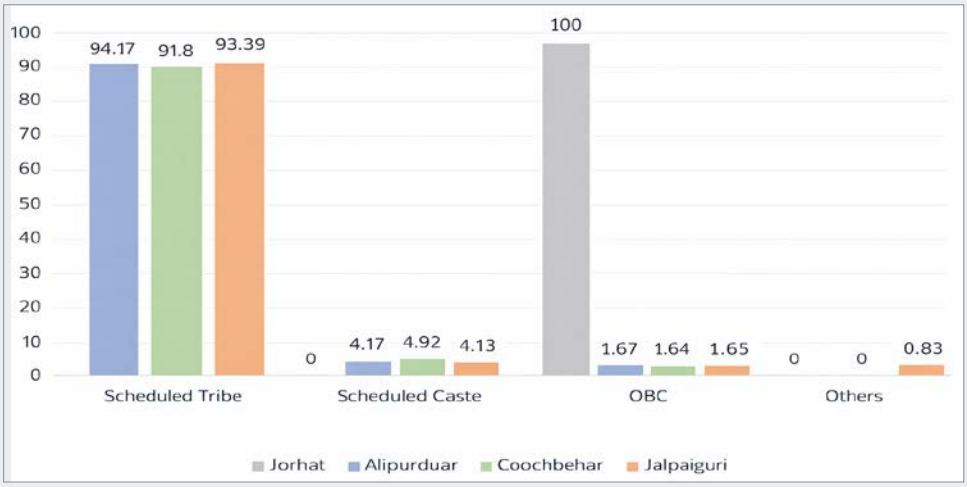


Figure 2: Social Composition of the respondents

Table 1 shows that most households across all districts are male-headed, with the highest in Jorhat (85.06%) and the lowest in Coochbehar (67.21%). This reflects broader national trends where males are traditionally recognized as heads due to socio-cultural norms. The relatively higher female-headed households in Alipurduar and Coochbehar may suggest shifting dynamics or male outmigration. This reflects national patterns where men are more commonly recognized as household heads, particularly in rural India.

Table 1: Gender of Head of the Household

District	Male	Female
Jorhat	85.06	14.94
Alipurduar	68.33	31.67
Coochbehar	67.21	32.79
Jalpaiguri	81.82	18.18
Total	76.09	23.91

Source: Estimated by authors from Primary Data

There is a more balanced gender representation among respondents (Table 2), with women outnumbering men in Alipurduar and Coochbehar. This might reflect targeted digital literacy initiatives encouraging female participation or women being more available during the survey period. Indicating women's increasing engagement in community-level initiatives, possibly supported by NGO interventions or digital inclusion programs.

Table 2: Gender of the respondents

District	Male	Female
Jorhat	63.22	36.78
Alipurduar	29.17	70.83
Coochbehar	49.18	50.82
Jalpaiguri	57.02	42.98
Total	48.59	51.41

Source: Estimated by authors from Primary Data

The education distribution chart (Figure 3) shows significant variation across districts. Jalpaiguri and Coochbehar have the highest number of respondents with a high secondary education (above 50 each), followed by Alipurduar. Jorhat has a more balanced distribution, with relatively fewer participants in the highest education brackets but significant numbers in middle and secondary levels. Coochbehar stands out for having the most respondents with graduate and postgraduate qualifications. The high presence of diploma holders in Jalpaiguri further indicates vocational learning trends. These educational trends help assess digital readiness and capacity for adopting complex digital tools and schemes across regions.

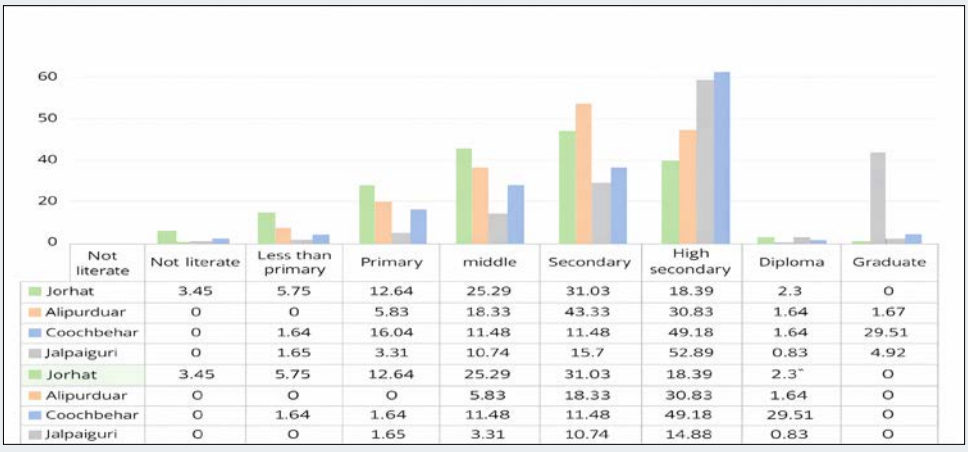


Figure 3. Education level of the respondents

Internet use is nearly universal in Alipurduar, Coochbehar, and Jalpaiguri, with 90.5% of respondents in these areas using it, while Jorhat lags at 67.8%. The 'Internet Roshni' project has had a significant impact, with strong digital adoption across intervention areas.

Use of Digital Technology

This section explored several aspects of the digital technology usage in the society in the Jorhat district in Assam and Alipurduar, Coochbehar, and Jalpaiguri districts in West Bengal in India. The major aspects that we are trying to capture are internet use patterns, access to digital devices, access to digital devices, use of digital devices to access social media, encountering problems while using the internet, training people by DEF team or others, facing online harassment on any digital platform, familiar with critical digital literacy, and encountering misinformation in the last year. At the starting point, a short overview of the type of Internet Roshni project holder is given, and then the mentioned domains of the digital technology usage are explored.

Beneficiary Types and Internet Users

Most respondents across districts reported being direct beneficiaries of the project, indicating good project penetration. Internet usage is nearly universal in Alipurduar, Coochbehar, and Jalpaiguri, indicating strong digital adoption (Table 3). Jorhat slightly lags (67.82%), possibly due to infrastructure limitations or awareness issues. The participants use the Internet Roshni project-sponsored internet for access and usage. For the future, the respondents expect better internet connectivity in the locality and surrounding areas. (Table 3). Nevertheless, the uniform patterns of internet use observed in both intervention and non-intervention areas demonstrate the positive impact of the Internet Roshni Project.

Table 3: Direct holder of the project and use of the Internet

Indicators	Direct holder of the project		Use of the Internet	
District	Intervention	Non-Intervention	Intervention	Non-Intervention
Jorhat	100.0	0.0	67.8	0.0
Alipurduar	99.2	0.0	99.2	100.0
Coochbehar	100.0	0.0	96.7	100.0
Jalpaiguri	95.7	0.0	95.0	96.1
Total	98.8	0.0	90.5	74.0

Source: Estimated by authors from Primary Data

Access to digital devices

Figure 5 highlights participants' access to various digital tools across the four districts. The overwhelming majority in all districts reported owning a smartphone, which is the most common device for digital engagement. Some participants also reported combinations like smartphone and normal phone, smartphone with laptop or tablet, and normal phones only, indicating varying levels of digital resource availability. The low access to laptops or computers as standalone devices shows that while mobile digital access is strong, comprehensive digital inclusion that supports more complex tasks (e.g., typing, formal education) may be lacking. This reinforces the centrality of mobile-first strategies in rural digital policy planning. Moreover, the uniform patterns of smartphone use observed in both intervention and non-intervention areas demonstrate the positive impact of the Internet Roshni Project.

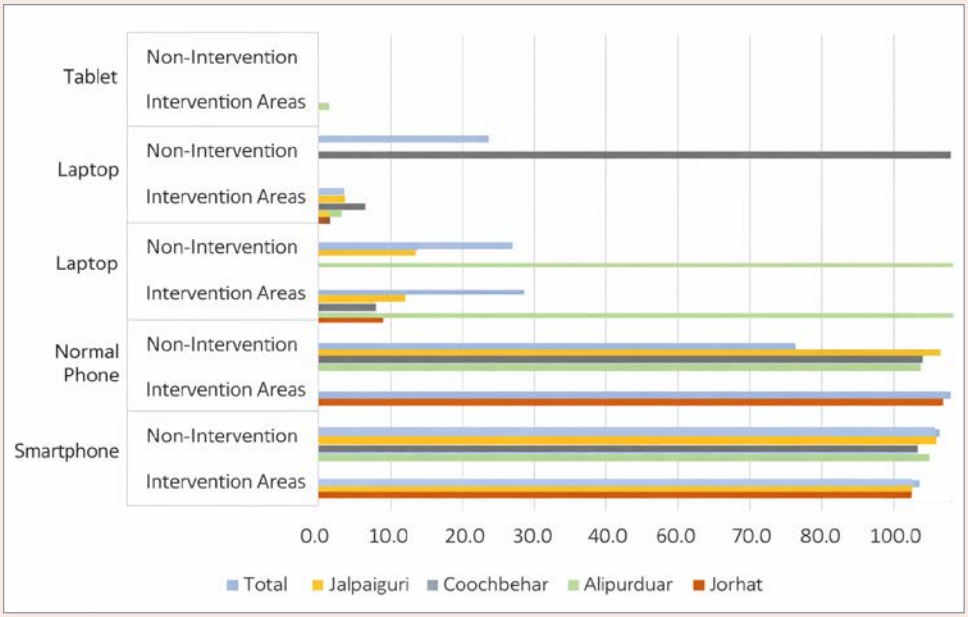


Figure 4: Access to digital tools

Use of digital devices to access social media

High percentages across all districts indicate that digital device ownership is common (Table 4). Alipurduar reported 100% use, reflecting both availability and active usage for social networking. The higher level of usage of digital devices to access social media, send SMS, and play games in intervention areas, as compared to non-intervention manifested a significantly positive impact of the Internet Roshni Project.

Table 4: Use of digital devices to access social media

Indicators	Social media		Sending SMS		Gaming	
District	Inter-vention	Non-Inter vention	Inter-vention	Non-Inter vention	Inter-vention	Non-Inter vention
Jorhat	93.1	0.0	27.6	0.0	27.6	0.0
Alipurduar	100.0	100.0	41.5	100.0	41.5	100.0
Coochbehar	95.1	100.0	71.7	0.0	71.7	0.0

Indicators	Social media		Sending SMS		Gaming	
Jalpaiguri	98.6	100.0	70.0	70.6	70.0	70.0
Total	97.4	75.0	52.7	42.6	46.9	42.5

Source: Estimated by authors from Primary Data

Encountering problems while using the internet

Alipurduar (96.67%), Jalpaiguri (84.3%), and Coochbehar (78.3%) reported significant usage challenges of the internet (Table 5). These could include connectivity issues, a lack of digital skills, or technical barriers, and a highly remote location despite high access levels. Access alone doesn't translate into effective use—a common finding in digital divide literature.

Table 5: Currently facing problems and online harassment using the internet/digital platform

Indicators	Facing problems in using the internet		Facing Online harassment	
District/Areas	Intervention	Non-Intervention	Intervention	Non-Intervention
Jorhat	4.6	0.0	20.7	0.0
Alipurduar	96.7	100.0	94.9	100.0
Coochbehar	78.3	100.0	96.7	0.0
Jalpaiguri	84.3	96.1	8.6	52.9
Total	71.0	74.0	55.2	38.2

Source: Estimated by authors from Primary Data

Similarly, Table 5 shows that the Coochbehar district in West Bengal reported the highest online harassment (90.7%), followed by Alipurduar (94.9%). This highlights the vulnerability of rural users to digital risks and the need for online safety programs and the urgent need for digital safety education (UNICEF, 2020). Its highlights there is still scope for intervention activities on the online harassment domain, hence DEF can contribute to society.

Training people by DEF team or others

Most participants were trained by their family member (who were trained by the DEF team) or the DEF team directly, showing the importance of a community-based digital education system (Table 6). Even the positive responses from respondents in non-intervention areas regarding the DEF team's efforts to train people in using the internet, mobile phones, computers, and tablets highlight the organisation's contribution and strength in digital empowerment. This emphasizes the critical role of peer or NGO-driven training models, such as those pioneered by DEF, in bridging digital literacy gaps (DEF, 2020) and promoting a holistic digital literacy system among geographically or socially socio-economically marginalized sections of society.

Table 6: Friend/family member or another person (DEF team) usually trains you how to use the internet/mobile/computer/ tablet

District	Intervention area	Non-intervention area
Jorhat	100.0	0.0
Alipurduar	99.2	50.0
Coochbehar	98.3	100.0
Jalpaiguri	98.6	70.6
Total	95.1	55.1

Source: Estimated by authors from Primary Data

Familiar with critical digital literacy

Table 7 depicts, Coochbehar in West Bengal had full familiarity (100%) and Jorhat in Assam had higher (95.4%) familiarity with critical digital literacy. But Jalpaiguri (86.67) and Alipurduar (88.1%) still had also higher level in critical digital literacy as compared to the non-intervention areas in the both districts respectively. Moreover, people in the Coochbehar, and Jorhat districts had comparatively higher-level understanding on major dimensions of critical literacy than people in the non-intervention areas in the same districts. Therefore, we found overall a strong impact of the Internet Roshni projects on critical literacy and its major components.

Table 7: Familiar with critical digital literacy

Indicators	Familiar with critical digital literacy		Major dimensions of critical digital literacy?					
			Learning basic computer skills to navigate the internet 2		Using social media platforms to connect with friends and family		Evaluating the credibility of online sources before sharing information	
District	Inter-vention area	Non-In-tervention areas	Inter-vention area	Non-In-tervention areas	Inter-vention area	Non-In-tervention area	Inter-vention area	Non-In-tervention area
Jorhat	95.4	0.0	98.9	0.0	100.0	0.0	2.3	0.0
Alipurduar	88.1	0.0	26.3	100.0	25.4	100.0	86.4	100.0
Coochbehar	100.0	100.0	96.7	0.0	5.0	0.0	5.0	100.0
Jalpaiguri	95.7	49.0	68.6	78.4	34.3	76.5	5.7	54.9
Total	94.8	32.3	72.6	44.6	41.2	44.1	24.9	63.7

Source: Estimated by authors from Primary Data

Encountered misinformation in the last year

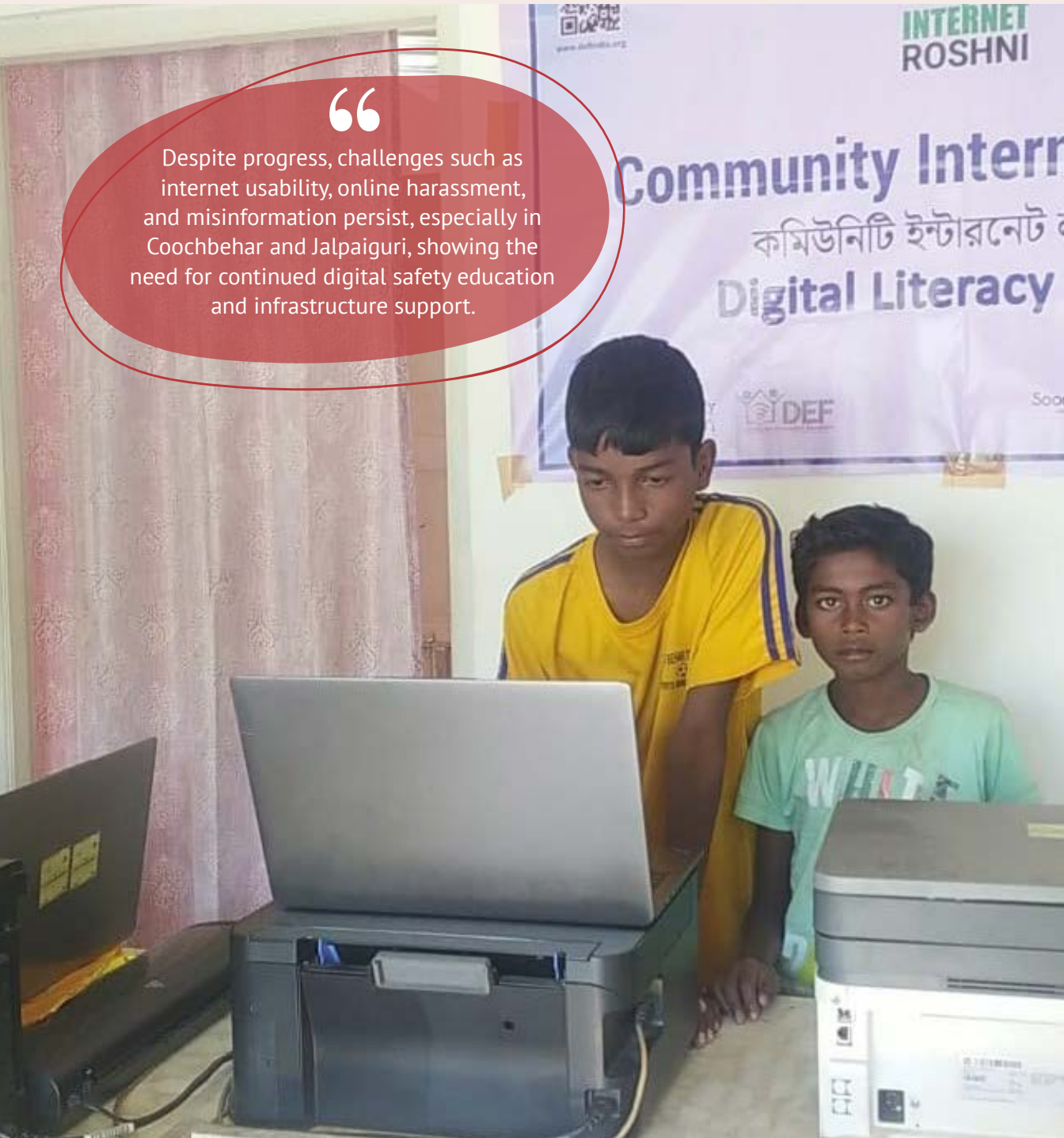
People in the district of Jorhat (12.6%) in Assam and Coochbehar (98.3%) in West Bengal had comparatively experienced a lower level of misinformation from the digital platform as compared to people from the same district, respectively. It's rally for enhanced digital media literacy in rural settings. (Table 8). Its highlights there is still scope for intervention activities in the misinformation on digital platforms, hence DEF can contribute to society.

Table 8: Encountered misinformation in the last year

District	Intervention area	Non-Intervention area
Jorhat	12.6	87.4
Alipurduar	82.2	0.0
Coochbehar	98.3	100.0
Jalpaiguri	91.4	41.2
Total	64.4	57.1

Source: Estimated by authors from Primary Data

The findings underscore strong digital penetration and device access across districts, with notable success in community-based training through DEF. However, challenges such as internet usability, online harassment, and misinformation persist - especially in districts like Coochbehar and Jalpaiguri - highlighting the need for targeted digital literacy, safety, and infrastructure interventions to ensure inclusive and effective digital empowerment.



> Despite progress, challenges such as internet usability, online harassment, and misinformation persist, especially in Coochbehar and Jalpaiguri, showing the need for continued digital safety education and infrastructure support.

> Strong internet access for learning was reported in Alipurduar (97.5%), Coochbehar (96.7%), and Jalpaiguri (98.6%), but Jorhat lags behind with only 50.6%. This shows the project's positive impact, though Jorhat still needs more intervention.

Use of Digital Technology for Educational Purposes

This section explores how digital technology—particularly internet access—has transformed educational opportunities in the intervention areas of the Internet Roshni project. It assesses the extent to which students are utilizing online platforms for learning, accessing study materials, participating in virtual classrooms, and preparing for competitive exams. Drawing from primary data across four districts—Jorhat, Alipurduar, Coochbehar, and Jalpaiguri—the section captures both achievements and gaps in digital education. The findings highlight regional variations in digital adoption, user confidence, and infrastructural availability, providing actionable insights to strengthen the digital learning ecosystem. The analysis ultimately reflects the Internet Roshni project's impact and outlines pathways for deeper integration of technology in education

Use of the internet for accessing learning/educational purposes

Strong access to online learning and educational materials is reported in the intervention areas of Alipurduar (97.5%), Coochbehar (96.7%), and Jalpaiguri (98.6%), compared to the non-intervention areas in the same districts. However, access to online learning and educational materials in the project's intervention areas in Jorhat remains significantly low at only 50.57%, although it is still much higher compared to the non-intervention areas in the same district. (Table 9). Therefore, we argue that the internet Roshni project has a tremendous impact on the online learning and educational system. Notwithstanding, this Jorhat evidence indicates an uneven distribution of digital educational access, highlighting an area where the DEF team can still make a substantial contribution, as they already did in other intervention sites.

Table 9: Access to the internet for learning/educational material

District	Intervention areas	Non-Intervention areas
Jorhat	50.6	0.0
Alipurduar	97.5	50.0
Coochbehar	96.7	0.0
Jalpaiguri	98.6	94.1
Total	85.8	36.0

Source: Estimated by authors from Primary Data

People's perception level on educational opportunity

People's positive perception is prevalent in the intervention areas of Jorhat (100%), Jalpaiguri (85.7%), and Alipurduar (85.6%) regarding the internet providing equal educational opportunities for the students in the locality as compared to the non-intervention areas of the same districts respectively (Table 10). This evidence highlights that the internet Roshni project has significant influence in the educational system to provide equal educational opportunities, and equality.

Table 10: Internet provides equal educational opportunities for students in the locality

District	Intervention areas	Non-Intervention areas
Jorhat	100.0	0.0
Alipurduar	85.6	0.0
Coochbehar	100.0	100.0
Jalpaiguri	85.7	41.2
Total	84.8	35.3

Source: Estimated by authors from Primary Data

Student dependency on online education

Surveyed participants' high agreement on students' dependency on online learning in project intervention areas of Alipurduar (87.3%) and Jalpaiguri (82.9%) suggests the presence of a well-established online educational ecosystem than the non-intervention areas in the same districts, respectively (Table 11). In contrast, the lower statistics from the intervention areas

of Jorhat (56.3%) (which is much higher than in non-intervention areas) highlight the need for additional digital intervention initiatives, in which the DEF team could consider implementing a new one.

Table 11: Has the internet made students too dependent on technology

District	Intervention areas	Non-Intervention areas
Jorhat	56.3	0.0
Alipurduar	87.3	0.0
Coochbehar	100.0	100.0
Jalpaiguri	82.9	33.3
Total	74.04	33.3

Source: Estimated by authors from Primary Data

Online platform usage for educational purposes

It was observed that the use of online platforms (such as Google Classroom, Zoom, Microsoft Teams, Canvas, etc.) for educational purposes was higher in the intervention areas compared to the non-intervention areas (Figure 5). This evidence underscores that the internet Roshni project has a significant influence on the educational system to provide equal educational opportunities.

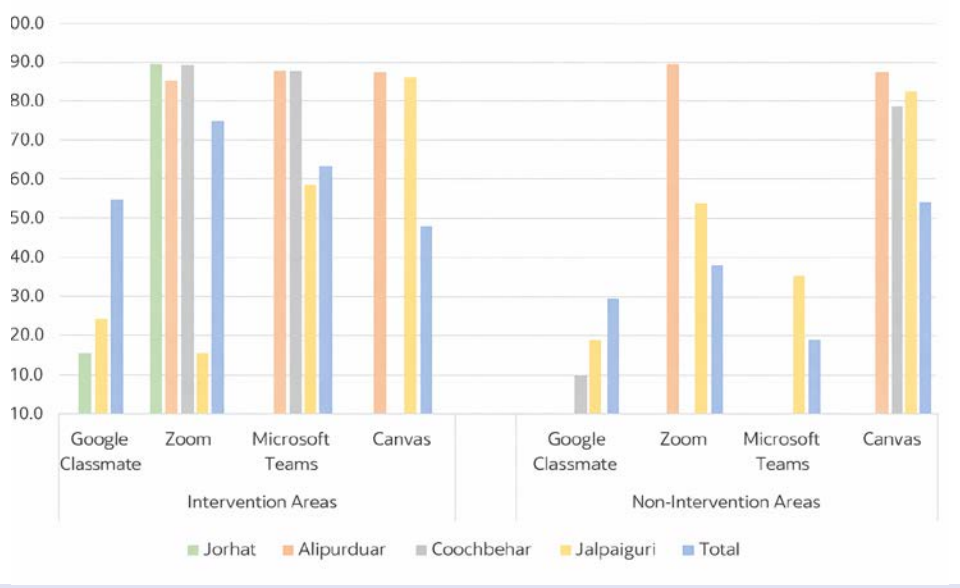


Figure 5: Online platform usage for educational purposes

Internet access provides learning confidence

The statistics from project intervention areas of Jorhat district (97.7%) indicate that students have strong confidence in the internet-based learning system as compared to the students from non-intervention areas in the same district (Table 12). The evidence from project intervention areas of Jalpaiguri also shows a relatively positive picture with 58.6% which is two times higher than the non-intervention areas of same district. However, Alipurduar and Coochbehar districts reported surprisingly low confidence levels among students. To address this gap, the DEF team could organize student capacity-building programs aimed at enhancing confidence in online learning, potentially with support from additional funding sources through co-financing initiatives.

Table 12: Internet access providing learning confidence

District	Intervention areas	Non-Intervention areas
Jorhat	97.7	0.0
Alipurduar	7.6	0.0
Coochbehar	41.7	100.0
Jalpaiguri	58.6	25.5
Total	44.7	31.4

Source: Estimated by authors from Primary Data

Internet provides access to competitive exam information to participants

The latest statistics (Table 13) show very high levels of internet access in the project intervention areas for competitive exam information among job aspirants across districts, underscoring the internet's role in democratizing access to such information. This positive outcome is largely attributed to the DEF team's rigorous mass awareness campaigns focused on job information dissemination and career building through online platforms.

Table 13: Internet provides access to competitive exam information to participants

District	Intervention areas	Non-Intervention areas
Jorhat	100.0	0.0
Alipurduar	98.3	0.0
Coochbehar	100.0	100.0
Jalpaiguri	97.1	82.4
Total	98.9	45.6

Source: Estimated by authors from Primary Data

Watching YouTube videos for skill development:

The widespread use of YouTube for skill development—especially in the project intervention areas of Coochbehar (100%), Alipurduar (99.2%), and Jalpaiguri (97.1%)—reflects a shift toward informal digital learning methods (Table 14). However, the relatively moderate usage of YouTube videos for skill development in the intervention areas of Jorhat (70.1%) highlights the potential for DEF to implement additional skill development interventions there as part of its co-financing efforts.

Table 14: Watching YouTube videos for skill development

District	Intervention areas	Non-Intervention areas
Jorhat	70.1	0.0
Alipurduar	99.2	100.0
Coochbehar	100.0	100.0
Jalpaiguri	97.1	94.1
Total	91.6	73.5

Source: Estimated by authors from Primary Data

Received study material through WhatsApp or Facebook before the survey

Table 15 presents data on study materials received by students through digital platforms in the six months preceding the survey. The high percentages in Coochbehar (100%), Alipurduar (87.5%), and Jalpaiguri (92.9%) indicates constructive use of platforms like WhatsApp and Facebook for

educational purposes. In contrast, the negligible rate in use of WhatsApp and Facebook for educational purposes in Jorhat suggests a gap in education-technology integration, which DEF could consider as a potential domain for future intervention.

Table 15: Received study material through WhatsApp or Facebook before the survey

District	Intervention areas	Non-Intervention areas
Jorhat	2.3	0.0
Alipurduar	88.1	50.0
Coochbehar	100.0	100.0
Jalpaiguri	92.9	52.9
Total	70.8	50.7

Source: Estimated by authors from Primary Data

Access to the internet made studies easier

A significantly higher percentage of participants surveyed in the project intervention areas of Jorhat (98.9%) and Jalpaiguri (91.4%) believe that the internet has made learning easier, compared to participants from the non-intervention areas of the same districts (Table 16). Such evidence underscores the impact of the Internet Roshni Projects on the student's learning system. Although, Alipurduar statistics suggests an opportunity for the DEF team to launch an initiative aimed at raising awareness about the positive impact of the internet on students' studies.

Table 16: Access to the internet has made studies easier

District	Intervention areas	Non-Intervention areas
Jorhat	98.9	0.0
Alipurduar	13.6	0.0
Coochbehar	95.0	100.0
Jalpaiguri	91.4	29.4
Total	74.7	32.4

Source: Estimated by authors from Primary Data

Online assignment submission.

Table 17 shows that the students from the project intervention areas of Jorhat (100%), Alipurduar (80.5%), Coochbehar (98.36%), and Jalpaiguri (90%) reported higher participation in online assignment submission than the students from the non-intervention areas of the same districts, respectively. These encouraging statistics suggest a strong level of digital integration at the ground level, likely facilitated by the efforts and initiatives of the DEF team.

Table 17: Submitting the assignment online before this survey

District	Intervention areas	Non-Intervention areas
Jorhat	100.0	0.0
Alipurduar	80.5	0.0
Coochbehar	100.0	0.0
Jalpaiguri	90.0	45.1
Total	92.6	11.3

Source: Estimated by authors from Primary Data

WIFI connection in the locality

Table 18 presents significant findings regarding the widespread availability and coverage of Wi-Fi connections across all Internet Roshni project intervention sites, where the DEF team has actively installed internet infrastructure. However, this evidence also reflects DEF's role and capacity in addressing the digital divide and improving communication outreach at the grassroots level through the implementation of digital infrastructure development projects.

Table 18: Heard about the setting of the Cyber/Wifi connection in the locality

District	Intervention areas	Non-Intervention areas
Jorhat	95.4	0.0
Alipurduar	94.9	0.0
Coochbehar	100.0	100.0
Jalpaiguri	98.6	58.8
Total	97.2	39.7

Source: Estimated by authors from Primary Data

Digital infrastructure and developments in hybrid teaching and learning:

Except in Alipurduar, the existing digital infrastructure and developments in the area have facilitated hybrid teaching and learning (Table 19). The project intervention areas of Jorhat (100%) and Coochbehar (91.8%) show significantly higher levels of strong agreement on the role of digital infrastructure and developments in enabling hybrid teaching and learning, compared to the non-intervention areas of the same districts. This evidence proves the impact of the Internet Roshni project on enabling hybrid teaching and learning. Alipurduar (11.7%), in contrast, shows significant disagreement, indicating untapped potential for digital integration in education. Hence, by aligning with the organization's activity plan, the DEF team should consider prioritizing Alipurduar for additional digital infrastructure and development initiatives to bridge the existing gaps.

Table 19: Existing digital infrastructure and developments in the area have enabled hybrid teaching and learning

District	Intervention areas	Non-Intervention areas
Jorhat	100.0	0.0
Alipurduar	11.7	0.0
Coochbehar	91.7	100.0
Jalpaiguri	91.4	47.1
Total	73.7	36.8

Source: Estimated by authors from Primary Data

The findings under this section clearly underscore the growing role of digital technology in facilitating education across the Internet Roshni project intervention sites. High internet access for educational material in Alipurduar, Coochbehar, and Jalpaiguri reflects a strong digital learning ecosystem, though Jorhat significantly lags behind in this regard. Despite this, Jorhat exhibits high confidence in online learning and strong participation in digital education activities, indicating the success of DEF's interventions there. Conversely, Alipurduar, despite high internet access, shows lower confidence and awareness regarding the benefits of digital learning. This signals a need for targeted awareness campaigns and capacity-building programs.

The section also highlights the wide usage of YouTube and platforms like Google Classroom, WhatsApp, and Facebook for skill development and academic content delivery. Yet, disparities remain, particularly in receiving study materials and perceiving the internet as a positive force in education. The widespread availability of Wi-Fi, largely due to DEF's infrastructural efforts, offers a solid foundation for scaling digital education interventions.

In sum, while substantial progress has been made, districts like Alipurduar and Jalpaiguri require greater attention to bridge digital and perceptual gaps. Strategic, need-based initiatives aligned with DEF's broader mission can ensure equitable access to quality digital education across all intervention areas.

> The presence of widespread Wi-Fi and digital infrastructure has facilitated hybrid teaching, especially in Jorhat and Coochbehar. However, Alipurduar still needs more digital integration, highlighting an opportunity for further development.

> Intervention areas like Jalpaiguri (91.4%) and Alipurduar (83.1%) show strong engagement in searching for health information online, significantly higher than non-intervention areas.

Digital Health Behaviour and Learning

Digital health behaviour refers to how individuals use technological tools and digital platforms to guide and enhance their health-related choices and activities. This includes employing various technologies, such as mobile applications, health apps, web-based services, and other digital solutions, to foster healthy habits, track well-being, and manage health conditions. The common goals of using digital technology include gathering health information, disease symptoms, proper medication use, and quitting harmful behaviours like smoking.

In this section, we explore the use of DEF-installed digital infrastructure to support health behaviour and learning in geographically and socially vulnerable areas, where communities have adequate access to internet connectivity and information flow ensured by the organization under the Internet Roshni Project. Here we present a glimpse of many aspects of digital health behaviour and learning in the community health, where the Internet Roshni project has been implemented by the DEF team.

Searching for health information online

Intervention areas of Jalpaiguri (91.4%) and Alipurduar (83.1%) show the highest levels of digital health-seeking behaviour and engagement which are much Higer than the non-intervention areas of the same districts respectively (Table 20). Emphasis on these evidences, we can conclude that Internet Roshni project has very positive impact on the digital health behaviour.

Table 20: Have searched for health information online in the last three months prior to the survey

Indicators	Searching for health information online		Received text message regarding health and wellness	
District	Intervention Areas	Non-Intervention Areas	Intervention Areas	Non-Intervention Areas
Jorhat	16.1	0.0	1.2	0.0
Alipurduar	83.1	0.0	83.9	0.0
Cooch Behar	98.3	100.0	98.3	0.0
Jalpaiguri	91.4	33.3	87.1	47.1
Total	72.2	33.3	67.6	11.8

Source: Estimated by authors from Primary Data

Received the text message regarding health and wellness

The intervention areas of the all districts reported the higher level of receiving text message regarding health and wellness than the non-intervention areas of those districts. The possible reasons behind are that the DEF team disseminates health and wellness message through text in the Internet Roshni project interventions areas, so people got the information. On the other hand, non-intervention adjoining areas does not receive any SMS related health and wellness. This evidence underscores the impact of Internet Roshni Projects on community health literacy domain.

Use the Website for seeking health information:

For the statement, "I have all the necessary skills to use a website to manage my/family/friends' healthcare information", it observed respondents of intervention areas have much more skill than the respondents of the non-intervention areas. For example, approximately 92%, 84.8%, 98.3%, and 94.3% of respondents from the intervention areas of Jorhat, Alipurduar,

Coochbehar, and Jalpaiguri districts, respectively (Table 21), reported having the required skills - figures that are much higher than those in the non-intervention areas. These findings suggest that the training strengthened digital health literacy in the intervention areas, and that the training provided by DEF played a significant role in this improvement.

Table 21: Skills to use website for health information

Indicator	Skills to use website for health information		Knowledge on updates for online health insurance	
District	Intervention Areas	Non-Intervention Areas	Intervention Areas	Non-Intervention Areas
Jorhat	92.0	0.0	74.7	0.0
Alipurduar	84.8	0.0	8.5	0.0
Cooch Behar	98.3	0.0	86.7	0.0
Jalpaiguri	94.3	56.9	90.0	21.6
Total	92.3	14.2	65.0	5.4

Source: Estimated by authors from Primary Data

Knowledge on updates for online health insurance

Respondents' knowledge of how to obtain information about health insurance online. In this regard, Alipurduar (8.33%) lags significantly behind compared to both Jorhat in Assam (74.71%) and Coochbehar (85.25%) in West Bengal. These findings highlight persistent inter-district and intra-district disparities in people's awareness and understanding of online health insurance updates. Moreover, the statistics from the intervention areas are several times higher than those from the non-intervention areas. This highlights the significant positive impact of the Internet Roshni Project in improving community knowledge on how to update online health insurance information.

Funny images/videos and mental relaxation:

In the online world, access to health insurance information, the easy sharing of content, and the circulation of humorous videos and images have become quite common. While some of this content can promote mental relaxation, others may contribute to anxiety. According to Table 22, 97.7% of respondents from intervention areas of Jorhat, 96.72% from

Cooch Behar, 81.4% from Alipurduar, and 92.9% from Jalpaiguri believed that online humorous images and videos contribute to mental relaxation. These statistics of the Internet Roshni project intervention areas are many times higher than the non-intervention areas. The widespread belief in the mental-relaxation potential of humorous online content in the intervention areas can likely be attributed to the DEF team's regular mass-awareness campaigns promoting digital health information and mental well-being.

Table 22: Funny images/videos and mental relaxation

Indicators	Funny images/videos and mental relaxation		Information through various online platforms	
District	Intervention Areas	Non-Intervention Areas	Intervention Areas	Non-Intervention Areas
Jorhat	97.7	0.0	3.5	0.0
Alipurduar	81.4	0.0	7.6	0.0
Cooch Behar	98.3	0.0	23.3	0.0
Jalpaiguri	92.9	47.1	44.3	33.3
Total	92.6	11.8	19.7	8.3

Source: Estimated by authors from Primary Data

Information through various online platforms

Respondents from both intervention and non-intervention areas across the districts reported receiving limited health and healthcare information from platforms such as YouTube, Facebook, and WhatsApp. About one-half (44.3%) of the respondents surveyed in the Internet Roshni project areas of Jorhat district strongly agreed that they are able to identify both the process and sources needed to obtain online health information—a proportion substantially higher than in non-intervention areas.

Such variations in digital health behavior and learning across Jorhat, Cooch Behar, Alipurduar, and Jalpaiguri. Significant disparities exist in digital health-seeking, literacy, and access to online health information, with Cooch Behar and Alipurduar showing higher engagement compared to

Jorhat, which requires targeted digital literacy support. Health-related SMS outreach further exposes this divide, as Jorhat reports very low receipt of wellness messages. Alipurduar also trails in awareness about online health insurance, emphasizing the need to address inter- and intra-district gaps. Across all districts, respondents value humorous online content for mental relaxation, reflecting the wider role of digital media in well-being. Although platforms like YouTube, Facebook, and WhatsApp are underutilized for health information, confidence in navigating online resources is moderate, especially in Jorhat. Overall, these findings stress the importance of tailored digital health initiatives and infrastructure improvements to reduce disparities and promote better health outcomes in vulnerable communities.

> Significant disparities in health-seeking behaviors and access to online health information exist, with Jorhat lagging behind in receiving health messages and awareness of health insurance, indicating areas for further digital intervention.

“

Residents in intervention areas, especially Jorhat and Coochbehar, show high awareness of online government schemes, reflecting the success of the Internet Roshni project in educating communities.

“

A significant proportion of respondents in intervention areas used digital platforms to apply for or inquire about government schemes, showcasing high digital adoption.

Information on Government Schemes and Entitlements of Participants

In recent years, the role of digital platform services—particularly the internet—has received considerable attention in information-seeking studies. This is evident across various domains, including those related to government policies, schemes, and benefits. Digital platforms not only enhance accessibility but also empower individuals to make informed decisions about the services and entitlements available to them. In rural and underserved areas of West Bengal and Assam, the Internet Roshani project, implemented by the DEF, often serves as a vital link between socially marginalized communities and formal governance structures and social welfare policy, and schemes. By facilitating digital access and literacy, the initiative enables individuals to track the status of applications for various social protection schemes, understand eligibility criteria, and access essential welfare benefits and entitlements. Therefore, this section explores how the Internet Roshani project enables its beneficiaries to seek and access information and build awareness related to government schemes and entitlements. We considered several domains and indicators to explore how the Internet Roshani project enables its beneficiaries to seek and access information related to public social welfare schemes and benefits.

People's Awareness of the Online Availability of Government Schemes and Entitlements:

In the Internet Roshni project intervention areas, residents of Jorhat (100 %) and Jalpaiguri (95.7 %) districts demonstrated significantly higher awareness of online government entitlements and schemes compared to their nonintervention counterparts (Table 23). These remarkable evidence in the intervention areas reflect the near-universal public understanding of digital access to welfare services, underscoring the substantial success of the Internet Roshani project implemented by the DEF. Through this initiative, the DEF team conducted widespread digital literacy activities aimed at educating communities about how to access government schemes and entitlements online.

Table 23: Awareness of government entitlements and schemes available online to the participant and their family

Indicators	People's Awareness of the Online Availability of Government Schemes and Entitlements		Received information about government job employment schemes	
District	Intervention Areas	Non-Intervention Areas	Intervention Areas	Non-Intervention Areas
Jorhat	100.0	0.0	98.9	0.0
Alipurduar	98.3	100.0	98.3	100.0
Coochbehar	100.0	100.0	100.0	100.0
Jalpaiguri	95.7	80.4	95.7	68.6
Total	98.5	70.1	98.2	67.2

Source: Estimated by authors from Primary Data

Received information about government job employment schemes

It has been seen that a much larger share of respondents in the Internet Roshni project intervention areas—specifically Jorhat (98.9 %) and Jalpaiguri (95.7 %) districts—reported frequently receiving information about job vacancies and employment opportunities in both government and private sectors, compared with those percentage in non-intervention areas of the same districts. This widespread dissemination of job-related information among the general public in the project intervention areas can be attributed to the efforts of the DEF team, who have facilitated access by providing high-speed internet connectivity. Additionally, DEF's awareness programs on the effective use of online platforms for employment searches have significantly contributed to increasing digital engagement and employment-related information access in these districts.

Public belief in digital/online platforms in the reduction of inequality in government social welfare schemes:

In the intervention areas of the Internet Roshni project, respondents in Jorhat (98.9 %), Alipurduar (99.2 %), and Jalpaiguri (100 %) districts expressed the strongest belief in the equitable role of digital platforms for accessing welfare schemes—significantly higher than respondents in the respective non-intervention areas (Table 24). These findings suggest that people in the intervention areas of the the Internet Roshani project have developed a strong understanding of how digital and online platforms can promote inclusivity and enhance equitable access to public entitlements.

Table 24: Beliefs of the participants of digital/online platforms in the reduction of inequality in government social welfare schemes for your community

District	Intervention Areas	Non-Intervention Areas
Jorhat	98.9	0.0
Alipurduar	99.2	0.0
Coochbehar	98.3	100.0
Jalpaiguri	100.0	78.4
Total	99.1	44.6

Source: Estimated by authors from Primary Data

Using the digital platform to apply for or inquire about a government scheme:

Table 25 illustrates the use of digital platforms by surveyed participants to apply for or inquire about government schemes over the past year. Notably, a much larger share of respondents from Internet Roshni project intervention areas in Jorhat (98.9 %), Alipurduar (92.4 %), and Jalpaiguri (94.3 %) reported using digital platforms to apply for or inquire about government schemes—far exceeding the proportions from non-intervention areas in the same districts (Table 5.4). These figures reflect a high level of digital penetration and adoption of technology in accessing government entitlements within the project intervention areas than non-intervention areas counterpart. This success can be largely attributed to the efforts of the DEF team, particularly the development of a unified digital platform that enables users to access comprehensive information on various government welfare schemes in one place.

Table 25: Participant or their family used digital platform to apply for or inquire about the government scheme in the last year

District	Intervention Areas (%)	Non-Intervention Areas (%)
Jorhat	98.9	0.0
Alipurduar	92.4	0.0
Coochbehar	98.3	100.0
Jalpaiguri	94.3	54.9
Total	96.0	38.7

Source: Estimated by authors from Primary Data

People's experience with digital platforms for accessing government schemes

Table 26 shows that 92 %, 96.6 %, 88.3 %, and 80 % of respondents in project intervention areas in Jorhat, Alipurduar, Cooch Behar, and Jalpaiguri, respectively, reported having an excellent or very excellent experience using digital platforms to access government schemes—rates far higher than those in the corresponding nonintervention areas. These overwhelmingly favorable responses indicate the development of a user-friendly, inclusive service ecosystem that effectively caters to the needs of laypersons in the project intervention areas. The positive experiences shared by respondents surveyed highlight the Internet Roshni project's successful to make digital platforms accessible, efficient, and responsive to the public's needs in navigating welfare entitlements.

Table 26: Experience with digital platforms for accessing government schemes

District	Intervention Areas			Non-Intervention Areas		
	Excellent	Good	Satisfactory	Excellent	Good	Satisfactory
Jorhat	92.0	8.1	0.0	0.0	0.0	0.0
Alipurduar	96.6	2.5	0.9	0.0	100.0	0.0
Coochbehar	88.3	6.7	5.0	100.0	0.0	0.0
Jalpaiguri	80.0	20.0	0.0	13.7	80.4	5.9
Total	89.2	9.3	1.5	28.4	45.1	1.5

Source: Estimated by authors from Primary Data

Online information available about government schemes for the public to access in your area

Table 27 shows that a majority of respondents from the project intervention areas in Jorhat (100%), Alipurduar (83.9%), and Jalpaiguri (91.4) acknowledged the sufficient availability of government schemes online. These rates are significantly higher than those reported by respondents in the corresponding nonintervention areas across the districts. This suggests that intervention activities by the DEF have strengthen the digital ecosystem and ensure more comprehensive outreach and accessibility of welfare scheme information in those project sites.

Table 27: Online information available about government schemes for the public to access in your area.

District	Intervention Areas	Non-Intervention Areas
Jorhat	100.0	0.0
Alipurduar	83.9	0.0
Coochbehar	88.3	100.0
Jalpaiguri	91.4	27.5
Total	90.9	31.9

Source: Estimated by authors from Primary Data

Facing challenges in availing public welfare entitlements:

Table 28 highlights the challenges participants face in availing themselves of government entitlements. A significant proportion of respondents in Coochbehar (96.7%) and Jalpaiguri (68.6%) reported experiencing challenges, indicating the need for improved implementation and support mechanisms in these areas. In contrast, respondents in Jorhat and Alipurduar reported minimal to no challenges in accessing public welfare entitlements. This suggests the presence of a well-functioning digital ecosystem in these districts, which effectively facilitates access to government schemes and services.

Table 28: Currently facing challenges in availing these entitlements

District	Intervention Areas	Non-Intervention Areas
Jorhat	1.2	0.0
Alipurduar	11.0	50.0
Coochbehar	96.7	0.0
Jalpaiguri	68.6	58.8
Total	44.4	27.2

Source: Estimated by authors from Primary Data

Need for improvement in information flow through technology regarding government schemes:

A majority of participants across districts recognize needs of reinforcing the call for policy and infrastructural improvements (Table 29). About 97.7%, 85.6% and 87.1% of the respondents from the project intervention areas in Jorhat, Alipurduar and Jalpaiguri respectively reported need for improvement in information flow through technology regarding government schemes. Therefore, we suggest that the DEF team should consider these societal expectations to be resolve by launching a new project in the near future.

Table 29: Need for improvement in information flow through technology regarding government schemes

District	Intervention Areas	Non-Intervention Areas
Jorhat	97.7	0.0
Alipurduar	85.6	0.0
Coochbehar	96.7	100.0
Jalpaiguri	87.1	37.3
Total	91.8	34.3

Source: Estimated by authors from Primary Data

The transformative role of the Internet Roshani project in enhancing digital access, awareness, and participation in government welfare schemes across rural and underserved districts in Assam and West Bengal. The initiative, spearheaded by the DEF, has significantly improved community-level knowledge and utilization of digital platforms for accessing information about government entitlements. While the majority of participants demonstrated high levels of awareness, positive experiences, and belief in the potential of digital platforms to promote equity, certain districts—particularly Jalpaiguri—continue to face challenges related to information flow, access, and usability. The persistence of digital barriers such as language issues and safety concerns further underscores the need for continued investment in inclusive, secure, and context-sensitive digital infrastructure and outreach. Overall, the project exemplifies how targeted digital interventions can bridge information gaps and empower marginalized communities in navigating social welfare systems.

> Internet access has fostered a favorable business environment in Jorhat (87.4%) and Alipurduar (97.5%). However, Coochbehar (13.33%) and Jalpaiguri (30%) need further efforts to strengthen local business ecosystems.

> Access to business-related content on platforms like YouTube and Facebook has inspired entrepreneurship, especially in Coochbehar (100%), Jalpaiguri (98.6%), and Alipurduar (99.2%).

Information on Digital Entrepreneurship and the Livelihoods of Participants

This section explores the transformational nature of the entrepreneurial ecosystem and evolving livelihood patterns among people in the intervention areas. While the broader concepts of entrepreneurship and livelihood encompass various economic, social, and cultural dimensions, this analysis focuses on a few key indicators that reflect the direction and scale of change. Specifically, we examine digital inspiration for entrepreneurship, access to business-related information, awareness of government loan schemes, and the use of digital platforms to explore income-generating opportunities from home. These indicators serve as windows into understanding how technology, particularly through internet connectivity, has reshaped people's aspirations and engagement with economic opportunities. The section also highlights how digital interventions, especially those led by the DEF, have contributed to fostering a more inclusive and opportunity-rich environment, even in remote or underserved areas.

Internet connection in the locality brought positive business ecosystem changes

A very high proportion of respondents from project intervention areas in Jorhat (87.4%) and Alipurduar (97.5%) expressed a positive perception of the role of internet connectivity under the Internet Roshni project in fostering a favourable local business ecosystem (Table 30). This reflects the potential for promoting sustainable business development and entrepreneurship in these districts. However, the comparatively low positive response in Coochbehar (13.33%) and Jalpaiguri (30%) highlights the need for renewed investment and focused efforts in building and strengthening the local business ecosystem in these areas.

Table 30: Establishment of an internet connection (under the Internet Roshni project) in the locality made positive business ecosystem changes

Areas	Intervention Areas			Non-Intervention Areas		
District	Strongly Agree	Agree	Undecided	Strongly Agree	Agree	Undecided
Jorhat	87.4	12.6	0.0	0.0	0.0	0.0
Alipurduar	97.5	2.5	0.0	100.0	0.0	0.0
Coochbehar	13.3	86.7	0.0	100.0	0.0	0.0
Jalpaiguri	30.0	70.0	0.0	62.8	35.3	2.0
Total	57.0	43.0	0.0	65.7	8.8	0.5

Source: Estimated by authors from Primary Data

Viewing Business-Related Inspirational Stories on Digital Platforms

Table 31 reflects high levels of digital inspiration for entrepreneurship, particularly in the project intervention areas of Coochbehar (100%), Jalpaiguri (98.6%), and Alipurduar (99.2%). This indicates that easy access to internet connectivity has exposed people to a wide range of inspiring business-related videos and stories on digital platforms such as YouTube and Facebook. Such exposure has significantly motivated individuals to consider starting their own businesses and pursuing economic independence.

Table 31: Watched/read any kind of inspiring videos/stories on online digital platforms (e.g., YouTube, Facebook, etc.) related to business

District	Intervention Areas	Non-Intervention Areas
Jorhat	75.9	0.0
Alipurduar	99.2	100.0
Coochbehar	100.0	100.0
Jalpaiguri	98.6	100.0
Total	93.4	75.0

Source: Estimated by authors from Primary Data

Digital platforms' role in inspiring people to become entrepreneurs in the future

Table 32 highlights the significant role of digital platforms in inspiring individuals to pursue entrepreneurship in the future. All respondents surveyed in project intervention areas of Alipurduar (100%), Coochbehar (100%), and Jalpaiguri (100%) reported that they frequently watch business-related videos and stories on online platforms such as YouTube and Facebook. These include content on organic tea production, agriculture, and innovative products, which have served as a source of inspiration and motivation to become an aspiring entrepreneur.

Table 32: Digital platforms are inspired to become entrepreneurs in the future

District	Intervention Areas	Non-Intervention Areas
Jorhat	74.7	0.0
Alipurduar	100.0	100.0
Coochbehar	100.0	100.0
Jalpaiguri	100.0	100.0
Total	93.7	75.0

Source: Estimated by authors from Primary Data

Engagement with Online Platforms for Home-Based Earnings

We observed not only the role of digital platforms in providing business-related ideas and information but also how people used them to explore ways of earning income from home (Table 33). Majority respondents surveyed in project intervention areas of Alipurduar (98.3%), Coochbehar (100%), and Jalpaiguri (100%) reported they watched or read any videos or stories on online digital platforms (e.g., YouTube, Facebook, etc.) in the past year about ways to earn income from home. However, evidence underscores the leadership role of DEF in deeper behavioral transformation among the population in the communities.

Table 33: Watched or read any videos or stories on online digital platforms (e.g., YouTube, Facebook, etc.) in the past year about ways to earn income from home

District	Intervention Areas	Non-Intervention Areas
Jorhat	60.9	60.9
Alipurduar	98.3	100.0
Coochbehar	100.0	100.0
Jalpaiguri	100.0	100.0
Total	89.8	90.2

Source: Estimated by authors from Primary Data

Internet Enables Easier Access to Loan Scheme Information

A high level of positive responses from participants regarding the internet's role in enabling easier access to loan scheme information highlights the emergence of an information-rich community in terms of welfare and livelihood opportunities (Table 34). Majority respondents surveyed in project intervention areas of Jorhat (100%), Alipurduar (99.2), Coochbehar (100%), and Jalpaiguri (100%) reported installation of an internet connection in their area has made it easier for people to access more information and ideas about government loan schemes. This success can be attributed to the DEF team's extensive village-level campaigns, which effectively raised awareness about the availability and provisions of public loan schemes among the people.

Table 34: Installation of an internet connection in your area has made it easier for people to access more information and ideas about government loan schemes

District	Intervention Areas	Non-Intervention Areas
Jorhat	100.0	0.0
Alipurduar	99.2	100.0
Coochbehar	100.0	100.0
Jalpaiguri	100.0	100.0
Total	99.8	75.0

Source: Estimated by authors from Primary Data

The findings from this section clearly demonstrate the transformative impact of digital connectivity on entrepreneurship and livelihoods in the intervention areas. High levels of engagement with inspirational business content, growing aspirations for self-employment, and increased access to welfare and loan scheme information all reflect a digitally empowered and opportunity-driven population. While districts like Alipurduar and Coochbehar have shown significant progress, others such as Jalpaiguri still require targeted interventions. The DEF's initiatives have played a critical role in catalysing these changes, and with sustained efforts, digital platforms can further bridge gaps in livelihood opportunities and economic inclusion.

> The Internet Roshni project has driven significant positive changes in livelihoods, with greater access to business and loan information. While some districts show substantial progress, others like Jalpaiguri still need targeted interventions to fully tap into digital opportunities.

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Participants in intervention areas were 4.81 times more likely to hold positive attitudes toward online learning, while beneficiaries were 11.68 times more positive than non-beneficiaries. They were 10.07 times more aware of government schemes and 10.86 times more likely to access them.

“

Health information seeking was 2.81 times higher, rising to 18.85 among frequent users. Entrepreneurial aspirations were 2.97 times higher, and 7.19 times among frequent internet users.

Impact on Perceptions, Attitudes and Aspirations

Furthermore, a series of multivariate logistic regressions have been performed to test whether simply living in intervention sites or being part of the program had any implications on people's perceptions, attitudes or behaviours. This analytical approach enables a deeper understanding of the relationships between key variables and provides robust evidence to support the endline findings presented earlier. In the multivariate logistic regression analysis model building, the backward stepwise elimination was used. All the statistical analyses were performed using version 14 (StataCorp LP, College Station, Texas, USA). The following regression model was applied.

Regression Model:

$$\beta 0 = \beta\ 1*Location + \beta\ 2*\ Usage\ and\ Access\ of\ Internet + \beta\ 3*\ Project\ beneficiary$$

Table 35 presents the results of the multivariate logistic regression models used to assess the impact of the Internet Roshni Project on shaping participants' attitudes and perceptions toward online learning. The analysis revealed that participants from the Roshni project implementation sites were 4.81 times more likely to have a positive attitude and perception toward online learning compared to those from non-intervention areas (AOR: 4.81; 95% CI: not correctly specified; p = 0.001). Likewise, project beneficiaries were found to be 11.68 times more likely to hold positive attitudes and perceptions toward online learning than non-beneficiaries (AOR: 11.68; 95% CI: 3.61–37.77; p < 0.001).

It also illustrates that participants from the Internet Roshni project were 10.07 times more likely to have a higher level of awareness about government welfare schemes compared to individuals from non-intervention (control) areas (AOR: 10.07; 95% CI: 2.34–43.22; p = 0.002).

The analysis found that individuals residing in the Roshni Project intervention areas were 10.86 times more likely to access government

welfare schemes compared to those from non-intervention (control) areas (AOR: 10.86; 95% CI: 4.09–28.83; p < 0.001) (Table 35). Similarly, project beneficiaries were 2.94 times more likely to access government welfare schemes than non-beneficiaries (AOR: 2.94; 95% CI: 1.04–8.35; p = 0.043).

The analysis further revealed that individuals residing in the Roshni project intervention areas were 2.81 times more likely to search for health information online compared to those from non-intervention areas (AOR: 2.81; 95% CI: 1.22–6.48; p = 0.015) (Table 35). Similarly, beneficiaries of the Roshni project were 5.04 times more likely to seek health information online than non-beneficiaries (AOR: 5.04; 95% CI: 1.58–16.11; p = 0.006). Furthermore, frequent internet users were 18.85 times more likely to search for health-related information online compared to non-frequent users (AOR: 18.85; 95% CI: 6.96–49.96; p < 0.001).

The analysis revealed that individuals from the Roshni project intervention sites were 2.97 times more likely to report positive inspiration toward pursuing an entrepreneurial journey and improving their livelihood compared to individuals from non-intervention areas (AOR: 2.97; 95% CI: 1.27–6.91; p = 0.012). Similarly, the likelihood of reporting such positive inspiration was 7.19 times higher among frequent internet users compared to those who were not frequent users (AOR: 7.19; 95% CI: 1.07–7.19; p < 0.001).

Table 35: Impact on Attitudes Toward Online Learning, Health Information-Seeking, Access to Government Welfare Benefits, and Entrepreneurial Aspirations

Outcome Domain	Predictor	AOR (95% CI)	p-value	Reference Group
Attitude Toward Online Learning	Intervention Site	4.81 (1.93–11.99)	0.001	Non-Intervention Site
	Project Beneficiary	11.68 (3.61–37.77)	<0.001	Not a Beneficiary
	Frequent Internet Use	0.25 (0.05–1.33)	0.104	Infrequent User
Awareness of Welfare Schemes	Intervention Site	10.07 (2.34–43.22)	0.002	Non-Intervention Site
	Project Beneficiary	1.99 (0.48–8.22)	0.342	Not a Beneficiary
	Frequent Internet Use	1.11 (0.13–9.64)	0.926	Infrequent User

Outcome Domain	Predictor	AOR (95% CI)	p-value	Reference Group
Access to Welfare Schemes	Intervention Site	10.86 (4.09–28.83)	<0.001	Non-Intervention Site
	Project Beneficiary	2.94 (1.04–8.35)	0.043	Not a Beneficiary
	Frequent Internet Use	1.83 (0.53–6.28)	0.339	Infrequent User
Online Health Information	Intervention Site	2.81 (1.22–6.48)	0.015	Non-Intervention Site
	Project Beneficiary	5.04 (1.58–16.11)	0.006	Not a Beneficiary
	Frequent Internet Use	18.85 (6.96–49.96)	<0.001	Infrequent User
Entrepreneurial Aspirations	Intervention Site	2.97 (1.27–6.91)	0.012	Non-Intervention Site
	Project Beneficiary	0.06 (0.22–0.06)	<0.001	Not a Beneficiary
	Frequent Internet Use	7.19 (1.70–7.19)	<0.001	Infrequent User

Source: Estimated by authors from Primary Data

The multivariate logistic regression analysis demonstrates that the Internet Roshni Project has had a significant positive impact across multiple domains, including shaping attitudes toward online learning, increasing awareness and access to government welfare schemes, enhancing online health information-seeking behaviour, and fostering entrepreneurial aspirations. Participants from the project intervention sites and beneficiaries consistently showed higher likelihoods of positive outcomes compared to their counterparts from non-intervention areas. Furthermore, frequent internet use emerged as a strong predictor of improved engagement in these areas, highlighting the critical role of digital connectivity in empowering underserved communities. These findings provide robust empirical evidence supporting the transformative effects of the Internet Roshni Project implemented by the DEF in promoting digital inclusion and socio-economic development of the society.

Access to functional internet hotspots and community support led to widespread internet use in intervention areas, with nearly all respondents online and 90% of households reporting children using it for education. About 93% sought income-related content, and 85% perceived better business awareness.

Scheme applications reached 96% versus 39% in control areas. Despite gains, power cuts and infrastructure gaps persist. Regression analysis confirmed significant improvements in learning attitudes, scheme access, health information-seeking, and entrepreneurship.

Challenges and Concluding Remarks

In sum, one broad pattern has stood out throughout the report: simply having access to a working internet hotspot - coupled with community support - dramatically changed how people used their phones. Both the village sites had high rates of phone ownership (over 90%), but almost all the respondents in the Internet Roshni sites reported being internet users (90%), compared to only about 74% in the nearby control areas. Moreover, due to training that was provided, almost everyone in the intervention sites had reported about being able to assess online information, while only about 32% in control areas did.

For students and youth, connectivity translated into learning. In villages with Internet Roshni, an overwhelming majority of households reported that their children now go online for studies – whether it's doing homework research, watching tutorial videos, or accessing educational apps. At the time of the survey, about 85.8% of respondents in these sites said someone in their family (often a school-going child) had used the internet for education in the past month, more than double the proportion in the villages (36%) without the program.

Internet access also broadened people's economic imagination. In the Roshni sites, 93% of respondents said they had looked up some form of income-related content online, whether it was job listings, information on government livelihood programs, or tutorials on farming and small businesses. By contrast, in the non-Roshni villages, that figure was about 75% – substantial, but clearly lower. What this suggests is a growing ambition among the connected communities. That is especially notable in areas where stable employment, other than relying on tea estates, is scarce. These numbers hint at a growing interest among rural youth in alternative livelihoods and skill development. With this line, 85% 'strongly' perceives that internet access improved their understanding of local business opportunities.

Perhaps the most visible change was in how people interacted with the state. Awareness of government welfare schemes improved: nearly all

respondents in intervention villages (97–100%) said they knew what schemes were available, compared to less than 70% in control areas. And knowledge translated into action, 96% of treated households had applied for at least one scheme online in the past year, versus just 39% in the control group.

Several respondents reported that digital access helped them avoid intermediaries or extra payments. Between 95% and 100% of respondents in intervention sites perceive those digital services in their villages made welfare access better.

These multi-dimensional changes in daily life have also been accompanied by a subtle yet important shift in attitudes and aspirations. The results of multivariate logistic regressions have focused on four major domains of change that came up repeatedly in the field: (1) attitudes toward online learning, (2) awareness and access to government welfare schemes, (3) health information–seeking, and (4) entrepreneurial aspirations. In each case, three key predictors have been examined: whether someone lived in an intervention village, whether they were a direct project beneficiary, and whether they were a frequent internet user.

The impacts are statistically significant. On online learning, for example, people in intervention villages were nearly five times more likely to view it positively (AOR: 4.81; $p = 0.001$), while direct participants were over eleven times more likely (AOR: 11.68; CI: 3.61–37.77; $p < 0.001$). Civic knowledge and ambition followed a similar trend. In the Roshni villages, residents were almost ten times more likely than those in non-connected villages to know about government welfare programs and how to access them.

Health information seeking behaviours also shifted in meaningful ways. People in intervention sites were nearly three times more likely to look up health content online (AOR: 2.81; $p = 0.015$), and direct beneficiaries were five times more likely (AOR: 5.04; $p = 0.006$). Yet here, frequency of internet use mattered even more: across groups, regular users were almost nineteen times more likely to seek out health-related information (AOR: 18.85; $p < 0.001$).

Entrepreneurial aspirations tell a similar story. Simply living in an intervention area nearly tripled the odds of people aspiring to improve their livelihoods (AOR: 2.97; $p = 0.012$). Again, frequent internet users stood out: they were more than seven times more likely to imagine alternative economic futures for themselves (AOR: 7.19; $p < 0.001$).

What emerges is a consistent pattern. The program mattered - being part of it or simply living in its orbit significantly increased the likelihood of positive

outcomes across learning, civic knowledge, health, and entrepreneurship. At the same time, habitual internet use cut across all domains as the most powerful predictor, suggesting that digital practice itself, once embedded in daily life, becomes a driver of wider attitudinal change.

Challenges and Way Forward

Wi-Fi access and digital instruction are, of course, not magic bullets. Socio-structural hurdles still exist, even with Internet Roshni. There is a complicated history of exploitation and discrimination behind the beautiful tea gardens. People who live in tea gardens have been watched over and governed in many different ways, including by colonial management boards, post-colonial political unions, government authorities, and development groups. Even after many efforts, tea garden workers still face ongoing socioeconomic problems, such as gender discrimination, low pay, poor living and working circumstances, and little chances to move up in the company. These problems get worse because people can't get reliable information, digital platforms, or state welfare programs. Power cuts still happen often, and network signals are generally weak in steep or isolated tea estate locations. Language is another problem. Many government websites and forms are only available in Bengali/Assamese, Hindi, or English, which a lot of tribal workers don't know how to read. These issues typically determine who may access and make use of the benefits of connectivity.

The evaluation shows some evidence to demonstrate how accessible internet, with support of SoochnaPreneurs, can bring changes and tackle some of these issues. Of course, usage of internet and online world have their loopholes, might have negative effects on their identity, but such integrated developmental approach in the field of ICT4D can create pathways to dignity, opportunity, and essential state services. With right interventions, it may enable someone to watch online tutorials to upgrade her skills; a student can attend a virtual class; a tea garden worker can check her pension account; and an entire village can use social media groups to crowdsource or share ideas to tackle everyday hurdles in tea gardens.

If Digital India is to be more than just an infrastructure project, policy must go beyond fibre and apps. It needs to implement in manner so that it creates human resource: through training, community facilitators, and content that makes sense in local languages and contexts. The findings of this evaluation aligns with those experts who argues for treating broadband like electricity: universally available, subsidized, locally managed, and surrounded by human support.

How Internet is Changing Lives in Tea Gardens of Assam and North Bengal

The Internet Roshni Endline Report assesses the impact of a digital inclusion intervention aimed at expanding internet access, digital literacy, and online service usage among underserved communities. Implemented through community-based digital facilitators and local access points, the programme focused particularly on women and first-time internet users.

The findings indicate significant changes in digital awareness, confidence, and practical usage of online platforms for education, government services, communication, and livelihoods. Many participants moved from basic mobile use to independently navigating digital applications, accessing welfare schemes, and supporting children's learning. Women beneficiaries, in particular, reported enhanced mobility, decision-making capacity, and social participation through digital access.

However, the report also highlights persistent structural barriers, including connectivity issues, device affordability, and gendered norms that limit sustained engagement. Overall, the intervention demonstrates that locally embedded digital support systems can meaningfully bridge aspects of the digital divide, but long-term inclusion requires infrastructural strengthening and continued institutional support.

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