Email   **Saumyata Bhargava**

Fwd: Digital Inclusion in the Era of Emerging Technologies

From : S.M.K. Chandra <ja-cadiv@trai.gov.in>   Tue, Dec 19, 2023 04:22 PM

Subject : Fwd: Digital Inclusion in the Era of Emerging Technologies   📎2 attachments

To : Saumyata Bhargava <Saumyata.bhargava@trai.gov.in>

From: "A.K Singh" <advisorit@trai.gov.in>
To: "S.M.K. Chandra" <ja-cadiv@trai.gov.in>
Sent: Tuesday, December 19, 2023 9:40:38 AM
Subject: Fwd: Digital Inclusion in the Era of Emerging Technologies

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From: asharma18@worldbank.org
To: "A.K Singh" <advisorit@trai.gov.in>
Sent: Tuesday, December 19, 2023 8:26:44 AM
Subject: Digital Inclusion in the Era of Emerging Technologies

Dear Sir,

Please find World Bank's comments on the consultation paper ""Digital Inclusion in the Era of Emerging Technologies" released by TRAI.

Regards,
Arun Sharma

Arun Sharma

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WORLD BANK GROUP
Digital Development

📰 **TRAI Consultation Paper - WBG Response.pdf**
190 KB

TRAI Consultation Paper on Digital Inclusion: World Bank's Response

This consultation paper has the following objectives:

(i) To study the issues related to uneven adoption of new technologies by various sections of the society and economic enterprises and how the new technologies can be used for bridging the digital divide and ensuring that the new technologies do not lead to digital exclusion.

(ii) To study and appreciate the current state of digital inclusion in the country.

(iii) To identify the issues in variations in digital inclusion across different sections of the society.

Sl No	Issue	WB Responses
I.	**Status of Digital Inclusion**	
1.	What should be the definition of Digital Inclusion? What all parameters should it include to highlight disparities across different segments of society to have a realistic assessment from a policy perspective? Please provide your answer with suitable justification.	The Parameters for Digital Inclusion could include: • Device Affordability- along with willingness to pay and access to finance • Connectivity • Digital Literacy and Skills (where basic digital literacy is differentiated from more advanced digital skills; digital literacy also directly links back to increased consumer readiness contributing to 'willing to pay,' listed above with Digital Affordability.) • Gender/ Demography and Economic Divide • Regulation/policy on civilian safety in the digital sphere (e.g., data privacy, AI regulation, criminalization of online [often gender-based] harassment and attacks, cybersecurity efforts). (These are the digital safety regulatory safeguards that correspond to the safety and security components within basic digital literacy programs; important to actualizing trust in the digital economy.)
2.	Do you agree that the indices mentioned above and developed by various international organizations for assessment adequately represent the status of Digital Inclusion in the country? What other indices and factors	Yes. We also see the 3 main digital inclusion (DI) components specified in the paper (connectivity, affordability, and literacy) as very apt. In addition, factors exacerbating other inclusion issues can offer insights and solution areas to closing digital inclusion disparities. For example, financial literacy gaps (digital and traditional) are often proxies for digital adoption gaps. Continuing with this

	need to be considered to identify the gaps in Digital Inclusion in the country?	example, raising financial literacy, particularly when offering digital financial services, can raise demand for digital services amongst the population segments where digital adoption is lowest (rural, semi-literate or illiterate, female, and socially marginalized groups (OBT/OBCs, STs, SCs, etc.)). Areas with at least 3G coverage but high below-poverty line (BPL) numbers and low DPT-disbursement could be another proxy indicator for a digital inclusion gap. Here, improving device affordability and digital literacy are the main "treatment" areas since connectivity is not the main issue.
3.	Are Digital Connectivity, Digital Affordability and Digital Literacy the main factors responsible for Digital Inclusion in the country? Do you agree that by addressing these, Digital Inclusion can be achieved in the country? If not, please suggest any other factors responsible for Digital Divide that need to be addressed to ensure Digital Inclusion?	Yes. As mentioned above.
II.	**Digital Connectivity**	
4.	Apart from efforts made by the Government through various Projects for provisioning of broadband connectivity under NDCP 2018 and NBM 2019 and other schemes, what additional measures are required to fulfil the objectives of universal connectivity in India?	• Elements of digital inclusion including last mile connectivity beyond Panchayats are missing. • Quality of service including bandwidth and speed are not covered. • Policy-driven incentives for industry could be strengthened. Policy and regulatory actions could incentivize more resource-sharing across telecom operators to both expand coverage and improve quality. The national RoW policy has been adopted which is very positive. Additional infrastructure-sharing regulations (both active, such as data roaming-related, and passive, such as tower sharing) could help lower the cost of deployment and transform CAPEX into OPEX. Without cost-sharing or other policy action supporting infrastructure expansion within operator business models, MNOs have little incentive to fiberize existing towers or invest in the backhaul and small cell investment necessary to expand infrastructure to the more rural and austere areas. • Policy around use of data, shared services, digital entrepreneurship are missing.
5.	Whether connecting GPs/villages/village institutions through BharatNet has helped in improving digital connectivity in an effective manner? If not, what additional	Yes, the Bharatnet project is helping. However, effective private sector mobilization through service providers is missing, especially on the last mile connectivity from GP to smaller villages, and from Panchayat center to homes.

	measures are required to ensure universal connectivity across all GPs/villages/village institutions in an efficient and time bound manner?	The network capacity, usage, bandwidth etc have not been planned or thought through. Business/ commercial activities supported through internet are not factored in the plans.
6.	Will the schemes supported by USOF other than BharatNet suffice the need of universal connectivity in the country? If not, what additional measures or changes in strategy are required to ensure universal connectivity to all unconnected areas? Please provide your answer with suitable justification.	Schemes under USOF need to be open and not entirely prescriptive.
7.	What steps should be taken to encourage service providers for effective utilisation of the BharatNet infrastructure in provisioning of connectivity to Institutions/households/ individuals?	Revenue sharing, encouraging innovation and entrepreneurship, digital skilling, edtech. Differential charges for passive bandwidth consumption for recreation. For example, digital literacy efforts in the context of encouraging adoption of digital financial services (including internet-enabled device financing and insurance products), encouraging digital entrepreneurship within e-commerce markets and the gig-economy, and availing of government services through the India Stack and services available at CSCs can boost consumer motivation and interest in digital services, and therefore demand. These efforts to incentivize consumer demand are often offered by operators themselves to drive data and device-uptake. Government and civil society programs can support and reinforce industry player activity – ideally encouraging MNO activity, rather than replacing their role. Targeted public outreach campaigns through trusted civil society groups regarding EdTech programs, connecting schools, and the health opportunities of the eHospital HMIS can also boost consumer readiness in overlooked/high risk population segments.
8.	Is there any need to take steps to make satellite internet a viable option for providing connectivity to remote/ inaccessible areas? If yes, please provide your answer with suitable justification. If not, what are the other alternatives for provision of connectivity in these areas?	Yes, with India's success in space, satellite internet is a viable model. GOI is in discussions with Starlink and an effective collaboration can be worked out. ISRO too has similar plans. Connectivity through VSAT is the current viable model but the functionality varies/ deteriorates over time and OFC is the more stable solution, but is expensive in hilly and remote terrains.
9.	What measures are required for adopting a collaborative approach to utilise Digital Connectivity Infrastructure created by the service providers or through government-aided schemes to extend connectivity to the people in	Revenue sharing, encouraging innovation and entrepreneurship, digital skilling, and other solutions offering edtech, agritech, fintech services. Private sector/ entrepreneurship could be encouraged for effective service delivery.

	unserved areas? Please provide your answer with suitable justification.	The pilot under Fiber to Home (FTTH) connections using BharatNet through BharatNet Udyamies (BNUs) under funding from USOF for both Internet Leased Line (ILL) and capital incentives was successful and can be expanded.
10.	Please suggest the best practices being followed internationally that can be adopted in the country to provide universal connectivity to all individuals, households, and communities?	
III.	**Digital Affordability**	
11.	Whether various measures taken by the Government such as focusing on local manufacturing are sufficient to bring down the prices of smartphones in India? If not, what additional measures are required to be taken to make it more affordable? Please explain your answer with suitable justification.	Very few companies are manufacturing locally. Most of them are assembling locally which does not lower the prices and as a result the cost of smartphones is still high, at almost 50% of median HH monthly income. A dedicated, low-cost phone with subsidized cost structure through direct input subsidy or tax subsidy may be a more viable approach. In addition to removal of sales tax, subsidizing or removing VAT taxes on imported parts that are locally assembled could significantly reduce costs as well. Sourcing at scale could lower shipping/warehousing costs along with distribution and sales costs, though just-in-time sourcing and large-volume sales would be required to see substantive impact. **The WB can conduct a study and suggest workable proposal to TRAI, DOT and MEITY.** In addition, if current government schemes aiming to incentivize local manufacture are successful and local manufacturing increases, impact on pricing will still take time, so consumer financing options offer important intervention streams in the meantime. Doing so requires stimulating the supply of financing in the consumer device financing market through risk reduction efforts to suppliers.
12.	Whether market for second-hand smartphones is a viable strategy for increasing the affordability of smartphones to the people? Please indicate the opportunities and challenges that may arise due to this strategy.	Repair and reuse of existing mobile phones by authorized resellers at a discount would benefit the seller and buyer while helping the circular economy and reducing carbon footprint. Fraud, lack of quality standards, customer education and dispute resolution would be some of the challenges. The DIRBS system for the Pakistan Telecom Authority to prevent the use of sub-standard, fake, stolen and illegally imported mobile phones is one example intervention in the region aiming to address this challenge while still supporting the recirculation of existing devices.

13.	Whether schemes undertaken by various states for distribution of smartphones and laptops to students and support for the connectivity are effective mechanisms to increase Digital Affordability in the country? If yes, what are the measurable parameters to assess the effectiveness of such schemes? If not, what could be the alternative policy interventions/ schemes with measurable outcomes that can support affordability of the devices? Please support your answers with suitable information.	Yes distribution of smart devices is a way to increase digital inclusion. However, these need to be conditional and not unconditional as is the case currently. The devices could be embedded with Apps such as Digilocker, mAadhaar, UMANG, DIKSHA (Education), etc to increase the usage of digital government while ensuring that the devices are not only being used for recreational purposes. Second, the devices should be 'locked' to prevent their black-marketing or sales in secondary markets. Third, effective usage of these devices for intended purposes should be monitored. Fourth, subsidies and free device distribution can apply to certain income levels (or BPL status) and indicators for other extremely marginalized conditions, perhaps along with other social service-based cash transfers. These can be offered along with device financing schemes for slightly higher income levels to avoid market distortions. **The WB can conduct a study and offer concrete suggestions in this regard.**
14.	Is there any need for policy interventions to increase Digital Affordability (digital devices and digital connectivity) among specific sections of society, for example, women, students, farmers, fishermen, economically weak, etc.? Please respond with suitable justification.	Yes, this is highly recommended approach to increase inclusion in targeted sections. As numerous studies have shown, the marginalized sections are often the last to have access to smart devices, **even when affordability is not a factor**. In several households, women/ students/ girl child will not get access to devices even if the family can afford it. Therefore, targeted approaches are needed. In addition, regulation that enables non-bank entities to enter the supply of financing market as authorized DFIs (digital financial institutions) can further expand the supply of financing. These new suppliers would then legally offer extended payment tenures with or without interest (e.g., "Buy-now-pay later," pay-as-you-go," and "asset-based-financing" linked to other assets like household solar panels). Government de-risking efforts can help suppliers of financing expand service offerings to target the lowest and therefore highest-risk income brackets (such as the demographics listed in this question).
15.	What measures should be taken to make digital devices and digital connectivity affordable to the citizens for empowering them to maximize the benefits of an inclusive digital society? Please provide your answer with best practices being followed internationally in this regard.	• Making smart devices cheaper through tax incentives, direct input subsidies, or PLI type schemes. • Improving access to finance for devices through innovative models • Second hand/ refurbished models with standardized quality controls • Outreach and publicity
IV.	**Digital Literacy**	

16.	What measures should be taken to engage the industry and academia in promoting Digital Literacy in India? Please provide your answers with suitable justification.	Results based approach through accreditation of literacy courses would be impactful. Regular check ins and feedback, tests and concrete recognition of the accreditation through actual use of the information. While advanced digital literacy is key to a country's taking full advantage of digital services and emerging technology such as AI, basic digital literacy is the key literacy area addressing the adoption gap in rural, lower income, and less educated demographics. A significant number of government-driven digital literacy interventions have been initiated, as already referenced in this paper. PMGDISHA is one particularly notable example. Integrating with existing large-scale government programs and services (such as those offered through DPI rails) and bundling with digital financial service products or digitally enabled primary healthcare can help further offer basic digital literacy efforts like PMGDISHA at scale. These activities are already being employed in certain areas so coordination and ensuring that public messaging is clear, transparent, consistent, and from trusted sources are important actions government can take to ensure success.
17.	How can the digital literacy toolkits developed by multiple industry players already available in the market be utilised to improve digital literacy levels in the country, especially for the rural citizens of the country?	By making the tools open and available to all, creating repositories, making them available in Government apps such as UMANG. WB can help in producing and customizing the content. In addition, TRAI, DoT, and MEITY can use their respective public sector roles to engage with and coordinate civil society organizations and other entities with known last-mile distribution networks (such as MNO retail branches, government ration shops, or utility offices). These entities are uniquely suited to use these toolkits with the target audience and conduct awareness campaigns regarding these offerings. In short, government can leverage its devolved powers at the national and local level to coordinate efforts so that "trusted faces in local places" reach individuals and businesses who have the least trust but need digital literacy support and the most.
18.	Please suggest the best practices followed internationally that can be adopted in the country to promote mass digital literacy for different segments of society.	Overall, messaging around digital literacy that conveys that effective support is wider than digital skills; it is about digital motivation and confidence and developing people's ability to apply digital skills for life and work. **The WB is studying effective global digital literacy best practices to develop strategic recommendations for interventions targeting the needs and opportunities in India and other South Asian countries.** The WB would like to involve TRAI as a key informant stakeholder interview for this effort and will share the

		recommendations when they are ready. Key practices that stand out are so far include:
		- Engaging with employers early to increase the absorption of women into the digital workforce (Kenya, Philippines). - Working with industry players such as Airbnb, Uber, and eCommerce sites on the local market to conduct outreach trainings for women and members of other marginalized groups on participating in the gig/platform economy and eCommerce (Southeast Asia and Latin America). - Bundling digital literacy and digital financial literacy programs with financial services/device purchase schemes targeting women, the unbanked/low banked, and other marginalized sections of society (Nigeria, Ghana).
V.	**Digital Public Infrastructure**	
19.	What steps should be taken to monitor the impact of DPIs on underserved and vulnerable segments of the society? Kindly indicate the key parameters that need to be monitored to assess such impact and actions required to promote adoption citizen centric services by these segments of the society.	The saturation of ID in government schemes, e-sign, e-kyc, Digilocker, and elements of linking UPI- Bank account- smartphone-connectivity can be measured and studied. The real saturation of the JAM trinity needs to be studied. WB has proposed the creation of a DPI adoption index across India states which will study these parameters.
VI.	**Emerging Technology driving Digital Inclusion**	
20.	How can emerging technology be leveraged to enhance the digital literacy programmes of the Government? Please give your input with reasons. Best practices being followed by other countries and private sector may also be referred to.	Just as decision-making support in digital health tools help clinicians, in-app decision-making support and customer nudges through decision-tree algorithms can be very helpful for digital literacy programs. On a more macro level, if Big Data and Deep Learning can capture all the different cohorts in digital literacy training throughout the country and assess before-and-after literacy improvement on a large scale, both content and delivery can consistently improve. Emerging technology can support government and other stakeholders' decision-making as digital literacy efforts go to scale.
21.	What steps should be taken to ensure that AI and new technologies do not result into further digital divide and every section of the society has access to the new technologies and resultant economic opportunities?	Drafting, finalizing, and publicly sharing a regulatory framework as quickly as possible; GoI can leverage work being done now in other countries, such as various EU member governments. Reinforcing elements of this paper - another key step is expanding advanced digital skills training, including computation,

		computer science and data science, so that India's workforce keeps up with the skills and digital security needed to safely leverage AI.
VII.	**Indicators and Dashboard for monitoring Digital Inclusion**	
22.	What should be key performance indicators to measure, monitor and track the progress of the key factors of digital inclusion in the country mentioned below? a) Digital Connectivity b) Digital Affordability c) Digital Literacy	The proposed DPI adoption index can cover these parameters.
23.	What measures should be taken to provide high-speed broadband connectivity to schools in the country, especially in states with low number of schools having internet connectivity?	A special focus on connecting all UDISE schools, through the M/o Education can be undertaken through available methods of VSAT/ OFC/ BB Mobile internet. An investment into this aspect is justified and needed. The infrastructure so created can also be used for other purposes in its off-peak hours.
24.	How effective is a dashboard as a measure for evaluating and tracking the progress made in respect of the various indicators of the three key areas of digital inclusion? What are the critical parameters and at what level (i.e., at state or district or towns/cities or block or Gram Panchayat levels), such parameters should be captured in the dashboard?	A dashboard to measure the progress across various indicators, while allowing addition of other indicators will be highly useful, as has been seen in other Mission Mode projects (DBT, PRAYAAS, SMART cities). This however needs that the underlying services need to be digitized to capture the required data. It is also recommended to draft indicators that measure how the government and other relevant stakeholders (to be determined by TRAI and DoT and MEITY) use such a dashboard for monitoring and decision-making (e.g., indicators on the number of active dashboard users; indicators tracking the number or % of "XXX" government projects or fund renewal processes where dashboard data are used for strategy and decision-making). Indicators with a scale of options as potential answers are especially useful to model maturity and help stakeholders move up maturity levels for a specific indicator.
25.	Who should be responsible to evaluate and track the progress of digital inclusion including development and management of the dashboard?	Village level officials, BDO, SDM, DM etc, with accountability for the data entered.
VIII.	**Digital Inclusion for MSMEs**	
26.	What efforts are required to provide reliable digital connectivity to MSMEs at affordable costs to empower them through new technologies for effective participation in the digital economic activities?	Digitization of processes through end-to-end solutions (ERP) models. The FM had made a budget announcement 3 years ago to allocate funds for digitization of MSMEs and could be revived. There could be other means provided for this effort, with overall ownership with the relevant Ministry. Consumer financing interventions were mentioned earlier in this document; likewise, similar financing schemes targeting MSMEs and their particular needs

		and strengths would be beneficial here. In addition, MSME digitalization does not follow a single formula and often needs to be bespoke; not every activity needs to be digitalized, and movement towards digitization should depend on the MSME's business plan. Guidance for MSME digitalization can be provided at local touchpoints such as CSCs, along with outreach/information on device and data financing options targeting MSMEs. **The WB can play a role through Technical Assistance and concessional financing.** The MSMEs once digitized should be incentivized to remain digital by bringing them into digital ecosystem such as GST, Udyam.
27.	Whether the schemes of fibre connectivity in villages and rural areas such as BharatNet can be leveraged to provide the digital connectivity to MSMEs at affordable costs? If yes, please suggest the steps to be taken to extend such connectivity?	Yes, connectivity in rural areas through various schemes, especially BharatNet should involve entrepreneurship opportunities. A digital plan for MSMEs, as mentioned above, could be developed, which can be linked with other existing or new schemes of government to provide support to these entities. (One District One Product; Aspirational District, etc).
28.	How DPIs can be used to allow the marginalised communities and MSMEs to access new technologies?	DPI, especially Data exchange frameworks can use the data available for required analysis and provide appropriate support to the marginalized entities (individuals, communities or MSMEs). The Account Aggregator and National Health Authority/ PMJAY models have shown that data exchange frameworks make it convenient for individuals and lucrative for service provides besides lowering the costs of doing business.
29.	What efforts can be made to increase awareness and digital literacy levels, especially in 5G, Big Data and AI/ ML, to the business owners and employees of the MSMEs? What kind of framework is needed in this regard? Please provide your answers with suitable justification.	To avoid biases since inception. MEITY could develop these policies. "Responsible AI/ML," data protection, and cybersecurity policies and regulation are all key to both protecting and empowering citizens, including MSME owners and employees. Beyond regulation and expanding on the previous answer, the services coming out of DPI's solutions and systems are strategic opportunities to demonstrate some of the benefits of emerging technologies to MSME business owners and employees. Digital payment systems (B2C as well as B2G and B2B), data exchange and the many other services "unlocked" by a digital ID are made possible by 5G, Big Data and AI/ ML. MSME-facing outreach campaigns on how and why this happens can be conducted through government touchpoints, MNOs, and afore-mentioned digital literacy programs to raise awareness and interest in further using these technologies.

| 30. | Stakeholders may also suggest any other measures not covered in the consultation document to improve Digital Inclusion in the country with suitable justification. | |