



29 December 2023

Shri Anand Kumar Singh,
Advisor (CA&IT)
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan
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New Delhi – 110 002

Subject: Tata Communications Ltd. comments to TRAI Consultation Paper on 'Digital Inclusion in the Era of Emerging Technologies'

Dear Sir,

This is with reference to the TRAI Consultation Paper No. 16/2023 dated 14-09-2023 on '**Digital Inclusion in the Era of Emerging Technologies**'.

In this regard, please find enclosed herewith Tata Communication Limited's comments for your kind consideration as Annexure.

We request you to kindly consider our submissions while finalizing the recommendations and would be happy to provide any additional information, if required.

Thanking You,

Yours Sincerely,
For Tata Communications Limited,

Alka Selot Asthana
Vice President and Head Regulatory Affairs
(Authorized Signatory)

Enclosed: As mentioned above

TATA COMMUNICATIONS

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**Tata Communications Limited's response to TRAI Consultation Paper on
'Digital Inclusion in the Era of Emerging Technologies'**

At the outset, we thank TRAI for providing us an opportunity to share our comments/inputs on this aptly issued consultation paper with an aim to explore and address the challenges and opportunities presented by the rapid advancement of emerging technologies, with a focus on ensuring inclusivity for all segments of society and industries particularly Micro Small and Medium Enterprises (MSMEs).

It is important to note that vide this consultation paper, TRAI has recognized that digital inclusion is crucial empowerment of every citizen of the country at right moment, failing which the gaps in the access of digital services may widen further and thereby depriving large segments of the society from an inclusive growth along with others who are well connected and availing the benefits of the digital services. Further, TRAI has analyzed various gaps in digital inclusion present in the country such as the mobile internet usage gap, rural urban internet penetration disparities, gender gaps in internet access, etc. as well as gaps identified from some global indices. Proactively prioritizing inclusion can create an ecosystem that benefits every individual, fostering a more equitable and accessible digital economy. TRAI has also identified various challenges being faced by Micro, Small and Medium Enterprises (MSME) sector in the country from the adoption of new and emerging digital technology solutions in the paper.

TRAI vide para 1.24 of the paper has stated that -

1.24 While emerging technologies hold great promise for advancing digital inclusion, they also present challenges that can create gaps in access and participation. The rapid pace of technological advancements and the associated costs of adopting and utilizing these technologies can widen the digital divide, particularly for marginalized communities and underserved regions. Unequal access of infrastructure, limited digital literacy, and affordability issues could hinder the equitable distribution and utilization of emerging technologies, exacerbating existing disparities in digital inclusion. To ensure comprehensive digital inclusion, it is imperative to address the gaps which are likely to arise due to emerging technologies by implementing targeted policies, investing in infrastructure development, promoting digital literacy programs, and fostering affordable access to emerging technologies for all segments of society. Furthermore, there is also a need to generate use cases for emerging technologies for individuals as well as businesses (MSMEs) to take benefit from, so that they can actively participate in the digital economy.

We are of the view that to ensure comprehensive digital inclusion across the country, it is imperative to address the gaps in digital inclusion which are likely to arise due to implementation of emerging technologies. The rapid pace of technological advancements and launch of 5G enabled services including Artificial Intelligence / Machine Learning based services and the associated costs of adopting and utilizing these technologies can widen the digital divide further, particularly for marginalized communities and underserved regions. Unequal access of



infrastructure limited digital literacy, and affordability issues could hinder the equitable distribution and utilization of emerging technologies, exacerbating existing disparities in digital inclusion.

The indices mentioned in the paper are more focused towards digital inclusion of individuals covering key areas – Digital connectivity, Digital affordability and Digital literacy with the aim to reduce digital divide. We are of the view that there is a need to have separate indices for Enterprises and MSMEs to monitor digital adoption and support them in their digital transformation journey.

Further, in order to enhance digital inclusion in the Country for all segments of society and industries including Micro Small and Medium Enterprises (MSMEs), the role of digital connectivity, digital public infrastructure and new technologies is critical. As MSME sector contributes significantly towards the nation's economy, it is imperative that the MSMEs are empowered to contribute more towards the digital economy through new emerging technology solutions, adoption of evolving use cases to get more operational efficiency, especially the micro-enterprises as majority of the MSMEs are micro-enterprises.

Tata Communications, being a global Digital Ecosystem enabler, provides various digital platforms, solutions, and connectivity services to different Enterprises by focusing on convergence of platforms, connectivity, and services. The world is gradually migrating from a connected to hyperconnected sphere, where various devices, platforms, technologies belonging to different ecosystems can literally converse, share intelligence and insights with each other and provide very high levels of experience and value to consumers and enterprises. We believe that this digital transition of Enterprises and MSMEs is going to accelerate further with advancement of technologies and with empowering hyperconnected ecosystems through a digital fabric leading to greater participation in digital inclusion,

We echo with TRAI's views that there is a need for putting in place a robust policy framework and collaborative efforts required among stakeholders to ensure participation of individuals and Enterprises in digital economic activities in order to address the gaps in digital inclusion which are likely to arise due to emerging technologies.

Tata Communications issue wise response is as follows:

Status of Digital Inclusion

Q1. What should be the definition of Digital Inclusion? What 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.

Tata Communications Response:

As rightly pointed out by TRAI in the paper, before defining the Digital inclusion, it is necessary to understand the digital divide, a key factor impacting the digital inclusion. There is a need to work



together by all stakeholders towards bridging the digital divide¹ to enhance digital inclusion in the country.

In our view, the definition of Digital Inclusion provided by the United Nations² as mentioned below is comprehensive and covers all aspects. The same may be adopted by India.

Digital inclusion is defined as “equitable, meaningful, and safe access to use, lead, and design of digital technologies, services, and associated opportunities for everyone, everywhere.”

It is suggested that the following parameters may be included to highlight disparities across different segments of society to have a realistic assessment from a policy perspective:

- Equitable, meaningful, and safe access to the Internet for individuals and businesses.
- Availability of digital devices, services, platforms, and relevant content
- Affordable access to critical digital and other skills, education, and tools
- Equitable participation in safe, discrimination-free online spaces
- Social permissiveness or lack thereof on factors such as gender, caste etc.
- Digital inclusion should aim to dismantle existing structural social inequalities and enhance well-being for all.

Q2: Do you agree that the indices mentioned above and developed by various international organisations for assessment adequately represent the status of Digital Inclusion in the country? What other indices and factors need to be considered to identify the gaps in Digital Inclusion in the country?

Q3: 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?

Tata Communications Response to Q 2 & Q3:

The indices mentioned in the paper are more focused towards digital inclusion of individuals covering key areas – Digital connectivity, Digital affordability and Digital literacy with the aim to reduce digital divide.

We are of the view that there is a need to have separate indices for Enterprises and MSMEs to monitor digital adoption and support them in their digital transformation journey. It is suggested that following parameters are required to be considered –

- Availability of innovative and scalable platforms to meet Enterprises and MSMEs digital requirements.
- Creation of hyperconnected ecosystems through digital fabric with real time availability

¹ OECD has defined the Digital Divide as “the gap between individuals, households, businesses, and geographic areas at different socio-economic levels with regard both to their opportunities to access Information communication technologies (ICT) and to their use of the internet for a wide variety of activities.”

² https://www.un.org/techenvoy/sites/www.un.org.techenvoy/files/general/Definition_Digital-Inclusion.pdf



and always on anywhere on features.

- Adoption of digital use cases by Enterprises to get more operational efficiency.
- Inclusive and prudent risk management framework to protect Enterprises in its digital transformation journey.

Additionally, we would also like to submit as follows:

- From Individual / retail user perspective, Digital Connectivity, Digital Affordability and Digital Literacy are not the only factors responsible for faster adoption of the Digital Inclusion in the Country.
- We are of the view that there are other factors which indirectly impact digital inclusion. Some of these factors are follows:
 - Illiteracy and further gender Gap in literacy.
 - Income Gap which further widens the affordability – some low-income groups / sections of society do not need / prioritized the need of internet due to need to other basis facilities.
 - Gender Gap in social fabric of the society – traditionally, Indian social fabric is male dominant which will always impede the adoption of technology or anything else by women in household. There are changes taking place but still it requires more efforts and awareness to promote digital inclusion.
 - Poor Infrastructure – Basic amenities like Electricity, Water, Roads etc. are not adequate in rural and remote regions of India. Villages and Gram panchayats even 100 Kms in the radius of Taluka/District Headquarters face scarcity of these basic amenities. Infrastructure conditions are much more severe in some of the States. In these regions, priorities of people are different than digital literacy leading to more widening the digital divide.
 - Caste gap and lack of social equality leading to definitive and normative expectations of social behavior.
- To combat with the above factors impacting the digital inclusion – We would like to propose that digital literacy should be intensively promoted in all primary schools covering all Gram panchayats across the country considering the fact that these primary schools are the pivotal epicenters of this change. These schools should be provided with subsidized BB and Mobile internet service (including subsidy for smart handsets and devices) by the Government in PPP- Model with ISPs / TSPs whosoever is licensed and having its network available to service that particular region in the LSA. The ISPs / TSPs should be incentivized by the Government through USO fund. There should be a mandate that certain percentage of schools (say 80% or above) should be connected by every service provider so these schools have minimum 3-4 provider's service at any given time. Quarterly compliance reports should be sought by the Government not just for connectivity but also for available functioning in order. This model could be expanded to include Adult Digital Literacy as well.



Digital Connectivity

Q4: 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?

Tata Communications Response:

There is a need to promote Broadband connectivity which is imperative to achieve digital inclusion in the Country. Various provisions / projects undertaken under NDCP 2018 and NBM 2019 which aim to provide 'Broadband for All' in the country. TRAI in its paper has mentioned that *the universal digital connectivity is not limited to the connectivity through smartphones but also connectivity to the places where people generally connect to the internet (homes, schools & community centres, and businesses). This is especially important in the concepts like working from home (WFH) and working from anywhere (WFA). Thus, the universality of connectivity can be measured by how many individuals, households, communities, and businesses have access to the internet. Meaningful connectivity, on the other hand, is enabled by robust digital connectivity infrastructure, affordable digital devices and high digital skill levels among the populace.*

In this regard, we would like to mention that TRAI in its recommendation on "Roadmap to Promote Broadband Connectivity and Enhanced Broadband Speed" dated 31-08-2021 had recommended to provide incentive to ISPs/Access Providers by way LF exemption on fixed line broadband service revenues for a period of five years subject to certain qualifying criteria in order to catalyze proliferation of fixed line broadband. DoT after reviewing TRAI recommendations dated 31-08-2021 has sent its Reference back to TRAI vide its letter dated 28-06-2022 inter-alia stating that license fee exemption would be applicable on the entire Fixed Line internet services and such exemption would be for a period of ten years and would be available to all Access providers and ISPs without any qualification. Further, TRAI has submitted its response to DoT reference vide its letter dated 25-07-2022 for the consideration for exemption of license fee to ISPs /Access Providers.

It is requested TRAI to again take up with DoT to expedite the implementation of TRAI recommendations to implement exemption of license on Fixed Line internet, voice and services - for ISPs and Access Providers for a period of 10 years. We are of the view that this policy reform will greatly incentive ISPs and Access service providers to build necessary digital infrastructure in the remote and rural areas to provide broadband connectivity and significantly contribute in meeting the objectives of universal connectivity in India.

Q5. Whether connecting GPs/villages/village institutions through BharatNet has helped in improving digital connectivity in an effective manner? If not, what additional measures are required to ensure universal connectivity across all GPs/villages/village institutions in an efficient and time bound manner?

Tata Communications Response:

Following are the suggestions for consideration as a part of additional measures to ensure universal connectivity across all GPs/villages/village institutions in an efficient and time bound manner –



- Incentive for end user connectivity to ISPs in terms of LF waiver, subsidy etc.
- Incentive for service providers in providing P2P links to enable the universal connectivity.

Q6. 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.

Tata Communications Response:

As submitted in our response to Q.3, It is reiterated that Private ISPs should be incentivized through adequate USOF scheme to connect Gram Panchayat offices, Schools, primary health centers etc. and ensure their appropriate intended functioning.

Q7. What steps should be taken to encourage service providers for effective utilisation of the BharatNet infrastructure in provisioning of connectivity to Institutions/ households/ individuals?

Tata Communications Response:

Tata Communications being an Enterprise Service Provider are required to deliver services to its Enterprise Customers' premises / locations as per their business requirements which is not feasible at all the times in terms of technical feasibility to access customer location(s) or areas where availability of fixed line connectivity (e.g. Fiber) was a challenge due to exorbitantly higher ROW cost. In this regard, it is suggested that BharatNet fiber infrastructure connectivity should be made available to ISPs / TSPs to meet their requirements wherever feasible in a highly subsidized tariff to serve their customers. This would also ensure better utilization and maintenance of BharatNet fiber infrastructure.

Q8. 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?

Tata Communications Response:

Yes, there is a need to take necessary steps to make satellite internet a viable option for providing connectivity to remote / inaccessible areas given the challenging terrain of India in some regions. Hence, this could be considered as an alternate option. Further, affordable solutions to provide interconnectivity between terrestrial, satellite backhaul & fronthaul need to be developed.

To cover the viability aspect of it, USOF funds should be allocated to the ISPs / TSPs for the same.



Q9. 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 unserved areas? Please provide your answer with suitable justification.

Tata Communications Response:

There is a need to have collaborative approach to utilize Digital Connectivity Infrastructure created by the service providers or through government-aided schemes to extend connectivity to the people in unserved, far-flung and rural areas. There should be a provision wherein service provider who has created a digital infrastructure under government aided schemes (USOF scheme), mandatorily be asked to share the infrastructure with other service providers at a nominal charge as and when required in a time bound manner. Further, the other service provider(s), who would be paying charges to other service provider for sharing such digital infrastructure, should be allowed to get pass through of such charges while calculating its AGR for the purpose of paying license fee to the Government.

Pls see also our response provided in Q.4.

Q10. 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?

Tata Communications Response:

It is suggested that Government should introduce scheme wherein both TSPs and other licensed service providers incl. ISPs should be eligible to participate and contribute in providing universal connectivity in the country to both individual and enterprise customers.

The Government can also introduce special schemes for all licensed service providers to support Enterprise customers in their digital transformation journey which is also an important stakeholder in the adoption of Digital inclusion. The Government of Australia as a part of its telecommunications agenda has launched scheme namely “Better Connectivity Plan for Regional and Rural Australia” to improve mobile and broadband connectivity and resilience in rural and regional Australia. The Better Connectivity Plan will drive productivity and improve equity for rural and regional communities. Improvements in digital connectivity deliver some of the most tangible and widespread benefits across a huge range of areas including economic and social participation and equality, access to online government, health and education services, and public safety including on roads and during disasters and emergencies.

In this recommended that similar scheme may be considered as a base scheme to be customized for India having provisions for all aspects of connectivity incl. IoT, funding for the Regional Tech Hub, providing advice and support on digital connectivity options.



Digital Affordability

Q11. 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.

Tata Communications Response:

No comments

Q12. 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.

Tata Communications Response:

No comments.

Q13. 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.

Tata Communications Response:

Yes, distribution of smartphones and laptops to students and support for the connectivity are effective mechanisms to increase Digital Affordability in the country seems effective mechanism. Adherence to compliance of proper functioning of these distributed devices, for their intended period of service should also be ensured.

Q14. 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.

Tata Communications Response:

Yes. Policy interventions should help in increasing Digital Affordability (digital devices and digital connectivity) among specific sections of society. For economically weaker sections the priorities shall be different that the digital literacy. Efforts to bridge digital affordability will certainly be a catalyst to increase adoption. This can very well be misused as well. Like purchase in subsidized price and sale in higher prices would gain momentum.



Q15. 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.

Tata Communications Response:

Digital Devices and digital connectivity should be subsidized only to organized and recognized bodies and offices like Gram Panchayat offices, government and primary schools, Primary health centres, Zilla Parishad offices etc. Digital affordability initiatives may not be extended to individuals to restrict its misuse.

Digital Literacy

Q16. What measures should be taken to engage the industry and academia in promoting Digital Literacy in India? Please provide your answers with suitable justification.

Tata Communications Response:

No Comments

Q17. 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?

Tata Communications Response:

No Comments

Q18. Please suggest the best practices followed internationally that can be adopted in the country to promote mass digital literacy for different segments of society.

Tata Communications Response:

No Comments

Digital Public Infrastructure

Q19. 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.



Tata Communications Response:

We are of the view that the parameters of the digital inclusion as captured in the consultation paper seem adequate to monitor the impact of digital literacy, for e.g., indices/parameters like Usage Gap, Gender Gap, Tele density, Affordability gap etc.

Emerging Technology driving Digital Inclusion

Q20. 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.

Tata Communications Response:

We have following suggestions for leveraging emerging technology to enhance the digital literacy programs of the Government –

- Mobile Learning Apps: Develop mobile applications that offer interactive and gamified lessons on digital literacy. These Apps can be designed to work offline, making them accessible even in areas with poor or no connectivity.
- Online Learning Platforms: Create online learning platforms that provide courses and resources for digital literacy. These platforms should be very user friendly and available in vernacular languages.
- Government Approved Certified Course certificates: Offer government recognized digital literacy certificates to motivate learners and improve their employability.

Q21. 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?

Tata Communications Response:

It is suggested that TRAI may reiterate its Recommendations given on “Leveraging Artificial Intelligence and Big Data in Telecommunication Sector” dated 20 July 2023 to DoT on this subject while giving their recommendation on this paper.

Indicators and Dashboard for monitoring Digital Inclusion

Q22. 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**



Tata Communications Response:

The document released by ITU and UN titled “Achieving universal and meaningful digital connectivity Setting a baseline and targets for 2030” provides a framework for universal and meaningful digital connectivity in the world along with a baseline and targets to measure digital inclusion across various indicators in different enablers of digital inclusion, may kindly be recommended by TRAI to adopt the same in India.

Q23. 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?

Tata Communications Response:

We would like to propose that digital literacy should be intensively promoted in all primary schools covering all Gram panchayats across the country considering the fact that these primary schools are the pivotal epicenters of this change. These schools should be provided with subsidized BB and Mobile internet service (including subsidy for smart handsets and devices) by the Government in PPP- Model with ISPs / TSPs whosoever is licensed and having its network available to service that particular region in the LSA. The ISPs / TSPs should be incentivized by the Government through USO fund. There should be a mandate that certain percentage of schools (say 80% or above) should be connected by every service provider so these schools have minimum 3-4 provider’s service at any given time. Quarterly compliance reports should be sought by the Government not just for connectivity but also for available functioning in order.

Please also refer to our response given in Q3.

Q24. 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?

Q25. Who should be responsible to evaluate and track the progress of digital inclusion including development and management of the dashboard?

Tata Communications Response to Q24 & Q25:

A dashboard for monitoring digital inclusion efforts and outcomes at the district and state levels in India may help policymakers, and stakeholders to understand the progress being made and identify areas where additional resources and efforts are required.

Releasing and maintaining 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 would be an effective tool. It is suggested that these dashboards should be tracking the progress at block or Gram Panchayat levels so that granular level activities can be monitored for faster adoption of Digital Inclusion in the country especially in rural and remote areas.



Digital Inclusion for MSMEs

Q26. 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?

Tata Communications Response:

As mentioned by TRAI in its consultation paper that *despite the significant contribution of the MSME sector to the Indian economy, it faces several challenges, including access to finance, adoption of new technology, reaching markets, availability of connectivity infrastructure and information etc.* Further TRAI has stated that *it has been observed that MSMEs which use digital technologies in their business operations prefer to use smartphones, which helps them to connect to the internet for business. Some of the MSMEs also use mobile hotspots, Wi-Fi Routers, etc. for internet connectivity and many of them use WhatsApp for business purposes. The major problem encountered by MSMEs in connectivity is poor affordability of internet. The availability of reliable fibre connectivity in rural and remote areas is important for all MSMEs, otherwise they are forced to rely on mobile broadband connectivity for their operational needs. Further, even if the fibre is available at nearby places, cost of extension of last mile connectivity (LMC) to MSME premises can also become a prohibitive factor in the access of reliable connectivity.*

Although Ministry of MSME has taken several initiatives and TRAI has also recommended several recommendations to strengthen digitisation of MSMEs in India. Additionally, we would like to suggest the following measures for further upliftment of digital adoption by MSMEs -

- **Digital Infrastructure Development:** Invest in development of robust digital infrastructure, including high speed broadband networks, mobile data coverage, and Fiber optic connection both in rural and urban areas.
- **Affordable Internet Access:** ISPs should provide data plans and broadband packages at affordable rates.
- **Government Subsidies:** Subsidies and financial incentives to MSMEs to access affordable internet services and upgrade their digital tools and infrastructure.
- **Digital Marketplaces:** Facilitate the creation of digital marketplaces and ecommerce platforms where MSME can showcase and sell their products and services.
- **Financing:** Support MSMEs in securing loans or grants for technology adoption and digital transformation initiatives.
- **Research and Development Grants:** Provide Grants and incentives for research and development efforts by MSMEs, encouraging them to create innovative digital products and solutions.
- **Cross Sector Collaboration:** Encourage MSMEs to collaborate with educational institutions, industry associations and research organizations to leverage expertise and resources.

Q27. 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?



Tata Communications Response:

Tata Communications being an Enterprise Service Provider are required to deliver services to its Enterprise Customers' premises / locations as per their business requirements which is not feasible at all the times in terms of technical feasibility to access customer location(s) or areas where availability of fixed line connectivity (e.g. Fiber) was a challenge due to exorbitantly higher ROW cost. In this regard, it is suggested that BharatNet fiber infrastructure connectivity should be made available to ISPs / TSPs to meet their requirements wherever feasible in a highly subsidized tariff to serve their customers.

BharatNet infrastructure deployed by the Government and can be used for providing direct broadband access to MSMEs as well as for providing backhaul services for spectrum starved terrestrial networks. Schemes with a different variant to provide fibre connectivity to MSMEs may be introduced for promoting use of BharatNet infrastructure wherein all licensed service providers should be eligible to participate in the same on need basis to meet the connectivity requirements of MSMEs and Enterprises at affordable cost.

Q28. How DPIs can be used to allow the marginalised communities and MSMEs to access new technologies?

Tata Communications Response:

DPIs can be used to allow the marginalised communities and MSMEs to access new technologies as suggested below:

- To provide affordable and widespread internet access
- To set-up digital training centres and programs for MSMEs and marginalized sections
- Co-work with government to digitize public services making them accessible to all including MSMEs and marginalized sections.
- To set-up digital marketplaces where MSMEs can sell their products and services.
- To provide incentives to MSMEs to adopt digital technologies, such as grants, subsidies, or tax benefits.

Q29. 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.

Tata Communications Response:

The telecom sector in India is very competitive and telcos thrive on technology to gain the competitive edge which can be achieved by keeping up to date with ever evolving technologies and innovation. Customization of product is one way to keep their customers happy by meeting their requirement as per their needs and demands rather than offering them pool of standards product from where customers reluctantly chose the one which is closure to their requirement.



Technologies like Big Data and AI models can help the telcos to create such customized products for their customers.

With the number of internet users increasing with each passing day, Enterprises are getting digitized and availing telecom services like never before, the telco's network and various systems e.g., CRM are handling and processing humongous amount of data. Use of Big Data analytics can help to identify the correct data which can be used as input to create algorithm for their AI models to handle various issues, troubleshooting, fault repairs, customer specific support through AI based chat bots etc. Big Data can help in creating AI models which would help the telcos in fraud detection, analyzing customer's preferences, ensuring data safety, enhancing customer's network experience etc.

With the evolution of technology and devices, it is now possible to deal with large volumes of different varieties of data at very high velocity. Traditional architectures are not able to tackle these wherein the data are stored in a distributed storage architecture and hence Big Data requires special programming model/software framework, one such framework is Hadoop. Various enterprises who are deploying Big Data Analytics can leverage the power of Hadoop ecosystem which allows them to have an analytical environment within the Hadoop ecosystem instead of deploying, managing, scaling, and maintaining the ecosystem on its own.

We believe that there is great potential for leveraging AI and big data (BD) in the various economic activities across the sectors of the economy. It is our view that there is a strong set of open-source tools and technologies available to develop models for horizontal tasks and that a near-term approach could be to develop models that can help solve for use cases specific to each sector. While the regulator and industry work towards a set of areas where fundamental research specific to the sector is required, there could be a near term focus on the development of such approaches that may not require a fundamental re-invention of the already established cutting-edge approaches but a collaborative effort to apply these technologies for the MSME sector.

In view of above context, we would like to suggest below efforts which 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:

- Digital Literacy Programs for MSMES that provide the basics of 5G, Big Data and AI/ML technologies. Provide online/offline training modules with hands-on experience.
- E-Learning platforms and Certification programs on these learning platforms
- Workshops and webinars inviting industry experts to provide insight and case studies.
- Local business association and encourage peer-to-peer learning with the business community.
- Offer Tax incentives and subsidies.
- Enumerate benefits of deploying emerging technologies which can support MSMEs in faster adoption of digital inclusion and digital transformation advantages to remain competitive in the marketplace.



Proposed below framework should help:

- Assess the current digital literacy levels and identify areas of need.
- Design a comprehensive curriculum that covers 5G, AI/ML, Big Data, with an emphasis on practical, real-world applications for MSMEs. Tailored content for different roles within MSMEs like business owners, employees, supervisors etc.
- Make access easy and available in on-line and offline modes.
- Establish mechanism for feedback and continuous improvements.
- Continuously monitor and assess the impact of training programs, tracking the adoption of technologies and business improvements within MSMEs.
- Develop a long-term sustainable model for the digital literacy program and ensure its access and relevance over time.

Q30. Stakeholders may also suggest any other measures not covered in the consultation document to improve Digital Inclusion in the country with suitable justification.

Tata Communications Response:

No Comments.
