CURRENT STATUS AND BARRIERS TO DIGITAL INCLUSION IN RURAL INDIA: A SYNTHESIS

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Abstract

Given the thrust of the Government of India as explicated in their Digital India Program, the digital inclusion of lay citizens assumes importance. A team of collaborators conducted seven field studies on exploring the extent of digital inclusion and barriers to it in rural India during January-July 2018. This group of studies reached out to over 1900 respondents in villages across six states of the country. Data was gathered by way of structured interviews, focus group discussions and direct observations. A study was also made about the constraints experienced by institutional service providers.

Agency is important and only with it does digital literacy, or mere mandated access can make a beginning towards digital empowerment. While digital inclusion is taken to mean access and ability to use digitally available information and services, digital empowerment requires agency. The studies reveal that very good progress has been achieved in moving towards the digital inclusion of citizens. The infrastructure of data networks is widespread in rural areas. Penetration of smart phones though naturally currently reaching the relatively better off people, is also adequate. Electricity supply adequate at least to charge the smart phones appears to be available in most places. The digital access and use of networks are very substantial in most places and almost universal in developed regions of the country. Social media and entertainment continue to be the main ends of using the internet as of now, and this is seen as a natural precursor to the meaningful use of the digital access. There is a perception of the high cost of smart phones and data access among the rural citizens rendered stronger by their belief that the digital world seems to have limited practical utility for them. As a majority of the public services such as banking etc are offered on platforms with only English language for customer interface, the above perception does not seem out of place. Literacy, particularly English literacy acts as a major barrier to digital inclusion and empowerment.

As is to be expected, the degree of digital inclusion is higher among students and salaried persons, , among better off social sections and men than among weaker sections and women in general. Efforts to promote digital literacy among women, as done by Google Sakhi and similar programs in the country are seen as contributing in a major way to reduce the stranglehold of patriarchy. Similar programs for inclusion of the Dalit and other weaker sections are also needed to ensure that the Digital India program does not create one more tool for perpetuating the social inequity currently present in the society.

**Introduction**

We launched this set of studies for understanding the current status of digital inclusion and barriers to its spread given the increasing importance attached to the adoption of digital processes by the Governments. The set of studies includes seven field-based studies[[1]](#footnote-1), each in a different locale, aimed at assessing the current status of reach of data networks, the spread of smart devices or computers and the level of use of the digital technologies by the people. Collaborators have also looked at State and civil society efforts to boost the level of digital inclusion and uptake of digitally enabled services (Gulati (2018)). This paper is an attempt to synthesize these studies.

The government of India has launched an ambitious Digital India program with the vision of transforming India into a digitally empowered society and a knowledge economy. The program has three vision areas including digital infrastructure as a core utility service to citizens, governance and services on demand and digital empowerment of services (Government of India, Digital India Program). The first two are areas of action which are in the realms of the Government and public action. Digital empowerment of citizens is an area which requires the active participation of citizens in acquiring skills of accessing and using digitally available information, knowledge and services. The digital inclusion of citizens needs to be looked at in the context of this program.

The digital network infrastructure is being created on an unprecedented scale to achieve progress in the first area. Telecom operators have created an extensive network using optic fibre as well as mobile telephony tower networks, and the reach of this infrastructure has expanded massively in the last few years. While there, of course, are remote and far-flung areas still not satisfactorily covered, the reach of the networks has expanded impressively. E-Governance processes in increasing domains of State action, support to online commerce and encouragement to digital and network-based offerings in an increasing array of services relate to the second vision area. Large-scale penetration of smart phones and other devices have contributed to making the hardware available to a large number of citizens, and this thus creates conducive conditions of digital empowerment of citizens, the third vision area.

Expansion of digital network is the first step in creating conditions conducive to making services available and interface with citizens on a digital platform. There has been significant progress on this front. Compared to the situation about a decade ago when, for instance, when core banking services were available only on a limited scale, one sees a dramatic change and net-banking options are now available virtually everywhere; thanks to the presence of data networks and connectivity across the length and the breadth of the country. Similarly, the existence of these networks together with increasing willingness as well as the action of the Central and State Governments to put increasing volumes of information on digitally accessible platforms. For example, information on land records, on diverse Government programs and schemes, employment opportunities etc), and data (on virtually every possible facet of the economy and the society) and processes (including online application, redressal of grievances, payment of fees, charges and taxes etc.) has been made available on such platforms. These developments have created the possibility of governance and services on demand at a scale hitherto not considered feasible. Provision of services digitally on demand reduces the scope and need for a human interface. Reduction in human interface often cuts out both inefficiencies as well as the play of discretion; even in complex and corruption-prone areas of direct as well as indirect tax collection. It also eliminates non-value adding transactions and processes and thus creates conditions for the improvement of the speed of response and resolution of issues. Use of digital identity of citizens linked to all crucial areas of their interface with the public system has also been encouraged systematically and on a large scale. These processes directly contribute to improved transparency and hence significantly reduce the potential for waste and corruption. While this potential of improvement of efficiency, reduction in response time and reduction of corruption and undeserved arbitrage opportunities has only begun to be exploited; the early signs of their potential impacts are visible.

The extent to which the above efforts will bear expected fruit depends on the extent to which citizens are digitally empowered. Digital empowerment starts with the access to the digital world; subsumes the ability to transact and confidently participate in an exchange with the digital world and perhaps reaches its desired result when citizens can voluntarily, proactively and creatively access and use existing knowledge as well as build on it.

**Conceptual Issues**

It is possible to conceptualize “digital inclusion” in a minimalistic fashion: A citizen is digitally included if she has access to devices and networks which can enable her to reach available information and services necessary and appropriate for her. When even an illiterate citizen has been given a smart card, and via biometric identification, she can use appropriate public services made available on digital platforms by the creation of back-end processes and systems with adequate safeguards; she may be considered to be included. However, this conceptualization of inclusion appears only partial. The whole digital project seems then to be a massive infrastructural and institutional apparatus designed and driven to achieve ends defined by an omnipotent State. It would appear that the project serves the instrumental role of improving efficiency, reducing misdirection of resources, cutting out the scope for the use of mala-fide discretion and improving speed. While entirely desirable, these are instrumental values, external to the citizens. Instead of a hapless and uninformed citizen trudging the offices of the State, she becomes a hapless and powerless citizen confronting a benevolent service provider who has designed a system to suit his purpose. She cannot be called digitally empowered. Empowerment has an essential and inherent element of agency. This agency can stem from the skills and abilities to use the power of the digital networks; awareness of the information, knowledge and opportunities in the world around her, the capacity to choose and the ability to not only use but also to contribute or otherwise influence the knowledge. Digital empowerment thus subsumes agency and requires both the skills and maturity required for discernment and assessment for appropriateness to her life among the vast array of digitally available information, data and knowledge. Knowledge society and economy have thus pre-requisites which are more demanding than the mere spread of network and penetration of appropriate devices (UN, 2005). We believe that inclusion is the first step towards digital empowerment which would subsume also the ability to access, sift through, build upon and contribute to digitally available information, data and knowledge. Combining the “hygiene factor” of infrastructure and access to a device with the most basic among higher order requirement of skill and ability to use digital access; ***we conceptualize digital inclusion as the combination of access and ability to reach digitally available services and information.***

Stages of inclusion

Digital inclusion has at least three pre-requisites. The first is the existence of an infrastructure of the digital network. The second is the possession or access to a smart device needed to access these networks. The third is the acquisition of motor and mental skills necessary to be able to manipulate the device and the platforms to reach the desired information and service. As the first is almost completely in the public or external realm, we ignore it for the present purpose. The process of wide-scale possession or access to smart devices is archetypal technology dissemination and adoption process. The third component is a combination of inculcation of skills as well as the adoption of new behaviour required to digitally access and use information. Combining the latter two, we can conceptualize that when viewed as encompassing increasing proportion of the population of citizens, digital inclusion will proceed in stages.

Technology adoption stages have been conceptualized in the well-known framework of Rogers who states that the entire target population can be seen to comprise “innovators”; “early adopters”; “early majority”; “late majority” and “laggards”.(Rogers EM 1962/2003) Rogers goes on to state that each of the categories accounts for a proportion of the population: 2.5% of the total for innovators as well as laggards, 13.5% for the early adopters, 34% each for early as well as late majority and the rest for laggards. This is a generic framework. The attributes of the members of each group will vary by the specific application of this framework. In a society characterized by physical and face to face sort of interactions for all walks of life, shift to a digital mode of exchange and the spread of skills necessary for it are both innovations and hence the above theory is ipso facto applicable. We need to discover the specific nature of each category.

In the specific case of the spread of digital inclusion; a four-stage pathway has been suggested: the first stage is of digital access. In this stage, people who have no access to a computer or a smart device acquires such access. The second stage is “digital taste”. In this stage, the individuals who have acquired the devices that enables them to access the digital world tend to take a call about whether they will, in fact, access the new world and if so; for what purpose. The third stage of “digital readiness” is reached by those individuals who have now acquired the taste for the digital world but now need to learn the skills necessary for access. The final stage is of “digital literacy” in which the individuals are capable of navigating in the digital world to access and use it for their purpose. (EPALE, 2009). Figuereriado et all (2012) have argued for considering a somewhat compressed transition process: the first of access where a combination of computers, tabs and smart phones create an access to digital world and ITES and the second stage of professional training and skill building in which individuals acquire the capacity to use the access appropriately.

We propose six-stage transition to full-fledged digital inclusion. To start with every individual is presumed to be excluded from the digital and ITES world. The stages of inclusion are

* Access: gaining access using sole or shared ownership or use rights to a device such as a computer or a smart phone connected to the data network.
* Familiarity: Familiarity with the operations and overcoming diffidence/xenophobia.
* Specific limited use: Limited and specific purpose-driven use.
* Navigation Comfort: Comfort with navigation on the web and search skills sufficient to help others access and use
* Voluntary, Creative and proactive use: proactive use of digital access to evolve access and use complex information as well as create new knowledge.
* (Awareness of possibilities of universal applications of IT and initiative in creating new applications.)

 This model builds on the EPALE model narrated above specifically in the context of the goal of building a digitally empowered society. We add the fifth stage to the four stages of EPALE. If, as we contend, the agency is an important ingredient of empowerment then Stage 3 (navigation comfort onwards) of digital inclusion is the first stage which can be said to lead the process of such empowerment. The sixth stage is of proactive digital empowerment when the citizen herself can foresee applications and participate in their creation. This stage need not be considered as being a prerequisite for everyone. Empowerment also subsumes the will to exert efforts to negotiate for carrying out individual choice in practice as well as a desire to influence the world about one’s views and rights. Considering this, we may perhaps be able to associate digital empowerment only with the final stage of voluntary, creative and proactive use of digital access.

 **Method, materials and inferences from the data**

As noted above, this paper synthesizes the studies done by our collaborators and by us. The seven field data-oriented studies followed a common methodology. The researchers worked in the locale where they had both language and social familiarity. Strict random sample choice procedures were not followed for choice of specific villages or individual respondents; nor were they influenced by any consideration other than language familiarity and social access. Data was gathered through three means: secondary data about infrastructure etc.; individual responses were obtained using administration of a structured interview schedule, and overall perceptions and views were obtained by conducting focus group discussions with citizens from the villages. The study in South Rajasthan (Phansalkar and Chamola, 2018) had a large sample size of over 1300 respondents. Each of the other six other studies had a sample size of around 100. The data gathered pertained to the

* availability of electricity;
* availability and perceived quality of data networks;
* ownership and access to smart phones;
* presence and use of shared facilities such as internet cafes or publicly run e-kiosks;
* frequency and ability of the individuals to use the device,
* the intensity of internet use by individuals,
* usually accessed sites and usual purpose of use of the internet,
* awareness of information and services available on the web-based platforms,
* skills of navigation on the web and
* challenges experienced in access, contact, engagement and use of web-based services.

The inferences from the data are as follows:

* Data networks are accessible in a majority of rural locales studied. The proportion of locales in which data networks are accessible varies from a low of 75% to complete coverage. However, depending upon the topography of the villages, reported strength and stability of the network appears to vary within villages. As is commonly observed; such variation occurs in cities as well.
* Electricity supply for charging of mobile phones is available in a majority of the locales studied. Very few villages largely due to their remote location report electricity supply of very indifferent quality posing challenges for charging the smartphones
* Ownership and access to smart phones is far higher than ownership and access to computers and tabs are more or less completely absent in locales studied. While the proportion of respondents reporting ownership or access to smart devices ranged between a low of 10% to a high of 70% in different regions, for the whole sample ownership of smart phones was reported by about a third of the respondents.

***The above three points inferences from field data point to the fact that a significant number of potential users in the rural area are at the stage of Digital Access in their progress towards digital inclusion.***

* Most users of the internet in our sample connected via smart phones from their homes. A small proportion used the internet from the e-kiosks set up by the local Government agencies. The proportion of users going to internet cafes in nearby towns etc. was so small as to be called exceptional.
* Internet use was far more prevalent among men than among women in the sample. This was substantially because smartphones were with men while women tended to have basic phones for voice calls.
* Internet use was more common among the young men (below 40 years) than among the old. Internet use is far more common among persons belonging to General Castes than among those belonging to Scheduled Caste or Tribes.
* Internet use was more common among the students, among salaried persons and among men who migrated for work than among men whose occupation was farming.

***The above inferences point to the situation in which one may state that the spread of digital inclusion has followed the expected course in which educated, high caste, better off males tend to participate and benefit early and more compared to marginalized, poor, uneducated women. This inference is not at all surprising and completely consistent with the usual pattern of development.***

* A dominant majority of respondents were able to undertake basic operations connected with their device.
* Most frequent internet use was for using the apps Youtube and WhatsApp. In fact, downloading and seeing music videos and film clips turns out to be among the most popular use of the internet. WhatsApp chats follow entertainment.
* Use of internet for accessing students related information (examination results, admission related information etc.) and Government programs and schemes accounted for much less internet use compared to the entertainment and social media sites.
* The proportion of internet users having and accessing their email account was small.

***The above inferences tend to support the conclusion that current stage of digital inclusion for a majority of the people can be called “Digital Taste” in the idiom of EPALE or the stage of familiarity and limited specific use regarding our model.***

* The proportion of internet users transacting on net-banking platforms was quite small. The proportion of those who made online purchases was smaller still, and this was affected by the mismatch in the speed of transaction and of physical delivery.
* Barring Tamilnadu, the proportion of users visiting sites such as Wikipedia for improving their knowledge is small.

***These two inferences point to the fact that the proportion of the rural population at the stage of “Digital Readiness” in the idiom of EPALE or the stage of navigation comfort in our model.***

**Issues and Challenges**

* The fact that most websites use English as the language of transactions with users deters internet users from meaningfully using the internet for any serious purpose. As Gulati (2018) notes, mobile phones are “language friendly but net banking sites are not”. Even service providers in bus ticketing or online commerce tend to have English as the language of transactions though naturally, the customer base of those comfortable with vernacular is far larger.

***This points to the fact that the proportion of users at the “Digital Literacy” stage as per EPALE idiom or “voluntary, creative and intelligent use” in our model is extremely small.*** ***Quite unnecessarily yet tragically, there appears to be a high degree of overlap between English literacy and digital literacy.***

* Other factors deterring or detracting from internet use are: stability and quality of networks, perceived high cost of smart phones and of data usage, limited awareness of what information and services are available on the net based platforms. Respondents lack awareness of existing facilities and procedures for availing these services; entertain (possibly exaggerated) fear of cyber frauds and hence amplified security concerns, and have strong perception about their own limited needs which makes internet superfluous for them.

Rural individuals; who are potential users of digital services, face one set of challenges while the service providers appear to suffer from another set. The challenges faced by rural individuals stem in part from the set of processes and activities they need to undertake as well as their mindset. Availability and stability of network is an actual, verifiable situation in some locations. However, the perception that the digitally transacted engagements may not actually result in their “real world” consequences is an issue of mindset. For instance, when it comes to online commerce, users, including urban Anglophone elites often believe that the images and narrations of the products in seller sites may not exactly correspond to the actual product and this suspicion tends to discourage wider use of these services. The overly stylized and formal language that tends to get used in Government websites is often a matter of concern as users often tend not to understand the language and in any case, believe that intervention of an interlocutor is a must for carrying out any transaction with the State system. Many public services offered on the digital platform suffer from seemingly innocuous yet critical lacunae; fuzziness or confusing language in the user interface which makes the system unusable for the rural individual. Only a few public services; such as Railway Reservation system or passport application procedure offered on a digital platform are glitch free. Frequent failure to satisfactorily complete the process, unstable network tend to reinforce the expectation that without interlocutors public services can simply not be availed and this eventually discourages use of internet-based services.

Service providers, on the other hand, tend to feel that insufficient penetration of smart phones, tabs and computers; unstable and often weak network; rigidity in legal requirements and stiff internal compliance requirements tend to interfere with their ability to provide customer friendly service experience. There is undoubtedly great deficit in language friendly customer interface as service providers seem to feel a sense of compact definitiveness about operating in a uniform, single language with all customers.

**Discussion**

“Time pass development” or a necessary step in digital inclusion?

Noting that much of the internet use was dominated by downloading of film songs and clips from Youtube and by Whatsapp chats, a view has branded the drive towards digital inclusion as “time pass development”. (Mertia, 2017). We find this a biased and albeit uninformed interpretation of the process of digital inclusion. We note that even in child pedagogy, the current trend is to emphasise joyful, activity-based learning. In this process; children are encouraged to play and participate in certain guided activities. It is believed that rather than drill and the boring onslaught of information, children learn more naturally when the lessons are drawn from activities and games which they find enjoyable. We would like to draw a parallel with that. We believe that the natural hedonism in us drives us to use whatever means we derive pleasure from what we do. We, therefore, do not find it either surprising or particularly objectionable that most individuals appear to use the digital platforms to ends which give them sheer pleasure. We believe that in this process the individuals achieve familiarity with the new medium and overcome their xenophobia and suspicion of the unfamiliar while obtaining a measure of comfort with the operations connected with harnessing the new technology for their benefit. These very operations will prepare them when they so need and choose to help them deploy these newly developed skills for more “productive and meaningful” ends. Thus we regard the currently dominant use of the internet for pleasure as an inevitable and fruitful step in the process of digital inclusion.

Controlling side effects of the digital drive

1. Controlling the onset of digital patriarchy

There are some red flags en route, however. When individual respondents are taken as units of analysis, clearly there is a major gender divide. Women tend to have if, at all they have, rudimentary phones for voice calls while smart phones and other devices appear to be dominantly a male preserve. It is a common knowledge that female literacy is lower than male literacy across sections of the society and this situation is perhaps true a fortiori regarding English literacy. Since there is much overlap between the English literacy and digital literacy at the current stage due to excessive use of English by most service providers, the gap between the extent of access by females and by males will only widen. As an increasing range of State services are mounted on solely a digitally accessible platform; the males will have a stronger position and women will become even more dependent on and hence subservient to them. The State perhaps is content in not “deconstructing” a rural household, but the gender differentiation is a matter of social concern. The digital drive will thus tend to reinforce the patriarchy in the society. The effect of the instrumental use of this increased dependence of women on their male relations will solely depend on the intent of the males and the residual power enjoyed by women. It is therefore not surprising that many women prefer to opt out of digital transactions altogether by surrendering their ATM Cards in favour of the paper transactions needing their personal interventions.

Efforts to promote digital inclusion cannot be burdened with the additional task of reducing the stranglehold of patriarchy but surely the potential side effect needs to be foreseen and controlled. In this light the efforts by Tata Trusts-Google to promote digital awareness and literacy through the Sakhi program; also supported by many other market players and civil society organizations assumes significance.

1. Controlling the widening of social inequities

As the results of the field studies indicate, better off, higher caste and more securely employed or occupied households and persons show a higher degree of adoption of smart devices and digital readiness. The socially and economically weaker sections can only hope to try and catch up. Digital inclusion is expected to open a new world of knowledge, information and opportunities. These will thus be captured first by the better endowed. Thus the drive towards digital inclusion reinforces and potentially widens exiting gaps between the haves and the have-nots. As of now no specific public or civil society program is addressing this issue but it is believed that the installation of e-kiosks in villages where access to digitally provided services will be made available for a fee will tend to mitigate this potential side effect. Whether this becomes a new layer of gate keepers who may end up rent-seeking from the excluded remains to be seen but no obvious alternative is visible.

Eliminating the perverse perpetuation of colonial snobbery

Significant potential opportunity gains of the digital revolution are under threat because as noted above a majority of websites have English as a language of transaction and user interface. In an exercise we did; we discovered that of the 70 public service websites assessed, only two offered customer interface in vernacular. Gulati (2018) records that most net-banking sites have only demo pages in Hindi or the vernacular; if that. There perhaps are genuine difficulties in the way of offering vernacular user interface. But the current situation creates a huge overlap between English literacy and digital literacy. Quite unintentionally this results in a perverse perpetuation of colonial snobbery. It is as though the public service providers have decided that you are worthy of obtaining digitally provided services only if you knew English. There is an urgent need to eliminate this situation

The tortuous path to digital empowerment and to the knowledge economy

As a reminder, it is noted that the Digital India program has the vision of transforming India into a digitally empowered society and knowledge economy. United Nations had come out with a detailed prior framework for creating digital empowerment and knowledge society in 2005. (UN, 2005). This report recognizes the tension between society on one hand and on the other the new technology (ICT) and techniques of mass production and distribution of knowledge using net based and other shared spaces. It suggests that a knowledge society and economy is the one in which organizations and institutions are created to further limitless development of people and information with open opportunities to create, mass produce and mass-utilize knowledge throughout the society. It recognizes all people as potential owners and creators of tacit and explicit knowledge and hence requires openness, freedom and democracy for furthering the progress towards knowledge society. When viewed in this broader and perhaps ideal context, where do we stand? As argumentative Indians we do recognize the widespread distribution of tacit knowledge and our democratic institutions guaranteeing freedom of expression do permit wide distribution of such tacit knowledge. Access to the digital world is limited in rural India by technology. It is substantially hindered by economic status that defines the ability to own and use smart devices. And it is most unnecessarily obstructed by imposing English literacy as a pre-condition for being full members of the new knowledge community. All these factors seem to detract from the possibility of progress towards the goals of digital empowerment and knowledge society and economy. India has perhaps only recently launched its movement towards this laudable goal. We hope that these various impediments will slacken their debilitating influence over time.

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