

Sustainability of Digital Intermediaries in Rural Development: A case study of e-Gram Vishwagram project of Gujarat, India.

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Abstract

Research Problem: The Global South faces challenges in successfully integrating rural population in its development interventions. The government of India is using information and communication technologies (ICTs) based solutions to bridge the developmental gaps, which range from building digital infrastructure to delivering e-services. In this process, one of the principal actors, Village Level Entrepreneurs (VLEs), called as digital intermediaries play a significant role in filling the digital divide gap enabling the linkage between citizens and the government through ICT led interventions.

Policy Relevance: The findings of the study highlight the critical role played by the digital intermediaries and what needs to be done to sustain their livelihood opportunities while achieving the ICT led development interventions. The study specifically focuses on VLEs who own and deliver public utility services within the telecentre models.

Principle Research Question: This study is looking into the sustainability of the digital intermediaries. It is finding the factors responsible for the sustainability of the digital intermediaries and demonstrating those in E-Gram Vishwagram project of Gujarat, India.

Research Method: Mixed methods approach is used to collect and analyse the data. Primary qualitative interviews with the VLEs and analysis of government documents, both policy and implementation were undertaken.

The primary data comprises qualitative interviews and online surveys with forty VLEs of Common Service Centres (CSCs) under the E-Gram Vishwagram Project in Gujarat. The secondary data involves data of E-Gram Vishwagram project from government websites, reports, government documents, videos and the newspaper articles.

Findings: The role of the VLEs is important in the successful implementation of the ICTs intervention, and the sustainability of the VLEs is critical for the project sustainability. The study found that the VLEs are feeling insecure about their position, income, and quality of services and lack of linkages with the public organisations which infer likely closure of the project itself.

1. Introduction

Information and communication technologies (ICTs) are used innovatively to deliver various services and connecting people. It is providing opportunities to policy maker to overcome the challenges relating to delivery of services, distance, infrastructure barriers, and investment, etc. ICTs are used to achieve the inclusive development objectives (Madon, 2009). ICTs along with various stakeholders can bring effectiveness, transparency, accountability, and participation in the development process (World Bank, 2016). With this background, various ICTs led initiatives started across the world, and telecentre is one such critical initiative for the development. Telecentres in developing countries have a significant stake in policy initiatives, especially in the rural regions. One of the critical stakeholders in the telecentres networks is digital intermediaries. The sustainability of the digital intermediaries linked with the sustainability of telecentres. In this background, this paper is highlighting some of the significant factors for the sustainability for digital intermediaries and used Indian case study to demonstrate them.

The current position of the government is influenced by the past events, as during the 1980s, New Public Management (NPM) emerged to bring efficiency in the governance structure, which leads to the improvement in the growth rate (DARPG, 2009 p.25). In this background, NPM integrated the public sector and expertise of the private sectors in the public service delivery (Chakrabarty & Chand, 2012).

India performed well on Gross Domestic Product (GDP) but fails to have significant improvements in the Human Development Index (HDI) (GoI, 2017). The vastness of India concerning its geographical area and population, it faces challenges on various fronts. One of the concern areas is the rural development, which is facing issues such as poverty, illiteracy, agriculturally dependent economy, connectivity issues, etc. (MoRD, 2016). To fill these gaps Government of India initiated various programs. One of such programs is to build digital highways and increasing internet based services across India (GoI MOITY, 2016). The efforts in this direction were boosted with the National e-Governance Plan (NeGP) in 2006, which having following vision "Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realize the basic needs of the common man" (NeGP, n.d, para.1).

The Common Service Centres (CSCs) is one of the 31 Mission Mode Projects of NeGP. CSCs are known as telecentres in development literature. The aim of CSCs is to provide service delivery point across the India to serve more than six lakh villages of India by establishing around 2.5 lakh telecentres in 2.5 lakh gram panchayats. In this process the CSCs (telecentres) is acting as a change agent. This has a multiplier effect on the rural ecosystem in the areas of the rural capacity building, rural entrepreneurship, and creating opportunities for livelihood which enable the bottom-up development (GoI-MoEITy, 2017). These telecentres are operated by the Village Level Entrepreneurs (VLEs). VLEs are also known as the Village Computer Entrepreneurs or digital intermediaries. Though the title of this paper mentioned about the rural development, however, the scope of this paper is limited to the sustainability of digital intermediaries', which has the potential to influence the rural development.

E-Gram Vishwagram Project is the network of 14004 CSCs spread across the Gujarat state (Gujarat, 2017). The CSCs in Gujarat also known as E-Gram and these are operated by the Village Computer Entrepreneurs (VCEs) (digital intermediaries). With the above background, this paper aims to discuss one of the principal actors, that is digital intermediaries in the process of digital intervention in the rural regions.

The arrangement of paper is as follows: the first section is the introduction (discussed above); the second section is literature review; the third section is dealing with research methodology; the fourth part is discussing the findings; the fifth section is conclusion with some recommendations, and the sixth section is the future scope of the study.

2. Literature Review

This section divided into following headings: Theoretical Framework, Telecentres, Digital Intermediaries, Telecentres Challenges and Concerns in global and Indian context. Though it's hard to see above topics in isolation, whereas division is done for an overall understanding of the variables involves in the sustainability of the digital intermediaries.

Theoretical Framework

Actor Network Theory (ANT) explains the formation of a web of various actors within an environment and interactions with the environment. It is describing how different actors are interacting to bring different ideas, products, change, etc. (Law, 2009). In this paper, Government form networks with different players such as citizens, government, external agencies (private players, donors) to deliver services (Kumar, & Gupta, 2006). This network

integrates with ICTs to support its ideas, visions and objectives (Law, 2009). As the core aspect of ANT is the collaboration of agencies to achieve their respective goals, otherwise difficult to achieve them in isolations (Teles & Antonio Joia, 2011).

The network formation and functions of the actors need to consider broadly. The actors participation in the network have two aspects first “what they are” and “what they do” (Teles & Antonio Joia, 2011, p.192). ANT is considered to analyse this case study as it provides demonstrations of interactions among various actors. ANT seems more relevant to present case studies where the position of the digital intermediaries is influenced by actors’ network. In this case study actors such as government, private players, digital intermediaries and the context in which are operating influencing their networks.

ANT is providing insights about the networks of various actors at various stages, spaces of the project. The networks of various actors lead to resources available in the form of infrastructure and resources to deliver services. ANT is highlighting the critical actors’ network, which enables the institutionalisation of the telecentres at the grassroots level. In this background, ANT enables to identify the actors of the digital networks.

ANT used in the case study of E-Gram Vishwagram project, where it is demonstrating various actors at various stages forming networks. These networks of actors formed between government institutions, private organisations, telecentres, and service delivery infrastructures. These networks influence by citizen participations, digital intermediaries and resource availability, which further form networks of actors which are influencing interactions of actors.

Telecentres

“Telecentres may be defined as strategically located facilities providing public access to ICT-based services and applications” (Oestmann & Dymond, 2001, p.3). Development is one of the goals to achieve through telecentres (Parkinson & Lauzon, 2008; Oestmann & Dymond, 2001). In most of the cases, telecentres established to provide ICTs led services in the rural regions without huge investments (Oestmann & Dymond, 2001). One of the factors in the success of the telecentres is the competent telecentres managers (digital intermediaries), along with factors such as, “strong local demand, good location, the ability to innovate and develop services to meet local needs, and linkages with supportive institutions” (Benjamin, 2001, p.4).

United Nations set a new agenda, to tackle the causes of poverty, exclusion, and inequality. Countries must connect people in the rural and urban areas to the modern economy through

quality infrastructure—electricity, irrigation, roads, ports, and telecommunications. To provide equal opportunities to develop, this can be done with the use of ICTs. (Nation, 2014). Institutionalisation of the ICTs, decide the long-term values, sustainability, and scalability of digital inclusion projects (Madon et al. 2009; Nation, 2014). Through telecentres government is reducing the gap between the ICTs led services accessibility between the rural and urban regions.

Digital Intermediaries: The Crucial Link

The research on Village Level Entrepreneurs (VLEs) is insufficient, and they are known with the different name such as digital intermediaries, telecentres operators, and Village Computer Entrepreneurs (VCEs), etc. In the context of digital intermediaries, some of the studies mentioned below, though these are not limited to the digital intermediaries. The primary concern is to investigate these intermediaries to examine the overall context, concerns and research gap.

The conceptualization of the intermediaries based on the various interaction with different actors (Sein & Furuholt, 2012). The trust of the citizens in an institution and the role of intermediaries, influence the functioning of the ICT-led development initiatives (Gopakumar, 2007). In the cluster specific development at the local level, the requirement is to strengthen the intermediaries and create a network with other institutions. This development is influenced by the macro policy of the state and the resources available to them (Intarakumnerd, 2005). The role of intermediaries is critical to creating awareness among various stakeholders and integrating them with the telecentres, and this helps to promote participations in the ICTs movement (Colle, 2005).

As a critical actor in the telecentres functioning, digital intermediaries are facing sustainability challenges (Gopakumar, 2007; Sein & Furuholt, 2012). The role of the internet intermediaries touching various areas such as role in the emerging markets, socio-economic developments, and value chain (OECD, 2010). The introduction of ICTs has changed the roles of intermediaries in electronic markets and instead of disintermediation due to ICTs. ICTs have changed the way market functions, and instead of replacing intermediaries, it is creating new avenues for them (Bailey & Bakos, 1997; Bailur, 2010; Gopakumar, 2007).

A study based on two states of India Uttar Pradesh and Meghalaya, where CSCs showed following results such as higher prices of services, affordability and lesser demands and these

findings were influencing the VLEs position (Prasad & Sinha Ray, 2012). The position of the intermediaries is critical to decide the achievements of ICTD initiatives (Bailur, 2010).

The some of the concerns associated with digital intermediaries are the less number of customer visits, electricity, and internet connection issues. The objectives of the public and private stakeholders differ with regard the telecentres. Based on the stakeholder's theory, the interactions and transactions among the stakeholder decide the project success or failure (Bailur, 2007). The use of ICT in the development process depends on following factors: access to the information and access depends on factors such as skills, availability of infrastructure, the societal system (cultural), economic viability, political will, etc. (Rice, McCreddie, & Chang 2001; Subuddhi, 2006).

Telecentres Concerns

The development objectives are influenced by the sustainability of telecentres, which itself depends upon the financial and social sustainability of region (Mayanja, 2007). "The social sustainability refers to the long-term positive contribution of the telecentres to the social and economic development of the local communities" (Tschang, Chuladul, & Le, 2002, p.131).

Some of the telecentres services are seasonal, and the information required by the people depend on the economic and cultural activities of the regions (Colle, 2005). The initial higher investment in infrastructure is restricting the expansion of the telecentres (Tschang et al., 2002). Some of the problems faced by the telecentres are the pricing of the services, business planning, consideration of the competition, problems encountered by the human resources involved in the form of wages and rate of retention of the staff; training of the staff (Oestmann & Dymond, 2001).

The sustainability of the telecentres depend on the types of services, and it should be a combination of public and private services to generate revenue to sustain as well as providing various services (Rao, 2008). The telecentres sustainability depends on the income generations to fulfil the cost incur to run the telecentres. The developed countries can provide subsidy whereas developing countries have limited resources that restrict the telecentres resources (Proenza, 2001). Digital intermediaries are acting as entrepreneurs, and their investments in the telecentres depend on the returns, and if returns are not enough to sustain the telecentres, then follow risk-averse behaviours (Kumar, 2004).

The telecentres require time to evolve towards the sustainability, and this path is based on the innovatively designed new services as per the needs of the community (Rao, 2008). Some of the factors such as the language of the content influence the adoption of a new system (Colle, 2005).

One of the critical infrastructures for the sustainability is the telecommunication infrastructure and how the government is taking place at the grassroots level (Proenza, 2001). The public and private institutions promote the professions to adopt the ICTs to improve its skills. The training of the stakeholders is critical to established and provide the services as per the local demands (Colle, 2005).

The revenue of telecentres depends on the telecentres locations and the population density of the region, whereas in some cases despite located in a region populated by low-income groups and telecentres are not making much impact on the life of the poor as it is used by the educated and above low-income group individuals (Proenza, 2001).

Telecentres initiative with the private partnership attempt to reach across the country, which increases the inclusiveness. Whereas the ICT ability for the development to bring social justice in the form of removal poverty, bringing equity is not clear (World Bank, 2016; Tripathi 2007). To achieve the development objectives, ICTs utilisation needs shaping around the goals. The government role to encourage the community participation, infrastructure creations, considering inputs from the research (Rao, 2008). The international commitments such as the Millennium Development Goals (MDG) and international treaties to achieve the development objectives in the area of the poverty reduction, health, education, etc. (Colle, 2005).

India Context: Telecentres Concerns

ICT interventions have potential to bring social and economic changes at the grassroots level. It has a potential for the rural development to enable the sustainable improvement of life of the rural people. One of the important factors to decide the development is the quality of governance available. ICT remove agents between the government and people; and provide efficient services (Malhotra, Chariar, Das & Ilavarasan, 2006). This section is highlighting some of the concerns of telecentres in India.

There is a gap in the performance among telecentres (Krishnaiah, 2006 p.43). The creation of the content based on the local needs, private player's participation and ICT interconnectedness with other sectors are critical areas to consider while formulating policies (Bhatnagar, 2014;

Tripathi, 2007). The people and institutions with inferior technology at the disadvantage side (Kumar, & Gupta. 2006). Citizen's experiences are different in different places to accessibility (Bhatnagar, 2014).

E-Governance at the grassroots level need to overcome two challenges first is the Business Challenges: information sharing, lengthy process, insufficient telecom infrastructure, unaffordable internet, human capacity; and technical difficulties: no service centricity, data duplication, availability issues of data, business applications outflow into common workflow, security enforcement, lack of integration between different institutions, bandwidth constraints (Behara, Varre & Rao 2009, p.1-2).

ICTs interventions are facing following challenges: such as access to the internet services, the investment required to deliver services, capacity building and participation (Prasad, 2012, p.187). The future of the telecentres depends on the power supply, government policies, and market (Prasad, & Ray, 2012).

MDGs linked with the e-governance, which helps to achieve, monitors the various important indicators of goals, and bring sustainability to the e-governance initiatives (Misra, 2013). Now the government of India is looking towards the implementing of the Sustainable Development Goals (SDGs) (MOITY, 2017).

Some of the important factors to run CSCs are: intermediaries training; women intermediaries; promotional campaign, providing combination of services such as government to citizen (G2C), financial services, utility services, educational services, proactive approach to resolving the complaints, share revenue support with intermediaries to promote new services [Department of Electronics & Information Technology (DEITY) Government of India (GoI), 2014].

In the previous section provided the literature review on telecentres, digital intermediaries and concerns of telecentres to provide a background in which digital intermediaries are positioned. This also helps to identify the networks of various actors which are influencing the digital intermediaries.

Factors Affecting the Sustainability of the Intermediaries

The above literature mentioned various factors influencing the sustainability of the digital intermediaries. Though the isolation of actors seems challenging and influence of one actor on other seems difficult to quantify. The interactions with critical groups decide the success of the

organisation. (Bailur, 2007). Based on the literature review, various factors categorised into following major headings: social; economic; political. These major headings further classified into sub headings and having following factors as discussed below.

Economic Factors

1. Services depend on the local needs, innovation in service designs, and access with affordability and equity, and language of the content. The private and public Services-Government to Citizen (G2C), Business to Consumer (B2C) (Utility Services, Financial Services, Educational Services). Entrepreneurs' returns on investments and scalability.
2. Capacity Building includes factors such as wage, training, skill development, retention of the staff, literacy, and women participation.
3. Infrastructure Development: Power supply, the internet, telecommunications infrastructure, and ICTs infrastructure.

Political Factors

1. Political will: The commitment of political leaders and government to implement the project and take special considerations of actors of the project.
2. Policy to bring new services, signing a new partnership with various stakeholders.
3. Integration of Stakeholders: Partnership (Networking with the actors).

Social Factors

1. Social sustainability: The impact of the telecentres on the overall development of the region.
2. Gender equality: Men and women intermediaries to deliver services; and participation of women in social, economic, and political activities.
3. Individual capacity development: The individual capacity building on two accounts, first about the capacity development of the digital intermediaries; and second about the citizen's capability to access the services.

The above mentioned major factors can't be kept in isolation, and one or more actors are influencing other actors. The externalities of the one or more actors such as corruption, resource limitations, less technological advancement, lack of integrated infrastructure and policy impediments are influencing the sustainability of the system, which affects the position of intermediaries.

3. Research Method

This paper is based on the mixed method approach (Johnson, Onwuegbuzie, & Turner, 2007). Mixed method involves quantitative and qualitative analysis based on the primary and secondary data. The primary data relies on the field work, telephonic interviews, and online surveys. The fieldwork conducted in the Gujarat state of India, focused on digital intermediaries, operating the E-Gram CSCs (telecentres) in Gujarat.

This study uses both the primary and secondary data to analyse the research problem. From research objectives, structured and unstructured questions are used for conducting interviews. To collect data and understand about the project, conducted the forty interviews, it comprises of five face to face interviews, twelve telephonic interviews, and twenty-three online surveys. For online survey, a structured questionnaire prepared with open ended and closed ended questions. The online survey comprises of questions related to the number of people visiting the telecentre, monthly income of digital intermediaries, motivation to become digital intermediaries, top services offered, challenges, Likert scale question about the factors critical for the efficient functioning of telecentres, expenses to provide services, and suggestions to make telecentres efficient. This survey emailed to 94 intermediaries, and 32 replied, out of which 23 completed surveys selected for the study and some of the intermediaries were telephonically contacted.

For secondary data, referred the Gujarat state government websites, published articles, internal reports (daily, weekly) of following services: land records, food entitlements, electricity bill collection reports, agricultural services, and complaints, etc. Weekly project newsletters referred from 21st December 2009 to 15th June 2010. Government documents referred to the project teams, intermediaries training, network details, about services, and guidelines for programs, services.

This research is based on content analysis (Krippendorff, 2004) and multiple sources of information help to interpret the findings. Multiple research methods are based on the qualitative and quantitative data. The quantitative data is used to understand the overall developments of the project. The qualitative data have been used to identify and interpret the various interlinkages and interactions among stakeholders.

Brief Description of the Case Study: About the Project- The vision of the E-Gram Vishwagram Project is to bridge the digital divide between the rural and urban regions. Through E Gram–Vishwagram project, 33 districts and 249 blocks panchayats of Gujarat State,

100 % (approx.) connected with the Gujarat State Wide Area Network (GSWAN) and 7400 village panchayats (panchayats is the local government at the grassroots) directly linked with the Gandhinagar district.

To enable the above-mentioned vision and objectives, a network of telecentres established to connect the gram panchayats, block panchayats, and district panchayats (these are three levels in state administration). The state government is providing the hardware and software such as the computer, printer, scanner and the internet, electricity; and other instruments to set up the E-Gram CSCs at the Gram Panchayats. E- Gram Vishwagram society established to administer the functioning of E- Gram centres (telecentres) (Gujarat Govt, 2015c, p. 3).

These centres are operated by the VCEs (digital intermediaries) and providing various Government to Citizen (G2C), Business to Consumer (B2C) services (Gujarat Govt, 2015bb, p.2). The present stage of the project emerged from its old form, where at various levels manual issuing of certificates and update of information in registers. ANT theory does not prescribe the characteristics of actors, and it can have both human and non-human actors (Steen, 2010). E-Gram telecentres initiative brought new actors to deliver services. Initially the actors in the form of government machinery, private players, digital intermediaries and material actors such as digital technologies, power supply, office building. With time the relationships change among actors, but a relationship still exists between two heterogeneous actor, where former relates to the later actor (Law, 2009). ICTs at the local level form networks with the digital infrastructure at various levels and form an integrated network. This integrated network keeps evolving by adding and removal of actors.

4. Findings

In present case study, the sustainability of the digital intermediaries is inferred as the monetary resources generated by delivering the e-services. The nature of income should be regular, consistent with the incremental rate. This enables the digital intermediaries to sustain a personal and professional life. This encourages the digital intermediaries to remain in the network of digital intervention in the rural regions.

ANT is used in various areas where interactions among various actors take place, which have different background (Teles & Antonio Joia, 2011). The sustainability variables of digital intermediaries can be grouped under following headings. Social, Economic, and Political. An actor is connected with various elements or can be referred as a result of various elements (Law, 2009). The variables mentioned of one heading is not isolated from other. It is rather better to

say that this whole conceptualization is more like a porous system, where various actors form various interactive networks.

4.1 Social Findings: ANT enables to recognise the interactions of technology with the social life structuring (Teles & Antonio Joia, 2011). One of the important goals of this project is to employ computer literate individuals in or near to his or her village. Some of the reasons mentioned by the intermediaries to accept their present responsibilities are job opportunities, job near to their village, social recognition and provide opportunities to serve people. “E-Gram (telecentre) ghar se pass main hai. Ghar main rehta aur job bhi yahi hai, (Telecentre is near to my house and living in the village house and having a job). E-Gram ki services dekar accha lagta hai pehle jo loog door jate teh abhi gavh main hi sewa hai (I feel good by providing e-services as earlier people use to go to districts or blocks to avail them)”.

Some of the Intermediaries mentioned other reasons such as hoping to regularise as the government employee in future, might receive a regular income from the government, getting the chance to interact with people to learn and explore. Some mentioned that “sarkar hume bhi sarkari naukri degi isseliye hum intejar kar rahe hai, suru main sarkar ne kaha tha (Government mentioned about the regulation of digital intermediaries as the government employee)”. In the survey, it is found that a gender gap in the number of intermediaries.

The success of networking of rural regions depends on the following stages of ICT implementation “initiation, adoption, adaptation, acceptance, regulation and infusion” (Rao, 2008, p. 475). Intermediaries incorporated into the panchayat office to strengthen the local governance and providing services since 2008. The digitalisation of local government documents and records of the citizens. During this phase, services provided by the intermediaries are based on the fulfilment of immediate needs of the individuals such as issuing the land records, certificates, etc. The most of the services offered are representing social threads of the society, where these services are linked with the various employment. “Jyadatar services woh hai jo logo ke daily kaam ki hai” (Translation- most of the services are related to daily usage of people).

In social aspects, digital intermediaries are forming networks with various actors, which is influencing the choices such as service delivery, personal values to serve, professional learning and satisfaction to be part of a network.

4.2 Political / Administrative: The implementation of Information technology governance need commitments at various levels of the organisation (Weill & Ross, 2005). The political

and administrative commitment towards the project enabled the project institutionalization across the Gujarat. During the initial phase, government officials mentioned that E-Gram telecentre project as a priority project of the government. This project received support from the government in the form of infrastructure creation at the district, block, and gram panchayat level. The government provided space to established telecentres, free electricity, digital infrastructure and the internet at the gram panchayats buildings.

The government signed Public Private Partnership to roll out new services from these centres. Government officials are administering the project at each level of the government structure. Initially, the government provided work to the E-Gram telecentres and continuously bringing new services. At the beginning of the project, Gujarat government provided a minimum income of Rs. 500 to digital intermediaries in those regions where the population is less and to increase the awareness about the E-Gram services employed people. The government is providing work related to data entry of ASHA worker, Anganwadi performance entry, issuing labour card Unique Identifier Number (UIN), Aadhar card generation, etc.

The government is providing regular training to digital intermediaries, and they are encouraged to provide training at the gram panchayat level. In the survey, all the digital intermediaries admitted that they had received regular training and regular meetings with the government officials. In meetings, they received training on new services and discuss the other which can be offered.

The integration of e-Gram centres services with government initiatives of state and central government. This further strengthens the digital networks and provide opportunities to various actors of the network.

4.3 Economical: One of the reasons to become digital intermediaries is the job opportunities. Digital intermediaries income depends on the commission earned by delivering e-services. The average yearly income of the digital intermediaries increased from Rs. 5341 in 2011-12 and peaked to Rs.36383 in 2014-15 which later reduced to the Rs. 17696 in 2015-16. These annual income of digital intermediaries are always less than the national per capita income. Income of the digital intermediaries depends on the number of people visiting the E-Gram telecentres and services offered.

Number of People Visiting E-Gram telecentres

The increase in the number of transactions, increase in the income of the E-Gram telecentres showed that its acceptance. The income is dependent on the number of people visiting the E-Gram telecentres. The survey showed that people visiting the telecentres vary from 0-120 people. These figures are highly fluctuating in nature, and some intermediaries mentioned that sometimes no one comes, and for some services, people visit telecentres during the initial period of months such as to pay the electricity bill. Some of the digital intermediaries mentioned that “sirf mahine ke suruaath main loog bijli ke bill bharne aate hai (Translation- People are coming to pay electricity bill during the initial period of months)”.

Some of the reasons for these variations are as follows: all services are not available in all villages, some digital intermediaries are engaged in number of activities such as acting as bank correspondent, while private CSCs are providing better services, availability of limited number of services, and people are seeking only a few services such as paying electricity bill, or issuing Rights of records (RoRs), limited demands of services. Some mentioned that internet speed is very slow to update and access other websites as the state government provide access to few websites.

Services Offered

The agencies in ANT are relational in nature, and the web of actors also increases concerning its each element and vice versa (Law, 2009). The result demonstrates that all the E-Gram telecentres are providing services of electricity bill collection and issuing RoRs certificates. The delivery of services depends on the demands of the services in a particular gram panchayat. And on papers, most of the services are available but differs from the demand side. The variations in the service delivery at the E-Gram telecentres.

The service availability at the E-Gram telecentres is not guaranteeing the same is taken by the people. In financial services, few people have taken insurance, most of the people go to the nearby city to take these services on their visit to city, online admission services limited to few numbers as most of the applications are filled by the students themselves. E-ration coupons not issued by all E-Gram telecentres as these are shifted to village shop or gaon ki ration shop, and other services are not needed on a daily basis.

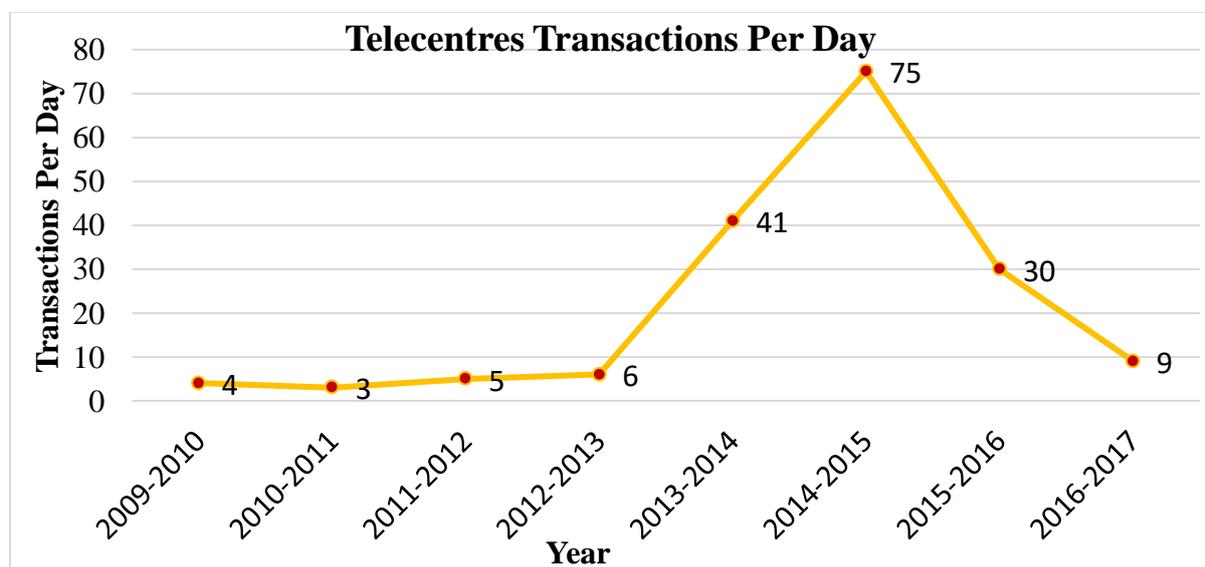
Initially, some of the services started at the E-Gram telecentres, VCEs/digital intermediaries mentioned that “pehle hamare se suru karwate hai, jab acche se jam jati hai toh fir dusro ko de dete hai means that first most of the services given to digital intermediaries, once established, then shifted to other agencies”. Digital intermediaries mentioned that “Sarkar bahut sari

yojanae lati hai par sab logo ko nahi pata hoti, jyadatar toh Sarkar data entry ka kaam deti hai aur woh bhi kabhi hota hai kabhi nahi (Government is providing number of schemes, but people do not know about all, mostly government is giving data work that too occasionally)”.

In cities, some people doing data on their laptops by registering as digital intermediaries. Competitions from the newly emerging internet cafés (Modi, 2013). Despite this, some good result found even in small villages, in that cases income of the E-Gram CSCs are dependent on entrepreneurship skills of the intermediaries as mentioned by digital intermediaries that “main toh haar service ke bare main pata karta hu aur logo ko batata hu, main bank ka kaam bhi karta, insurance bhi Deta hu, bade sahib logo se naye naye scheme ke bare main puchta hu, aur mujhe best digital intermediaries ka inaan bhi mila hai” (Translation- I am seeking information about all the service and informing about them to people, doing work of bank, I am also giving insurance, taking information about the new services form bigger officials and I also received best digital intermediaries prize).

The number of daily transactions by the digital intermediaries fluctuated as shown in figure:1. This is explained by some of the finding of the research as discussed earlier.

Figure: 1



Source: Government of Gujarat (2017).

Income of the E-Gram CSCs VCEs

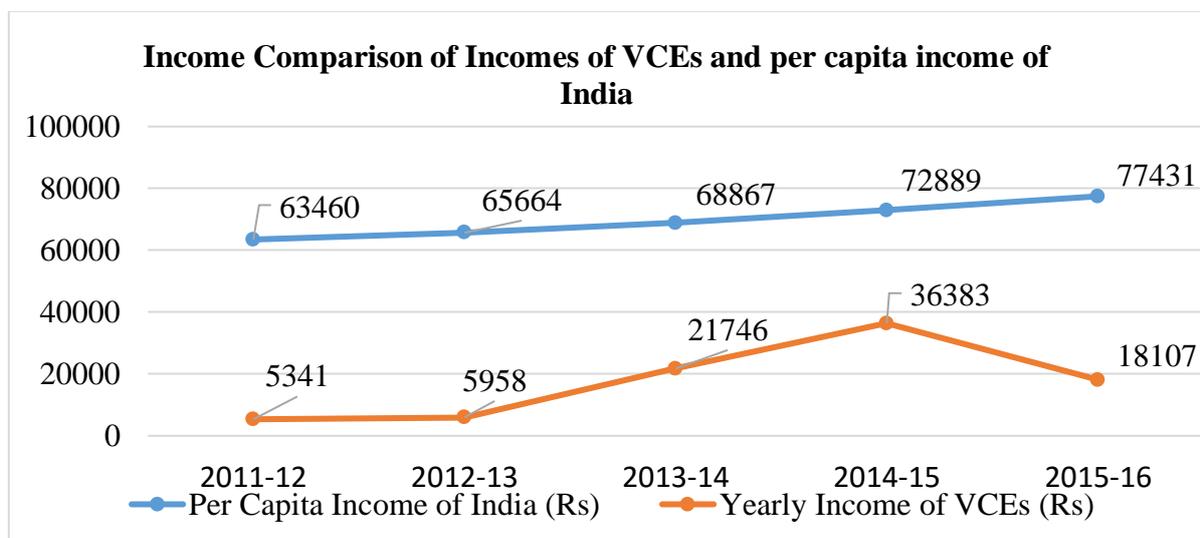
As mentioned in the earlier section, about the digital intermediaries income, which is based on the commission earn while delivering services. In last six years, the income of the digital intermediaries is increasing as in 2009-10 income of digital intermediaries (average monthly

income of 13685 E-Gram telecentres) was Rs.94.08 which increased to Rs.3031.92 in the year 2014-15. Digital intermediaries mentioned that “Kabhi bahut kaam hota hai kabhi kuch nahi hota, par sabh accha hai (Translation- Sometimes have enough work, whereas on other occasions do not have any but everything is fine)”.

In some cases, digital intermediaries have taken up part-time jobs and open more than one telecentres. Digital intermediaries mentioned that “Bahut saare logo ne toh bahut pehle hi choodh diya yeh kaam aur kuch logo ne sath main duhre kaam leliye hai (Translations- Many people left the digital intermediaries to work and some digital intermediaries started some other part time work)”. Some digital intermediaries took up panchayat clerk job along with present responsibilities. In the figure below shown continuous increase of intermediaries’ income till 2014-15, this is the result of the introduction of new services. Some mentioned about the rates of services and commissions of digital intermediaries are not updated regularly.

Intermediaries as visionaries and champions to bring the visions of the telecentres on the ground despite facing economic hardships (Colle, 2005). Some intermediaries outperformed in services delivery by taking following responsibilities such as bank correspondents, insurance agents, learning about the new services and taking proactive decisions to come up with new services. Some VCEs mentioned that, “E-Gram (Telecentres) main cum log aate hai par mere dusre telecentres main jyada loog aate hai, mere private telecentres main services acchi hai” (Translation- Lesser people are coming to telecentres in government panchayat building, whereas more number of people are coming in private telecentres).

Figure:2



Source: Government of Gujarat (2017) and GoI (2017).

Technological

These are key areas in IT decisions: “IT principles, IT architecture, IT infrastructure strategies, business application needs, IT investment and prioritisation” (Weill & Ross, 2005, p.30). At the grassroots level, digital intermediaries are provided information and communication technologies such as computer, scanner, printer, etc.; the internet and technical support team. One of the challenges faced by the digital intermediaries is that the private individuals are providing services efficiently, whereas digital intermediaries lack the market-oriented products and updated accessories. Some of the issues such as Lower income of digital intermediaries especially in less populated villages, the speed of internet is slow during early hours from 11.00 am to 1.00 pm.

“Hamare paas toh yeh computer ki chize hai jo purani hogaye hai aur dusre loog naye naye tezh computer ki chize isstemaal karte hai. kai baar to internet speed itni kaam hojati hai ki kuch kaam nahi hota hai, who din toh yuhi chala jata hai, wahi dusri jagah loog apna dongle isstemaal karte hai toh loog waha challe jate hai, kai loog toh jab sahar jate hai waha se service lelete hai (Translation- We have these computer instruments, they are old and other service providers have new and fast computer instruments. Sometimes speed of internet become so slow that hardly do any work and that day goes without any work. Other service providers using internet connector to provide fast internet based services. Some people go to cities for their work and take services from there)”. One Digital intermediaries mentioned that many digital intermediaries purchased instruments other than what government provided to deliver new services and to expect to recover the cost.

The networks of actors evolve in the interactive dynamic environment (Couldry, 2008). The Gujarat government become the partner with the private players to provide technological support to the E-Gram telecentres to introduce new products and services, and training to the digital intermediaries. An online complaint system provided and Panchayat Wide Area Network (PAWAN) for dedicated internet connection to provide online content at the gram panchayats. Digital intermediaries mentioned that “Jyadar toh system tikh e chalta hai, par kai baar complaint tikh karne main 3-7 din lag jate hai fir koi internet service nahi hoti” (English Translation- Most of the time system works well while in case of problem despite complaint it take 3-7 days to get it solved and during these period no internet based services offered).

These is a brief sum up of factors influencing the digital intermediaries: low awareness about the services among people, the limited number of available services, the low relevance of

currently available services, similar services are provided by other players, lack of resources to offer new services, inadequate cooperation from the government. Some mentioned that the income earns as the commission is very less and to run home is itself a challenge. People are using the computer in their houses, and teachers are helping students to fill admissions forms and presence of banking branches in gram panchayats these are new ICT led changes influencing the intermediaries' income. Digital intermediaries said that charges of issuing certificates not updating regularly.

In most of the interviews, people mentioned about some fix salary so that a minimum salary can be expected. Digital intermediaries mentioned that “Haa income toh cum hai par tikh hai Sarkar dheere dheere nai nai services laa rahi hai par chahte hai ki Sarkar kuch aur kare taki mahine ki cumse cum kuch pagar toh fix ho gaye (Translations- Yes income is less but that alright government is slowly slowly bringing new services. We wish government do something so that at least have a minimum salary)”.

In some cases, digital intermediaries left the job as mentioned by “digital intermediaries that many digital intermediaries left as no income is there and those are working in hope to get regularise as government employee”; some digital intermediaries are providing proactive services delivery of services in various areas which represent the multipurpose nature of the telecentres and increase the income of the digital intermediaries. Some digital intermediaries take up responsibilities of Gram Panchayat clerk along with digital intermediaries, take up a part-time job, and set up more than one telecentre. Some of the changes are positive for development, but these changes are influencing the position of the digital intermediaries. Despite these challenges, digital intermediaries are providing appropriate services in less amount and remain available to people and the government machinery.

The interactions of actors of digital networks influencing the position of digital intermediaries in the form of services introduction, policy formulations, incentives, the institutionalisation of digital networks in the regions and citizen-centric administration. The stability of these networks strengthens the digital intermediaries' position and digital intermediaries further reinforce the strength of the ICTs led initiatives.

5. Conclusion

The developing countries are using ICTs to fill the service gap. In this process intermediaries role become imperative to connect the people. Intermediaries play a critical role to stabilise and institutionalise the digital network system at the grassroots level. Intermediaries are

influenced by various factors such as government policy, private entities, partnership among actors, citizens' awareness and human development index of the regions, etc.

The interactions among various actors of networks evolve to establish as a natural force in the form of institutions (Couldry, 2008). E-Gram Vishwagram Project institutionalises at the grassroots level as a transformational step in the governance process. It is bringing efficiency and transparency in the governance process. Whereas the digital intermediaries are facing challenges, which require policy interventions. The sustainability of intermediaries depends on the interactions among actors, and it may act as an indicator of the outcomes of various actors' performance in the regions. But there is a difficulty in the quantification of increase in the web concerning other elements or actors (Law, 2009).

This research study contributing on two fronts first through literature study it is highlighting various indicators for intermediaries sustainability need to be considered while formulating policies; second the case study highlighting some of the challenges faced by intermediaries. This research shows that information and communication technologies use for development are an evolving field, parameters set earlier, need regular updating with changing time and space, which requires the integrated system of actors with a proactive approach. The policy focus should be on integrating actors to develop the capability of actors, and this helps to develop a reliable means to achieve the development goals of the government.

6. Future Research Directions

ANT recognised the ambiguity of networks of actors about how they influenced by the action of other actors (Couldry, 2008). The future scope of the study of intermediaries' lies in interactions among various actors and how these actors are influencing the sustainability of the intermediaries. The evolving nature of the society on social, economic, political and technologically also open up new avenues for the researchers to study the changing role of the intermediaries in developing countries.

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