Dual Role of ICT Interventions for Semi-Literate Rural Communities: A Social Capital Perspective

by

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ABSTRACT

Prior research has proposed ICT as an intervention for behavior change but it has primarily focused on literate communities. These techniques, however effective fail to prove their metal when it comes to semi-literate rural communities. Because ICT has played an important role in enabling positive change in developing regions we believe they can be contextualized for semi-literate communities as well. In this paper, we use a social capital perspective to focus on India's farming communities that have comfortable access to mobile ICTs but have not been fully served. We explore some of the inherent challenges in adopting ICTs in a particular belt of villages in Maharashtra (India). Although our results are preliminary they highlight the importance of contextualizing ICTs specifically for semi-literate communities so that they can be better adopted.

Keywords: ICTs, Social Capital, semi-literate rural communities, India

INTRODUCTION

The excitement around information and communication technologies (ICTs) is hard to miss and research has made significant contributions towards the understanding of how ICTs can contribute significantly to overall socio economic growth in emerging economies (Akhtar & Gregson, 2001; Heeks & Arun, 2006; Madon, 2005). Much is accredited to easy access and low acquisition cost which along with other factors has paced the diffusion of these technologies quite comfortably (OECD, 2003), the most common example being mobile ICTs. Mobile ICTs mainly represent mobile computing technology that supports and coordinates knowledge sharing,

for example, mobile message, mobile web-based knowledge platform, and mobile database, etc. Hence, mobile ICTs can assist in rapid search, access and retrieval of information, and can support communication and collaboration between communities (Yeh et al. 2006). Along with ICT, social capital theory (SCT) has also been widely explored in literature. Social capital is typically defined as "resources embedded in a social structure that are accessed and/or mobilized in purposive action" (Lin, 2001). The most common definition as proposed by Putnam is "connections among individuals-social networks and the norms of reciprocity and trustworthiness that arise from them" [p. 21]. This perspective has been used to explore ICT interventions in various literate communities, but little has been done to extend this to semi-literate communities belonging to emerging economies. A semi-literate community can be understood as community members having reading age between seven to nine years (Roberts, 1995). Although there is no standard definition for ICT intervention it simply refers to an activity that involves usage of ICT related tools. We intend to use these perspectives for our study as well.

Numbers of studies have explored the connection between social capital and ICT. Based on the analysis of the impact of television e.g. Putnam (2000), some researchers believe that electronic technology contributes to decline in social capital, whereas others argue that ICTs such as the internet and its latest applications, such as social networking sites (SNS) facilitate social capital building (e.g. Hampton and Wellman 2003), (Yang, 2009). These two seemingly opposite school of thoughts indicate that there is a need to explore these two together in varied contexts so as to avoid generalizing their relationship based on findings in one study. Fortunately extant literature posits the contribution of ICTs to be highly promising and fruitful in developing economies but one could argue that there is a deficit in number of qualitative studies that employ relevant theoretical lenses to analyze the rich data obtained through direct interactions with semi-literate communities. Leveraging on the relevance of SCT, we propose that it can lead to sharper focus on new aspects of ICT interventions, which deepens our understanding of how these communities uniquely contributes to social capital in various contexts.

Against this backdrop, we try to answer the following research question; *"how do ICT interventions contribute to social capital considering different communication orientations, specifically in semi-literate communities"*. Seeking an answer to this is important for two main

reasons. Firstly, the orientation of communication (inter or intra level) heavily determines the extent to which ICTs are used. Secondly, social capital is extremely crucial to semi-literate communities, since these communities thrive on trust, norms and networking for all their needs. SCT has the ability to "encompass the norms and networks facilitating collective action for mutual benefit" (Woolcock, 1998).

An exploratory case study (Yin, 2009) was conducted in the rural villages in central India (Maharashtra) with semi-literate farming communities to examine our research question. We developed a theoretical framework to lay the foundation for this study. Structured-pragmatic and situated case study design and analytical approach (Pan and Tan, 2011) was used to map our preliminary findings against our framework and to get insights into the understanding of dual role that ICT interventions play while contributing to social capital.

The remainder of the paper is organized as follows: Relevant literature is outlined in the next section, followed by theoretical framing and the case background including method design and data collection. The findings of the data analyses are then summarized. Finally, implications of the study, together with future research directions, are discussed on the conclusion section.

LITERATURE REVIEW

ICT in Emerging Economies

The importance of ICT for socio-economic growth in emerging economies has been well recognized (UNDP, 2001), but how it does that remains unclear. One could attribute this to social capital's ability to foster human capital (Coleman, 1988). Research has also tried to answer this by looking at mobile ICTs being a major contributor to knowledge sharing in rural farming communities (Deng et al. 2012). There have been attempts to develop an icon taxonomy specifically warranted for semi-literate communities. The argument is that current design principles do not focus on majority of the worlds' population -semi literate communities in terms of icon design and thus require more focused studies (Wan et al. 2013). There have also been works that relate social capital with better healthcare (Liukonen et al. 2004), quality of life (Kennelly et al. 2003) and civic engagement (Putnam, 2000). Woolcock & Narayan, 2000 in their paper mention how social capital leads to trust formation among communities which in turn contributes to economic development. Given the controversial nature of social capital related

research we need to take into account works that illustrate the negative effect of social capital as well (Rheingold, 2002; Srivastava, 2005). What is important to note is that the complexity and challenges in a rural setting in a developing economy is very different from their developed counterparts (which is the site of study for most of the above mentioned works). There is a huge chunk of developing nations that have fallen prey to the digital divide (Di Maggio et al. 2004). The problem is further exacerbated with multiple ethnicities, languages, culture and inherent issues like nepotism, caste structures and strict bureaucracy.

While ICTs could foster social capital when intra-community (within the community) interactions are concerned, it may take up the opposite role when inter-community (across distanced communities) interactions are concerned. Thus it is useful to further explore ICTs in different contexts and understand how various dimensions of social capital can be facilitated/fostered or inhibited/restricted. Though lot has changed as far as the context of development in emerging economies (Ashley & Maxwell, 2001) is concerned, agriculture continues to be the main foundation for economic growth in developing nations (IFAD, 2001). The good news is that ICTs are adaptable and flexible but the context in which they are used needs a deeper understanding for effective knowledge contribution and information exchange. It is important to understand the complexity of rural development context to adapt better to their inherent challenges. With deeper understanding of ICT interventions when used for such communities, we can have a more balanced and effective approach towards developing them.

Social Capital

Social Capital aims to encompass everything humane about a community, from whom it constitutes to what it thrives on and is rooted in the literature of conventional or temporal communities. In one of the earlier definitions it is stated as "those intangible substances that count for most in the daily lives of people-namely goodwill, fellowship, sympathy and social intercourse among the individuals and family that make up a social unit" (Hanifan, 1916). Later what became popular was the notion of social capital being rooted in the interactions that take place between rational actors and is a resource in itself (Coleman, 1988). Nahapiet et. al (1998) defined social capital as sum of actual and potential resources embedded within, available through and derived from the network of relationships possessed by an individual or social unit. World Bank (1999) provided a more societal definition which refers to it as a collection of

institutions, relationships and norms that shape the quality and quantity of society's social interactions. Coherent with this viewpoint, we believe that social capital is what a community thrives on. It thus becomes ever so crucial to complement the extant social capital literature with more in-depth understanding of the context and unique settings that semi-literate communities are in.

A stream of work in SCT literature belongs to the domain of social capital classification. They classify social capital into bonding, bridging and linking (Healy and Cote, 2001; Putnam, 2000; Woolcock, 2001). *'Bridging'* refers to one's externally related relations, *'bonding'* on the other hand refers to the social capital that accounts for personal or internal relationships. Another stream of work studies the type of actors that are relevant in the context of Social Capital building process and are commonly termed as recipients and donors. In an organizational setting, the classification rendered is according to its relative focus, outwardly or inwardly oriented (Adler et al., 2002). Another effort to operationalize social capital as a construct resulted in *'structural'*, *'cognitive'* and *'relational'* dimensions of social capital (Nahapiet et. al, 1998). Relational dimension of social capital refers to the types of norms, trust, shared understanding; the glue that binds a community together and structural dimension refers to the ties and connections and the social organization of the community. The third form, cognitive, usually stems from the belief that individuals with shared codes, languages and narratives contribute more to sharing and exchanging of resources (Tsai et. al, 1998). As far as impact of social capital is concerned, extant literature expands in both directions. High amounts of social capital can lead to high levels cohesion in a community but this same community tends to close on other sections of the society. This is not beneficial for overall development. As Adler et al., (2002) suggested, *'Ties that bind are also ties that blind''*.

Despite the heterogeneity, researchers seem to unify when it comes to the fact that social interactions or communication are chief enablers of social capital (Narayan et al., 2001). It encourages all participants of a community to nurture and foster internal or external ties and move towards an overall development-oriented goal. Clearly there is not one uniformly accepted categorization. Based on the context of the given study we choose to focus on two dimensions structural and relational forms of social capital.

ICT and Social Capital

Having discussed ICT led development in emerging economies and social capital literature; we next discuss social capital in relation to ICT. Social capital and ICT studied together can be beneficial at individual level (Yang et. al, 2009) or at a community level in which these individuals reside. At community level, ICT interventions can contribute to social capital as a result of increased communication, better access to resources like knowledge, increased influence, control and power. Above all, it leads to effective information dissemination. A number of studies explore the positive impact of ICT on social capital. Social networking sites for example, were found to enhance social ties and thus have a positive impact on social capital (Frank et. al, 2004; Simpson, 2005). In emerging economies, ICTs have had a major impact towards increased participation, transparency, trust and acceptance (Rohde, 2004; Syrjänen, 2004). Thus social capital is positively related to the development, adoption and use of ICT, at both individual and collective level. Yang et. al (2009) summarized the work related to social capital and ICT depending on unit of analysis (individual or collective) and role of social capital in research design (dependent variable or independent variable).

THEORETICAL FRAMING

Drawing on the classification of social capital into structural and relational dimensions, we classify ICTs impact on social capital i.e. whether *facilitates* or *inhibits*, along different levels of communication orientations, intra or inter. In accordance with Putnam's (2000) indicators of social capital, structural dimension is affected by how well people stay connected in a network (*network*) and who are the key individuals in the community who are in a way central to the network and help connect other community members effortlessly (*centrality*). They are positioned in such a way that they can effectively disseminate information from a variety of sources and hence increase the social interactions amongst the community members. ICTs can intuitively become an effective carrier of this information but may also render ineffective when competing against traditional methods of communications. Similarly, relational dimension of social capital, which not only refers to *trust* and norms but also *reciprocity*, can contribute to an increased motivation amongst community members to engage in effective information exchange. While one would think that ICTs are the ideal catalyst for fostering these communications, there are distinct patterns when different communication orientations are concerned. For these very

reasons, we need a much deeper understanding of how ICTs contribute to different forms of social capital with distinct communication orientations.

The framework in Table 1 highlights distinct patterns of preferences as far as ICT interventions are concerned. Having accepted various information and communication technologies over the last few years, the semiliterate rural communities primarily has a notion of relevancy of ICTs when participating in inter-community or intra-community interactions. ICTs are considered for distant networking (inter community interactions) and face to face communication would be the method of choice for intra community interactions. How this effects their contribution to different dimensions of social capital is explained further.ICTs used in inter community interactions contribute to structural social capital (*facilitating structural social capital*) but for relational dimension of social capital, traditional meet-ups and personal interactions are still the trusted and reliable choices (*inhibiting relational social capital*). ICT diffusion in such a scenario becomes very challenging. It follows that:

> *Proposition 1: The impact of ICTs on structural social capital will be more positive for inter-community interactions than intra-community interactions.*

ICTs are the method of choice when staying connected with extended family and relatives (*fostering relational social capital*) but again for communicating with fellow farmers and information exchanges regarding everyday farming issues/challenges, it renders irrelevancy (*restricting structural social capital*). It follows that:

> *Proposition 2: The impact of ICTs on relational social capital will be more positive for intra-community interactions than inter-community interactions.*

THE CASE: RESEARCH BACKGROUND

Maharashtra is the third largest state on India, both in terms of population (96.88 million) and area covered (307,713 sq. km.). It is bounded by Arabian Sea in the west and relies heavily on agriculture for its economic growth. In 2009, Maharashtra was the 8th state to have State Wide Area Network implemented under the National e-Governance Plan by the government. This meant a reliable and integrated telecommunication infrastructure, quick and reliable access to information, amongst other things. Soon the tele- density (number of telephones per hundred populations) in Maharashtra (57.98) was recorded higher than for all of India (47.89). These

Table 1. Dual Nature of ICT Interventions towards Social Capital		
Inter	**Facilitating Structural Social Capital** *Centrality*: In regards to structural social capital, farmers with prior experiences of pest attacks or other problems related to farming in distant villages and communities are referred to and approached via ICTs. They are prominent figures in the farming communities with long history of successful techniques. *Network*: ICT facilitate the communication amongst these farming communities and has seamlessly integrated as part of their networking strategies.	**Inhibiting Relational Social Capital** *Trust*: The usefulness of information obtained from distant farmers ranked very low. The information is more exploratory in nature then applicable. *Reciprocity*: Mutual benefit is not the main motivation behind inter community communications, resulting of which is a disapproving outlook towards enhancing personal ties with other communities through ICTs.
Intra	**Fostering Relational Social Capital** *Trust*: ICTs are viewed as catalyst for enhancing personal ties with families and relatives. They are used extensively to stay connected and used as an active mode of communication. *Reciprocity*: ICTs aid the cause of villagers helping each other out by providing an easy way to extend information useful in a similar situation faced earlier, in hope that the favor would be returned.	**Restricting Structural Social Capital** *Centrality*: Neighboring farmers are referred to in case of any issue, but here the preferred communication channel is face to face meet-ups. Even with the option of using ICTs for quick and effective communication, it still not used as they rely on their evening routine of get together. *Network*: ICTs are considered irrelevant for networking within the village as traditional means are still preferred and considered highly effective in resolving issues.
Facilitating/ Fostering	Polarity of ICT Intervention	**Inhibiting/ Restricting**

Note: the left axis is labelled "Communication orientation".

numbers revealed by the Economic Survey of Maharashtra 2009-2010 bring to focus the facts that ICT (in this case mobile phones) are no longer restricted to population in top of the pyramid. Affordance and sheer convenience over traditional communication technologies like landlines

will thus continue to enhance mobile phone adoption in semiliterate rural communities as well. As far as social makeup of Maharashtra is concerned, it clearly has one dominant caste of Marathas (35% of total population).

Interpersonal relations are harmonious and people are generally nice to each other. There is no stringent superior/subordinate hierarchy as far as agricultural setup is concerned and thus is rarely exploitive in nature. One can safely say that on most accounts people are socially and morally very conscious. Women are treated well and there is sufficient importance given to education for all. The literacy rates for males and females are 89.8% and 75.5%, respectively, Census 2011. One can see women riding bicycles or motorcycles and are better represented in the society as compared to some other states, thus there are no imminent culture or social difficulties in carrying out a study like this. Mobile phone is a common resource and everyone uses it in their daily lives for a breadth of activities (RNCOS, 2009). Going one step deeper and we observe that there are some distinct patterns for this usage from the social capital perspective.

STUDY DESIGN: CASE STUDY METHOD

Given the relatively rich body of work available on SCT, and yet the interesting perspective that ICT interventions in semiliterate rural communities brings along, we chose to employ exploratory case study (Yin, 2009) since it is one of the best ways to develop research when the phenomenon under focus is in its early stages. In addition to this, we follow a structured, pragmatic and situational case study approach (Pan and Tan, 2011) to achieve theoretical confidence and saturation and to establish theory-data-model alignment. We use the rich qualitative data obtained during the study to seek evidence for justifying the proposed framework. At the same time it brings into light the impact of ICT interventions on various social capital measures (network, trust and reciprocity).

Data Collection

To understand the impact of ICT interventions on social capital, we carried out an exploratory investigation. The case data was collected as part of a larger study on designing social media innovations in semiliterate rural communities. The first site was selected via access negotiation (Pan and Tan, 2011) at a local NGO in Pune who are working closely with farming communities. Later using snowball technique (Patton, 2002), three more sites and participants were identified. To ensure data triangulation (Yin, 2009), multiple interviews per site were conducted. In total, 18

people were interviewed four farming communities including farmers, head of the villages and other local villagers. These semi-structured interviews lasted approximately 1 hour each. The interview began with generic questions for the purpose of collecting demographic information and continued on to more specific questions that were aimed at ICT usage in their daily lives with particular focus on information exchange in inter and intra community communications. The average age of these participants was 42 years and ranged from 33 years to 60 years. All the participants were involved in agricultural farming for their livelihood and had education ranging from primary to university. They owned low-cost mobile phones with only two participants having desktop machines at their homes.

Data Analysis and Preliminary Findings

The data analysis follows the steps of phenomenological as mentioned by Creswell (2007), Moustkas (1994) and Polkinghorne (1989) to analyze participants' transcripts. The analysis begins with reading of the transcripts multiple times to get an overall idea of the relational collected through interviews and is later transcribed into English. Then from each transcript, significant statements or quotes pertaining to participants' ICT usage in different contexts are identified and highlighted. This process involves a repeated examination of the data until we determine that no more new issues could be extracted. As a part of the examination of preliminary interview data, 26 significant statements were extracted from the participants' transcripts. The first researcher in this study is a native speaker of the language in which these interviews were recorded and thus is able to relate and analyze them with minimum language bias.

Our preliminary findings aid us to classify ICT interventions and their contribution to structural and relational dimension of social capital along inter and intra community interactions. We followed Putnam's (2000) classification of social capital into structural, cognitive and relational types. Clustering statements with similar meanings help us to see the classification that emerged through the framework. Table 2 includes examples of significant statements along with their mapping in the framework described earlier.

Table 2. Selected examples of significant statements related to each quadrant in the framework	
Quadrant specification	**Significant statements**
Facilitating Structural Social Capital (Inter)	*"Now I can call up **senior farmers in other villages (inter)** in case there is a pest attack in my village. I enquire about various medicines, which one I should apply. I **ask for his experience (structural/centrality)** and he can tell which one is more efficient. These sorts of communications have **become easy with technology (facilitate)**."* (Site: Pune, Respondent 3).
Inhibiting Relational Social Capital (Inter)	*"I **don't need to go beyond my business (inhibiting)** [...with farmers in other villages **(inter)**], I have my friends here, we meet up at the tea stall every day and I usually discuss all my problems there, they get solved there when **someone who encountered similar problem gives me advice and I follow up on them (relational/reciprocity)."** (*Site: Nashik, Respondent 11).
Fostering Relational Social Capital (Intra)	*"**Neighboring farmers (intra)**. I call farmers who have more experience than me in farming, so as to know which medicines to apply and **which fertilizers, pesticides and seeds to adopt (fostering)**. The discussion which happens with neighboring farmers those only provides **reliable and authentic (relational/trust)** information." (*Site: Pune, Respondent 5).
Restricting Structural Social Capital (Intra)	*"**Face to Face interaction only (restricting)** [...**neighboring farmers (intra)**]. We keep in touch with each other. **Only the people (3-4) (structural/network)** who planted the same breed stay in touch with each other. Now when we meet in the market we exchange information over there. They will sometime invite me to check on their crop and all." (*Site: Nashik, Respondent 12).

ICT interventions facilitate structural social capital (Inter-Community)

ICTs have provided an opportunity for semi-literate communities like villages in Maharashtra to stretch beyond their traditional practices and acquire knowledge on what is latest in technology. However due to high social bonding amongst the community members, they tend to add little value to the relational oriented social capital during their inter-community interactions.

This by no means implies that the interactions are non-existent, they exist but they are primarily focused more on meeting needs like building networking ties and creating business opportunities for financial gains.

There are some important things to note here. People that belong to this quadrant tend to view technology as means to enhance networking opportunities. Thus they rely on it to make phone calls to representatives from NGO's, fellow farmers, technicians etc. which are in distant

villages. For them the benefits reaped out of using technology are more than the cost they pay for acquiring these technologies. Villagers often remarked sympathetically when asked whether they

ICT interventions inhibit relational social capital (Inter-Community)

feel mobile phones are priced too high, "*no it is too less*". Beyond networking and business opportunities they don't consider ICTs to be of any real use in terms of inter community interactions.

The other end of the spectrum narrates the second half of the story. As mentioned earlier social capital is something that semiliterate rural communities thrives on. Extreme faith and trust in each other is what keeps these communities tightly knit. On one hand where it increases their internal bonding this group closes on other communities when it comes to enhancing the relational oriented social capital. They still would like some form of personal interactions before building up relational oriented social capital.

This clearly indicates that in order to enhance relational oriented social capital, semiliterate rural communities consider ICT irrelevant. This is quite counter-intuitive since they are primarily using ICTs to call up experts and farmers in other villages for technical advice/issues but they don't go beyond that to contribute to effective knowledge dissemination and taking it a step further to bond the relationship. They prefer traditional face to face interactions for personal bonding. When asked whether they trust and apply information they get from interactions in

other communities, they were rather apologetic about it mentioning things like they have little time to pay too much attention to such information and resort to their meetings in the evenings with other farmers in the same village to get useful information that can be applied. When asked whether the method through which they communicate with farmers in other villages is effective, one villager remarked:

"It could be better but face to face interactions are still very important, we come to know each other's experiences quickly." (Site: Nashik, Respondent 13).

This constant insistence on traditional means stretches beyond just information reliability. It alters their attitude towards using ICTs for social bonding and relationship strengthening. To further illustrate this, consider the response to the question, *"What about communicating with other farmers belonging to other communities?"*

"No, in such cases face to face interaction is rare...but I can see them in television programs like 'satbara'[...name of a popular farming based show] ...but **face to face interaction are always better***...".* (Site: Pabal, Respondent 2).

ICT interventions facilitate relational social capital (Intra-Community)

As defined earlier, relational oriented social capital refers to norms, shared understanding and trust that ties people together. This dimension of social capital is enhanced tremendously when ICT interventions are used. The majorities of villagers in Pune and Nashik districts belong to the same ethnic group, namely Marathas and thus are very closely knit. However interacting with their relatives in the same village has become even more convenient with the mobile phones being available. The villagers now connect with their relatives through phone calls, chats, SMSs. Although chats are not very commonly used, calls and SMS are the more popular features. However farmers have increasingly been using internet enabled services on their mobile phones. Students use the computers available in computer centers (private/society office) to connect with their friends after school hours. In the past, the villagers would often resort to sending letters or using messengers to convey their messages to relatives in other parts of the village. They realize that with the ICT they can communicate in real time with their friends and relatives. This solicits their relationship further and builds trust over time. When asked whom they talk to when they need information regarding good crops etc., a villager explained:

*"Neighboring farmers. I call farmers who have more experience than me in farming, so as to know which medicines to apply and which fertilizers, pesticides and seeds to use. The discussion which happens with neighboring farmers those only provides reliable and authentic information." (*Site: Pune, Respondent 5).

This should not be confused with earlier cases where farmers preferred face to face interactions for getting information mentioned above. Along with the traditional means, some farmers who are more open to technology due to higher education level use ICTs moderately to communicate with other farmers within the village to get such information.

ICT interventions inhibit structural social capital (Intra-Community)

When asked about their preferred mode of information sharing, most of the farmers replied, *face to face* meetings. When we were further probed to ask whether they think technology can be used to communicate better with your friends and relatives he remarked:

"No, nothing as such. We anyways meet for tea in the evening. But I would like to know results of farmers growing same breed outside our village. Mobile phone can be useful there." (Site: Nashik, Respondent 12).

Clearly there is a notion of using ICTs amongst farmers in other villages for networking etc. but to interact with farmers within same village tea shops, co-operative society or personal visits are always preferred. Because these techniques have worked for them so far and given good results, their usage of ICTs is restricted to communicating with relatives or family issues when intra community interactions are concerned. They rely heavily on face to face interactions with other farmers in the evening for networking and information sharing. They even participate in events like farming fairs where they disseminate mass information to the public about farming issues. They consider it to be more authentic and reliable. When asked whether they think using mobile phones amongst themselves would be useful some of them retorted to a point blank no. Such hostility is not seen when we change the opposite side to farmers in other villages. And this is not based on one or two responses. Out of the 18 interviewees, more than 16 people shared this view. They have realized that in order to stay updated with what is happening outside the village they need ICTs but they consider it to be irrelevant when it comes to communication within them. Due to this irrelevancy notion of ICTs almost all government initiatives, NGO schemes/programs fail to be effective in semiliterate rural communities (Walsham, 2010). We

need to contextualize the usage of ICTs in such a way that it can first penetrate at grass root level into their day to day interactions with other farmers. Until the semiliterate rural communities accept ICTs to be used in day to day basis for tasks other than communicating with family, they will be resilient to government initiatives and plans.

To illustrate this further, consider response to the question,

"You get information from very many different sources like shops selling fertilizers, pesticides, chief of the village, agricultural officer, comparatively established farmers etc., among them from which source you generally get most reliable and effective information?"

*"Calling village shop. I go to 'Vigyan Ashram' [..Local NGO] to get the information from internet, and then look for it. Among them I got more and **more reliable and effective information** by calling comparatively big farmers who do it by themselves."* (Site: Pabal, Respondent 3)

Agricultural officer or chief of the village are generally not available in the village premises. Thus they are not preferred over established farmers and local village shops. This clearly indicates that while ICTs facilitate relational social capital within the village it is not the method of choice for communicating with resources outside the village (intra).

DISCUSSION

Theoretically our research interest was to explore the link between ICT interventions and their impact on social capital keeping in mind different communication orientations. We propose that by studying contextually unique settings we can identify key determinants of how ICT plays a dual role in social capital building. Our findings show that while ICTs foster relational dimension of social capital in intra community interactions, they restrict structural social capital because of heavily reliance on face to face interactions. When we shift the focus to inter community interactions, ICTs are readily used to build networking ties thus facilitating structural social capital but they are not used to establish and strengthen personal relationship thus inhibiting relational dimension of social capital. Also this study provides a foundation in the form of an initial framework to understand impact of ICT on social capital in semiliterate rural communities.

Practically, our study has implications for IS development teams and managers both. IS development teams can understand the importance of taking into account local users and their needs before developing tools for them. More specifically, understanding which communication orientation or ICT intervention relates to which specific users' need can help in more effective

and successful IS development. Managers interested in investing in mobile ICTs can benefit from this study by understanding the current status of role of ICTs in rural communities and how ICT interventions can take up dual role when considering various dimensions.

LIMITATIONS AND FUTURE WORK

However this study has few limitations. Communication in farming communities is highly dependent on the harvesting season. Thus, one may argue that the study was not performed at the appropriate 'time'. The second limitation we feel is that this study was conducted in an extremely homogenous community and thus puts a limit on the generalizability of our findings. Hence our findings should be considered in light of these limitations.

Having said that, we would like to point out that contribution to various forms of social capital exists even without ICT interventions. This is the very nature of social communities and social interactions. What is important is how they enhance or inhibit these contributions and thus context becomes crucial. To elaborate, different contexts have different characteristics and the best way to highlight them is to interact with the people experiencing these contexts on a daily basis and we have been able to do that. Indeed it is of importance to know whether ICTs lead to a positive or a negative impact on social capital, but what is also important is to realize that it is contributing to the "*rich get richer and poor get poorer*" phenomenon. People are channelizing power of technology to foster their personal ties and sticking to traditional face to face interactions for networking opportunities. The scenario is reversed however when communication is between distant communities. Thus the benefit of closely studying the requirements of the semiliterate rural communities will help design ICT interventions in a way that it seamlessly integrates with their needs and expectations.

The future goal is to explore a temporal aspect in social capital building process by visiting the site multiple times during various harvesting seasons. Also we aim to do a comparative study by choosing an ethnically different community in India to further enrich our analysis. The ultimate goal of this study is to understand the role of ICTs in social capital building process for semiliterate rural communities in emerging economies for better contextualization.

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