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REVIEW ARTICLE

ANTHROPOLOGICAL UNDERSTANDING OF RURAL-USER NEEDS TOWARDS THE CONSTRUCTION OF THE USE OF ICTs: A CASE OF INDIA

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ABSTRACT

The introduction of Information and Communication Technologies (ICTs) in mainstream societies affects the way in which the societies interact, communicate, produce, assess, adapt and access vast amount of information. The information revolution has not only affected the technology and telecommunications sectors but also rippled through nearly every aspect of the economy and society at large. The proliferation of ICT in nations is directly seen to be vital for socio-economic development. However, the concept of socio-economic development and its relationship with ICT growth remains an open question in the developing and under-developed nations owing to many socio-economic, rural and cultural factors. Rural areas are geographically dispersed and if ICT programs for such rural areas are to provide equitable coverage, accessibility technological needs and user's perspective must be considered. Also, in a country like India where three fourth populations resides in rural area, it becomes pertinent and challenging to understand how Information Communication Technologies (ICTs) are embedded in the lives of rural users. This paper explores how rural participants shaped their use of ICTs by examining the most important meanings and uses of ICTs in their lives, such as their role in emergency situations and as a status symbol. As much as possible this paper is based on the priorities and needs of participants as they themselves saw them (emic approaches), rather than what the researcher assumed was important (etic perspective).

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INTRODUCTION

ICTs are rapidly changing the world (Castells, 1996) and are increasingly gaining attention in the context of developing countries, which is evident from the rapid expansion of work done in the field of Information and Communication Technologies for Development (ICT4D) in recent years (Walsham and Sahay, 2006; World Bank, 2006; Heeks, 2008; Unwin, 2009). Hamelink (1997) defines ICTs as encompassing 'all those technologies that enable the handling of information and facilitate different forms of communication among human actors, between human beings and electronic systems, and among electronic systems'. This broad definition includes both 'older' technologies, such as radio, television and telephone, as well as 'newer' technologies, such as mobile technology and computers (Wachholz and Meleisea, 2006). The present research builds on literatures and understanding that consider the development of these technologies as a social process (Bijker *et al*., 1987; Dourish, 2001; Oudshoorn and Pinch, 2003; Suchman, 2007). The ICTs have embedded almost every aspect of human life and hence, it is very important to study the inter-relationship of this technology and humans (users) and the intricacies involved. Understanding users and their needs is a well known stage of the interaction design process (Preece *et al*., 2002) and it is also of great importance when exploring the social consequences of ICT use, a main objective of this study. Mackay *et al*. (2000) explicatory describes the misnonimity of the term user by saying, 'users' is a complicated term that is used by different actors in different settings with varying meanings. Understanding the role of users in technological development requires going beyond essentialist views of user identities and thus taking into account the multiplicity and diversity of users, both during the design as well as the actual use of ICTs (Oudshoorn and Pinch, 2003). Over time users have gradually come to play a more important role in the design process. Historically, the design of ICTs did not always have a good record of considering the actual users, but over time awareness about the importance of obtaining an understanding about 'users' has grown (Bannon, 1992; Benyon *et al*., 2005). The design process has become more user-centred, meaning that designers put people rather than technology at the centre of the design process (Benyon *et al*., 2005; Robertson, 2006). However, although users have

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been given a larger role in the design process, it is often still a very passive role. User-centred approaches tend to treat users as passive human factors that can be studied in isolation in a laboratory and merely provide information to the designers, for example regarding the evaluation of an existing system (Bannon, 1992; Mackay *et al*., 2000). For this reason, different scholars have pleaded for a move from 'user-centred' to 'user-involved' design, meaning that the user becomes an active human actor in all the stages of the design process, rather than just a human factor (Mackay *et al*., 2000). According to Bannon (1992), 'user-involved' design promotes democratization and ensures the resulting computer system meets the needs of the users. Not only when identifying user needs during the design phase, but also during the actual use of ICTs, a great deal can be learned for future designs from how users actively shape and reshape the use of ICTs according to their needs (Mackay and Gillespie, 1992). First of all, each ICT allows a range of possible uses, some in accordance with the intentions of the designers, others unanticipated (Bijker and Law, 1992; Dourish, 2001). The typical evaluation of ICT designs predominantly focuses on evaluating the intended uses and pays limited attention to the possible unintended uses. However, the appropriation manifested in unintended uses can actually reveal a great deal about the role and meaning users assigned to an ICT and how they adopted it to their needs (Bijker and Law, 1992). Based on this understanding this paper explores how rural participants shaped their use of ICTs by examining the most important meanings and uses of ICTs in their lives, such as their role in emergency situations and as a status symbol as reflected by them. Furthermore, the paper discusses how participants' needs were explored with them and highlights the challenges of this process. The focus of the study lies on rural area for the reason that in this present technology-driven age where nations worldwide are talking about economic growth in terms of ICT development in every social as well as political domain, the rural areas present a totally different scenario. By definition, rural areas are those parts of the space economy which are least affected by the process of urbanisation, and are therefore more associated with a much more dispersed pattern of population distribution and economic activity. They are also affected by varying levels of peripherality, depending on their distance from markets and their access to services. Traditionally, spatial theories of development have focused on the relationship between core and peripheries, with the more deterministic and sometimes ideological interpretations suggesting that uneven development is an inevitable outcome of the nature and functioning of capitalism (Harvey, 1989). Empirical evidence gives considerable support to the view that higher levels of economic development are associated with urban centres, and that the spatial structure of the urban system reflects the spatial pattern of economic opportunities, with greater access to opportunities being concentrated in the more urbanised areas. As per Census 2011, the rural urban ratio of India is 72:28, hence, it becomes pertinent to explore and understand the dynamics of this huge population residing in rural areas to address the challenges of development India is currently facing.

Methodological approach

The findings discussed in this article are a part of wider enquiry into the role and social construction of ICTs in rural areas in India. The particular aim of this study was to understand how the rural users comprising of youth and their parents place ICTs in their lives, the meanings and use attached to their ICT use which directly influence their needs for particular ICTs. The focus of the study was rural users of India for the reason that majority of India's population resides in rural areas as compared to urban, still ICT penetration is lowest there. The analytical framework of this study was based on a range of social as well as demographic variables such as age, gender, education, and economic status with predominant focus on exploring how these variables shape ICT use and needs of users. Qualitative multiple method approach was applied in generating data from the respondents residing in rural village, Khanyaya of Himachal Pradesh, north Indian state. Himachal Pradesh is a beautiful northern state of India, a part of Himalayas. The reason for selecting this village rests on the fact that firstly, its location which is not too interior as urban town of Dharamshala is located at a minimal distance of 10km. Secondly, all the provisions for government initiatives like digitization in schools and governance were present in the village with secondary school facilities, an internet and mobile recharge shop making it best possible place for conducting the present research. To achieve the intentions of this study a qualitative research design was developed that engaged within an epistemology of social constructivism, then gathered and analyzed ethnographic data using an interpretative theoretical perspective. Interviews, participant observation, focus groups and document analysis formed a complementary suit of qualitative data gathering methods to address the research objectives. A total of 73 in-depth interviews were conducted with respondent's belonging to different age groups (student's (15-24 years), parents (25-70 years)) to achieve the holistic perspective of research. The interview questions were particularly focused on participants' current ICT practices, as well as on their future ambitions and ideas about future technologies. As a supplement to the data from the in-depth interviews, focus groups were also employed. These guided group discussions were intended to generate additional understanding of participants' experiences and beliefs about their daily activities, skills, and ICTs.

The wealth of data that resulted from the field research was subsequently analyzed and organized into conceptual categories in light of the analytical framework's predefined variables. The findings specifically relating to the users needs and expectations of ICTs are discussed in this article.

Shaping ICT use: Percieved opportunities

The meaning of an ICT is not inherent in the technology itself, but instead arises from the way it becomes used in the entire fabric of social, political, cultural and economic relations within which it is embedded (Geldof, 2010). Users and the context of use play a crucial role in how ICTs become utilized and the meanings that are assigned to them. This theme is concerned with the meanings that users/respondents assigned to ICTs and their use. In particular, it examined their motivations and explanations about how they had ranked the ICT cards, so as to better understand the role and meaning of ICTs in their lives. The interviews and in-depth discussions with the respondents highlighted some of the most important

ICT uses expressed by participants, better to understand the meanings that they assigned to ICTs. The following were the important ICT uses labeled by the respondents explained in detail below: improved communication, use in emergency situations, business opportunities, learning opportunities, leisure and its role as a status symbol. Nevertheless, participants were not only praising ICTs, but also identified some of their dark sides that are important to consider as well highlighting the negative uses of ICTs.

Improved communication

The introduction of ICTs had inevitably changed existing communicative practices. At the time of field research, participants identified the following four main practices to communicate over long distances: going somewhere yourself, sending an oral message through someone else, sending a letter, or making a phone call. As the two main advantages of the latter ICT practice compared to more traditional communication methods, they mentioned faster speed and reduced cost.

(What I like about the mobile phone is that if there is a fast message you want to send to somebody, you don't have to spend money on transport, but just use it.)

Prior to the introduction of ICTs, bridging the physical distance between a sender and receiver of a message, for example through a person or a letter, was a precondition for communication over long distances. As a consequence, the spatial distribution of social networks was more restricted by physical distance. The introduction of ICTs has greatly reduced this distance barrier and therefore not only changed communicative practices, but also the spatial distribution of social networks (Chéneau-Loquay, 2007; Unwin, 2009). The following quotation for example shows how mobile phones allowed the respondent's to keep in touch with their relatives hundreds of kilometres away:

(If there is no mobile phone, I cannot keep in touch with my relatives)

The potential of mobile phone as the future channel of communication is based on orality being a central element, as majority of the parents were illiterate and could not read and write. Phone calls did indeed dominate the communicative ICT practices reported by participants" (Khatri, 2016).

Emergency

The main reason why the improved communication offered by mobile phones was considered of great importance was for its use in emergency situations, which is in accordance with findings from other scholars (Souter *et al*., 2005; Hahn and Kibora, 2008; Geldof, 2011). According to a comparative study by Souter *et al*. (2005), telephone/mobile phones served as the most important channel for emergency information and communication. Hahn and Kibora (2008) found that it was through the shared use of mobile phones in emergency situations that people in rural areas became convinced about the usefulness of this technology. The most important advantage offered by ICTs in emergency situations is an increased speed of communication. Participants held mobile technology particularly important for the following three emergencies: to inform relatives about the death and funeral of a loved one, to be informed of approaching conflicts, mishappenings and to call for help in case of problems, such as illness, financial hardship or criminal offences. The latter was for example evident from the following quotations:

(With mobile phone I can call the police if I am in danger.)
(I like mobile phone because there was a funeral at my home village and they used this to inform me.)

Participants rendered mobile technology very useful in case of conflicts and mishappenings when they are far from their children. As is clear from the following case study:

(Ram Kumar, a migrant from upper interior area in Dhauladhar hills, considers Mobile technology as the best thing now; he was informed about his land encroachment in his village, through mobile phone. It helped him reach the place on time and sort the matter. Had there been no mobile phones, he would not have been informed about the matter and his land would have been encroached forever.)

Business opportunities

There is widespread interest and research in the economic impact of ICTs in developing countries, as ICTs are often thought to have a potential to contribute to economic growth (Donner, 2004; Souter *et al*., 2005; Best and Kenny, 2009; Geldof, 2011). The two main ways in which existing businesses were supported by ICTs was through improved communication and access to information. As discussed in earlier chapters participants interviewed in this research belonged to labour class, and majority of them were contracted laborers, who had to search for work everyday. Respondent's explained how mobile phones were of great help for them in finding their daily wages. Now, the respondent's do not have to wander in search for their daily wages, the contractor calls them and they reach directly at the worksite.

Status symbol

Apart from their instrumental functionality, ICTs also fulfill important symbolic functions. They acquire meanings and values in the environment where they are placed and therefore within any social structure with aspects such as social position, status, role, authority and prestige, ICTs can be used to express things such as our lifestyle, the values we believe in and the subcultures we belong to (Bourges-Waldegg and Scrivener, 1998; Hallnäs Redström, 2002). Similar to what other scholars have found, this field research revealed the importance of ICTs as a status symbol; and in particular as an expression of prosperity (de Angeli *et al*., 2004; Donner, 2004; Musa *et al*., 2005; Molony, 2007; Geldof, 2007). Possession of mobile phone was a rage in the area of study. On visit to the poorest household of the village, it was surprising to see, there were two very old and ill members living in a very small room, with hardly little of little utensils but still a mobile phone. They never got it recharged, it was just meant to listen and very few

calls came, as they did not had much relatives and social circle. The mobile they possessed was a second hand one of the oldest Nokia sets. Mobile phone provided them sense of satisfaction and happiness of being connected with technology. Also, mobile phones were associated with superiority. Contrastingly, ICTs can also play a symbolic role in expressing low status. The following interrelated factors help to explain how ICTs obtained, or perhaps inherited, their symbolic role as an expression of status: affluence, literacy, and English. ICTs were mainly affordable and accessible to rich people and were therefore indirectly a symbol of affluence: It was found that ICTs have meaningful presence in people's lives as a status symbol without necessarily serving any functional purpose. During the field research it became evident that dysfunctional ICTs, after they lost their instrumental functionality, remained a piece of furniture as part of the interior (transistors, old televisions etc.), suggesting that their presence was still meaningful as a display of status. This further reinforced the need for a broad conception of the term 'user', not only to include those who use the instrumental functionality, but also those who use it for symbolic purposes, because as Oudshoorn and Pinch (2003) have pointed out, 'there is no one correct use of a technology'.

Leisure

The field research demonstrated how ICTs were influencing and changing the way people spent their leisure time (Kellner, 2002; Mokhtarian *et al*., 2006). Leisure is a social construct of which the meaning can sharply vary between different contexts (Parr and Lashua, 2004; Geldof, 2011). As Mokhtarian *et al*. (2006) have highlighted 'the more closely the concept of leisure is examined, the more slippery it becomes'. Leisure is often conceived in terms of free time or activity, but the notion of what comprises 'free time' is slippery (Parr and Lashua, 2004). Leisure is considered to provide the most entertainment value as per the respondent's. Television, radio and now the mobile phones became an indispensable part of the lives of the respondent's owing to the entertainment value they provide. The female respondent's stressed on the point that watching television is the best time of their day providing them relaxation and enjoyment at the same time. On the other hand radio and mobile phones were more a rage with youth and male respondent's. The young boys especially labeled mobile phones taking place of their friend. As one of the respondent said, "Mobile phone is my best friend, with it I do not find the need of going out and meeting my friends".

Negative impacts

The most important negative uses and meanings that participants expressed were the impact of television and video shows on education and behaviour, loss of cultural values, use in criminal practices, facilitating social conflicts, loss of jobs and physical damage caused by the use of ICTs. The main concerns participants especially parents expressed were increased school absenteeism to visit the shows and the negative impact that the sex and violence shown in such shows has on people's behaviour. Furthermore, the following participant expressed his concern about cultural values getting lost, when people adapt to the cultural values they get exposed to through ICTs.

Exploring needs: Inherent desires and recommendations

Apart from the perceived opportunities for ICTs the respondent's made important recommendations regarding the improvement of existing ICT designs in terms of price, durability, portability, video functionality for mobile phones and different functionalities in one device. Given that most participants came from poor backgrounds, the recommendation to produce ICTs more cheaply so that they become more affordable for the poor. Participants asked for durable technologies that lasted long and did not incur repair or replacement costs. Moreover, in accordance with the popularity of ICTs with a high degree of mobility, participants made different recommendations about the portability of technologies, such as reducing the size and weight and fitting it with handles or cords to make it easier to carry. The recommendations made by the respondent's point towards a very important point of discussion in the interaction-design technology literature focusing on the place of technology in this case ICTs in user's life. The respondent's interviewed usually belonged to low socio-economic status and occupational profile as laborers. Hence, the prime target of the respondent's were the fulfillment of needs for daily survival that was particularly evident from the new inventions suggested by participants, most of which were in some way related to these fundamental needs, such as housing, water and clothing whereas inventions related to information and communication needs were negligible. Respondent's aspired for technologies and inventions that could make their basic living easier. This included agricultural tools as one of respondent aspired for an agricultural machine that could sow seeds automatically. Others included machine for safe water, cheaper transport, cheaper food materials and the like. These aspirations were evidently inspired by participants' daily lives, as most of them were of use to the most common daily activities that participants brought up in the focus groups, such as cooking, farming, fetching firewood and water and cleaning the house.

Maslow's (1943) hierarchy of needs, ordered human needs into a hierarchy of five levels, often represented in a pyramid, starting from the lowest level of basic physiological survival needs, such as food, water, clothing and shelter. He has argued that the higher level needs can only be addressed once the lower level needs are satisfied. Although Maslow's (1943) hierarchy of needs is contested (van Kempen, 2003; Geldof, 2010) the idea of hierarchically ordered needs helps to understand the priorities expressed by participants in terms of their fundamental needs and ICTs. The field data suggested that, apart from their use in emergency situations, ICTs was indeed a higher-order need in the hierarchy that was mostly addressed once more fundamental needs were satisfied. ICTs were perceived as luxury more than their needs. This hierarchy was for example evident from participants who used to have an ICT at home, but had meanwhile sold it in order to overcome their (financial) hardships.

Conclusion

The present research concentrated on how rural users including parents and students defined their needs, by examining the most important meanings and uses participants assigned to

ICTs as well as exploring their needs with them. It illustrated the importance of really listening to users about their experiences with and views about ICTs, which are reflected by direct quotations from respondents. All too often, even when researchers working in the field of ICTs for development have claimed to have listened to users, they may not have really heard what users were trying to tell them. Most significantly, this paper reinforced the role of users in actively shaping the meaning and uses of ICTs according to their needs (Mackay and Gillespie, 1992). One of the most important uses of ICTs was their use in emergency situations. Furthermore, their role as status symbol expressing prosperity reinforced how ICTs not only served an instrumental functionality, but also fulfilled important symbolic functions and had meaningful presence in people's lives, even when they were not operable (Geldof, 2007; Hallnäs Redström, 2002). The research further illustrated the importance of not only paying attention to ICTs as drivers of positive change, but also to their potential negative meanings and uses as a way to better understand users needs. The paper has contributed to understandings about the needs of rural users and signified a hierarchy of needs in which ICTs were of a lower priority than other more fundamental needs in participants' lives, such as housing and food (Rice, 2005; Leach, 2008). Only once these more fundamental needs were satisfied, did ICTs get into the picture. This hierarchy was particularly evident from the inventions that participants proposed and the sale of ICTs as a sacrifice to overcome hardships. The latter again showed how beyond their instrumental functionality ICTs also served other functions, such as this role as a financial reserve. Identifying the user needs together with the rural participants was not without its challenges. Some of the major difficulties were that participants were not always aware of their needs and found it difficult to reflect on their answers and explain the motivations behind them. Furthermore, they had difficulty in thinking outside the box of what they knew was possible. This highlighted how conventional 'Western' methods in design might not always be suitable in a rural context (Oyugi *et al*., 2008) and thus emphasizes the need to explore alternative methods that are more appropriate to the local context including language ease to enhance applicability.

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