

After Access: An Inquiry Into ICT Use Factors for Indian Women

Anindita Paul

Information Institute of
Management Kozhikode
Kozhikode Kerala 673570, India
apaul@iimk.ac.in
+91 808 627 1231

Kim M. Thompson

Charles Sturt University
Wagga Wagga NSW 2678
Australia
kithompson@csu.edu.au
+61 2 6933 2808

Jannica Heinström

Åbo Akademi University
Fänriksgatan 3 B
FIN-20500 Turku, Finland
jheinstr@abo.fi
+ 358 02 215 3401

ABSTRACT

Nations have made great strides in providing physical access to digital technologies and educational opportunities, yet barriers still exist that prevent those who have strong physical and intellectual access to information and communication technology from taking full advantage of the information and opportunities the technology offers. Women in particular are affected by social barriers which may be quite subtle and are easily excluded from taking an active role in the information society. This study explores how Indian women incorporate information and communication technology (ICT) into their daily lives and what aids or barriers they face in the process. This study contributes to an understanding of factors that lead to Indian women's current use of ICT, reasons why Indian women choose to use ICT, and barriers to this usage.

Keywords

Information behavior, social informatics, social media.

INTRODUCTION

In this paper we explore the adoption and use of information and communication technology (ICT) by women in India. By ICT we refer to any product that will "store, retrieve, manipulate, transmit or receive information electronically in a digital form" (Ngaroga, 1996, p. 283) such as computers and the Internet, broadcasting technologies (radio and television), and telephone. We particularly focus on the newest ICT, such as tablets, mobile phones and other in-hand digital devices. The study is motivated by a need for an increased understanding of the digital divide in terms of women and ICT adoption and use. ICT is currently changing people's life in radical ways and could potentially offer opportunities for development and emancipation for underserved populations. Devices such as

feature phones (mobile phones with functionality beyond telephony) and Smartphones have helped reduce the digital divide in developing countries such as India; however, there is evidence of a gender imbalance in the use of ICT that threatens to remain constant or even widen the existing gender based digital divide if there is no intervention (ITU, 2013).

The digital divide is not only a matter of material access but also to a large extent a matter of skill, mental access, such as interest or attitudes, and usage access such as lacking time or opportunity to use ICT (van Dijk & Hacker, 2003). Thompson et al (2014) have described digital inclusion, or full access to the digital information and communication infrastructure, as existing on three levels:

1. physical access, including economic and political factors affecting access to ICT and ICT infrastructures;
2. intellectual access, including education, training, and literacies; and
3. social access, including social and cultural factors that act as supports or barriers to ICT access and use.

While physical access barriers have gained most attention and are being addressed with government attention to building national digital infrastructures, the intellectual and social divides seem to be widening (van Deursen & van Dijk, 2010). In a recent study of middle class Indian women, Paul (2015) found that her participants were willing to use ICT but were reticent to challenge social norms, sometimes choosing to rely on strong social ties for information support rather than fulfill their own needs using ICT. While this could be interpreted as a mere freedom of choice, what are the factors motivating this choice? And could there be subtle barriers that influence this choice, preventing these women from incorporating ICT into their lives more fully? And if so, what are these barriers preventing them from using it even when there is ostensibly ample physical and intellectual access? In this study we set out to explore how social access enables or restricts women's use of ICT.

ASIST 2015, November 6-10, 2015, St. Louis, MO, USA.

Author Retains Copyright.

Significance of the Study

The importance of the study lies in the increasing economic role women are taking on in terms of knowledge bases, social networks, economies and governance throughout the world as users of ICT (Nath, 2001; Youngs, 2012) and the way the global economy both impacts and is influenced by changing gender roles and identities that have ensued. Rather than push for inclusion as an effort of gender neutralizing homogenization, analysts recommend exploring the diversity that can only be accessed by having both women and men involved within the many layers of ICT development, use, policy, and so forth (Gillard et al, 2008). Gender inequalities, however, remain a persistent issue in the information society (Broos, 2005; Bilal & Jopeak, 2014). A good number of recent studies have, for instance, noted stereotypes held about women that reduce ICT access and use (e.g., Youngs, 2012; Wei & Kramarae, 2012; Prakash, 2012).

This study was conducted in India because, in spite of clear traditional gender stereotypes, generally speaking, women in India have a significant role to play in the family in terms of family income generated. In most cases women are accepted as professional workers sharing the income burden alongside the man of the household as the cost of living has increased. Because we are exploring everyday ICT use of non-novice women users, the study was conducted in the Indian state of Kerala, where the status of women in Kerala in terms of education and professional positions held has been reportedly high compared to other states of India (Government of Kerala, 2001).

One of the Indian stereotypes of women renders them to be incompetent technology users (Howcroft & Trauth, 2008; Jain, 2006). In fact, Prakash (2012) notes how women may consider themselves as technophobic because they are socialized to believe so. Jain's (2006) review of the UNESCO report *Networking Rural Women and Knowledge* indicates a substantial influence of ICT in empowerment of rural Indian women, some of which involved gaining more respect in families and local communities, greater confidence in the job market, increased creativity, increased income, and enhanced solidarity among women in the community. While issues of physical access to ICT can be minimized with ever-richer ICT infrastructures worldwide, intellectual (literacy and ICT skills) and social (cultural acceptance) access issues can still persist unless concerted initiatives are undertaken (Thompson et al, 2014). There remains a need for more studies on women's use of ICT to help in gender mainstreaming of ICT policies and programs (Subramanian & Saxena, 2006).

In spite of the above reasons that call for more attention to women and their ICT use, there is a dearth of literature in this area. Factors such as culture, attitude, belief, habit, infrastructure, environment, and social expectations of Indian women are likely to affect their adoption and use of ICT. This exploratory qualitative study aims at an in-depth understanding of the lives of twelve middle class Indian

women and their use of ICT in their everyday lives. Particularly we will focus on social access in terms of cultural norms, roles and relationships that enable or restrict women's use of ICT. Our study contributes to an understanding of factors that have led these users to accept ICT, uses of ICT by these Indian women, and identifiable barriers to this usage.

LITERATURE REVIEW

The importance of studying the role of gender in terms of information behavior and ICT use has long been acknowledged (Agosto, 2001; Enochsson, 2005). Several studies have identified gender differences in information behavior (Lorence & Park, 2007; Urquhart & Yeoman, 2010), as well as in use of new technologies such as text messaging and Wikipedia (Hargittai & Shaw, 2015; Lim & Kwon, 2010; Shuter, 2012). For example, anxiety and helplessness as well as low self-efficacy have been identified as barriers to Internet use among women (Kennedy et al., 2003; Purushothaman, 2013; Top, Yukselturk & Cakir, 2011). Some studies have found that women use ICT more cautiously than men (Lim & Kwon, 2010; Magherat & Stock, 2010); however, other studies have challenged this assumption and found that women have a high need for information, as well as a high search drive (Halder, Ray, & Chakraborty, 2010) and that technophobic attitudes may simply be a result of lack of exposure to technology (Achuonye & Ezekoka, 2011).

A study of the development in 25 countries over three years found that less use of ICT by women linked directly to lower employment, education and income; in other words, tangible disadvantages (Hilbert, 2011). The same study found that when women in the study population were provided with similar levels of physical and intellectual access to ICT as men, they actually were more active users of digital tools than men. This is true for women in India as well (Antonio & Tuffley, 2014).

The Internet holds the potential to enable women in developing countries to partake actively in the global society as never before in history, but only if social norms allow it. Faster and cheaper communication opportunities can facilitate contact with relatives and friends; social networking can enable self-expression and economic development; and online support can help women fight negative stereotypes, stigma, and attitudes encountered in daily life (Antonio & Tuffley, 2014), but only if women who have access to ICT are allowed and motivated to participate in the digital dialogue. ICT has large potential to substantially improve both the conditions of women themselves and of their families and communities; currently, however, we have not yet reached this goal.

Once women have the appropriate ICT in hand, full access to the Internet, and the knowledge to use the technology, social barriers may still prevail that prevent active engagement. Socio-cultural norms may encourage women to underuse the technologies available in order to avoid

challenging cultural power dynamics; for example, in one study, women said they prefer to text only when they are alone because they fear negative reactions when texting in the presence of others, as text messaging may be interpreted a potential threat to Indian patriarchy (Shuter, 2012). Women in India are six times more likely to regard Internet as inappropriate for women than women in Uganda (Intel, 2013). These social barriers to ICT use are very important to understand if we aim to ensure an inclusive digital information infrastructure.

Socially constructed gender roles and tasks also affect the ways ICT is used by both men and women (Moghaddam, 2010). Steinerová and Šušol (2007) have found that women's use of ICT tends to be more pragmatic and collaborative as compared to more individual information seeking by men. For women, when ICT is used, it is usually for a specific need, such as communicating with family abroad, instead of casual recreation (Johnson, 2012). Domestic duties and responsibilities can also be a reason women choose to use ICT, as a tool to support homemaking roles (Goh, 2013). One "micro-study" in Chennai, India found that when women do use ICT, they tend to strongly identify with their roles as caretakers of their families; consequently their incentive for use of ICT grows from this role rather than their individual needs (Johnson, 2010). These women's traditional care giving roles thereby transfer into their information behavior (Kennedy et al, 2003).

Previous studies have thus shown that social access influence women's use of ICT. There is, however, currently lack an in-depth understanding of the mechanisms behind this in terms of how the cultural and social context frames women's information behavior. This study will address this research gap.

METHODOLOGY

Design

The study follows the interpretive paradigm and is situated to explore an understanding of culture and gender in the Indian context. The motivation for the study originated from an interest in the premise that ICT has the potential to liberate the female gender from a fettered past. Orientational qualitative inquiry (Patton, 2002, p. 129) represents situations when explicit theoretical or ideological perspectives determine the conceptual framework to direct fieldwork and the interpretation of findings. Certain concepts from the gender studies literature and culture were used to inform the current inquiry. Patton describes the "reality-oriented qualitative inquiry" (p. 95) as an approach that seeks to identify and correspond with the "real world". Such an approach rings with the ideologies of the post-positivistic paradigm of maintaining validity, reliability and objectivity. A completely value-free inquiry is impossible, but adequate steps may be taken to make the biases, values, preconceptions of the inquirer visible (Patton, 2002). And while generalization is not the objective of qualitative inquiry, qualitative findings can, in fact, provide insight

into human experiences that do extend beyond the population studied (Denzin & Lincoln, 2013; Patton, 2002). Denzin and Lincoln (2013) note, "no individual or case is ever just an individual or a case. He or she must be studied as a single instance of more universal social experiences and social processes" (p. 48). In light of this, that the study takes place in a non-Western country does not mean the findings are not useful for non-Western readers, as the current study aims to reach an in-depth understanding of how connected, middle class, gainfully employed women use ICT in India in their information behaviors. That there could be differences between Indian women and European women is not the issue under exploration. Rather, the researchers aim to explore the range of behaviors identifiable within a somewhat homogeneous sample of women.

Data were collected through interviews that were unstructured, partly conversational, and shaped by the interviewer so as to get deeper into points of interest. The authors substantiate their interpretations of the interviews by bringing in evidences from literature, their own experience and understanding of the social, cultural and environmental aspects of the context being studied. Discussions to that effect intend to address the external validity of the study. Internal validity is addressed by providing a detailed account of the study, procedures and grounding the findings to the interview interpretations.

Participants

The twelve participants are all Indians from similar cultures of the state of Kerala. All reside in India but some were reared in different towns across India and one did her schooling across the world. In order to ensure some level of homogeneity of our sample and to ensure all users had access to and experience with ICT, the participants of the study were identified through convenience sampling based on the demographics:

- tertiary graduate,
- between the ages of 25 and 50,
- married, mother of at least one child,
- gainfully employed,
- user of ICT for at least five years, and
- belong to the state of Kerala.

Upon completion of the initial interview, each participant was asked if she could recommend someone else from her social network that uses ICT and might be willing to be interviewed. The twelve participants ranged in age, employ, and years of experience with ICT and the Internet as represented in Table 1.

Participant	Age	Profession/Industry	Years experience with ICT/Internet
P1	32	Entrepreneur /Hotel	17
P2	35	Anesthetist and Faculty	13
P3	34	Dentist and Entrepreneur	8
P4	35	Bookseller, radio-announcer	5
P5	33	IT professional/ Education	14
P6	43	IT professional	20+
P7	45	Pediatrician	13
P8	47	Ophthalmologist	8
P9	26	Dentist	10
P10	34	Service Operations Assistant Manager	16
P11	31	Customer Service Assistant Manager	15
P12	34	Clinical Safety Manager	15+

Table 1: Participant list

Data Collection

All the participants were interviewed using unstructured interviews of at least an hour and then engaged in follow-up phone calls to clarify data if needed. Data were collected between October 2012 and September 2014. NVivo10 and analytical discussion between the researchers was used to code the interview responses.

FINDINGS

In order to gain greater insight into factors that have led our participants to accept ICT, the way ICT is used by these women, and to identify barriers to this usage, we analyzed the interview data with an eye for variations between ICT use among the participants. Even though all of the participants had comparable physical ICT access, there was obvious disparity between those we classify as heavy, moderate, and limited ICT users, as follows:

- Group 1 – Heavy ICT Users (P1, P2, P5, P10, P11)
- Group 2 – Moderate ICT Users (P6, P9, P12)
- Group 3 – Limited ICT Users (P3, P4, P7, P8)

The findings presented here characterize the three categories of users, focusing on factors identified as affecting their engagement with ICT and then the reasons that seem to encourage or discourage their continued ICT use. This is followed by a discussion of what these findings suggest.

Group 1: Heavy ICT Users (P1, P2, P5, P10, P11)

The women identified as heavy ICT users all indicated that they feel both comfortable with and interested in ICT. Though three of these participants have completed their higher studies in technology, this did not seem to be the most important factor in heavy ICT use. P1 and P2 were heavy users but were from a non-technology background. Likewise, P6 (moderate ICT user), has a technology background and profession but was not into ICT use as much as the heavy users in this category. The heavy users

of ICTs were heavy users by choice rather than work demand.

Factors affecting engagement with ICT

In their interviews, most of the women we have classified as heavy users mentioned that they were technologically inclined from their childhood and that their technology interests were encouraged from the beginning. P5 mentioned the role of her father in trying to encourage her to be independent and to pursue her interest in technology. In her words,

[My sisters] don't like [technology]...but I used to do all the repairing at home...TV, you know repairing. Even though I did not know everything about it, I learned it by doing it and my father used to [encourage] me [and] say if I learn something I can achieve something.

P2 was called “the repairman” when she was growing up because of her interest in technology, and her interest was motivated by her brother. She said, “[my brother] was much more efficient than me [with technology]. And I learned most of the things from him only.”

P11 stated that she was the tech support for her neighborhood when she was younger. Even now her family and sibling look up to her for any technology related work. She gave an example of this:

I do the surfing for my sister, for her research and all, so she's not good at, I mean she doesn't check [the Internet] at all. She would be wanting some information for her research and projects and all. So she'll tell me “Chechi [sister], this is the subject, these are the keywords that you should be checking.” ... Then she gives me some important points then I search, then I download the articles and send [them] to her then she makes her project or so.

P11 also mentioned how her father and uncle had helped her shape her technology interest and bought tools for her to assist her in learning. She fondly reflected about her father: “So [my dad] thought probably I had flair for engineering. Then he used to encourage me, he used to get me... magnets and electromagnetic wires, small transformers, etc. So he was a big encouragement [for me].”

Those who did not specifically mention childhood encouragement indicated that the more usable the technology, the more interested they became in engaging with it. P1 said she can get everything she needs to do with her iPad and Smartphone, even scanning. P10 stated how her use of ICT greatly increased when she purchased her first touch phone. She said,

I don't think I did much on [my Nokia feature phone], though I had it. You know, just maybe do a Google search or something.... Not even maps, I don't remember using maps or GPS. [But] everything came on my Samsung [touch Smartphone]. In that, I royally use all the features.

Having easy access to the Internet through Wi-Fi is an additional factor that has affected ICT use. P2 mentioned

her frustration when there were issues with Wi-Fi at work, as it disabled her Internet access. Conversely, P10 mentioned how Wi-Fi access at home has enabled her to seamlessly access the Internet through her phone. She stated that she cannot remember information searching before the Internet and cannot imagine what she would have done then to get information she needed. She averred,

Anything you think about, first thing you do is [access the Internet]. Gold price today? I just go to the app and see what is the gold price today and think of buying gold. I just see, okay, what is the price today? You just go and check it out....So for everything, you are dependent on your technology, your phone.

In most cases these women were frequent users of their handheld devices, but they also used desktop computers and laptops, such as for work and watching movies online at home with family. None of these participants identified themselves as techies at work, but they did all say they used ICT as a tool to accomplish various work-related tasks such as email, copying, scanning, etc., that may have led to some comfort level with ICT.

Reasons for ICT use

Some of the reasons that these women said they use ICT were for getting information related to work or about household related purchases, family and children's health, children's homework, e-shopping, looking up information for others, and communication. P10 especially, being a busy professional and maintaining a long distance relationship with her spouse, said she finds ICT to be a good support for various things. She stated,

You know [ICT] makes you independent...other times if you have something in your mind or if you have to find some information you're dependent on men, right? You will first go to your husband, find out from him. But now, see, if my phone doesn't tell me any answer, then I go to him.

All of the participants except P1 and P11 were time constrained due to household chores. Rather than act as a barrier, however, they spoke of how ICT use helped them to meet their personal needs on the fly and engage in their hobbies in spite of their busy schedules, including finding recipes, accessing and reading e-books, banking, accessing information on "vastu" (akin to *feng-shui* or home decor), fitness monitoring, finding news and music, or searching for information for herself or her family. P1 was additionally involved in regular e-shopping and P1 and P11 both were involved in following technology news and the latest releases in technology.

Another use of ICT was to help others with online transactions, for example, doing credit card transactions for others who were unsure of how to use their credit cards online. P5 has been involved in educating people in her community about benefits of ICT and has inspired families and businesses to buy computers. P11 said she is seen as the

"digital" person by her colleagues and she usually is asked to do favors such as downloading and burning CDs.

Barriers to ICT use

Overall this category can be seen as having very positive attitudes towards accepting ICT in their lives, and are the support providers to others, rarely asking for support themselves. Each of these women is a frequent Internet surfer for leisure, and indicated that they enjoy e-commerce and using ICT to fulfill their everyday information needs. These users are quick to seek information from the online media when needed such as health, product, service, or hobby related information and are comfortable using the various ICT utilities such as global positioning satellite (GPS), calendars and organizers, various apps for tracking workout exercises, camera, etc. They use ICT to conduct office work easily from any place such as scanning, emailing, accessing job-related information through downloaded apps, taking photographs and notes on their Smartphone, and so forth. ICT was an integral part of their daily life and they did not indicate any real fears of identity theft, security breaches, or other common ICT-related social phobias. There were no apparent barriers to the ICT use of these women.

Group 2 – Moderate ICT Users (P6, P9, P12)

The women grouped as moderate ICT users had enough knowledge of their devices (desktop, laptop, tablet, mobile phone) to enable them to use them without trouble; however, what differentiates this group from the first group is that they indicated that they appreciate the benefit of ICT in their lives, but view it with some degree of skepticism.

Factors affecting engagement with ICT

The moderate users indicated that they do prefer using ICT for meeting most of their information needs. They also said they may be more receptive to increasing their use of ICT at some future date, yet they do not currently find the necessity for using it any more than they do now. In their professional lives, these users expressed some level of reliance on others to help them use ICT, or even some use of close social networks (friends and family) to allow them to avoid using ICT when they wanted to avoid it, for example, for online banking or looking up information about a place or event or other interactions that required passwords they may have forgotten or that seemed to them a potential security risk. These women indicated that they sometimes use ICT for leisure or entertainment and expressed neutral feelings about ICT in their lives, though they did say they appreciate the level of access and use of ICT they have.

The moderate users did not talk of family encouragement to use ICT at an early age, but they did speak of ICT access in some form, through family or friends, from an early age. P12 said she received support from her sister when she was young and now she feels her tech-savvy husband and colleagues at work are a great help to her for ICT related assistance. She mentioned her husband's support when she buys a new mobile: "Whenever I get a new mobile I give

him the booklet and I give him the mobile and [ask] him to do all the settings [I] want and give it back to me. [I tell him], 'This is my requirement, I want all these' and he will do it [for me]."

P9 grew up in a joint family amidst cousins who were technology savvy. Her elder female cousin was the first to introduce a desktop into the household, and this enabled everyone to access technology. P9 said she relies on her remarkably well-informed father-in-law for information rather than seek it online. She stated,

Sometimes I do ask [my father-in-law], and he doesn't really need to Google it, he knows it all, so he is a mini encyclopedia. [When] we talk, anything that's happening in the paper, any state, any place, he won't be stuck, he even tells us what's our population, he even tells us what's the main thing in that place, what's the most attractive thing there, he tells that all.

Similarly, P6 spoke of her high level of trust on her husband's information seeking capabilities and how the support he gives her has kept her comfortably away from any heavy use of ICT. She also referred to how all the males in her family are tech-savvy, but that among the females in the family, she is the best with ICT.

Smartphones were used for meeting personal needs as well when the user had figured out the features and apps well enough. P9 was significant in this respect. Similar to heavy user P1 above, she mentioned, "I didn't need a laptop anymore; I could do everything whatever I was doing in [my] phone."

Reasons for ICT use

The moderate use of these participants varied between use for self and use for family. For example, P12 said she uses ICT to seek information related to helping with her daughter's homework. She recalled a situation in which she was helping her daughter find a poem in a local dialect. She remembered,

So [through] a lot of trial and error, ultimately I got the poem and I downloaded it on the mobile....when I played it for [my daughter] she was like "Yeah, yeah this is it this is the one I wanted." So that I was like, "OK everything is there on the Net".

P12 said she has assisted her mother with recipe searches online, she has used the Internet to help her find a property, and she has occasionally shopped online using Flipkart. Others we have identified as moderate ICT users also told of preferences for similar tasks as the heavy users, including work-related activities, online shopping, banking transactions, entertainment, and so forth. P9 said that in her leisure time she uses ICT to access the Internet and read and that Google is her main Internet resource. She stated, "I go into Google, every day, every small thing, I Google it...if somebody asks me, I Google it and I tell them." P9 also accesses apps such as for music and *vastu*. A major distinction of this participant from the other two

participants in this category is that she does a lot of e-shopping online. She gets information about online shopping sites through the television and then accesses them through her mobile. She says her preference for e-commerce is because of the eWallet app on her phone that enables her to make easy online payments.

P9 also described using ICT as a support when in public places, for security reasons:

[I often pretend I am talking to people on my cell] when I travel alone. Sometimes, not all the time, I pick up the phone and act as I am on the phone and talking to someone just to enjoy, I don't know why I do it. Just to let [auto (tuk tuk) drivers] know that there is somebody waiting there. I don't tell them where I am, I am in this auto, this number, I will be passing by you right now, something like that, I don't know, but kind of makes me feel secure...[Also] recently, I got into [an auto], okay, I found a weird guy, then I tried this, I felt he was drunk or something. He kept on asking me a lot of questions, so just to avoid him, I talked on the phone like that.

Barriers to ICT use

It was interesting to see that, though P6 was an information technology professional and spent hours working on coding on her office desktop, when it came to ICT use for personal purposes, she was an unenthusiastic user. She said she rarely browses the Internet on her desktop or laptop, but rather she relies on her husband for most information seeking over the Internet, as she said she felt her husband was much better in online information seeking than she. In fact, she reasoned why men are better in information seeking than women:

[Men] just concentrate on one problem, sit there solve it..., but [women] think a lot, we talk about everything [like] that madam's sari [is] very good, we [are used to] gossiping. In my office [there are] a lot of ladies, we discuss a lot of things, what we prepared in the morning, what food, how [did] it come up, how to make it more tasty, all [sorts of] thing we discuss.

One reason for the moderate use of ICT for P6 could be discomfort with the small screen of her mobile devices. She said she prefers accessing the Internet with a desktop or laptop, which possibly reduces the amount of time she spends online. P12 also said she was not very frequent user of WhatsApp initially when her Smartphone screen was small.

For P9, the ease of access through her Smartphone to the Internet was of more importance than the size of the screen. She said she prefers to use her phone because of her preference for apps rather than Internet browsers and search engines when locating needed information. She stated,

When you are browsing [the Internet], you may have to go through few pages which gives [information] about [things], you have to go through each. Some of them may be good, some of them may not be. Apps [e.g., TripAdvisor]

give us direct access to everything that you need about that particular subject.

P6 also expressed her discontent with information overload by stating,

I check [the Internet] rarely. For product information I don't search the Net, because they are confusing, there will be lot of products and one is beneficial other will have other beneficial features, you get confused seeing lot of info, truck loads of items are there now.

Added to the above information overload issue of browser searching, remembering passwords for accessing accounts was also detriment to ICT use. P12 recalled,

[Remembering a password] is one major thing, but I try to keep my password the same everywhere. I always end up writing my password otherwise I don't remember so at the most what happens is that I recreated it every time. I mean my Gmail, Facebook, it is the same. But my bank accounts we have to keep on changing, you know, we have the expiry and all... So that is definitely an issue for me.

The busy schedule of the participants is another factor that they said keeps them away from high use of ICT. P6 and P12 fulfill domestic responsibilities of cooking and feeding their children, sending them off to school before rushing to the office. They felt that hardly left them with any time for browsing the Internet at home, and they did not feel there was time during the work day for personal browsing either. P6 stated,

At the office, all the time I am sitting in front of a [desktop], from morning to evening, I am doing programming, modifying or doing programs, database modification, number settings. Everything in front of a laptop all the time. Rarely [do] I get to check Facebook or mail. I have half an hour lunch break only, that, too, I don't get most of the time, because I have a program to finish. Only two of us are there to do the programming; when there is need to modify a program or a new report is required, we have to prepare it from the scratch.

P9, a young dentist, spoke of fewer domestic responsibilities compared to P6 and P12, but she too felt her busy work life keeps her from high use. She said she avoids even using her Smartphone when she is in public, as people might feel ignored when she is talking or texting on her phone.

Group 3 – Limited ICT User (P3, P4, P7, P8)

Women in the third category of users were much more limited in their ICT use compared to the moderate users. In fact they were conscious about their reservations and were mostly comfortable about it except for few instances where they admitted feeling that they need to make more efforts to learn about ICT, but learning about ICT was put off to a later date, when there might be more motivation to do so.

Factors affecting engagement with ICT

The participants in this category belonged to two age groups: two of them were in the 30-35 and two were age 45-50. The later age group participants felt that ICT came into their lives pretty late which could be a reason for their limited use. The participants in their 30s, though they were exposed to ICT earlier in their life as compared to the later age group, were still restricted in their ICT use. For the younger two, their inability to adapt to the different ICT available to them, the lack of usability or user-friendliness of the digital media, and the high cost of better ICT devices were factors that they said hampered their ICT use.

The two older participants said they did not need to use ICT at all for work purposes, as they were senior enough in their work hierarchy to delegate online tasks to lower-level colleagues as needed. For them one of the strongest factors that led them to ICT use was the need to fulfill responsibilities pertaining to their daughters' needs. P7 stated, "...if you would have come next year I would have become more than savvy because now [my daughter] is going into that new curriculum called [school board-I], international." P7 also said she would not mind joining a course for learning to use computers for accessing the Internet for helping her daughter to learn, she simply had not gotten around to that yet.

These participants had a support system that enabled them to reduce their ICT use. They needed support from others, whether at work or at home. P3 said she seeks support from her husband and father for ICT use. She said that sometimes she uses her husband's Smartphone for accessing the Internet when he draws her attention to something, and then she subsequently takes it from there. Her father supports her in getting information on train tickets online and bookings. She compared her ICT use with those of others as: "[Compared to] family, I am okay. [Compared to] friends circle [or] ladies, I am not sure. But at least my, you know, gents colleagues, I am very bad and I [warn them beforehand about it]."

P4 said she relies on her environment for ICT related support as well. She said she owns a low-end mobile phone that is not as user-friendly and that she had limited access to her office and home desktops, but that the support she receives from her friends allows her to meet her online needs without having to use ICT herself. She was the one user in this low-use group who was interested in increasing her use of ICT but was economically inhibited from acquiring the level of technology access she desired.

Reasons for ICT use

ICT use by this group was very simple and there was little use of ICT in their work lives. When using ICT for work purposes, P3, P4, and P7 said their use as limited to Google searching and using work-related websites, although P4 also did some word processing work editing articles for magazines. When asked how she uses Google in the workplace, P7, a pediatrician, described,

Like there is a diagnostic dilemma, we're not able to come at a diagnosis, then sometimes we just Google and see what it can be like or maybe suppose sometimes we get a syndrome like a complicated case where we're not sure what it is. Then we Google to read more about it. So that way I use it.

P3 and P7 both said they frequently use their desktops or laptops for communicating using Skype. P3 said she prefers a desktop for its bigger size screen compared to the laptop for Skyping. P8 said she has adopted WhatsApp on her Smartphone for communicating with her friends.

As with the rest of the participants, though limited ICT users, these women still used ICT for helping their family with their needs such as their children's education needs or their husband's professional needs. P3 stated, "...some [e]mails [that have] been sent to him [and] he [doesn't have time to respond]...yeah I'll check for him." She added, "Like for his college, he goes [to] many conferences [within] his specialty, so his friends will be sending things for him to read and accept or some kind of matters to send back. So, he just tells me what are things to be [done], and I'll do that for him." Further P7 also stated her use of ICT started because of her daughter: "I started using [ICT] more when [my daughter] started going to school, frankly, because then you need [ICT] for their projects and all." Similarly, P8's ICT use, beyond communication with friends, centered on her daughter's needs.

Barriers to ICT use

Factors that inhibited ICT use among the limited ICT users included their busy life schedules where they were negotiating their profession and family time, and their attitudes towards women's use of ICT. P8 once questioned during the interview, "Isn't ICT supposed to be a man's thing?" When asked about her lack of interest in ICT, P7 noted that she feels mostly males are good with technology (for example, her male colleagues and her husband), although she did admit that "women are also accepted to use technology." She said she feels she is "bad" at ICT use and so relies on others. She also voiced some concerns of how technology has adversely affected society and she feels concerned for her daughter's overuse of ICT that might distance her from communicating with people in the physical world. She shared how she tries to keep her daughter away from ICT but fears that when she grows up she will demand more of it.

Although P4 was the only participant of the twelve who noted financial barriers to ICT use, P7 also told of physical limitations to her use of ICT based on technical connectivity issues that were taking a long time to resolve. The feeling that resolving the technical issue—which had already taken six months of troubleshooting—was more trouble than it was worth.

DISCUSSION

All the participants in the three different groups had ICT as a relatively integral part of their lives yet there was

variation in the extent of their ICT use. We identified no particular demographics per se that seemed to align specifically with interest and use. For example, the two participants over age 40 expressed relative lack of interest in ICT, but so did various other participants in their 30s, and still all of them used ICT in their daily work and personal lives with varied degrees of use. Length of time using ICT also did not seem to be a defining factor; one user with more than 15 years experience expressed feelings of less confidence with ICT than another user with only five years experience. None of the participants spoke of restrictions to their physical access to ICT based on gender or familial role.

Early interest and encouragement

The participants with the greatest interest in using ICT were those who told of strong encouragement and positive reinforcement for this interest by families at a young age. This familial encouragement seemed to give them confidence in their ability to use ICT as well as troubleshoot their own ICT issues whenever possible. Further studies can look at the affect of varying childhood reinforcement on higher acceptance of ICT by Indian women.

Confidence in ICT skills

Each participant had some level of technology training/education or else support in the workplace or at home. Still, the foremost barrier to ICT engagement for the limited ICT users was lack of confidence in ICT skills, which agrees with the literature (Johnson, 2010, Purushothaman, 2013). Information overload and struggles with ICT with low usability in some cases were internalized by the women as their own inability to use ICT, and thus led to less ICT use, confirming the idea that women's negative attitudes, low self-efficacy, and lack of confidence with technology is a limiting factor in ICT use (Kennedy et al., 2003; Top, Yukselturk & Cakir, 2011).

Helping others and being helped

Similar to other research findings (e.g., Johnson, 2012; Steinerová & Šušol, 2007), the sociality of ICT use seemed to come out strongly as a motivator for ICT use. All of the participants were able to tell of experiences where they were able to help others use ICT for information seeking. But, although willing and active in helping others use ICT and seek information therewith, the moderate and limited users took on a more passive role in their own advancement in ICT know-how, relying more heavily on social networks to troubleshoot their technical issues or to navigate digital resources with which they were less familiar. As noted by Johnson (2010) and Kennedy et al (2003), the role of being able to help others can be an important motivator in ICT use. However, whether absence of a support system will enable these moderate and limited users to increase their ICT know how and use, needs to be addressed in future research.

Convenience and usability

The data suggest that the convenience and usability of the ICT itself are also factors for higher engagement with ICT. The ability to have all-in-one functionality in Smartphones helped some of the women use technology more than they had previously, when they only had desktops or laptops. More than one participant indicated that she would use ICT more if the technology she could afford was more user-friendly. Larger screen size was also preferred. Rapid release of new technology claims to give users improved experience than before. It needs to be understood the extent to which convenience and usability factors of ICT use is overcome by motivation to use ICT by late adapters or reluctant and demotivated women.

Everyday duties as motivator rather than barrier

Conforming with Johnson (2012), our study found that some of the heavy ICT users started off using ICT in order to fulfill household duties, later moving on to recreational and other activities. They saw ways and were encouraged to use ICT in their professional lives, family care, daily chores, and for everyday information.

CONCLUSION

Our study confirmed the strong role of the social and cultural context in forming Indian women's use of ICT. In addition to personal and tangible factors, such as confidence in ICT skills, usability and convenience of devices or services availed, and the ability to use ICT in everyday life, higher engagement in use of ICT was often related to early interest and encouragement to engage with ICT, opportunities to help or to be of assistance to others or otherwise engage in social use of ICT,

More ICT studies on specific profiles of women understanding their barriers to digital use can help formulate education and policies that enhance digital inclusion and to lead to a better understanding of women-specific needs that can be hence incorporated in developing better ICT that is relevant for women. Education and policies cannot be developed in vacuum, however, but need to build on an understanding of the interwoven context between women and their social and cultural environment.

ACKNOWLEDGMENTS

The authors would like to gratefully acknowledge the participation of the twelve women in this study, research assistants – Sina Sadanandan, Nandu Aditya and Sandhya P V as well as the support of the IIMK medium-grant for research that funded the data collection and travel, and to CSU for the teaching award that helped fund travel for the writing of this paper.

REFERENCES

Achuonye, K. A., & Ezekoka, G. K. (2011). Technophobia among female undergraduate students: A challenge to attainment of the MDGs in Nigeria. *British Journal of Educational Research*, 1(1), 49-57.

Agosto, D. E. (2001). Propelling young women into the cyber age: Gender considerations in the evaluation of

web-based information. *School Library Media Research*, 4.

- Antonio, A., & Tuffley, D. (2014). The gender digital divide in developing countries. *Future Internet*, 6(4), 673-687. Available at <http://www.mdpi.com/1999-5903/6/4/673/htm#sthash.qob6nLpz.dpuf>
- Bilal, D. & Jopeck, V. (2014). Young girls' affective responses to access and use of information and communication technology (ICT) in information-poor Societies. In *New Directions in Children's and Adolescents' Information Behavior Research*. Available at <http://dx.doi.org/10.1108/S1876-056220140000010048>
- Broos, A. (2005). Gender and information and communication technologies (ICT) anxiety: Male self-assurance and female hesitation. *CyberPsychology & Behavior* 8(1), 21-31.
- Denzin, N. K., & Lincoln, Y. S. (2013). *The Sage handbook of qualitative research (5th ed.)*. Thousand Oaks, CA: Sage.
- Enochsson, A. (2005). A gender perspective on Internet use: Consequences for information seeking. *Information Research*, 10(4). Available at <http://informationr.net/ir/10-4/paper237.html>.
- Gillard, H., Howcroft, D., Mitev, N, & Richardson, H. (2008). "Missing women": Gender, ICTs, and the shaping of the global economy. *Information Technology for Development*, 14(4), 262-279.
- Goh, D. (2013). Who we are and what we want: A feminist standpoint approach to defining effective ICT use for West Virginian women. *Information, Communication & Society*, 16(7), 1019-1041.
- Government of Kerala. (2001). Status of Women. Available at <http://www.old.kerala.gov.in/education/status.htm>
- Halder, S., Ray, A., & Chakrabarty, P. K. (2010). Gender differences in information seeking behavior in three universities in West Bengal, India. *The International Information & Library Review*, 42, 242-251.
- Hargittai, E., & Shaw, A. (2015). Mind the skills gap: The role of Internet know-how and gender in differentiated contributions to Wikipedia. *Information, Communication & Society*, 18(4), 424-442.
- Hilbert, M. (2011, December). Digital gender divide or technologically empowered women in developing countries? A typical case of lies, damned lies, and statistics. In *Women's Studies International Forum* (Vol. 34, No. 6, pp. 479-489). Pergamon.
- Howcroft, D., & Trauth, E. M. (2008). The implications of a critical agenda in gender and IS research. *Information Systems Journal*, 18(2), 185-202.
- Intel. (2013). *Women and the Web*. Available at <http://www.intel.com/content/www/us/en/technology-in-education/women-in-the-web.html>

- ITU. (2013). *ICT Facts and Figures*. Available at <http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2013-e.pdf>
- Jain, S. (2006). *ICTs and women's empowerment: Some case studies from India*. Department of Economics at Lakshmi Bai College, Delhi University.
- Johnson, V. (2010). Women and the Internet: A micro study in Chennai, India. *Indian Journal of Gender Studies*, 17(1), 151-163.
- Johnson, V. (2012). The gender divide: Attitudinal issues inhibiting access. In R. Pande, & T. van der Weide (Eds.), *Globalization, technology diffusion, and gender disparity: Social impacts of ICTs* (pp. 110–119). Hershey, PA: Information Science Reference.
- Kennedy, T., Wellman, B., & Klement, K. (2003). Gendering the digital divide. *IT and Society*, 1(5), 72-96.
- Lim, S., & Kwon, N. (2010). Gender differences in information behavior concerning Wikipedia, an unorthodox information source? *Library & Information Science Research*, 32, 212-220.
- Lorence, D., & Park, H. (2007). Gender and online health information: a partitioned technology assessment. *Health Information & Libraries Journal*, 24(3), 204-209.
- Magherat, P., & Stock, W. G. (2010). Gender-specific information search behavior. *Webology*, 7(2).
- Moghaddam, G. (2010). Information technology and gender gap: Toward a global view. *The Electronic Library*, 28(5), 722-733.
- Nath, V. (2001). Empowerment and governance through information and communication technologies: Women's perspective. *International Information & Library Review*, 33, 317-339.
- Ngaroga, J. M. (1996). *Professional studies for primary teacher education*. Nairobi: East African Educational Publishers.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage.
- Paul, A. (2015). Use of information and communication technologies in the everyday lives of Indian women: A normative behaviour perspective. *Information Research*, 20(1). Available at: <http://www.informationr.net/ir/20-1/istic2/istic19.html#.VRjq4-FyPA0>
- Prakash, N. (2012). ICT and women empowerment in a rural setting in India. In R. Pande, & T. van der Weide (Eds.), *Globalization, Technology Diffusion, and Gender Disparity: Social Impacts of ICTs* (pp. 277–291). Hershey, PA: Information Science Reference.
- Purushothaman, A. (2013). Empowering Women Through Learning To Use The Internet: An Ethnographic Action Research Project to Address The Second Order Digital Divide [Doctoral dissertation] Aalborg University The Faculty of Humanities, Department of Communication and Psychology.
- Shuter, R. (2012). When Indian women text message: Culture, identity, and emerging interpersonal norms of new media. In P. H. Cheong, J. N. Martin, & L. P. Macfadyen (Eds.), *New media and intercultural communications: Identity, community and politics* (pp. 209-222). New York: Peter Lang Publishing Group.
- Steinerová, J., & Šušol, J. (2007). Users' information behaviour: A gender perspective. *Information Research*, 12(3). Available at <http://InformationR.net/ir/12-3/paper320.html>
- Subramanian, M., & Saxena, A. (2006). Gender and ICT Policies and Programmes in an Indian State. In *Global encyclopedia on "Gender and ICT"* (pp. 411-416). Hershey, PA: IGI Publishers.
- Thompson, K. M., Jaeger, P. T., Taylor, N. G., Subramaniam, M., & Bertot, J. C. (2014). *Digital literacy and digital inclusion: Information policy and the public library*. Lanham, MD: Rowman & Littlefield.
- Top, E., Yukselturk, E., & Cakir, R. (2011). Gender and Web 2.0 technology awareness among ICT teachers. *British Journal of Educational Technology*, 42(5), E106-E109.
- Urquhart, C., & Yeoman, A. (2010). Information behaviour of women: Theoretical perspectives on gender. *Journal of Documentation*, 66 (1), 113 - 139.
- van Deursen, A., & van Dijk, J. (2010). Internet skills and the digital divide. *New Media & Society*, 13(6), 893-911.
- van Dijk, J., & Hacker, K. (2003). The digital divide as a complex and dynamic phenomenon. *The information society*, 19(4), 315-326.
- Youngs, G. (2012). Globalization, information and communication technologies, and women's lives. In R. Pande & T. van der Weide (Eds), *Globalization, technology diffusion and gender disparity: Social impacts of ICTs*, (pp. 25-34) . Hershey, PA: Information Science Reference.
- Wei, Z., & Kramarae, C. (2012). Women, big ideas, and social networking technologies: Hidden assumptions. In R. Pande, & T. van der Weide (Eds.), *Globalization, technology diffusion and gender disparity: Social impacts of ICTs* (pp. 70-82). Hershey, PA: Information Science Reference.