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Women in Digital India: An In-depth Analysis of Preparation for Digital Inclusion

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Abstract

A holistic outlook of inclusive growth can be achieved with higher and equitable citizen participation. Digital governance cannot be bereft of the end-user perspective. The purpose of this particular study is to present factors that may affect digital technology use by middle class Indian women in particular. The study follows the interpretive paradigm and is situated to explore an understanding of culture and gender in the Indian context. Applying Venkatesh's (2003) UTAUT model of technology acceptance we have discussed the four categories of users identified in our study.

1. Introduction

At the end of 2015 the Indian government launched its Digital India initiative. The initiative is at a time when there is increasing acknowledgment of the transformative power of the electronic media. The government, in its plan to digitise India, has stressed the three key visions of the digital India initiative, which include 1) "digital infrastructure as a core utility to every citizen," 2) "governance and services on demand," and 3) "digital empowerment of citizens" (Government of India, 2015a). Since some eGovernment initiatives of the past have not had the level of impact desired, the focus hence is now to make this new digitization initiative impactful. As mentioned on the Digital India website, "It has been felt that a lot more thrust is required to ensure e-Governance in the country promote[s] inclusive growth that covers electronic services, products, devices and job opportunities" (Government of India, 2015b).

A holistic outlook of inclusive growth can be achieved with higher and equitable citizen participation. Digital governance cannot be bereft of the end-user perspective. The first goal, provision of a strong digital infrastructure that is accessible and useful to every citizen, focuses largely on the macro-level of digital inclusion, reflecting what the government can provide. The second goal, at the meso-level, commits to governance and services on demand, relying on government agencies to provide useful and usable online resources and services and shows expectation of government-citizen communication to enable responsive government resources. And the third goal aims to improve micro-level citizen response to the government initiative, relying heavily on citizens being educated, trained, and responsive to government information in a way that results in social as well as digital inclusion.

The level of digital literacy required for citizens to be empowered through digital technologies has been recognised as essential in order to meet this third vision. The National

Digital Literacy Mission (NDLM) defines digital literacy as "the ability of individuals and communities to understand and use digital technologies for meaningful actions within life situations" (NDLM, 2015). The NDLM focuses on making one person in every family digitally literate by December 2016. It is focused to train the poor and provide information technology training to 5.25 million citizens of India (India Today, 2016). However, as of the latest update in April 2017, according to the NDLM website -- this goal has been exceeded by 3 million. While this measure indicates a positive movement towards digital inclusion, there needs to be careful consideration of elements that hamper digital inclusion in order to ensure that efforts are as efficient and effective as possible.

The purpose of this particular study is to present factors that may affect digital technology use by middle class Indian women in particular. Stereotypes of the Indian woman's technology use has extended to their information and communication technology (ICT) use as well. The social and cultural factors affect the Indian woman's ICT use has been acknowledged in previous studies (Paul, 2015; Potnis, 2017; Prakash, 2012; Thompson & Paul, 2016). This paper covers a broader aspect of Indian women's interaction with ICT and contextualises it in the 21st century Indian society. Fifteen Indian women from the middle class of the Indian state of Kerala were interviewed using unstructured interview in which they were questioned about their adoption and use of ICT in their respective circles which include mandatory use settings such as that of workplace and voluntary use settings such as for personal and other non-work reasons. Multiple aspects of social equity, information behaviour and information literacy were brought to light. In addition to providing data that might influence policy, this study also has implications for libraries and other public services as they assume the role of enhancers in the Digital India initiative, particularly in meeting the third key vision of "digital empowerment of citizens".

2. Literature Review

Women's information seeking behaviour is important to understand as it can help in accommodating their needs in the overall ICT development and policy implementation of a nation. That women report less confidence in their technical expertise and more negative attitudes about technology than men has been established (Bailyn, 1987; Broos, 2005; Howcroft & Trauth, 2008; Gokhale & Machina, 2012; Jain, 2006). A study of gender differences in defining information technology identifies differences in how even perceptions of technology differ by gender, with women defining technology "in terms of innovations that make life better or easier for the individual" or as something that might be used for "improved communication" whereas their male counterparts more often defined technology in terms of computer equipment and "mechanical or electronic applications of science" (Buche, 2006, p. 531). Nevertheless, Buche's (2006) study found that both female and male participants "assumed that technology leads to positive change" (p. 531), and other studies have also shown that women do use for ICT in their lives in various ways, albeit with different emphases than men in the same cultures and societies, for reasons related to their professional and workplace needs as well as home, family, and personal care such as health and educational needs, banking, travel, hobbies, and so forth (Ahrens, 2013; Hilbert, 2011; Thompson & Paul, 2016).

2.1 Social factors influencing ICT adoption and use

Coupled with this there may be socio-cultural expectations from women about their ICT use (Li & Kirkup, 2007). Moore and Benbasat's (1991) study of adoption of information technology innovations reflects that individuals seek social approval when adopting new technologies. Venkatesh, Morris, Davis and Davis (2003) reflect on this idea, adding their finding that social influences are "more likely to be salient to older workers, particularly women," and particularly "during early stages of experience/adoption" of ICT (p. 469). Likewise, Chatman (2000) postulates in her theory of normative behaviour that socialised

"small world" attitudes affect everyday information seeking behaviour and help establish "'rightness' and 'wrongness' in social appearances" (pp. 10-11), determining what channels one pursues in order to obtain information as well as determining what information is accepted into the small world. Chatman notes that worldview strongly influences what is relevant and useful to one's lifeworld and what is not. In their comparative analysis of cultural influences on Internet adoption by women in the US and Japan, Ono and Zavodny (2005) found that social roles influenced by national culture, such as gendered employment roles, have a significant effect on women's adoption and use of technology. This relates somewhat to Castano and Webster's (2011) suggestion that the way that women use ICT needs to be considered based on contextual elements and life-course events. Domestic, workplace and other social contexts such as gender regimes in the society, family structures and employment cultures influence adoption and use of ICT in daily life. That social influences are particularly important for women's adoption of ICT underscores the importance of exploring these factors in varied contexts.

2.2 Information behaviour of women in general

Researchers have studied women's information behaviour with varied viewpoints and have found varied sets of findings. Maghferat and Stock (2010) have found certain dissimilarities in women's information search process on the web as compared to that of men. In their study, women behaved cautiously in choosing search sources. They primarily relied on search sources with which they were already quite familiar and knew skilfully, changing to another search source only when such a change was assigned by someone in authority. In contrast, men seemed to be extremely self-confident and determined regardless of the search sources available. Further, Lim and Kwon (2010) too found that women, regarding their information behaviour on Wikipedia, display "more cautious or conservative attitudes, emotions, and behaviours than their male counterparts" (p. 219). These different behaviours

of women need to be considered in their respective contexts that may explain the factors leading to the differences in women's behaviour as opposed to men's.

Halder, Ray, and Chakrabarty (2010) found that female university students accessed many resources when seeking information, including primary, secondary and tertiary resources available both within as well as outside of their institution. On the other hand, Warner and Procaccino (2004) found that though the women in their own study were active health information seekers and made use of information received about health, they had a low awareness of resources that provide health and medical information. They also found indications of weak search strategies to retrieve health information on the World Wide Web using ICT. The study indicates that the women felt uncertainty in relying on Internet repositories when it came to crucial health information, relying more readily on family and friends for health information seeking. These studies reflect how women have accepted ICT in their lives yet there is scope to improve their ICT use through various ways such as proper training and support.

Environment and context can also play a role in information behaviour of individuals. Urquhart and Yeoman (2009) postulate a connection between information seeker and the situation. They propose that information behaviour studies should study the effects of the situation on the information seeker and also at how the information seeker changes the situation. Quesenberry, Trauth and Morgan (2006) studied on the work-family balance of women in the information technology field and posit that environmental context has a role to play in complicating the pressure on woman about the decisions they make concerning work-personal lives. They also hint towards the negative stereotypes about women that lead her to strive more to prove her worth.

Some have argued that ICT empowers women, although the level of empowerment will depend on the level of access and actual usage of the technologies. Hilbert (2011), for

example, recognises that women's use of ICT is significant for establishing egalitarian roles in the labour and political markets as women have been unequally treated in the past and these inequalities have transmitted to their use of ICT. He calls for an examination of positive attitudes and natural abilities women have, such as good communication skills and media capacities, to overcome such transmitted ICT use inequalities.

2.3 ICT adoption by women in India

Taking a look at the worldview and pervading cultures of India, as in many parts of the world, women have been focused on maintaining traditional roles, or even confined to traditional, often subservient, roles, and their lifeworld has mostly been restricted to the small worlds of their family circles. In many cases women live in joint families, which consist of a married couple living with one or both sets of parents and sometimes an additional assortment of in-laws. Even within these traditional roles, access to the outside world has improved over time. According to an Intel report (Intel, 2013), 49 percent of Indian women seek information for accessing government services; however, the report further states that women in India lack more in ICT awareness as compared to some other emerging economies with 31 percent disinterested and 40 percent unable to recognise its need in their lives. In addition, 48 percent of Indian women were reported to have expressed that they were not comfortable or familiar with technology. The report covers aspects of the Indian women's ICT use that reflect the gravity of the gender divide in ICT use in the Indian context and calls for timely measures to contain any far reaching consequences.

Review of the literature indicates that women's use of ICT is an area worth exploring owing to the factors that are social as well as behavioural. It is also important to understand women's information seeking behaviour for achieving greater digital inclusion. An understanding of women's use and non-use of ICT in spite of the requisite physical access would help in achieving higher Internet penetration.

3. Method

The study follows the interpretive paradigm and is situated to explore an understanding of culture and gender in the Indian context. Data were collected through interviews that were semi-structured, partly conversational, and shaped by the interviewer so as to get deeper into points of interest. Questions ranged from "Think about some time recently when you remember you needed some information—it could be for work or home or personal information. Could you please describe what information you needed and how you went about finding the information?" to "Who decides technology matters at home? (buying, upgrading etc.)" and included discussion about ICT and the women's social roles, perceptions, environmental influences, empowerment, and use. 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.

The fifteen participants interviewed are all middle class Indian women from a range of sub-cultures within the state of Kerala, which is the Indian state with the highest level of gender equity and literacy rates (Government of India, 2015c). All reside in India but some were reared in different towns across India and one did her schooling abroad before returning to Kerala. In order to ensure some level of homogeneity of the 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, gainfully employed, user of ICT for at least five years. 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 fifteen participants ranged in age, employment, and years of experience with ICT and the Internet. Data were collected between October 2014 and May 2015.

3.1 Theory

As government and other everyday communications and information seeking practices increasingly rely on technology, understanding models of adoption and use of technology and factors that could potentially act as barriers to full enfranchisement become increasingly important. This focus on technology adoption, however, is not new. As technology emerged as a significant player in white-collar workplace in the 1980s, it became increasingly important to understand human technology adoption and user acceptance of technology, as more and more workplace tasks were becoming digitised and automatized. Davis's (1986, 1989) Technology Acceptance Model (TAM) introduced a psychological model of technology use, focusing attention on how *perceived usefulness* (how much the technology is seen to be enhancing job performance) and *perceived ease of use* (how little effort might be required to use the technology), were significant determiners of how easily a user accepted new technologies.

Davis's model has since been expanded by himself and others (e.g., Venkatesh & Davis, 2000; Venkatesh & Morris, 2000; Venkatesh, Morris, Davis, & Davis, 2003; Venkatesh & Bala, 2008). In Venkatesh and Morris (2000), the researchers included gender as a factor in the study of differences in technology use in the workplace, finding that while men were more highly motivated by productivity factors like usefulness of the technology for getting the work done, women were strongly influenced by perceived ease of use as well as *subjective norm*, or "the degree to which an individual believes that people who are important to her/him think she/he should perform the behavior in question" (p. 119). In other words, women were most likely to be motivated to use technology when they found it easy to use and when social influences encouraged technology friendly behaviours. Additional study by Venkatesh, Morris, Davis and Davis (2003) resulted in similar findings, and recent studies of

web acceptance have found similar gender-based differences (Kim, 2010; Ong & Lai, 2006; Sanchez-Franco, 2006; Terzis & Economides, 2011).

Interestingly, Venkatesh and Bala (2008) also found that perceived ease of use and perceived usefulness are not static personal attributes, but can be moderated with experience. That is, with increased experience a user will feel more capable and feel less anxiety about technology. The UTAUT model by Venkatesh (2003) has attempted to combine eight user acceptance of technology models and provide a comprehensive view of the acceptance phenomena with antecedents such as performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) moderated by gender, age, experience and voluntariness of use. Though this is a more recent version of the acceptance models it has not been applied to understand acceptance in the general society.

With these factors in mind, we have analysed our data to explore the influence of experience/degree of use in mandatory setting *vis-a-vis* voluntary setting, as well as social normative behaviour factors, and self-perception of ability/ease of use of the women we studied.

4. Results and Discussion

The interviews with the 15 women revealed various ICT use habits and factors in an informal setting. We apply UTAUT to understand ICT usage of these participants. With increasing technology penetration and emphasis on digitization in India we have attempted to use the model in a broader context of the Indian society. We have used the model to identify the various antecedents and factors that lead to and influence ICT adoption by Indian women. The study identifies various external factors of ICT use such as that which related to environment and social norms that were in the form of PE and SI of ICT as well as internal factors of use such as that which were attitudinal that determined the EE. We also found factors that facilitated ICT adoption that were not covered in the model such as childhood

grooming and technology inclination. To our knowledge this is the first attempt to apply UTAUT in the general society or voluntary setting to understand the ICT adoption by Indian women. The increasing impetus towards digitization by the Indian government and due to the nature of today's transitional society it is even more important to understand the factors of ICT acceptance and adoption. Further usefulness of the study is at the policy level for designing programs that can support user acceptance and then adoption of ICT, specifically for middle class Indian women.

The middle class Indian women who participated in our study reflected different levels of ICT adoption across mandatory and voluntary settings. A change in perceptions of ICT use across the participants is a characteristic of a dynamic society undergoing changes in multiple dimensions of technology and society. We divide the findings into categories of mandatory which were mostly for work related purpose and voluntary which were mostly non-work related use. We follow with discussion of factors of ICT acceptance in the participants' lives.

4.1 Findings

ICT use is common in the office workplace and since the women interviewed were all professionals, they used ICT at work. Some of these participants had some exposure to ICT during their childhood out of which a few keenly developed an affinity towards it. As part of their professions most participants needed to use ICT at varying levels. It was interesting to see differing trends between ICT use for mandatory and voluntary use which hinted that ICT adoption and use at work may or may not influence their perception of ICT use in their everyday lives. We refer to the participants as P1, P2, and so forth, until P15. Based on their ICT use we categorized the participants on type of ICT use - *mandatory* and *voluntary,* and within each type of use the frequency of ICT use - *heavy* and *light* as presented in Table 1. We explain each of the categories in the following sub-sections.

		Mandatory Setting	
		Heavy Use	*Light Use*
Voluntary Setting	*Heavy Use*	**H-H Group** *P1, P5, P10, P11, P13* ・Heavy ICT users for mandatory and voluntary settings ・High levels of confidence ・ICT integration across all spheres of life be it professional, personal, entertainment, etc. ・Years of ICT experience ranging between 10 years to 17 years	**L-H Group** *P2, P9* ・Heavy ICT use in voluntary settings but ICT not needed or needed minimally for work ・PE, EE played a role in intention to use ICT. ・Facilitating conditions enabled use of ICT such as strong technology infrastructure, availability of useful mobile apps ・Years of ICT experience ranging between 10 and 13 years
	Light Use	**H-L Group** *P6, P12, P14, P15* ・Heavy ICT users in mandatory setting and light users for voluntary setting ・ICT use driven by PE ・Inclination to incorporate ICT in their personal lives was low. ・Years of ICT experience ranging between 15-20 years	**L-L Group** *P3, P4, P7, P8* ・Minimal use of ICT in both mandatory and voluntary settings as there was less PE through ICT use in their professions ・EE lead to low intention to use ICT ・In some cases low facilitating conditions also contributed to non-use ・Years of ICT experience ranging between 8-13 years

Table 1: Categorization of participants based on type and frequency of ICT use

4.1.1 Heavy Mandatory Use - Heavy Voluntary Use (H-H)

The H-H group were the most prominent ICT users: P1, P5, P10, P11, and P13. Both their professional and personal use of ICT was motivated by their affinity towards ICT which reflected their enthusiasm in technology and latest trends. Their PE and EE directly influenced their intention to ICT use. All of these participants worked in different industries, with P1 working in the hospitality industry and managing her family business. Using ICT she has been able to manage her business from a distance.

She used ICT for work mostly for keeping herself updated with office emails. She states, "we have the mails [meaning email] that come from the reports that I will check in the morning and in the afternoon. And then the other mails that come, I will check them, it is mostly mails and responding to mails on one side of my Internet" [P1].

Further, she regularly checks the Facebook page for reviews of their hotel and also uses ICT for projects regarding her business operations. For P1 her effort expectancy seemed to be a determinant in her intention to use ICT. She was constantly updating and upgrading her devices, and her family had always supported her interest in technology since childhood. The literature also indicates support as an important factor for women in their ICT use, although UTAUT does not explicitly underscore support from family or friends as a moderating factor for intention or actual use of ICT.

P11, a customer service assistant manager, also uses ICT for work extensively and; her colleagues rely on her for any technology related support. She states, "A lot of them [meaning colleagues], I think almost everybody in office [would give me ICT responsibilities]. If there's a function...they would [ask me]…" [P11]. In her case too, just as with P1, the technology inclination was based on how she was perceived by her colleagues. This instance reflects voluntary use of ICT at work that was enhanced by the influence by others. Venkatesh (2003), in his paper, talks about how social influence may not affect involuntary use of ICT and stressed social influence as having a direct relationship with intention moderated by experience. However, we found that social influence for voluntary use of ICT can be an important factor of ICT use in communities including that of involuntary workplace use. Venkatesh talks about "influencing perceptions about the technology" (p. 452) as a social influence in the use of ICT in voluntary settings. In our study we found a role of social influence in terms of the pressure to conform to the image held in society, in this case the workplace.

P5 was also an extensive user of ICT for work. She is a manager in the education sector and for her PE and EE played well in intention to ICT use. She has found her mobile to be particularly useful when she travels, "because my job also requires constantly checking [e]mails and replying. Through the [mobile] phone it is possible but if the contents are long, typing is difficult" [P5]. She has found it convenient to use her mobile for quickly checking office messages or email to read later or to take notes on her mobile during a meeting. Her use of ICT has been driven by PE. Venkatesh (2006) suggests that effort expectancy varies between women and men; however, as our study did not explore men's use of ICT, we do not have data to support or refute this comparison. Nevertheless, it is reasonable to suggest that individuals who are less experienced with ICT may not have an accurate sense of effort expectancy. For the participants in the H-H group the inclination towards ICT use along with PE seemed to be driving their fascination and inclination for ICT.

Facilitating conditions provided by a sound ICT infrastructure and availability of online services such as finding information, paying bills etc. has helped P10 to use ICT for her needs and hence conforming to UTAUT. It was interesting to see how she, though a heavy mandatory and voluntary user of ICT, denied having incorporated ICT in her daily life completely. This may be attributed to the attitude towards ICT which is accounted for by effort expectancy. In any case such attitude did not lessen her ICT use. She explains her ICT use as follows-

> You can see my technology proneness in my everyday activities which I do based on technology, see I'm addicted to that. But others I don't think much about. My phone, it's with me all the time so I'm addicted to my phone and I use almost everything that my phone has to offer and yeah you can say that about my laptop and, you know, things at home. If you say fridge and cooking range and all that [is technology], yeah what comes in my purview yes. But the rest I just leave to others, you know. [P10]

It was not clear what technology beyond mobile phone, laptop, and home technology she thought of as "the rest", but clearly she felt there was even more technology involvement that she might have engaged in had she been so inclined.

P13, a creative designer who works regularly designing software, searches the Net constantly. She works from home which requires her to have an ICT at home that she uses for performing her job responsibilities. Similar to P5, PE and EE are the constructs for determining behavioral intention to use ICT. In her case, she being able to work from home acted as a FC for ICT use for voluntary purpose. The model does not specifically address aspects of voluntary within the mandatory which is mostly in cases of work from home or work as a freelancer etc.

P1, P5, and P11 reported childhood inclination towards ICT that was supported by their family members as well as the environment that they grew up in. This may have reduced the technophobia that most women in India are perceived to have. Cultural factors have led these women to be supportive of their family, friends and colleagues in order to help them with their ICT related needs. Considering the traditional roles of women, family encouragement and support to perform a non-traditional role is an aspect not explained in the UTAUT.

//4.1.2 Heavy Mandatory Use - Low Voluntary Use (H-L)

Participants in the heavy mandatory use and low voluntary use (H-L) group--P6, P12, P14, and P15-- were mostly unwilling ICT users who use ICT only when unavoidable. ICT use for mandatory settings was driven by PE whereas voluntary use of ICT was minimal which can be attributed to high effort expectancy. High effort expectancy was mainly from the negative perceptions of ICT adoption that lead to low ICT use intention. P6 is an information technology professional in a government job who does computer programming and conducts online search for government policies related to her employment. P12 is also a

regular ICT user for professional needs but not much for her personal needs. She stated regarding her ICT use for work, "because we [are] involved in a lot of training [in the medical field] … we need to keep updated on many things. Sometimes it was just pick up a headline so maybe we go on to the Net for previous similar headlines, to read all those" [P12]. Her work, or her PE, directly impacts ICT use intention.

P14, a journalist, was also a reluctant ICT user but used it extensively at work. According to her, "I am not a very prolific user... I mostly use it for my work and having Internet. Access to Internet makes a lot of things easier for which I would otherwise have to spend a lot of time finding the facts and checking the facts." [P14] Apart from searching the net for facts and figures ICT helps in her role as a journalist. She states,

> ...because I have WhatsApp it makes it a whole lot easier to send and receive photos, photographs because whatever story you do, you need a photograph to go with it and this was very difficult otherwise because if you cannot get a photographer to go with you it becomes a problem. So because I have a smartphone I can take pictures, I can double up as a photographer and reporter and it is easier to bring it back and transfer it into the system. [P14]

P15, also a journalist, recognised the usefulness of ICT in being proactive about the different work affairs that could help her in her profession. She states regarding her ICT use,

> I mean if I find any doubts which I am having I just check it on the Net. I mean like that, I do kind of everything...Yeah for my work and not just for my work, but mostly for my work...like you get some flash news on television, okay something happened okay and I'll just think okay, let me check on [the Net]. I'll check on it, like that. I mean I seek information to see if there is something, something which I can use maybe for possible stories, or just to find out. [P15]

The use of ICT for them was to enhance their job performance but had not reconciled to ICT use for voluntary purpose.

P14 also commented that there are lot of things that she could use the Internet for but she does not out of choice. There was a clear hint in these women's denial of incorporating ICT in their lives is a conscious decision which has been attributed by UTAUT to effort expectancy. This also indicates how the effort expectancy can lead them to use ICT for mandatory purpose, however they exercise restraint when it comes to voluntarily using ICT.

4.1.3 Low Mandatory Use - Heavy Voluntary Use (L-H)

The third group of users, low mandatory use-heavy voluntary use (L-H), reflects the ICT use of two participants: P2 and P9. P2 and P9 were motivated to use ICT for personal voluntary purposes in spite of not much mandatory use at work. The low effort expectancy for the two participants was a cause for ICT use intention. P2, a medical professional, notes that there is not much Internet use for mandatory purpose except for few instances where she may look for information related to vital statistics. Another factor encouraging her non-use of ICT is poor facilitating conditions due to a bad wireless connection at work. She states, "sometimes I save some work related things also on my phone. For some repeated cases … I sometimes save [dosage information] on my phone so I can refer quickly, refer back what I had given last time." [P2]

As for P9, she is a young dentist who noted that she did not have to use ICT mandatorily at all, but uses her mobile apps extensively voluntarily. As with the H-H group, family influence and encouragement has helped them in adopting ICT in their lives and due to lack of performance expectancy they did not really adapt to ICT for mandatory purpose. However, the effort expectancy and facilitating conditions owing to family support and easy technology in the form of seamless internet access over phone through apps has led them to incorporated ICT in their lives.

4.1.4 Low Mandatory Use - Low Voluntary Use (L-L)

Finally participants P3, P4, P7, and P8 demonstrated low mandatory and voluntary use of ICT (L-L). These women have ICT access, but use it minimally for both mandatory and voluntary purposes. Three of the four participants in this group (P3, P7 and P8) are in the medical profession. P3 has used ICT for work mainly for her family-owned dental clinic. Her use of ICT is primarily for finding contact information of dealers of dental instruments and "material things" they use in the clinic, "so many dealers [are] there, I would search for their contact number and know what all products they provide. So, I just take their contact number and call them directly" [P3]. She also used ICT for designing and approving brochures for their clinic. ICT use in this case for mandatory setting is meagre and is being supported by enhanced performance expectancy leading to enhanced intention to use ICT.

P7 and P8, both active medical practitioners, also did not need to use ICT for their professions much. P7 mentioned the only time she gets close to using ICT for work is when "there is a diagnostic dilemma". She adds that "[sometimes] 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" [P7]. P7 also had some support from her medical colleagues that allows her to distance herself from IT. She says she does not need to use the Internet much because they will access the Internet for her and help her with information related to dosage. She stated, "there are certain medicine [apps] that can be downloaded where you'll get quickly the dosage formula. So they [her colleagues] are using it because, as I said, I don't have a Net connection; I'm not using it but they do use it" [P7]. The effort expectancy in ICT use also further hinders her use since she would rather ask her colleague for such information using ICT than find it herself.

Likewise, P8, another medical practitioner, relies on her assistants in case she needs any kind of assistance with ICT. The performance expectancy for medical professionals in this case is low and hence does not mandatorily require them to use ICT. Adding to it is the effort expectancy that is low owing to the non-inclination or the negative attitude towards ICT use which directly affect the intention to use ICT. Neither P7 nor P8 had positive experiences from childhood or young adulthood upon which to draw to encourage them to use ICT. UTAUT does not clearly indicate the role of support in terms of formal training given through educational institutions or informal training given by family and friends which enhances the ICT use confidence and hence influence the intention to ICT use.

The only non-medical professional in the L-L group, P4, works at a small press and doubles as a book-seller and part-time radio announcer. Although middle-class, P4 did not feel she could afford her own personal ICT device which hence hampered her adoption of ICT for voluntary purposes. She used her office computer for mandatory use at work and sometimes used the office computer for personal work, while other times she uses cybercafé services. Her friends also support her ICT related needs. Her meagre use of ICT for mandatory work can be attributed to performance expectancy that is a direct determinant of ICT use intention. The lack of facilitating conditions also lead to the non-use of ICT whereas effort expectancy was not found to play a role in her ICT use intention as even though she was aware of the benefits of ICT and had a positive inclination towards it she was unable to use it due to lack of facilitating conditions.

Each of the L-L women noted that family members and/or colleagues have helped them find information, check email or engage in e-commerce activities that they otherwise might have had to do themselves online. A factor that as indicated before is not represented in the UTAUT. A second reason for non-use of ICT was built in the notion of adverse lifestyle and health impacts of ICT. P3, P7 and P8 each cited this as a factor that prevented their

pursuing ICT more actively. UTAUT does not clarify such aspects but may indirectly address it under facilitating conditions directly related to ICT use. It is possible that such factors will also be directly related to intention to ICT use as was evident for the participants in this group.

4.2 Discussion

The effect of social influence in ICT use for women has been spelled out in the UTAUT model as influencing ICT use through internalisation and identification. One social influence that was obvious in the women's ICT use was their reflection on how their families supported them in their childhood when they had opportunities to interact with ICT. The women who indicated the most interest in voluntary ICT use—those in the H-H and L-H groups--told stories of how their family members encouraged them to use and play with ICT when they were girls. Social influence was also present in the L-H group, those who were prompted by the demands of the work to use ICT and had primarily limited it for that purpose only. Participants who were in the H-H and L-H groups were more likely to use ICT for numerous personal needs and requirements. However, some of the participants from the H-L group seemed likely to be avoiding ICT for personal use even though they used it more than the characteristic novice users in the L-L group especially for P12 and P14.

Looking at ICT usage for personal purpose, the H-H group reported watching movies, buying tickets, planning travel, making commercial purchases, reading product reviews, using their mobile for security purposes, communicating with friends and family, buying clothing, finding medical care professionals, and even registering to vote and applying for a passport online. ICT has proven to be of immense help as devices to get work done conveniently and much faster. Similar to the above participants from the H-H group, participants in the H-L group unhesitatingly used ICT for personal purposes.

Using ICT for work purpose may have enabled some of the participants to form positive perceptions about the usefulness and ease of use of ICT such as it did for P10 and P13 in the H-H group which in turn affected their attitudes positively in favour of ICT use. Nevertheless, ICT use at work does not appear to be the sole factor for forming positive perceptions of ease of use or usefulness of ICT. For P2 and P9 from the L-H group, work use of ICT was minimal, yet they were heavy users of ICT for personal purposes. P2's use of ICT was driven by her inclination towards technology since childhood; and P9 noted that the convenience of a mobile device was a factor that established her ICT use for personal purpose in spite of not being as knowledgeable as required for ICT use. Explaining ICT adoption in the personal lives of working women may imply a different story altogether as compared to what happens at work. The personal lives of these women are guided by factors that are different than workplace constraints.

Taking a look at factors that might cause non-use of ICT for personal purpose, different set of causes are further elucidated. The H-L group participants are heavy users of ICT at work but were reluctant to use it for personal purposes. For P12 and P14, it was interesting to see how their little use of ICT was motivated by their duty boundedness towards their children for academic needs. Apart from this, P12 relied on her husband for other technology or information needs. As for P14, she had benefitted from ICT immensely in the process of finding books to read to her son. In spite of her apparent comfort with ICT she was not interested in using ICT for personal purposes partly because she was busy and partly she did not find the need. She rated her use of ICT as below average.

The same was the case with P6, who was visibly distraught with the information clutter brought about by the online media. Even though P6 was an information technology professional, she relied on her husband for most non-work Internet surfing and other online activities. She had discovered little use for ICT in her personal life. She expressed the reasons

for her non-use of ICT for purposes other than work as, ”I learned [information technology] because of the need, I had to because of work, but they [husband and relatives] learned it for just understanding it, that is the difference, they don’t need it in day to day work, my father in law was a director in postal he doesn’t have any touch with technology, but he learned it.” [P6]

She also expressed her dissatisfaction with the information overload she encounters on the web: “I check rarely, product information. I don’t search in the Net because it is 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 load of items are there know, even if you search for mobile phone, you get a lot of phone, you can’t find what you need.” [P6]. She is currently enrolled in an executive course that requires her to seek information and do group activities with fellow classmates, so she has to use her ICT device at work and also at home for study. This could have been another reason why she did not think of ICT as a leisure tool.

Another H-L, P15, found ICT difficult to use for domestic needs such as recipes but had used it extensively for surfing the net. She noted she was reluctant to use ICT for online purchases. According to her:

> Actually making a purchase I never, I mean I made a purchase once but then it was [when] I had checked this site along with my mother but then that didn’t work out properly as in...we ordered a dress but...it seemed completely different when I saw it online [and] when I got it. [The colour] was somewhat different. So after that I am a little, I mean I like going through online stuff but then I am a little reluctant to buy. [P15]

She did mention how she might indulge in “online window shopping”, but one disappointing e-commerce experience spoiled her interest in using ICT more extensively for commercial consumption.

Non-use of ICT for personal purpose in spite of heavy ICT in work settings further stresses on the disconnect that perception of ease of use or usefulness on attitude towards ICT use. It is possible that there is an adverse relation between their perception of ease of use and usefulness with attitude but these women seemed to have a positive attitude towards ICT but that too did not affect a positive influence to use ICT for personal use. Within the parameters of our study, light use of ICT for personal purposes by choice and not due to technology phobia.

Even the participants who belong to the L-L group, social influence was what encouraged them to use technology outside of work. P3, P7 and P8, who rarely use ICT for work or at home, based most of their ICT use on communication with friends and family, and P7 and P8 use it to help their daughters with school projects. P7 stated:

> So she was selected for elocution. So last [ICT use] I think was for the topics that they had given so she had to prepare for four topics and then she had to speak on any one. So for that I think it was very useful for me because otherwise I don't think it's possible to you know read books. The topics are given by them, like I think topics given where women's empowerment, then the person you admire most and all. So those kind of topics, especially women's empowerment and all, I got good articles through the Net. [P7]

P8 also reported using ICT for helping her daughter with her projects.

P7's daughter also played some role in getting her mother to more fully adopt ICT in daily life. According to P7, "then my daughter in fact you know she said mamma, what is this everybody is using all nice good new Smartphones, why are you not changing? So I think about six months back you won't believe I went and bought this Micromax Smartphone!"[P7] At the same time, she expressed scepticism about the adverse effects of ICT for her daughter and mentioned,

> I can tell you about my brother's kids. Now they're always with this thing either [PlayStation 3] or the mobile phone you know so when they're sitting they hardly communicate with us. When we ask them they'll answer but again they're busy with their fingers. So I think that way the communication has gone out really, really has gone I think. Children don't read at all. So it's one of the disadvantages I feel of, you know...The psychologists nowadays are telling that too much of gaming, too much of this thing makes [children] very aggressive. So that is one part I'm very scared of. [P7]

Also, P3 and P8 regarded women as non-tech savvy, reflecting their own negative attitude towards their own ICT use. P3 she rated her own ICT knowledge as possibly better than that of other housewives, but she mentioned that when it comes to her male colleagues she is not as good. All these L-L participants --P3, P7 and P8-- grew up with restricted access to ICT and not much interest or access as children. And though the three users P3, P7 and P8 had positive perceptions of the usefulness of ICT, it did not really impact their attitudes to the extent that it lead to impact on behavioural intention. Their attitudes were primarily affected by the social uses of ICT.

6.1 Conclusions

As Digital India and other national and international policies and movements seek to ensure equitable access to ICTs throughout India and throughout the world, we must consider the range of factors that affect ICT adoption, use and enjoyment. Simply providing access to households or to workplaces or public places will contribute greatly to digital inclusion, but social factors also need to be carefully thought through. Women often lag behind in ICT adoption and use worldwide. As noted in the literature review, some have suggested that this is simply the way it is, and that women will eventually catch up and perhaps even surpass men in using the Internet. However, it is not enough for women to simply "catch up" to men

in ICT use. For social inclusion as well as reasons of interest and personal fulfilment, factors that affect adoption, use and enjoyment of ICT require careful study and analysis.

This article provides an in-depth look at the ICT narratives of 15 middle-class Indian women who use technology in the workplace and own and regularly use technology—at the very least a functioning mobile phone with Internet connection—personally. Through in-depth interviewing, we elicited narratives of their digital technology adoption, use and enjoyment, and we found that although all use technology at work and personally, there were varied levels of interest, use and enjoyment of ICT in daily life. Applying Venkatesh's (2003) UTAUT model that highlights performance expectancy, effort expectancy, social influence and facilitating conditions as key factors to technology acceptance we have discussed the four categories of users identified in our study: H-H, L-H, H-L, and L-L.

Heavy mandatory-heavy voluntary (H-H) users felt they were happily nearly addicted to ICT, using it extensively from first thing in the morning until last thing at night. These women enjoyed working, shopping, communicating and finding information online for both work and personal needs. These women reported high performance expectancy, low effort expectancy, high social influence, and strong facilitating conditions in terms of infrastructure. The light mandatory-heavy voluntary (L-H) users did not need ICT as much in the office, but did very much enjoy using technology and voluntarily used it throughout their day both at work and at home. Performance expectancy and effort expectancy were low but social influence and facilitating conditions were high. High social influences and facilitating conditions clearly made an important difference in their attitudes toward and interest in ICT.

Heavy mandatory-low voluntary (H-L) users used ICT extensively in the workplace, but did not enjoy or feel strong need for ICT in their personal lives. So their performance expectancy was high, but effort expectance, social influence and facilitating conditions varied. Low mandatory-low voluntary (L-L) users likewise had low effort expectancy,

reduced social influences encouraging use, and adequate or below-adequate facilitating conditions. Their performance expectancy was also apparently low, as they had social supports that allowed them to avoid ICT as much as they desired.

It is hoped that this study might be used to expand understanding of how organisations from schools to whole communities might best influence girls and women to adopt, use and enjoy digital technology. High performance expectancy is not necessarily the best or only path to lead to women to involvement in ICT related work or personal activities. The women of this study indicated a more positive response to social influences and facilitating conditions than to performance expectance and effort expectancy. This research also has the potential to inform future research related to the effect of parents and social communities in the encouragement of girls and women to develop and maintain interest in digital technology in their professional and/or personal life.

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