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Using Factors for Digital Inclusion to Assess Changes in Digital Use Behavior During Covid-19

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Abstract

During this sudden dramatic transformation owing to the pandemic normal lives were disrupted and personal spaces merged in new ways with the professional. During this time considerable attention has been drawn to the need for understanding in what ways the pandemic has affected the use of digital media in everyday lives of people. Literature highlights the COVID-19 home in context of the digitized work arrangements and the need to look at unequal burdens of household work along with issues of digital access including Wi-Fi. Businesses are also reshaping their work practices in new ways after experiencing remote work during the pandemic. The purpose of our study is to explore the impact of COVID-19 in everyday lives of working professionals in India applying a digital inclusion framework (Thompson & Paul, 2020) using an online survey method. The findings of our study can help in understanding the new normal with respect to digital use in the lives of individuals owing to the pandemic that will be of interest to governments and organizations to formulate policies towards effective digital inclusion for citizens and better work productivity by employees during stressful times.

Introduction

On March 24, 2020 the Government of India declared a nation wide lockdown due to the Covid- 19 pandemic. News media and research outputs have reported the repercussions of the pandemic on families and employees from all tiers some of which were layoffs (Biswas, 2020), gender issues in coping with the pandemic lifestyle when working from home (Feng & Savani, 2020; UN Women, 2021), mass movement of daily wage earners on foot (Mohan, Mistry, Singh, & Sreedhar, 2021), technology-centric lives and stress of work from home employees (Jain, 2021), etc. Covid ha s impacted the lives of Indians in incomprehensible ways and major shifts have happened.

One of the central effects of Covid-19 has been that the use of digital technologies has become a necessity for continuity of life and work. During this sudden dramatic transformation digital devices enabled professionals to work from home for weeks at a time . The former clear divides between the workplace and home/family life have been reduced or disappeared for many. P ersonal spaces have merged in new ways with the professional. During this time considerable attention has been drawn to the need for understanding in what ways the pandemic has affected the use of digital media in the everyday life (Watson et al., 2021; Pandya & Lodha, 2021; Livari et al., 2020; Nguyen et al., 2020).

Digital penetration figures in India three years before the pandemic were between 34% - 38%. This number has risen to 48.48% since the onset of the pandemic (India: Internet penetration rate 2021a; 2021b); however, there is little understanding of the daily lives, behaviors and adaptations in context of the pandemic lives that underlie this rise. This study explores aspects of digital inclusion by examining digital factors experienced by working professionals who were restricted to working from home during the pandemic in India. Our study also examines the significance of digital technologies in the everyday lives of people during the pandemic. For a theoretical framework, w e use a digital inclusion model designed before Covid-19 (Thompson & Paul, 2020) as a means to check whether the model holds the same validity during times of crisis. To explore

the usefulness of this model in understanding digital inclusion during the pandemic, w e use the following research questions:

1) What factors during the pandemic have affected users' daily digital adoption and use?

2) What has changed in the digital lives of Indian professionals from prior to the pandemic?

    a) What intrinsic (demographics, personal characteristics etc.) factors determine the above two?

    b) What extrinsic (employment, family aspects, technology availability and use style, environment etc.) factors determine the above two?

The findings of our study will help further understanding of the dynamics of digital inclusion in terms of adoption and use of digital technologies for everyday life and information behavior . The findings will be of interest to governments and organizations as they formulate policies towards effective digital inclusion for citizens and better work productivity by employees during times of crisis. Businesses that have benefitted from the remote work arrangements intermediated by digital technology are unlikely to go back to the pre-pandemic ways of working (McKinsey, 2021), or may design new ways of engaging with staff, clients, and other stakeholders (McKinsey, 2020); hence a need to understand the telecommuting and hybrid workforce better for developing better HR, administrative and communication policies. In addition this study identifies issues of telecommuting and working from home that have hitherto not been widely studied .

Background Literature

On March 24, 2020, the Government of India ordered a 21-day national lockdown to try to contain the spread of the coronavirus (Economic Times, 2021). Businesses, manufacturing plants and factories, schools, universities, libraries, government services, and most other public and private organizations were immediately closed. Only what services deemed essential, such as medical care, hygiene, and grocery provision, continued to operate. Where possible, organizations and individuals quickly sought no-contact and digital ways to continue business, education, and other public and private services (Anand, 2020). April 14, 2020 the lockdown was extended into May in many areas of India as numbers of COVID-19 cases steadily rose, and it became clear the pandemic lifestyle would be a long process, deeply affecting social and public life.

The digital surge during the pandemic has drawn attention to possible areas research (De et al., 2020; Dwivedi et al., 2020). These papers have called for the need to understand the new telecommuting experience and virtual teams with focus on the 'dark side' of it including technostress, design of collaborative work, team performance, stress, continuous learning. While the research hints of a dramatic ongoing shift in digital usage, there has been little time to explore these shifts using empirical data.

Digital adoption has been studied widely in the technology adoption literature, but that has primarily been through study of adoption and use of technology in stable environments (e.g., Paul & Thompson, 2018) or in the context of localized crises and disasters (e.g., Sandoval & Lanthier, forthcoming). Digital inclusion, on the other hand, is seen as a function beyond just physical access (Burnett et al., 2008). The term 'digital inclusion' has been used as an antonym to the 'digital divide' (e.g., Jones, 2016)--that is, the gap between those who have access to the digital world (i.e., Internet and the World Wide Web) and those who do not. However, what does access to the digital world entail?

Digital inclusion indices, such as the Australian Digital Inclusion Index (https://www.digitalinclusionindex.org.au/), define digital inclusion as "It is based on the premise that access to and use of digital technology is now vital for inclusive communication and information about health and wellbeing, education, services, and finance (Thomas et al., 2016). Bradbook and Fisher (2004) describe digital inclusion in terms of 5Cs - connectivity, capability, content, confidence and continuity. Digital inclusion is also seen to exist at three levels: physical, intellectual, and social access (Thompson, 2016). Though there are people who have the requisite infrastructure to stay connected, they lack the intellectual capacity to adapt and use digital technologies (Paul & Thompson, 2018). The pandemic is transformative and has impacted work and personal lives of all sections of the society. During this time digital technologies have played a significant role. More needs to be understood in terms of the transitive phenomena relating the change in digital use brought about by the pandemic. An insight into individuals' daily lives will enable an understanding of the factors, induced by the pandemic, under which they learn, adopt, and unlearn digital devices in order to use them in innovative ways.

Theoretical Framework (More needs to be entered)

The present study was conducted in the DI framework developed by Thompson and Paul (2020).
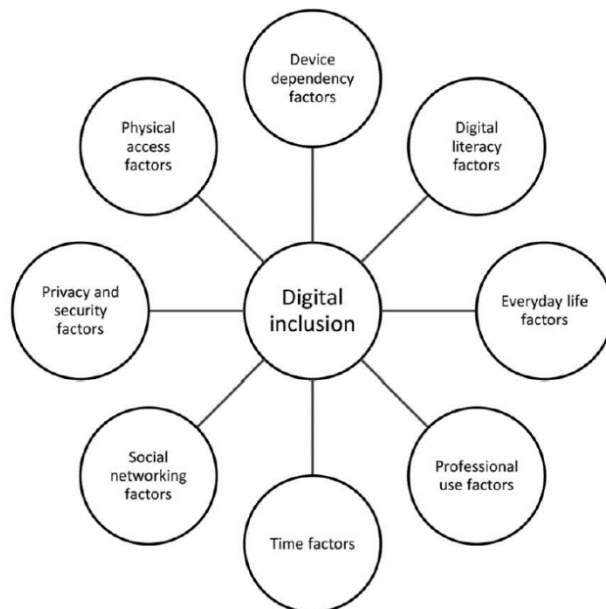
Figure 1: Eight factors for Digital Inclusion (Thompson & Paul, 2020)

Method

Survey instrument was developed based on the DI framework by Thompson and Paul (2016, 2020). The questions were formulated using eight factors (device dependency, physical access, digital literacy, everyday life, professional use, time, social networking, privacy and security) for digital inclusion were used in the study. A few questions were used from a digital literacy survey instrument developed by Deursen, Helsper and Eunon (2014). In addition, we used the results of three extensive pilot interviews conducted in the summer of 2020 for survey development, especially for multiple options responses. With respondents' consent, they were asked screening questions and those who consented to participate in the study and were working or had worked from home during the pandemic were invited to complete the questionnaire. The questions asked for basic demographics (gender, age group, location in India, marital status and family size, level of education, occupation), ownership and use of digital devices

individually and with family during the pandemic, social media usage during the pandemic, change in digital skills from before the pandemic, work related digital use during the pandemic, impact of pandemic on lives and digital use, challenges faced in digital use during the pandemic and privacy/security issues faced in digital use during the pandemic. We aimed to define each factor based on Thompson and Paul (2016, 2020) studies and operationalize.

A link to a survey questionnaire in Qualtrics was distributed to Indian listservs between April - June 2021. A total of 617 responses were collected out of which 304 were valid responses. Out of the respondents 21% were females and 79% males, 71% were graduates or post graduates; and 28% completed their bachelors or undergraduate degree, 77% were married, 51% of the responses were from respondents who were in the age group of 35-44 years and 31% were from between 25-34 years, 15% were between 45-54 years and rest 1% each for age groups between 18-24, 55-64 and 65-74 respectively.

For the analysis rows that had more than 80% missing values in columns (i.e. 80% questions not answered) were dropped. In addition to that, multiple choice questions were split into several columns to better handle the data analysis.

Findings

Eighty six percent of respondents reported using the internet for more than 10 years which suggests high familiarity and confidence with internet usage. Looking at the ownership of electronic devices, 33% of the respondents reported to have personal computer that was used for themselves (17%) or shared with families (16%). However, for laptop users, 82% of them used the laptop for their own needs and 16% shared it with family members, indicating that laptops are mainly used as personal devices during the pandemic. It is possible that this reflects workplace provision of devices for working-from-home situations. Fifteen percent of the respondents note that they have a personal-use tablet or iPad that only they use, and 36% share with family members, reflecting that tablets are more often shared with family members than laptops are, suggesting that perhaps they are used for entertainment more than work purposes.

Respondents reported using feature phones – phones with at least one additional feature such as texting (42%) and smartphones (78%). Similar to laptop use, 17% of respondents note they share their feature phone with other family members, and 18% of smartphone users indicated the same. These figures indicate that mobile phones as personal devices in most cases. Additionally, 48% of single women reported that they share their digital device with others compared to 11% men in the same category. Respondents also indicated owning e-readers, with 23% of the respondents using it only for self-use and 15% share with family. 79% of the respondents indicated owning smart TV.

About 36% and 30% of the total respondents relied on WiFi and Mobile Data respectively to connect to the internet and a comparatively lower percent used hotspot and broadband. The majority of them reported that they connect from home, work, and elsewhere through mobile data or through free WiFi. 89% of the respondents that reported using a smartphone and 83% of those using a laptop noted that they use these devices "almost all the time". Around 68% of respondents reported using WhatsApp "always" and 28% and 34% reported using Facebook and YouTube respectively "a few times a day" during the pandemic. It is possible that this use is similar to what it was prior to the pandemic, but when asked whether digital technology helped them work efficiently during the pandemic, 24% strongly agreed and 30% somewhat agreed.

The preliminary results of the survey analysis indicates that there has been quite an impact in the respondents' digital use during the pandemic which transformed the way they used the digital device before the pandemic. This could be owing to multiple pressures of the pandemic including change in workplace setting or in the hours spent working. There was a considerable increase in working hours from prior to the pandemic when 48% reported working for 9 hours or more which changed to 83% in the same slot during the pandemic. There are other pressures that may be as a result of the pandemic such as balancing career roles women hold when working from home, as has been reported in the news media (Chaudhuri, 2021), or other issues reported by the World Health Organization (2020) that might have arisen because of stress related to health, economy, lack of space, etc. Our findings show that respondents struggled to balance between work and home responsibilities with 56% married women and 37% married men strongly agreeing to this. 33% of married women also strongly agreed compared

to 22% of married men that they are solely responsible for their child/children's education using the online mode. Interestingly, a near equal number of married women (66%) and men (64%) reported that they are responsible for taking care of their families, although the data indicate that married women are feeling more stress compared to married men during the pandemic. Further analysis will investigate the impact of such an additional stress during the pandemic on use of digital devices. Further 42% of married women compared to 27% of married men reported that they do not have time for themselves but must continue working hard, reinforcing the high levels of stress that they are undergoing. Forty four percent of married women reported that they spend more time with family during the pandemic compared to 34% married men. Thirty one percent of married women compared to 21% of married men noted that their life has changed during the pandemic, while among the singles, women (33%) and men (35%) respectively noted that they feel their life has changed during the pandemic.

Further, the pandemic has affected the respondents' digital skills positively as an equal proportion (47%) reported how they know better to connect to the internet and to use mobile data. Thirty five percent indicated how they can troubleshoot better than before, information seeking skills have also improved for 44% of the respondents. Forty-two percent of the respondents also indicated how they have better knowledge of with whom to share content than before. There were indications of respondents' increased confidence in writing and commenting online (35% strongly agree, 21% somewhat agree). Another 35% agreed and 27% somewhat agreed that they have learnt to adjust privacy settings in apps and tools better than before the pandemic. Forty percent of the respondents strongly agreed and 19% somewhat agreed that they feel comfortable with whom to follow online now than before the pandemic.

The respondents reported enhanced use of digital devices for purposes other than work during the pandemic. Some of the daily use of digital device include searching for information (252), communicate with family (226), listening to news/podcast (226), visit social media (187), get covid information (177), entertainment (175). Learning new skills (126), online banking (108), help their children (94), help others in the family (89), online shopping (74) and look up recipes (48).

Some other impact of the pandemic included increased use of social media – women (42%) compared to men (23%) strongly agreed to this. However, there was a strong disagreement of addiction to games online or offline during the pandemic (35%). Forty five percent of the respondents somewhat agreed that they have to help others to use digital technology. Respondents also indicated strongly agreeing (24%) and somewhat agreeing (35%) that they had to learn lots of new skills and digital applications during the pandemic days. Thirty percent of the users somewhat agreed and 21% strongly agreed that they spent too much time communicating or chatting with others during the pandemic. Sixteen percent of the respondents strongly agreed and 31% somewhat agreed that they developed new hobbies during the pandemic due to digital technologies. Fifteen percent strongly agreed and 29% somewhat agreed that they are balancing their online and offline time well. Of all the respondents 22% strongly agree and 32% somewhat agree that they have good self-regulation with usage of digital technology. Digital technology is offering flexibility to the respondents to manage work and home duties, 27% of the respondents strongly agreed and 41% somewhat agreed to this. Though there was a universal agreement that how digital device has helped the respondents during the pandemic, 67% of the married women strongly agreed to this compared to 50% married male.

Regarding the challenges faced during the pandemic the respondents strongly disagreed that they faced issues sharing digital devices to fulfill work and family responsibilities (72 strongly disagreed and 82 somewhat disagreed), learning technology to fulfill their job duties (68 somewhat disagreed and 59 strongly disagreed) and that they faced issues when finding ways to pay for online connection (100 strongly disagreed and 93 disagreed). There were also disagreements regarding challenges faced in connecting various digital devices (81 strongly disagreed and 86 somewhat disagreed). In other words, they were comfortable to connect various digital devices. Respondents agreed that they were unable to focus on work when working from home (94 somewhat agreed and 67 strongly agreed). About 53 users strongly agreed that they faced issues in making sure that their children attend online classes. The respondents were somewhat divided over facing challenge in remembering password and login details (76 somewhat agreed, 75 strongly disagreed and 66 somewhat disagreed). Respondents were also divided over reporting the challenges faced on protecting their devices from viruses and cyber-attacks

when 77 somewhat disagreed and 69 somewhat agreed to it being a challenge. Respondents mostly agreed that they face challenges finding their own workspace at home (71 strongly agreed and 75 somewhat agreed) but many strongly disagreed about it (61). Similarly, some respondents (66) somewhat disagreed that protecting personal privacy was an issue for them whereas 60 strongly agreed and 58 somewhat agreed that this was a challenge. Even keeping up with knowledge to use digital devices was not seen as a challenge by many (66 strongly disagreed, 68 somewhat disagreed) but 61 respondents somewhat agreed it to be a challenge. Some respondents disagreed that they receive offensive messages and comments (74 somewhat disagreed and 57 strongly disagreed) but there were 54 respondents who strongly agreed that this was a challenge. Finally not many respondents saw privacy and security issues as a threat rather saw spam, fake calls and messages as a real issue.

Conclusion

The study is in its analysis stage and the findings presented are preliminary. However the initial findings indicate the need to look deeper into specific transformation in digital device use during the pandemic that are different from prior to the pandemic. Technology adoption and digital inclusion literature do not talk about changes in technology use due to stress related to extraordinary events such as the pandemic. Our study is geared towards understanding this area and can help prepare organizations to cater to the new normal including government agencies and businesses equally.

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