An Empirical Research into Technology usage By Older Adults and Barriers Faced in usage of Technology in Kerala

Anjana Krishnan, Murale Venugopalan , Shruthi Menon

Abstract*: Digital technology has transformed our everyday life to a great extent in the past couple of decades and has reached its zenith. In our attempt to digitalize everything, they have ignored or forgotten to tap a large consumer base, mainly comprising of elderly users. According to a hep age, India report India will be burgeoning with senior citizens by 2050 as its elderly population will be the same in number to its population below 18 years of age. In short, the intrusion of digital technology has created a paradigm shift in the way people interact, access information, and make purchases rather than depending heavily on human interaction & personalized monitoring. It will be gruesome for the elderly generation to adopt these changed as they are not accustomed to this newfound applications & methods. As more business and services get transformed into an online platform, some unique barriers and challenges may place many of the elderly Indians in a disadvantaged position. A study among senior citizens will help the policymakers of our society, designing inclusive digital interventions that can accommodate elderly citizens' requirements. It further makes business sense to marketers to design and deliver products that can cater to their needs. Our study is an attempt to understand the usage and application of smart and digital technologies and barriers faced by them in using them. Senior citizens filled the questionnaire in the age band of 65to 75 from different geographical areas dispersed in Kerala. Our study reveals that older adults have unique barriers to adoption, such as physical, emotional, and lack of comfort and confidence while using these devices. The most exciting fact from our study is that many of them hold a positive outlook about technology invading into their life

***Keywords*: Barriers in technology adoption, gerontology; Indian Citizen, Physical, emotional Barrier**

I. INTRODUCTION

Digital technology has transformed our everyday life to a great extent in the past couple of decades and has reached its zenith. There is no doubt that India is blessed with a considerable lot of tech-savvy millennials who can yield demographic dividends for our nation for the next 37 years in the global arena. The marketers and the marketing world also sensed the opportunity & actively got engaged in launching promotional campaigns to this target market with a rich portfolio of high end dazzling digital devices tools and applications. However, in this process, they have ignored or forgotten to tap a large consumer base, mainly comprising of elderly users. According to a hep age, India report India will be burgeoning with senior citizens by 2050 as its elderly population will be more or less the same in number to its population below 18 years of age. Henceforth this segment presents an unexpected opportunity that exists in this group as it consists of more than 100 million senior citizens with a literacy well over 40 percent. Further, the diffusion of smart technology is on showing very high growth signals, even in this cohort.

In short, the intrusion of digital technology has created a paradigm shift in the way people interact, access information, and make purchases rather than depending heavily on human interaction & personalized monitoring. Technology has transformed the way most business is being carried out in today's smart world, offering innovative value-added service and better customer experience. The newer generation quickly adopts these technological innovations as they had grown along with it. Still, it is gruesome for an elderly lot as they are not accustomed to this newfound applications & methods. The older generation fails in recognizing value on new technologies. They tend to exhibit strong resistance to adopting them. Many of the elderly Indians will be in a disadvantageous position as more and more business migrates into the online platform. Lacunae to put in the effort to shorten this gap between the elderly generation and existing technology today will push us into a losing side as they will not be able to cope up with novel & better inventions of the future.

Prior Studies in the west have proved that technology could improve elderly citizens' lives in multiple ways. In short digital empowerment of the elderly cohort is a must-do a thing in our society today, and a study in these lines will help us to gain insights into the physical, emotional & technological barriers faced by them. Any lacunae in this will push our elderly citizen cohort to a world where they feel isolated and may affect their mental wellbeing. A study among senior citizens will help to the policymakers of our society designing inclusive digital interventions that can accommodate elderly citizens requirements, and it further makes business sense to marketers to design and deliver products that can cater their needs.

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II. THEORATICAL BACKGROUND

The paradigm shift that occurred in the technological domain, along with a growing number of the aging population, has resulted in a unique scenario where technology-based applications help senior citizens in their routine tasks. The various activities can vary from financial planning to social networking with friends and relatives. Novel applications also have the potential to keep them healthy and independent for a more extended period (Geraedts et al., 2014)[1]. The older cohort takes more time to get adjusted to newer technology than their younger compatriots. (Czaja et al., 2006)[2] The older generation is quite enterprising in learning new things when they perceive a utility/value or when it helps in improving their quality of life (Heinz et al., 2013)[3]. In the effort to make technology friendlier to the older cohort, it is quintessential to understand their perceived advantages and disadvantages of technology in terms of utility. Hence this study aims to investigate the familiarity of older groups with technology and the barriers experienced by them while using these advanced gadgets and processes.

Smart devices such as tablet computers come with features like touch screen are immensely popular in recent times. The percentage of people in the age group 65-75 who use mobile devices has considerably increased from 5 percent in 2012 to 17 percent in 2014 globally in a study conducted by social scientists from the United Kingdom. The adoption of technology helps in improving the quality of life and fosters confidence in them to lead an independent entity (Orpwood et al., 2010). A hands-on orientation on usage devices like tablets helps in reducing the technological gap experienced by older generations. (Bailey and Ngwenyama, 2010). The tablets can provide the functionality of a computer but are more flexible and portable. According to a study carried out by Ofcom (2014). Tablet helps in propagating internet usage among adults as they have a bigger screen. An effort aimed at understanding barriers in using technology, in general, helps to have insights and aids in designing suitable intervention while they are introduced to newer technology. Such studies further bolster the view that the tablet promotes technology among senior citizens and inspires them to access the Internet. Exposure to the digital world, especially the social one, helps older adults in their daily activities as well as from a quarantined lifestyle (Cornwell and Waite, 2009). The Internet may help in socially connecting individuals and help them to do their daily chores such as shopping as well as banking (Czaja et al., 2006).

Prior studies have investigated the perception and attitude of senior citizens towards acceptance of novel technologies'. A study conducted by(Heinz et al. (2013) adopting focus group discussion (FGD) methods by which 3o older adults shared their views. The debate was on the boon and bane of technology in their lives. The study reveals that participants were willing to brace the newer technologies when their usefulness transcended the sentiments of incompetence, though some strong feelings upon society's over-reliance were evident. Mitzner et al. (2010) carried out 18 focus group discussions by involving 113 community-dwelling older adults (mean age 73 years). The respondents have informed of engaging technology for multiple purposes such as work, home, and healthcare. The valuable part of the technology adoption was highlighted in the discussion. The advantages mentioned include portability and communication, whereas the disadvantageous elements are unsolicited communication and multiplicity of choices.

The Centre for Research and Education on Aging and Technology Enhancement (CREATE) has carried out studies on the usage of technology among community-dwelling older adults. The findings that older adults (60-91 years of age) were less likely to adopt technology, especially concerning the usage of computers and the Internet. Adoption of technology was viewed as something which requires a higher level of cognitive ability, computer self-efficacy, and computer anxiety. It is assumed that people having higher fluid intelligence and crystallized intelligence tend to engage in the use of technology. A high degree of computer anxiety will result in lower usage of technology (Czaja et al., 2006). Prior research reveals that the older cohort (60-75 years) perceive lesser comfort, lower efficacy, and little or no control over computers in comparison with the younger lot. It was observed that exposure to computers has resulted in the formation of more positive attitudes (Czaja and Sharit, 1998). Low self-efficacy and negative perception of one's cognitive ability have a positive association with reduced ability to use technology Alvseike and Bernick (2012). Current literature suggests that though older adults are willing to use newer technologies, there exist age-related deficiencies (e.g., cognitive decline) as well as interface usability (technical) barriers, which restricts them from frequent use of the newer technology. Innovation such as tablets, reduced stress, and anxiety among older people (Umemuro,2004; Schneider et al. ,2008; Balagtas-Fernandez et al., 2009).

There exists scope for study as old adults are believed to be technically less savvy than their younger counterparts. (Grimes et al. 2010). This could be attributed to several factors such as lower technical skill as seniors, retirement from regular vocation, or social exclusion, or reduced peer support. Such factors can have a significant influence on the security and wellbeing of older cohort and expose them to risks of financial loss (e.g., through scams) (Garg 2011; CFAC 2014). Hence it is quite essential to carry out a study on these lines as our findings will add value to preexisting knowledge

III. METHODOLOGY

Our study is an attempt to understand the usage and application of smart and digital technologies and barriers faced by them in using them.

We have set our research in the context of Kerala as a representative population of the country. Kerala is a state with a high density of population but known for its high literacy rate, better medical care facilities, and one of the lowest infant mortality rates and many other highly rated social indexes. However, Kerala's population is aging faster than the rest of the country.

According to a census survey conducted in 2011, 13 percent of Kerala's people have already crossed 60 years mark. A study carried out by Centre for Development studies reveals that the aged population of the state grows at a constant rate of 2.3 percent. Various reports on aging indicate that Keralites have the highest life expectancy among all Indians.

In Indian culture, social security for the elderly was provided by their children and relatives. In recent years, Kerala witness a transformation in its culture where old aged people are being sent to elderly homes. This change in the social scenario will beef up the pressure to develop digital systems that will support the elderly cohort. Data were obtained using a standard questionnaire developed by PE Research Centre USA. The questionnaire consists of the item that covers information on access to the Internet, their information literacy levels, levels of application of knowledge, digital opportunity as well as digital exclusion. The questionnaire was filled by senior citizens in the age band of 60 75 from different geographical areas dispersed in Kerala. Our sample size is 64. We have adopted descriptive statistics to analyze the factors.

Our study reveals that older adults have unique barriers to adoption, such as physical, emotional, and lack of comfort and confidence while using these devices. But new fact is that many of them hold a positive outlook about technology invading into their life.

IV. ANALYSIS

We are presenting a commentary on three-level. The first one based on demography and access to the Internet. The second level of study deals with the type of usage, level of usage, and third aspect of our study deal with socio-psychological issues.

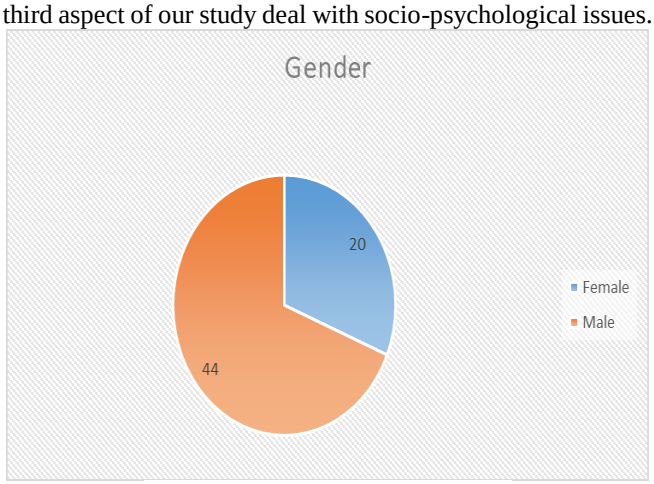


Fig-1 Gender of the respondents

31percent(N=20) are females and 69percent(N=44) are male respondents for the study

Table-1; Respondents Gender & Education Level of the Respondent

Gender	Education			Total
	Graduate	Higher secondary S or less	Post-Graduate	
Female	5	13	2	20
Male	25	11	8	44
Total(N)	30	24	10	64

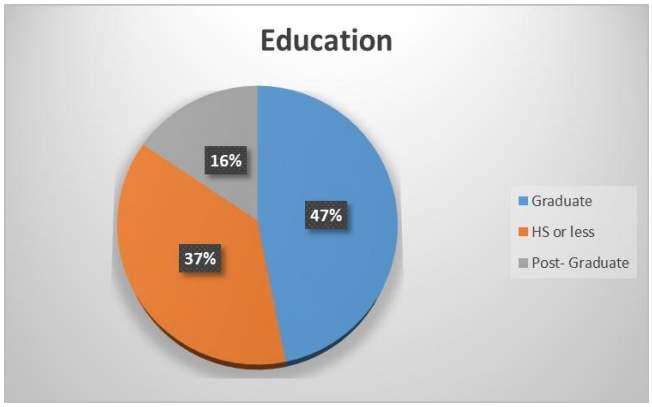


Fig.2 Education Level of the Respondents

Forty-seven percent of the respondents are Graduates, and 16 percent are Postgraduates, The levels of literacy among males are proportionately higher 33 are college graduated out of 44 (i.e., .e 75percent) participated in a survey whereas only 7 out of 20 among Female sonly have received collegiate education (35 percent). However, all of the respondents had some kind of formal education.

Table-3 Household Income of the Respondents

Income Level(INR)	Number of respondents	Percentage to total
Less than Rs.30,000	21	33
Rs.30,000-50,000	26	41
Rs.50,000- 70,000	10	16
AboveRs.70,000	7	10

The respondents in our survey indicate 41 percent of our respondents belong to households having income between 30000 INR and 50000 INR

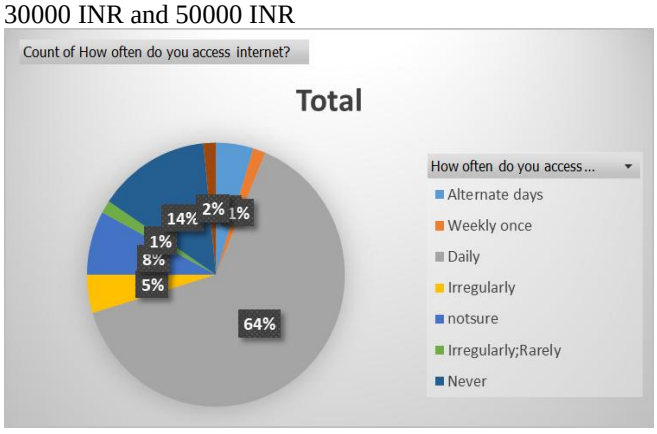


Fig-3: Access to the Internet

Our survey reveals 64 percent of users access the Internet daily (N=41), and 14 percent (N=9) had never accessed the Internet. 8percent of the respondents were not sure of their frequency of use. 31 percent use the Internet for 1 – 2 hours, and 5percent used the Internet for more than 5 hours.30percent of the respondent population required only little assistance in using technical devices. 70percent have an account on social media platforms, which made them feel connected to the world.25 percentage of our respondents have never used social media, and 31 percent use them for less than an hour a day. Only five percent of our respondents are active social media users and spend around 2 to 5 hours of their time in social media .21 percent of respondents can use e-mail facilities satisfactorily whereas 17 percent of respondents are well versed in e-mail correspondence.

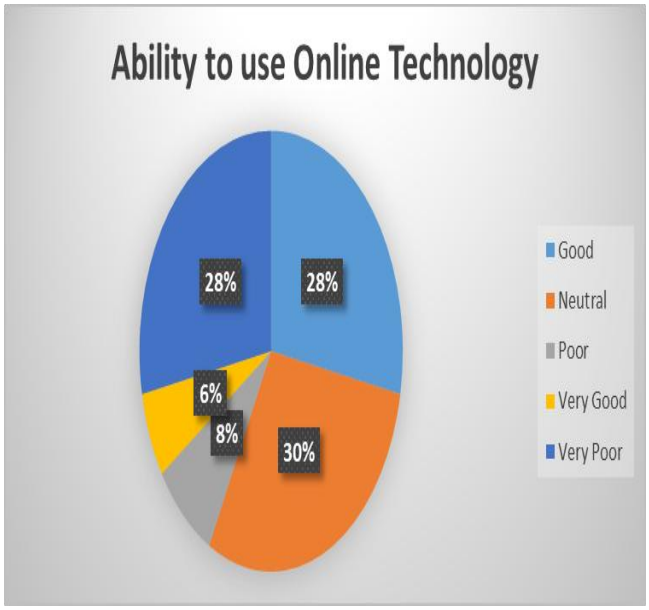


Fig-4: Ability to make use of online services

The older cohort finds it difficult to use online technology 28 % rate their ability to make use of the online facility as very poor and another 8 percent rate it as weak. Thirty percent of respondents rate their knowledge as neutral. However, 20 percent of respondents have required skills to use word, excel and PowerPoint.47 percent of respondents are illiterate on these modern office tools

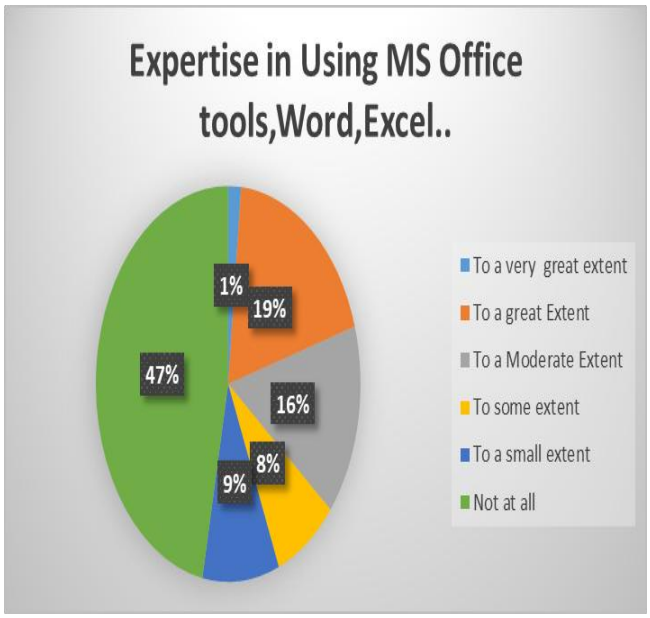


Fig- 5: Expertise in using MS Office Tools, Word, Excel

The survey Indicates that Search engines like Google and yahoo are used to a great extent by 20 percent of respondents. They do search for information required for their needs. However, 22 % of respondents have never been exposed to this search engine.

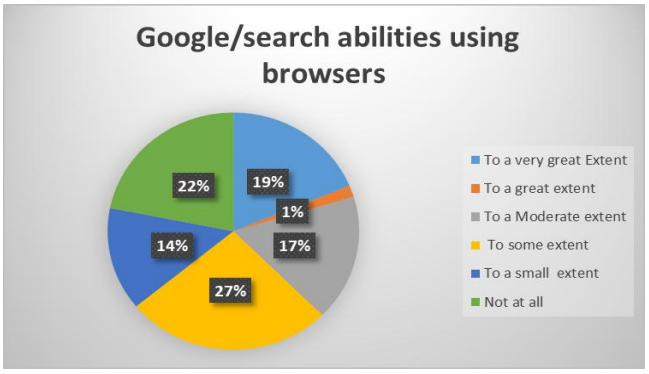
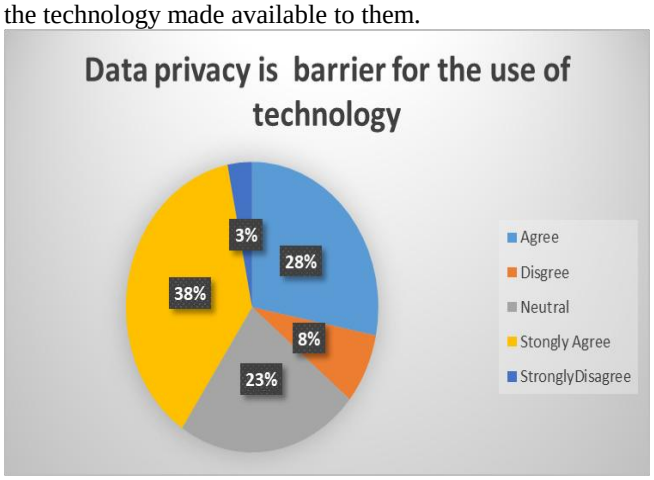


Fig-6 Googling ability of the respondents

Twenty-five percent of our respondents experience lower self-efficacy while they engage in the use of technology or technological devices. Sixty percent of respondents express their opinion that there exists a lack of instructions and guidance concerning the usage of technology. Thirty-one percent perceives that instruction manuals are quite complicated for their cognitive ability. Thirty-eight percent of the respondent feels that data privacy is a big concern for them in adapting to technology. Thirty-one percentage technological advancements do affect their degree of social interaction. Thirty-two percent of respondents are highly comfortable in adopting the technology extended to them. Twenty-seven percent are moderately comfortable in utilizing the technology made available to them.



. Fig -7 Data Privacy as a barrier

V. DISCUSSION

In a nutshell, our study enabled us to have an understanding of the advantages and disadvantages of integrating technology into the elderly citizen cohort. The participants have expressed their views on perceived and actual barriers while technology is applied in solving their day to day issues. The respondents have highlighted their apprehension and uneasiness in deploying the technology. These can be mainly fit into four broad categories, such as a) inadequate knowledge and b) lower degree of confidence. The other leading barriers are c) Breach of privacy and d) absence of adequate instruction on the application of technology. The respondents have also raised concerns about sophisticated technology that does not fit into their cognitive domain. The various respondents were anxious about the decreasing amount of social interaction and

social skills in their network and community.

The findings of our study reinforce the conclusion from prior studies, which inquiries into the perception of elderly citizens on novel technologies (Mitzner et al., 2010). Previous works concentrated on a variety of techniques, whereas we focused only on a specific technology (computers and the Internet). Hence our investigation had a higher degree of an interactive element embedded in it.

Our study reveals that a reasonable number among respondents have the habit of browsing the net and had a social network account. However, they were concerned about complexities involved in adopting technology and voiced the need for more uncomplicated instructions. Data privacy and security was highlighted as a significant factor that alienated them from using online technology. The findings were consistent with the current literature. The usability concerns and frustration upon the usage of new technologies were witnessed in our studies was earlier reported by Heinz et al. (2013). Our study reveals that lack of confidence and lower self-esteem act as a barrier to technology, Czaja et al. (2006)). Our study further helped in endorsing the prior work by Rogers (2010) on the theory of diffusion of innovation. The approach propounds that older adults defer the adoption of novel technologies until they see tangible benefits from them.

The respondents comprise of young and old (i.e., 65-75) lot. The age range was constricted to moderate the cohort effect. All of the participants were Keralite Indians, and hence our sample lacks diversity. Still, our results were in line with prior studies conducted by Heinz et al. (2013) and Eleftheria Vaportzis et al. (2017). This assures that the results of our research are replicable and foolproof in its design, and the findings can be shared across borders. However, certain demographic variables like income and education may be higher in our respondent's group in comparison to respondent groups in similar studies. Our respondent group is much small in size; hence further studies have to be conducted by including a larger lot. Such an effort will help in validating our findings in the context of a larger population. However, it should be noted that only a section of our respondents was comfortable in using technology. This indicates that the results should be interpreted with a lot of caution. It is worthwhile to note that around 20 percent of respondents reported that they never used technology-based applications and were unlikely to use a technology-based form in the future. This indicates that the respondent group also consists of a heterogeneous mix of people with diverse attitudes toward technology.

VI. CONCLUSION

To conclude, the results of the study indicate that a significant lot of respondents were comfortable using newer technology. However, the adoption and usage of technology by an elderly group is not hassled free, and the respondents had listed out the following barriers. This includes complex instruction manuals, a lack of communication, and privacy concerns. It points to the absence of support, guidance, and scarcity of security mechanisms prevailing in our digital literacy mission. We would like to suggest that there should be more efforts to understand the perception of the elderly cohort on perception about technology. Studies aimed at investigating older citizens attitudes towards technology will aid in improving their wellbeing.

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