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A Glimpse of Grey Digital Divide: Challenges and Barriers for Rural Elderly

[1]Dr. P. Bharathi, [2]Dr. T. Vijayakumar

[1]Associate Professor of Economics , V.H.N.Senthikumara Nadar College, Virudhunagar, Tamilnadu, India
[2]Associate Professor of Economics , V.H.N.Senthikumara Nadar College, Virudhunagar, Tamilnadu, India

Abstract: The digital space is gaining momentum in the country, and the use of digital payments is constantly increasing. In an age of ever-changing technology, the elderly are often left behind because they cannot keep up with the rapid pace of development. In our country, most of the elderly do not know how to use computers because they have never had computer skills. This study explores the perception and barriers of elders to using digital technology. Data were collected on the background characteristics of the elders; barriers faced in using digital technology, and elders' perception of using digital technology. These data were supplemented by the survey method and structured Questionnaire. The non-probability convenience sampling technique was adopted to gather the primary responses from elders. Statistical tools such as percentage analysis, descriptive statistics, Mean Based Ranking, Friedman test, Kruskal – Wallis H test, One-way ANOVA, and Tukey's HSD test have been applied to draw meaningful answers for the research objectives. The result of the analysis highlights that Participants emphasized their concern and fear of using tablets and technology in general due to a lack of knowledge or low confidence, as well as the perceived dangers of technological equipment. Participants ranked Cost, Health-related Issues, and Lack of Information as the first three important barriers in using digital technologies. There is a borderline difference in the opinion of participants regarding the barriers faced in using digital technology

Keywords: Elderly, Digital Technology, Barriers

INTRODUCTION

The 21st century is characterized by increasing digitalization. Over the past 20 years, technology has penetrated every aspect of modern society and the use of digital technology has become an integral part of people's daily lives. As a result of constant technological developments, many services, and resources are now only accessible through digital means. Technology now supports or streamlines many daily activities. Technology has driven many social, medical and technical trends that have become an integral part of people's daily lives. As we live longer, our world becomes increasingly *digital*.

Elderly people are embracing modern technology like never before. In fact, according to a recent study, 77% of people over 65 use the Internet at home by 2020. According to the same results, recent Internet use by women aged 75 and over has more than doubled double since 2011. Recent Internet use among the 65-74 age groups has increased from 52% in 2011 to 83% in 2019, meaning older adults are closing the generation gap in usage of the Internet and technology. Older adults don't just use their computers, either. They are also branching out into mobile phones and tablets. According to Ofcom's 2018 report, more than a quarter (28%) of people over 75 are currently using tablets, up 15% from 2015. The 2020 report shows that 21% of people over the age of 75 have a social network account. The majority of older adults prefer Facebook as their social media platform of choice.

While these reports are promising, many seniors still feel threatened by technology. We believe there is still a lot of work to be done to help increase these numbers even further. However, there are still barriers to consider and address for seniors to use technology. In our country, most of the elderly do not know how to use computers because they have never had computer skills. "Computer is still a foreign thing for most of them and they are trying to get away from computer technology.

While the government's National Digital Literacy Mission (NDLM) aims to equip at least one person in every household with essential digital skills by 2020, the older population doesn't seem to be in the plan. With

the computerization or digitization of most basic services and facilities, digital literacy has become an urgent need, especially for the vulnerable elderly population. . There are many uses and benefits of digital literacy, but digitally illiterate people, especially older people (55+), find it very difficult to handle/use smartphones.

SIGNIFICANCE OF THE STUDY

Technology has come a long way in the past few decades. The Internet has opened many doors for people of all ages, making it easier for people to shop, work, and study. Most young people find it easy to use modern technology because they have grown up using it. On the other hand, older generations are often less inclined to use modern technology. It may be difficult for some of us to see the benefits of technology, especially if we have never used the internet or a smartphone before. Unfortunately, half of the world's population still does not have access to the Internet. Although many older adults regularly use Digital technologies, many still do not have access to them and the pace of digital innovation has not taken into account their needs.

STATEMENT OF THE PROBLEM

The digital space is gaining momentum in the country, and the use of digital payments is constantly increasing. In an age of ever-changing technology, the elderly are often left behind because they cannot keep up with the rapid pace of development. In 2015, the Indian government announced the much-needed campaign - "Digital India", which aims to connect India digitally and provide digital access to the less fortunate. However, there is no dedicated program for digital literacy programs for seniors. In addition, elderly people living in rural communities face a lack of telecommunications infrastructure, which increases their difficulty in accessing digitalization. In rural India, the need of the elderly for digital literacy is directly related to their means of livelihood, where they can learn the latest technologies in farming methods, Weather conditions, global practices, latest government news and programs that benefit them, how to apply to the government loans and the use of the online marketplace space to sell their products.

RESEARCH OBJECTIVES

The aim of this paper is

- To analyse the Barriers in using digital technology among the participants
- To Assess the Respondents' Perception of the digital technology

HYPOTHESIS OF THE STUDY

The following Null Hypothesis has been framed to test the significance

1. There is no significant difference within the mean rank of respondents for the barriers to using digital technology.
2. There is no significant difference between different age groups regarding the barriers to using digital technology.
3. There is no statistically significant difference between different occupational status and their perception of digital technologies.

METHODOLOGY

This study was empirical and exploratory in nature. The researchers have adopted a survey method and a structured questionnaire was issued to elders in Virudhunagar. A sample of fifty-six was collected. The non-probability convenience sampling technique was adopted to gather the primary responses from elders.

ANALYSIS AND INTERPRETATION

The primary data collected were subjected to analysis through SPSS Version 23.0. Thefollowing tools were used for the study. Statistical tools such as percentage analysis, descriptive statistics, mean-based ranking, Friedman test, Kruskal – Wallis H test, One-way ANOVA, and Tukey's HSD test have been applied to draw meaningful answers for the research objectives.

Table No.1 Background Profile of Respondents

Background Profile		**No.of Respondents**	**In Percentage**
Gender	Male	39	69.6
	Female	17	30.4
Age	Youngest Old (65 to 75)	27	48.2
	Middle Old (75 to 85)	24	42.8
	Oldest Old (above 85)	05	09.0
Occupational Status	Management and Administration	04	7.1
	Professionals	12	21.4
	Retired from services	18	32.2
	Agricultural Skilled Work	22	39.2
Family	Joint	32	57.1
	Nuclear	24	42.9
Usage Learning	Self- Learning	10	17.9
	Peer Group	13	23.2
	Family and Friends	22	39.3
	Google	11	19.6

Source: Primary Data

Table 1 show that the majority of respondents were men (69.6%), followed by women (30.4%). The majority of surveyed elders are the youngest old (48.2%), followed by middle old (42.8%). The majority of respondents' occupations were skilled agricultural workers (39.2%), followed by service pensioners (39.2%). The majority of respondents belonged to the common family (57.1%), followed by nuclear (42.9%). The majority of respondents learned about digital technology use from family and friends (39.3%), followed by a significant portion of respondents learned about technology from a peer group (23.2%) and Google (19.6%) and by self- learning (17.9%).

Table No.2 Descriptive Statistics for Barriers in using digital technology

Barriers in using digital technologies	**Mean**	**Std. Deviation**	**Rank**
Lack of Instruction	3.43	1.234	3
Lack of Knowledge and Confidence	3.09	1.311	9
Health related Barriers	3.46	1.220	2
Cost	3.73	1.168	1
Impatience	3.43	1.234	3
Fear of Use	3.05	1.354	10
Lack of familiarity with technical terminology	3.21	1.331	6
Physical Limitations	3.30	1.220	4
Visual impairment	3.18	1.309	7
Lack of understanding in Modern Technology	2.86	1.341	12
Fear of being Cheated	3.29	1.358	5
Lack of Interest	3.11	1.216	8
Manual Dexterity	2.91	1.379	11

Source: Primary data

The above table presents the descriptive statistics for the factors with reference to Barriers faced by the respondents in using digital technologies. The cost factor ranked number one with the highest mean and standard deviation (Mean = 3.73; SD = 1.168). This is followed by health-related issues (Mean=3.46; SD=1.220, Rank 2), Lack of Information (Mean =3.43; SD =1.234 Rank 3) and Impatience (Mean =3.43; SD =1.234 Rank 3), Physical Limitations (Mean = 3.30; SD=1.220, Rank 4), Fear of being Cheated (Mean=3.29; SD=1.358, Rank 5), Lack of familiarity with technical terminology (Mean=3.21; SD=1.331, Rank 6), Visual impairment(Mean =3.18; SD =1.309, Rank 7), Lack of Interest (Mean=3.1'S D=1.216, Rank 8), Lack of Knowledge and Confidence (Mean =3.09; SD =1.311, Rank 9), Fear of Use (Mean=3.05; SD=1.354, Rank 10), Manual Dexterity(Mean=2.91; SD=1.379, Rank 11), Lack of understanding in Modern Technology(Mean=2.86; SD=1.341, Rank 12). Overall the table concludes that participants ranked Cost, Health related Issues, Lack of Information as first three important barriers in using digital technologies.

Table No.3 Friedman Test for Barriers in Using Digital Technologies

Barriers in using digital technologies	Mean Rank
Lack of Instruction	7.60
Lack of Knowledge and Confidence	6.64
Health related Barriers	7.54
Cost	8.52
Impatience	7.50
Fear of Use	6.53
Lack of familiarity with technical terminology	6.89
Physical Limitations	7.17
Visual impairment	6.78
Lack of understanding in modern Technology	5.93
Fear of being Cheated	7.27
Lack of Interest	6.49
Manual Dexterity	6.14

P- Value = 0.023

Friedman test was applied to identify the critical barriers faced by participants in using digital technology. It is observed that cost ranked high by the survey participants with a mean ranking of 8.52. However, they ranked last for the factor 'Lack of Understanding in Modern Technology' with a mean rank of 5.93. While the difference between these factors is significant at p = 0.023. Hence it can be concluded that there is a significant difference within the mean rank factors.

ONE–WAY ANOVA ON RANKS

The Kruskal – Wallis H test (sometimes also called the "one–way ANOVA on ranks") is a rank–based nonparametric test that can be used to determine if there are significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable. It is considered the nonparametric alternative to the one-way ANOVA, and an extension of the Mann – Whitney U test to allow the comparison of more than two independent groups.

Table No.4 Kruskal Wallis test for Barriers in using digital Technology

Barriers in using digital technology	Age	N	Mean Rank	P – value
Lack of Instruction	Youngest	27	27.59	.768
	Middle	24	28.54	
	Oldest	5	33.20	
	Total	56		

Lack of knowledge and Confidence	Youngest	27	30.04	.034
	Middle	24	30.46	
	Oldest	5	10.80	
	Total	56		
Health Related Issues	Youngest	27	31.37	.267
	Middle	24	24.54	
	Oldest	5	32.00	
	Total	56		
Cost	Youngest	27	28.83	.967
	Middle	24	27.92	
	Oldest	5	29.50	
	Total	56		
Impatience	Youngest	27	24.35	.094
	Middle	24	33.77	
	Oldest	5	25.60	
	Total	56		
Fear of Use	Youngest	27	28.78	.776
	Middle	24	27.29	
	Oldest	5	32.80	
	Total	56		
Lack of Familiarity with technical terminology	Youngest	27	24.48	.170
	Middle	24	31.58	
	Oldest	5	35.40	
	Total	56		
Physical Limitations	Youngest	27	26.83	.462
	Middle	24	28.73	
	Oldest	5	36.40	
	Total	56		
Visual Impairment	Youngest	27	26.74	.464
	Middle	24	31.42	
	Oldest	5	24.00	
	Total	56		
Lack of Understanding in Modern Technology	Youngest	27	29.72	.627
	Middle	24	26.29	
	Oldest	5	32.50	
	Total	56		
Fear of being Cheated	Youngest	27	29.50	.901
	Middle	24	27.65	
	Oldest	5	27.20	
	Total	56		
Lack of Interest	Youngest	27	27.67	.303
	Middle	24	31.29	
	Oldest	5	19.60	
	Total	56		
Manual dexterity	Youngest	27	30.33	.587
	Middle	24	27.63	
	Oldest	5	22.80	
	Total	56		

The mean rank (i.e., the "Mean Rank" column in the Rank Table) can be used to compare with Gender. A Kruskal – Wallis H test showed that there was a statistically significant (p = 0.034) difference for the factor Lack of Knowledge and confidence and across the gender (Mean rank of 30.04 for youngest old and 30.46 for middle old and 10.86for oldest old) and for the factor Impatience (p = 0.094) across the gender (Mean rank of 24.35for youngest old, 33.77 for middle old and 25.60 for oldest old). However, such a difference was not observed for all other factors. This illustrates that there is a borderline difference in the opinion of participants regarding the barriers faced in using digital technology

ANALYSIS OF VARIANCE ON PERCEPTIONS OF DIGITAL TECHNOLOGY TO OCCUPATIONAL STATUS

The below table explains the ANOVA on concern about using digital technology between Occupation status. In this analysis, occupational status is the common factor and Too much and too Complex, Feeling of Inadequacy in comparison with the younger generation, Lack of Social Interaction and Communication, Negative features of digital Technology, Overwhelming Information, Technical Issues, Insufficient Training for Use, Stigmatization, Need Assistance are dependent factors.

Table No.5 Analysis of Variance in Perception of Digital Technology to Occupational Status

Perceptions		Sum of Squares	Df	Mean Square	F	Sig.
Too much and too Complex	Between Groups	.403	3	.134	.560	.644
	Within Groups	12.455	52	.240		
	Total	12.857	55			
Feeling of Inadequacy in comparison with younger generation	Between Groups	.371	3	.124	.472	.703
	Within Groups	13.611	52	.262		
	Total	13.982	55			
Lack of Social interaction and Communication	Between Groups	.227	3	.076	.351	.789
	Within Groups	11.202	52	.215		
	Total	11.429	55			
Negative features of digital Technology	Between Groups	1.289	3	.430	2.117	.109
	Within Groups	10.551	52	.203		
	Total	11.839	55			
Overwhelming Information	Between Groups	1.600	3	.533	2.358	.082**
	Within Groups	11.758	52	.226		
	Total	13.357	55			
Technical Issues	Between Groups	.954	3	.318	1.578	.206
	Within Groups	10.475	52	.201		
	Total	11.429	55			
Insufficient Training for Use	Between Groups	1.220	3	.407	2.412	.077**
	Within Groups	8.763	52	.169		
	Total	9.982	55			
Stigmatization	Between Groups	1.080	3	.360	1.482	.230
	Within Groups	12.634	52	.243		
	Total	13.714	55			
Need Assistance	Between Groups	.065	3	.022	.082	.970
	Within Groups	13.917	52	.268		
	Total	13.982	55			

** Statistically significant at 5% level

One-way ANOVA was performed to compare the influence of occupational status on participants' perceptions of digital technologies. A one-way ANOVA revealed that there was a statistically significant difference in the mean value of the overwhelming information factor between at least three groups (F(3,52) = [2.358], p = 0.082, and for the factor insufficient factor between at least three groups (F(3,52) = [2.412], p = 0.077. The result also reveals that for other factors there is no statistically significant difference between different occupational status and their perception about digital technologies.

Tukey's HSD Test for multiple comparisons found that there was no statistical difference in the mean score of factors related to the perception of digital technologies between the different occupational status of respondents.

CONCLUSION

Digital skills is a more contemporary term but are limited to practical abilities in using digital devices such as laptops and smartphones. Our analyses explored the study's main objectives related to elder people's attitudes toward digital technology, the perception of digitalization as well as barriers to interacting with that. Participants emphasized their concern and fear of using tablets and technology in general due to a lack of knowledge or low confidence, as well as the perceived dangers of technological equipment. Participants noted a number of issues that discouraged them from using digital technology. Participants voiced apprehension about the lack or unclear instructions and support. Understanding elders' perceptions of technology is vital to assist with introducing technology to this population and maximizing the potential of technology to facilitate independent living. In conclusion, our findings suggest that the majority of our participants were eager to adopt new technology and willing to learn and go with digital transformation. However, concern about the process of learning was noted.

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