GENDER DIGITAL DIVIDE IN KERALA, INDIA- AN EXPLORATORY ANALYSIS AT MICRO-LEVEL

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ABSTRACT
The recent National Family, Household Survey-5 of India, reveals a stark discrepancy between men and women who use the Internet in 22 states and Union territories. The present study examines the existence and extent of the gender digital divide in Kerala, a region in India acclaimed for a unique model of social and economic development. A micro-level exploratory analysis using data collected from a sample of 200 households randomly selected from two strata viz: **Kudumbasree* (n_1=100) and *non-kudumbasree* (n_2=100) members from a Panchayat in the district of Ernakulam, Kerala, India. The data collected using a self-administered questionnaire were analysed using SPSS software. Multiple Logistic Regression predicts internet usage based on the socio-demographic profile. The study found that women who use the internet are more significant than men. Internet penetration among the *kudumbasree* homemakers is more than the *non-kudumbasree* homemakers in the panchayat. The micro-level findings that emerged from the study contradict the national and state-level patterns regarding the gender digital divide. The study identified a significant association between socio-demographic variables such as age, gender, education, family size, economic status and internet usage.
(*Neighbourhood Help Group comprise of women).
Keywords: *Gender digital divide, Kerala, socio-demographic factors, Kudumbashree.*

Introduction

Internet, the prominent among Information and Communication Technologies (ICTs), has evolved into an indispensable tool for humanity, particularly since the onset of the global pandemic that has confined people within four walls, and almost every service, from education to healthcare to business and governance, is now delivered online. Recognising the growing reliance on digital technologies, international organisations such as the United Nations (UN) acknowledged it as a fundamental human right in 2016. They framed it as a sustainable development goal. Individuals' fundamental rights are violated when they do not access the Internet (Reglitz,2020). However, most people are still barred from taking advantage of this opportunity, resulting in a digital divide. The digital divide refers to the differences between societies and nations and has four dimensions-geographic, demographic and socio-economic (Tapashi, 2018). Therefore, there can be various digital divides in a country, such as a gender divide, the age divide, and the income divide (Singh, 2010). The growing disparity in access rates between men and women is referred to as the gender digital divide.

With the continuous development of information technologies, the digital divide has become a dynamic problem (Saha and Zaman,2017). According to the UN, increasing digital access to women could improve the world GDP and reduce the wage and employment gap between men and women, otherwise exacerbating the prevalent gender inequality and adversely affecting the development of society. Among Sustainable Development Goals (SDGs), the fifth one encourages the international community to enhance the use of enabling technology, particularly ICTs, to empower women. (The World Bank, 2018). Digital participation of women enhances sustainable development (USAID, 2019).

India, a developing country with vast human resources and technological potential, suffers from the social issue, the gender digital divide, as evidenced by the latest NFHS -5 (National Family Household Survey, 2021) data in all 22 states and union territories chosen for the survey, posing a threat to the country's goal of becoming a US D 5 trillion economy by 2024-25. With the country remaining committed to this goal amid a ravaging pandemic, it should carefully plan to eliminate this social evil and promote gender-equal internet access in India through appropriate policies framed at the grassroots level. For this, the study explores the micro-level situation in Kerala, which is known for its unique socio-economic, industrial, and political environment conducive to promoting and attaining a knowledge society characterised by a high level of skilled and technically qualified human resources, a nearly 100 per cent literacy rate, a large NRI population and thus a considerable level of NRI remittances, high

level of social development and living standards comparable to advanced nations. Also, Kerala is more capable of embracing ICT than any other developing country. (Jacob and Manoj, 2019).

Women still have to struggle in order to attain a rightful place in accessing and using the Internet, and the new technologies remain the domain of men (Nair, et.al. 2020; Saha and Zaman, 2017). Scholarly studies have identified socio-demographic factors as the prime reasons for this digital divide in India (Tapashi, 2018; Agrawal et al.,2018; Guha, 2018; Singh,2010; OECD report, 2018). Micro-level studies would be more reasonable and inferential than generic studies to validate this argument in India, the world's most populous country after China. Furthermore, there is little research in Kerala due to the common misconception that Kerala has gender-equal internet usage, which the NFHS-5 data refutes. Most studies are state-specific and rely on primary data due to data scarcity. A micro-level analysis would be beneficial to investigate the prevalence and extent of the gender digital divide in a diverse community such as Kerala to expedite effective policies. Therefore, the present research focuses on gender as a barrier to ICT use in Kerala at the grassroots level, in a Panchayat, in the district of Ernakulam, known as the state's commercial capital and the IT hub.

Methodology

The NFHS-5 evidenced the gender digital divide in India and Kerala. The nature of the gender digital divide is further explored in the Kerala context at the micro-level in a Panchayat. The micro-level exploratory analysis is done using data collected from a sample of 200 households randomly selected from two strata viz: Neighbourhood Help Group called *Kudumbasree* (n_1=100) and *non-kudumbasree* (n_2=100) members from the *Valakom Panchayat* in the Ernakulam district, central Kerala is chosen for the grass- root level survey.

The ability to use ICT and navigate the Internet has become a requirement for living in today's society, also known as the Information Age (Elena et al.2016). The study measures the first-order gender digital divide (access to the internet) and the second-order gender digital divide (use of the internet). It is to be noted that 'access' later became synonymous with 'use', at which point opportunity and choice were unfortunately connoted, as studies have shown that more people have access to the Internet than actually use it (Antonio and Tuffley, 2014). The present study has taken the first-order digital divide is the gender difference in owning a smartphone. The second-order gender digital divide is the difference in using social media such as WhatsApp, Facebook, web browsing, watching YouTube, and checking E/Gmail.

Data Collection Instruments

The study relies on a self-administered survey schedule to gather primary data via telephone interviews. To determine internet usage and phone type, the study asked respondents if they and their spouses use WhatsApp, Facebook, watch YouTube, browse the web, or use e-mail. Household profiles, including age, gender, family size, educational attainment, social group, and economic status, of the respondents are also collected. The data collected were analysed using SPSS software. The percentage method, Chi-Square test and the multiple logistic regression were the Statistical techniques employed.

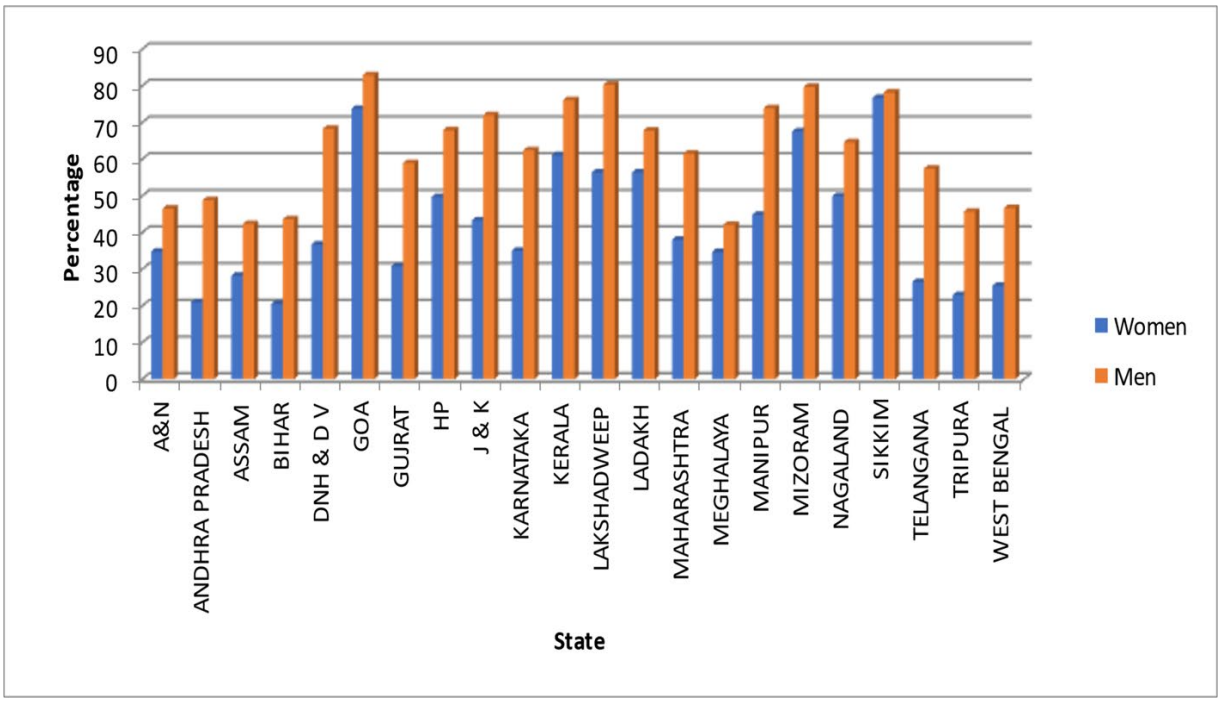
Analysis and Results

The launching of new digital technologies transforms society, and many of these provide new avenues for empowering people, especially women contributing obviously to gender equality. The Internet, digital platforms, mobile phones and digital financial services open up umpteen opportunities for all and move towards bridging gendered economic and social inequality that prevails in society by giving women the opportunity to earn additional income and increase their employment opportunities and access to knowledge and gather general information. This part of the study analyses NFHS-5 data to identify the gendered use of digital technologies in Indian society. From this national perspective, the study moves to a micro-level analysis. It verifies how the national pattern is different from micro-regions in India and the need for policy implications thereon. For this analysis, a panchayat from the Commercial capital and IT hub of the state of Kerala, which well acknowledged for its unique human development paradigm, has been taken.

In India, on average, only 42.6 per cent of women have ever used the Internet, compared to 62.16 per cent of men. In all the states surveyed, male users outnumber female users. Except for Sikkim, Goa, Kerala, Lakshadweep, Ladakh, and Mizoram, the rest of the states and union territories have less than 50 per cent of the women population using the Internet (Sarkar,2020). Despite more than 50 per cent of women internet users, these states are faced

with unequal gendered internet usage. The NFHS-5 data on the gender digital divide in 22 states and union territories of India are given in Figure 1.

***Figure 1*: National Pattern of Gender Digital Divide (in per cent)**



Source: NFHS-5 data

Given its unique and favourable human development context, Kerala necessitates a well-thought-out gender and development strategy at the micro-level (Baiju, Shibu, 2018). The study in the Valakom Panchayat seeks to explain the first and second-order gender digital divide, household-level predictors of internet usage and the difference in internet penetration among homemakers in *Kudumbashree* and those who aren't. The Internet is now a part of the globalisation process, eradicating old realities and certainties while creating new opportunities and challenges associated with living in a small world (Shrivastav and Agarwal 2013). Based on the data collected, the first-order and second-order gendered digital divide shows an unusual pattern in the Panchayat surveyed, as females outperform smartphones and internet usage ownership, as shown in Table 1. The data show that 35.94 per cent of women own 'basic' type mobile phones against 41.01 per cent of the men who own such a type of phone. According to the data, the percentage of women who own a smartphone is 64.06 per cent against 58.99 of men with a smartphone.

Table 1: Percentage distribution of mobile ownership and internet use

Type of mobile phone	Women		Men	
	Count	Percent	Count	Percent
Basic	69	35.94	73	41.01
Smart	123	64.06	105	58.99
Internet use	140	70	105	59

The percentage of women who are internet users is more significant than men. While 70% of the women surveyed are internet users, only 59% of the men are internet users. In contrast to the national and state patterns, the Panchayat reflects an unusual women-dominant distribution among internet users.

The Chi-Square test displayed a significant association between age, education, gender, economic status, family size, and internet use with a p-value of less than 0.05. These variables are included in the Multiple Logistic Regression to predict internet usage (see Table 2). The variable age is divided into four categories, with age >60 as the reference category. The analysis shows that the people below the age 40 and between 41-50 have a

significant association with internet usage but not age above 50. People below 40 years of age use the Internet 6.8 times more than the reference group, and those between 41 to 50 use it 8.09 times more. For gender, the male is selectedas the reference category. The variable gender significantly affects internet usage as the corresponding p-value is less than 0.05.

Table 2: Multiple Logistic Regression to predict internet usage

Variables with the reference category		*B*	*S.E.*	*P*	*Odds (95% CI)*
Age >60	<=40	1.92	0.86	0.026	6.8(1.25-36.93)
	41-50	2.09	0.68	0.002	8.09(2.14-30.58)
	51-60	0.50	0.56	0.378	1.64(0.55 - 4.95)
Size of family (1-2)	3-4	1.06	0.60	0.076	2.89(0.89– 9.35)
	>=5	-0.43	0.60	0.477	0.655(0.20-2.10)
Education-(Primary/Upper Primary)	Secondary	1.55	0.52	0.003	4.71(1.69-13.17)
	>Higher Sec.	3.13	0.75	0.000	22.91(5.24100.13)
Economic status (BPL)	APL	1.02	0.44	0.022	2.76 (1.16 - 6.59)
R^2	0.364				

Source: Primary data

The internet usage of females is 0.616 times higher than the internet usage of males. Though family size has a significant association with internet use, categories 1-2 and more than five do not significantly predict internet usage. Education, having a p-value of 0.00, is a significant predictor of internet usage. It is categorised as primary and upper primary, secondary, higher secondary, or above. Primary and upper primary education is chosen as the reference category for education. People with secondary education use the Internet 4.71 times more than the reference category and have a significant relationship with internet use. Respondents with higher secondary education and above were found to use the Internet 22.91 times more than those respondents with primary and upper primary education. The economic status of the respondents was taken from the Government authenticated document issued by the Department of Civil Supplies under the Revenue Division of the Government of Kerala. This document records the household profile as Above the Poverty Line (APL) and Below the Poverty Line (BPL) based on the household's annual income. Considering the BPL as the reference category, it is seen that the respondents who belong to the APL category use the internet 2.76 times more than the BPL category.

***Table 3*: Internet usage of *Kudumbashree* and *non-Kudumbashree* homemakers**

Category	**INTERNET USAGE**			
	'YES' count	**Percent**	**'NO' count**	**Percent**
Kudumbasree	**42**	**42**	**58**	**58**
Non-kudumbasree	**18**	**18**	**82**	**82**

Source: Primary survey data

Among the women users, the internet penetration among the *Kudumbashree* homemakers is more than *non-Kudumbashree* homemakers in the Panchayat. This is evident from the analysis, which shows that 42 per cent of the *Kudumbashree* members use the internet, while only 18 per cent of the *non-Kudumbashree* homemakers use it. It has been reinforced from this result of non-kudumbasree homemakers the argument of Hafkinn and Taggart (2001) that among the different factors, social and cultural norms seem to become the biggest obstacle in many developing countries with a tradition of a strongly patriarchal culture that marginalises women. See the details given in Table 3.

Discussion and Conclusion

The findings at the micro-level contradict the national and state-level pattern as women own a smartphone and use the Internet more than men in the Valakom Panchayat. The study identified a significant association between socio-demographic variables such as age, gender, education, family size, economic status, and internet usage at $p<0.05$. The Chi-Square test did not find any significant association between a social group and internet usage. Age less than or equal to 40 and 41-50 years of age was significantly associated with reduced odds of internet usage (OR 6.8 and 8.09 respectively, 95% CI). Though significantly associated with internet usage, family size is not found

as a good predictor in this regard. Those having educational qualifications higher secondary and above are found to use the Internet 22.7 times more than that women with primary and upper primary schooling. The odds ratio of secondary education is seen as four times more than those with primary and upper primary schooling. The family's economic status is also a significant predictor of internet usage as the odds ratio of the APL category is twice more than the internet usage of the BPL category. The study's findings comply with the existing studies that age, education, economic status and gender have a significant association with internet usage (Haight et al., 2014; Bala and Singhal, 2018; Singh et al., 2018; Tapashi, 2018; Agrawal and Asrani, 2018; Joshi et al., 2020; Nair et al.,2020; Das and Jain, 2020).

Based on the discussion of the results, it is suggested in consonance with the trend observed in the study area that improving education is crucial to address the disparity in access and use of mobile phones and the Internet among women. The Neighbourhood Help Group initiatives, such as the *Kudumbashree,* which is government-supported and gender-focused in Kerala, mainly emphasise the holistic empowerment of the women belonging to the socially excluded categories. The role of Neighbourhood Help Groups, especially Kudumbasree, as a means of social change for strengthening the socialisation process of women has been well documented (Rajagopal, 2020). The present analysis brings forth the capacity of *Kudumbashree* in promoting internet usage among women in the Panchayat under study convincingly. Such success models can be emulated in other states too. Women from the backward classes can effectively use the Internet if they are adequately supplemented with the technological skills and the logistics required to access it. The Social It has been proved that the Internet provides critical infrastructure for many essential activities in the covid pandemic. In the study area, most *Kudumbashree* activities are efficiently conducted over the Internet, especially during the pandemic, requiring members to use the Internet. Hence, women are intrinsically motivated and become self-oriented to use the internet for community/participatory activities when engaged in such groups. The Local Self Governments could conceive and rollout suitable schemes and programmes for enhancing ICT use based on a micro-level database of the identified beneficiaries and target groups.

Scope, Limitations and Further Study

The study focuses on the issue at the grassroots level and facilitates an effective policy. Kerala, a southern state known for its distinctive socio-economic, open, and women inclusive development, also has gender-biased Internet usage as per the NFHS-5 survey. The present microlevel analysis reveals that the *kudumbasree* women have more access to digital devices and have evaluated its efforts to penetrate Internet usage among its members compared to *non-Kudumbashree* homemakers. The reliance on self-reported data is a primary limitation of this research and admits the chances of variations in the study results if time, place, subjects, and sample size are altered. However, it has been well accepted and documented that *Kudumbashree,* the Neighbourhood Help Group (NHG), has been lauded as a success story of women's empowerment in Kerala. Hence, the role and initiatives of *kudumbasree* can be emulated in other parts of the state and the country to enhance digital literacy and access to digital devices, which is pertinent to achieving SGD. The study could be expanded to other Panchayats and municipalities, and comparative studies could be conducted to assess gender differences in internet usage.

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