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Digital Inclusion And Literacy In Rural Kerala With Special Reference To Thrissur District

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Abstract: In an increasingly digital world, the ability to access and navigate digital technologies is no longer a luxury and it is a necessity. This study explores the level of digital literacy and the barriers to digital inclusion among individuals in Kerala. The study Used a descriptive statistical analysis of survey data from 229 rural respondents in Thrissur district. The findings reveal moderate digital literacy across the sample, with higher proficiency in tasks like mobile app usage and online banking, but noticeable weaknesses in email communication and participation in online meetings. The study identifies key barriers to digital inclusion, including the lack of digital guidance, difficulties in understanding technology, and infrastructural limitations such as poor internet connectivity. The result found that a statistically significant difference between the income levels of respondents and their digital literacy, suggesting that income remains a critical determinant in shaping digital competencies.

Keywords: Digital Literacy, Digital Inclusion, Socio-Economic Factors, Rural Kerala

Introduction:

In the 21st century, digital literacy has emerged as a cornerstone of economic participation, social inclusion, and educational advancement. As the global economy becomes increasingly digitized, the ability to access, understand, and utilize digital technologies has transformed from a luxury into a necessity. In India, this digital transformation has been swift, particularly with initiatives such as Digital India, which aims to empower citizens through enhanced access to digital infrastructure and services. Despite rapid digital advancements, a significant gap remains in terms of digital literacy and inclusion, especially among rural populations **(Pradhan et al., 2021)**. Bridging this digital divide is essential for achieving inclusive development.

Kerala, recognized for its commendable achievements in literacy, health, and social indicators, presents an interesting paradox. While the state has relatively high internet penetration and ICT infrastructure compared to other Indian states, disparities still exist between urban and rural areas, mainly in terms of digital competence and accessibility **(Joseph & Narayanan, 2020)**. The COVID-19 underscored the critical importance of digital access in every aspect of life. During nationwide lockdowns, digital platforms became the primary conduit for school education, public health messaging, and even economic sustenance through e-commerce and remote work **(Mehta & Singh, 2020)**.

For rural communities, this sudden shift was jarring. Households with limited or no access to digital tools found themselves excluded from essential services, intensifying existing socioeconomic inequities. The issue is not merely one of infrastructure but extends to digital literacy. Digital literacy defined as the ability to locate, evaluate, and use digital information effectively **(Martin, 2008)**. In rural Kerala, there is a pressing need to evaluate the extent to which rural residents are digitally literate and the barriers that hinder their digital participation. While general literacy rates in the district are commendable, there is little empirical data on digital literacy levels and usage patterns among the rural populace.

Digital inclusion refers to the efforts and strategies aimed at ensuring individuals and communities have access to and can effectively use information and communication technologies (ICTs). It encompasses five main components: affordable broadband internet service, access to digital devices, digital literacy training, quality technical support, and applications and online content designed to enable and encourage self-sufficiency (**Bertot et al., 2012**). Digital literacy, on the other hand, goes beyond the mere ability to operate digital devices. It involves critical thinking skills that enable individuals to navigate, interpret, and create digital content responsibly. According to the European Commission (2016), digital competence includes information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving. Kerala has been a frontrunner in digital adoption due to early investments in education and technology. The state's IT@School Project, Akshaya Centres, and e-governance platforms have made commendable progress in building a digital ecosystem (**Sasidharan & Parayil, 2015**). However, recent studies suggest that rural regions still lag behind urban areas in the effective use of digital tools (**Nair et al., 2019**).

Despite Kerala's proactive policies and commendable digital penetration, the rural population still faces obstacles in accessing and effectively using digital technologies. These challenges include limited internet connectivity in remote areas, low affordability of smartphones and data plans, lack of awareness of digital opportunities, and inadequate digital training. There is a lack of rural based empirical research that captures the digital literacy status, usage patterns, and perceptions of rural residents in Thrissur district. Thus, this study seeks to fill this knowledge gap by exploring the depth of digital inclusion and literacy in rural Kerala with special reference to Thrissur district.

Objectives of the Study:

1. To assess the level of digital literacy among the rural population in Thrissur district.
2. To identify the major barriers to digital inclusion faced by rural communities.

Research methodology:

This study adopts a descriptive research approach to assess the levels of digital literacy and identify barriers to digital inclusion among the rural population of Thrissur district in Kerala. A structured questionnaire comprising both demographic variables and Likert-scale items was used as the primary data collection tool. Respondents were selected using convenience sampling method from various two rural panchayats. Data were collected through direct interviews and online surveys. The study used descriptive statistics and inferential techniques.

Result and Discussions:

Table 1
Demographic Profile of the Respondents

		Frequency	Percent
Gender	Male	119	52
	Female	110	48
	Total	***229***	***100***
Age	Below 25	129	56.3
	26-50	53	27.5
	above 50	37	16.2
	Total	***229***	***100***
Educational Qualification	SSLC and below	54	23.6
	+2	114	49.8
	Degree and above	53	23.1
	Others	8	03.5
	Total	***229***	***100***
Marital Status	Single	107	46.7

	Married	122	53.3
	Total	***229***	***100***
Type of Device Used	Smart Phone	115	67.7
	Tablet	25	10.9
	Desktop/Laptop	32	14.0
	No Device	17	07.4
	Total	***229***	***100***
Income	Below 10,000	169	73.8
	10,001-25,000	23	10.0
	25,001-50,000	32	14.0
	Above 50,000	5	02.2
	Total	***229***	***100***

(Source: Computed from primary data)

Table 1 provides a comprehensive overview of the demographic characteristics of the 229 respondents surveyed in the study. The gender distribution indicates a balanced sample, with 52% male and 48% female participants. In terms of age, 56.3% fall below the age of 25, indicating a predominantly younger population. This is a significant factor in the context of digital literacy, as younger individuals are typically more exposed to digital tools through education or social interactions. The middle-age group (26–50 years) comprises 27.5%, while those above 50 years account for 16.2%.

Educational qualifications reveal that 49.8% have completed higher secondary education (+2 level), followed by 23.6% who have qualifications up to SSLC (10th grade). A substantial segment (23.1%) holds graduate-level or higher degrees, while only a minor fraction (3.5%) falls under the 'Others' category, possibly representing vocational or non-conventional educational backgrounds. With regard to marital status, 53.3% married and 46.7% single. Device ownership is another critical variable in understanding digital access. The data shows that smartphones are the most widely used digital devices, with 67.7% of respondents indicating ownership. This reflects the increasing penetration of mobile internet in rural Kerala. Tablets and desktops/laptops are used by 10.9% and 14.0% of respondents respectively, while 7.4% reported having no access to any digital device. The dominance of smartphones highlights the mobile-centric nature of digital engagement in rural areas and suggests that any digital literacy interventions should prioritize mobile-based platforms.

Income distribution reveals that 73.8% of the respondents belong to households with a monthly income below ₹10,000. Only 10% fall within the ₹10,001–₹25,000 range, and 14% earn between ₹25,001–₹50,000. A marginal 2.2% earn above ₹50,000. These figures underscore the economic constraints that many rural households face, which in turn affect their ability to afford internet services

and digital devices. Low income is a well-documented barrier to digital inclusion, as it limits both access and sustained engagement with technology.

Table 2
level of digital literacy among the rural population

Variables	Mean	Std. Deviation
I can operate a smartphone/tablet independently	2.85	.945
I know how to download and install apps on my phone.	3.13	.951
I can send and receive emails.	2.70	.947
I can participate in online meetings or video calls (Zoom, Google Meet, etc.).	2.76	.940
I know how to use online banking or UPI apps.	3.11	.950
I understand how to stay safe while using the internet.	3.07	.939
I have attended any formal/informal training in digital skills.	2.96	.951
I can use the internet to search for information.	3.07	.932

(Source: Computed from primary data)

The above table 2, the mean scores for digital literacy items ranged from 2.70 to 3.13 on a 5-point Likert scale, indicating a moderate level of digital competence among participants. The highest mean score was observed for the item *"I know how to download and install apps on my phone"* (M = 3.13, SD = 0.951), suggesting a relatively high familiarity with mobile applications and basic smartphone functionality. The item *"I know how to use online banking or UPI apps"* (M = 3.11, SD = 0.950) also received a high mean score, highlighting respondents' comfort with digital financial tools. This trend is consistent with recent increases in the use of mobile payment platforms such as Google Pay, Phone Pe, and Paytm across Kerala, particularly following the digital push during the COVID-19 pandemic.

Conversely, the lowest mean was recorded for *"I can send and receive emails"* (M = 2.70, SD = 0.947), indicating that email communication skills remain underdeveloped among a segment of respondents. This may be attributed to the preference for instant messaging platforms like WhatsApp, which require less formal digital skills. Similarly, moderate mean scores for *"I can participate in online meetings or video calls"* (M = 2.76, SD = 0.940) and *"I have attended any formal/informal training in digital skills"* (M = 2.96, SD = 0.951) suggest limited exposure to structured digital learning environments and online collaboration tools. The item *"I can use the internet to search for information"* (M = 3.07, SD = 0.932) received a relatively high mean and the lowest standard deviation, reflecting a consistently high level of agreement among respondents regarding their ability to access and retrieve online information. The standard deviations for all items were below 1, indicating low variability in responses and suggesting a relatively homogeneous digital literacy profile among the participants.

Table 3
Barriers to digital inclusion

Variables	Mean	Std. Deviation
Poor internet connectivity limits my digital usage.	3.0437	0.940
I find digital technologies difficult to understand.	3.1223	0.938
I cannot afford smartphones or internet charges.	2.9738	0.938
I do not have anyone to help me learn how to use digital tools.	3.2052	0.943
Language is a barrier in using digital platforms.	2.8428	0.940
I am afraid of making mistakes while using online services.	2.6594	0.927
I prefer face-to-face services rather than using digital alternatives.	3.079	0.935

(Source: Computed from primary data)

Table 3 presents descriptive statistics for the perceived barriers to digital inclusion among respondents. The mean scores of the items ranged from 2.65 to 3.21 and suggesting that participants experience moderate levels of digital exclusion, with some barriers being more prominent than others. The highest mean score was observed for the item *"I do not have anyone to help me learn how to use digital tools"* (M = 3.21, SD = 0.943), indicating a significant gap in digital mentorship or support systems. The statement *"I find digital technologies difficult to understand"* (M = 3.12, SD = 0.938) also received a high mean, reinforcing that cognitive and skill-related challenges persist. *"Poor internet connectivity limits my digital usage"* (M = 3.04, SD = 0.940) and *"I prefer face-to-face services rather than using digital alternatives"* (M = 3.08, SD = 0.935) reflect infrastructural and behavioural barriers. These variables point to external limitations (like network access) as well as cultural or habitual resistance to shifting from traditional modes of service delivery to digital modes.

"I am afraid of making mistakes while using online services" had the lowest mean score (M = 2.66, SD = 0.927), suggesting that fear or anxiety is a lesser barrier, though still relevant. *"Language is a barrier in using digital platforms"* scored relatively lower (M = 2.84). The item *"I cannot afford smartphones or internet charges"* had a mean of 2.97, reflecting that economic affordability remains a concern, although not the most severe one.

H_{01}: There is no significant difference between income and Digital Literacy

Table 4
Significant difference between income of the respondent and Digital Literacy

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	167.744	3	55.915	4.381	.005
Within Groups	2872.003	225	12.764		
Total	3039.747	228			

(Source: Computed from primary data)

The ANOVA was conducted to examine whether there exists a statistically significant difference in digital literacy among respondents based on their income levels. The result reveals a significant effect of income on digital literacy scores (F (3, 225) = 4.381, p = 0.005). Specifically, the between-group variance (Sum of Squares = 167.744, Mean Square = 55.915) was significantly greater than the within-group variance (Mean Square = 12.764), suggesting that the digital literacy levels varied across different income categories. This finding indicates that income is a determining factor in influencing digital literacy levels among the rural respondents. Higher or lower income groups may differ in terms of access to digital devices, internet connectivity, and opportunities for digital skill development, which contributes to the observed variance in digital literacy.

H_{02}: There is no significant difference between educational qualification and Digital Literacy

Table 5
Significant difference between educational qualification of the respondent and Digital Literacy

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.265	3	2.422	.180	.910
Within Groups	3032.482	225	13.478		
Total	3039.747	228			

(Source: Computed from primary data)

Table 5 reveal that the effect of educational qualification on digital literacy is statistically non-significant (F (3, 225) = 0.180, p = 0.910). The between-group variance (Sum of Squares = 7.265, Mean Square = 2.422) is small in comparison to the within-group variance (Mean Square = 13.478), indicating minimal variation in digital literacy across educational groups.

Conclusion:

In today's rapidly evolving digital landscape, the ability to effectively use technology has become essential for personal, educational, and professional growth. Digital literacy is the knowledge and skills required to access, understand, and engage with digital tools and plays a vital role in enabling individuals to participate in the modern information society. The present study examines the extent of digital literacy and the perceived barriers to digital inclusion among rural population in Kerala. The analysis of digital

literacy indicators revealed that respondents demonstrated moderate levels of digital proficiency, with mean scores for most items ranging between 2.70 and 3.13. The most significant barriers identified, *"I do not have anyone to help me learn how to use digital tools"* received the highest mean score (M = 3.21), suggesting that a lack of support networks or digital guidance is a primary hindrance to digital inclusion. The findings highlight the need for targeted policy interventions aimed at enhancing digital literacy among lower-income groups, while also recognizing the evolving nature of digital skill acquisition beyond traditional educational frameworks. Future research may further explore the role of digital training programs, community-based learning, and access to affordable digital tools in bridging the digital divide.

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