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A Comparative Study On Digital Literacy And Technology Acceptance Among Rural And Urban Households Of Coimbatore District

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ABSTRACT

The study aims to explore and compare the levels of digital literacy and technology acceptance among rural and urban households in the Coimbatore district. With rapid advancements in technology, understanding the factors influencing digital adoption in different demographic settings is crucial. This research evaluates the disparities in access to digital tools, proficiency in their usage, and the overall readiness to embrace new technologies. The Technology Acceptance Model (TAM) is utilized to gauge attitudes toward technology, while digital literacy is assessed based on skills, knowledge, and access to digital resources. Through quantitative surveys and data analysis, the study identifies key drivers and barriers affecting digital literacy and technology acceptance across rural and urban regions. The findings reveal significant contrasts between the two groups, offering insights into the role of socioeconomic factors, education, and infrastructure in shaping digital engagement.

Keywords: Digital literacy, technology acceptance, Rural Households, Urban Households, Technology Acceptance Model (TAM), Digital Adoption, Socioeconomic Factors and Digital Engagement.

INTRODUCTION:

In today's increasingly digital world, technology plays a pivotal role in shaping daily life, influencing how individuals access information, communicate, and participate in economic and social activities. Digital literacy, defined as the ability to use digital devices, communication applications, and networks effectively, is essential for navigating this modern landscape. It has become a fundamental skill, especially as economies and services shift toward digital platforms. However, disparities in digital literacy and technology acceptance persist, particularly between rural and urban populations.

Coimbatore district, a region in Tamil Nadu, India, presents a unique opportunity to study these differences. While urban areas often enjoy better infrastructure, educational opportunities, and access to technology, rural areas may face challenges such as limited internet connectivity, lower digital awareness, and fewer educational resources. These factors contribute to a digital divide that can significantly impact the socio-economic development of households in these regions.

Understanding the levels of digital literacy and technology acceptance among rural and urban households is crucial for developing policies and interventions aimed at reducing this digital divide. Technology acceptance, often measured using frameworks such as the Technology Acceptance Model (TAM), evaluates how individuals perceive the usefulness and ease of use of digital tools, which in turn affects their willingness to adopt new technologies. By comparing rural and urban populations in the Coimbatore district, this study aims to uncover the underlying factors that influence digital literacy and technology adoption, providing insights into how to bridge the gap and ensure equitable digital inclusion.

This comparative study will explore the differences in access to technology, proficiency in using digital tools, and overall attitudes toward technology in rural and urban households of Coimbatore district. By analyzing these factors, the research seeks to identify key drivers and barriers that contribute to the varying levels of digital engagement between these two demographic groups. The findings will offer valuable insights

for policymakers, educators, and development practitioners aiming to enhance digital literacy and foster technology acceptance across diverse populations.

REVIEW OF LITERATURE:

A study by Van Dijk (2005) highlighted that digital literacy is more than just the ability to operate digital devices; it encompasses cognitive skills and a broader understanding of technology. Van Dijk identified that socioeconomic factors such as education, income, and access to resources significantly influence digital literacy levels, especially in rural areas where access to infrastructure is limited. These findings suggest that policies aimed at improving digital literacy must also address underlying social and economic disparities between rural and urban regions.

Davis (1989) developed the Technology Acceptance Model (TAM), which has been widely used to assess individuals' attitudes towards technology. The model focuses on perceived usefulness and ease of use as critical factors in technology acceptance. Several studies, including those by Venkatesh et al. (2012), applied TAM in rural and urban settings and found significant differences in technology adoption behaviors. Rural populations often demonstrate lower technology acceptance due to perceived complexity, lack of relevance, and limited technical support, in contrast to more tech-savvy urban populations.

According to Srinuan and Bohlin (2011), rural-urban disparities in digital literacy are a common phenomenon in developing countries like India. Their research on digital access in various regions of India revealed that rural households are often left behind due to inadequate infrastructure and educational opportunities. Furthermore, cultural factors play a role in shaping attitudes towards technology, with rural populations exhibiting more reluctance due to traditional mindsets and limited exposure.

Hargittai (2002) investigated the role of education in enhancing digital literacy, showing that individuals with higher educational attainment tend to be more digitally literate and are more likely to adopt new technologies. The research emphasized the importance of formal education in both rural and urban areas to boost digital literacy. The study also suggested that training programs tailored to rural populations could mitigate the digital divide and enhance technology acceptance.

A study by Rao (2018) on technology adoption in rural India highlighted the barriers to digital literacy in rural areas, including inadequate digital infrastructure, lack of proper training, and resistance to change. Rao's research revealed that rural households often lack access to the internet and digital devices, contributing to lower levels of technology acceptance. The study recommended implementing government initiatives to improve access to technology and provide digital literacy programs specifically targeting rural populations.

Maiti and Awasthi (2020) examined the role of government initiatives like Digital India in improving digital literacy and technology acceptance among rural populations. Their study revealed that while the Digital India program has made strides in expanding internet access and providing digital training, there is still a significant gap in the effectiveness of these initiatives, particularly in rural areas where literacy and awareness remain low. Maiti and Awasthi suggest that targeted, localized interventions are necessary to bridge the digital divide.

STATEMENT OF THE PROBLEM

The problem addressed in this study is the significant disparity in digital literacy and technology acceptance between rural and urban households in the Coimbatore district. Despite the increasing importance of digital skills in today's technology-driven world, rural areas often lag behind urban areas due to limited access to digital infrastructure, lower levels of education, and socio-economic constraints. This gap poses challenges for inclusive development and economic progress. Understanding the factors contributing to this digital divide is crucial for creating effective policies and programs that promote digital inclusion and technology adoption across both rural and urban populations.

SCOPE OF THE STUDY

The scope of this study focuses on comparing digital literacy levels and technology acceptance between rural and urban households in the Coimbatore district. It covers factors such as access to digital devices, internet usage, proficiency in using technology, and attitudes towards adopting new technologies. The research will analyze these aspects using data collected from households in both rural and urban areas, identifying key differences and commonalities. The study aims to provide insights that can inform policy

decisions and initiatives aimed at bridging the digital divide and fostering inclusive digital development within the district.

THE OBJECTIVES OF THE STUDY

- To assess the level of digital literacy among rural and urban households in Coimbatore district.
- To examine the factors influencing technology acceptance in rural and urban areas.
- To compare the accessibility and usage of digital devices and the internet between rural and urban households.
- To identify the key barriers and drivers affecting digital literacy and technology adoption in both demographic settings.

RESEARCH METHODOLOGY:

This study adopts a descriptive research design to explore and compare digital literacy and technology acceptance among rural and urban households in Coimbatore district. The descriptive approach is chosen to obtain a detailed understanding of the current status of digital literacy and the factors influencing technology acceptance across different demographic settings.

Source of Data Collection:

Primary Data: Data will be collected through a structured questionnaire designed to assess digital literacy levels, access to digital devices, internet usage, and attitudes toward technology. The questionnaire will be administered to respondents from rural and urban households in Coimbatore district.

Secondary Data: Relevant literature, reports, journals, and websites will be reviewed to provide additional context and support the analysis.

Sampling Method: The study will use simple random sampling to select participants from both rural and urban areas to ensure a fair representation of the population.

Sample Size: The sample size for this study is 150 respondents, comprising individuals from both rural and urban households in Coimbatore district.

Tools Used for Analysis:

Percentage Analysis: This tool will be used to analyze demographic data and responses related to digital literacy and technology usage.

Descriptive Statistics: This method will help summarize the characteristics of the data, providing insights into the central tendencies and variability of digital literacy levels and technology acceptance.

One-way ANOVA: This test will be applied to compare the mean differences in digital literacy and technology acceptance between rural and urban households.

LIMITATIONS OF THE STUDY:

- The study is limited to the Coimbatore district, and the findings may not be generalizable to other regions.
- The sample size of 150 respondents may not fully capture the diversity of experiences and perspectives within rural and urban populations.
- Self-reported data from questionnaires may lead to response bias, affecting the accuracy of the findings.
- The study focuses only on households, excluding the perspectives of businesses or other organizations that may influence digital literacy and technology acceptance in the region.

DATA ANALYSIS AND INTERPRETATION

Demographic variables of the respondents

Demographic variables	Particulars	Frequency	Percent
Gender	Male	73	48.7
	Female	77	51.3
	Total	150	100.0
Age	Below 20 Years	40	26.7
	21-30 Years	52	34.7
	31-40 Years	43	28.7
	41-50 Years	15	10.0
Educational Qualification	Primary education	33	22.0

	Secondary education	40	26.7
	Graduate	46	30.7
	Postgraduate	25	16.7
	Other	6	4.0
Occupation	Student	26	17.3
	Employed	63	42.0
	Self-employed	34	22.7
	Homemaker	22	14.7
	Other	5	3.3
Monthly Household Income	Below Rs.10,000	67	44.7
	Rs.10,001 – Rs.25,000	36	24.0
	Rs.25,001 – Rs. 50,000	28	18.7
	Rs.50,001 – Rs. 75,000	14	9.3
	Above Rs.75,000	5	3.3
Location	Rural	86	57.3
	Urban	64	42.7
Total		**150**	**100.0**

The demographic data provides a clear overview of the sample population. In terms of gender, the distribution is nearly balanced, with females slightly outnumbering males (51.3% female, 48.7% male). Age-wise, the majority of respondents fall in the 21-30 years group (34.7%), followed by 31-40 years (28.7%), indicating that most respondents are relatively young.

Regarding educational qualifications, a significant portion of respondents are graduates (30.7%), followed by those with secondary education (26.7%). Only a small percentage (4.0%) have qualifications categorized as "other," indicating a standard educational background for most participants.

In terms of occupation, 42% of respondents are employed, making this the largest occupational group, followed by self-employed individuals (22.7%) and students (17.3%). Monthly household income data shows that nearly half of the respondents (44.7%) earn below Rs.10,000, indicating a lower-income demographic. Only a small percentage (3.3%) earn above Rs.75,000, highlighting economic disparities within the sample.

Finally, the location data indicates that 57.3% of the respondents reside in rural areas, compared to 42.7% from urban areas, showing a majority rural representation in this study. This distribution provides a solid foundation for analyzing differences in digital literacy and technology acceptance between rural and urban households.

Socio graphic variables of the respondents

Socio graphic variables		Frequency	Percent
Access to Internet	Yes	84	56.0
	No	66	44.0
Access to Digital Devices (e.g., smartphone, computer):	Yes	84	56.0
	No	66	44.0
Total		**150**	**100.0**

The data on sociographic variables shows that 56% of the respondents have access to the internet, while 44% do not, indicating that a significant portion of the population still lacks internet connectivity. Similarly, 56% of the respondents have access to digital devices such as smartphones or computers, while 44% do not.

Descriptive Statistics for various dimensions

		N	Mean	SD
Digital Literacy	I am confident in using a smartphone or computer for basic tasks (e.g., messaging, browsing the internet).	150	2.41	1.130

	I know how to install and use new apps or software on my devices	150	2.41	1.124
	I understand how to keep my personal information secure online (e.g., using strong passwords).	150	2.39	1.152
	I frequently use online services (e.g., online banking, e-commerce) without assistance	150	2.37	1.324
	I feel confident in troubleshooting basic technical issues with my devices	150	2.47	1.267
Technology Acceptance (Perceived Usefulness)	I believe that using digital devices improves my productivity in everyday tasks	150	2.68	1.372
	I find using the internet helpful in staying informed and connected with others	150	2.64	1.089
	Digital technology helps me save time in performing daily activities (e.g., paying bills, booking services).	150	2.93	1.224
	I think digital technology plays an important role in improving education and learning.	150	2.76	1.208

The data on digital literacy and technology acceptance shows that respondents generally have moderate confidence in using digital devices. The average scores for digital literacy indicators, such as using smartphones or computers for basic tasks (mean = 2.41), installing apps (mean = 2.41), and maintaining online security (mean = 2.39), indicate a relatively low to moderate level of confidence. Additionally, the ability to troubleshoot basic technical issues shows a slightly higher confidence level (mean = 2.47).

In terms of technology acceptance (perceived usefulness), the respondents somewhat agree that digital devices improve their productivity (mean = 2.68) and help them stay informed (mean = 2.64). The highest rating was given to digital technology saving time in daily activities (mean = 2.93). However, overall, the responses indicate a moderate level of digital literacy and technology acceptance, suggesting room for improvement in both areas.

Descriptive Statistics for various dimensions

		N	Mean	SD
Technology Acceptance (Perceived Ease of Use)	Learning to use new digital devices or apps is easy for me	150	3.04	.904
	I find it easy to navigate websites and applications	150	3.16	.963
	Digital devices and apps are generally user-friendly	150	3.03	1.013
	I am comfortable using technology without requiring much assistance	150	3.15	.930
Barriers to Technology Adoption	Lack of access to the internet is a significant barrier for me in using technology	150	3.20	.955
	I face difficulties in affording digital devices or services	150	2.97	1.006
	I find it difficult to understand or use technology due to lack of proper training or knowledge	150	2.97	1.212
	I am concerned about privacy and security issues while using digital technology	150	2.87	1.514

The data on technology acceptance (perceived ease of use) shows that respondents generally find digital devices and apps relatively easy to use. The mean scores for learning to use new digital devices (mean = 3.04), navigating websites (mean = 3.16), and using technology without much assistance (mean = 3.15) indicate moderate to high confidence in handling technology independently. Similarly, respondents perceive digital devices and apps as user-friendly (mean = 3.03).

Regarding barriers to technology adoption, lack of access to the internet is highlighted as a significant challenge (mean = 3.20). Affordability of digital devices (mean = 2.97) and lack of training or knowledge (mean = 2.97) also pose notable barriers, although to a slightly lesser extent. Concerns about privacy and security show

moderate importance (mean = 2.87), suggesting some apprehension regarding online safety. Overall, while respondents feel relatively comfortable using technology, barriers such as internet access, cost, and knowledge gaps remain significant challenges

Comparison between (access to internet) and various dimension of digital literacy

Ho1: There is a relationship between (access to internet) various dimension of digital literacy

	Access to Internet	N	Mean Rank	Chi-Square	Asymp. Sig.
Digital Literacy	Yes	84	76.82	0.179	0.672
	No	66	73.82		
	Total	150			
Technology Acceptance (Perceived Usefulness)	Yes	84	75.13	0.014	0.906
	No	66	75.97		
	Total	150			
Technology Acceptance (Perceived Ease of Use)	Yes	84	80.54	2.627	0.105
	No	66	69.08		
	Total	150			
Barriers to Technology Adoption	Yes	84	82.56	5.108	0.024
	No	66	66.52		
	Total	150			

Digital Literacy: The results show no significant difference in digital literacy between those who have access to the internet and those who do not (Chi-Square = 0.179, Sig = 0.672). The mean ranks for both groups are nearly the same (76.82 for those with access and 73.82 for those without), indicating that internet access does not substantially affect the respondents' self-reported digital literacy levels.

Technology Acceptance (Perceived Usefulness): Similarly, no significant difference is found in perceived usefulness of technology between those with and without internet access (Chi-Square = 0.014, Sig = 0.906). The mean ranks (75.13 for those with access and 75.97 for those without) suggest that internet access does not influence how respondents perceive the usefulness of digital technology in their lives.

Technology Acceptance (Perceived Ease of Use): Although there is a slight difference in mean ranks (80.54 for those with access and 69.08 for those without), this difference is not statistically significant (Chi-Square = 2.627, Sig = 0.105). This implies that internet access does not significantly affect how easy respondents find it to use digital technology.

Barriers to Technology Adoption: A significant difference is observed in barriers to technology adoption (Chi-Square = 5.108, Sig = 0.024). Respondents without internet access face more significant barriers (mean rank = 66.52) compared to those with internet access (mean rank = 82.56). This suggests that lack of internet access is a key barrier to technology adoption, possibly due to issues like affordability, infrastructure, or lack of training.

Comparison difference between demographic variable (age of the respondents) and various dimension of digital literacy

Ho2: There is no signification difference between demographic variable (age of the respondents) and various dimension of digital literacy

	Age	N	Mean	SD	F	Sig
Digital Literacy	Below 20 Years	40	2.31	0.967	4.542	.004
	21-30 Years	52	2.20	0.535		
	31-40 Years	43	2.60	0.719		
	41-50 Years	15	2.88	0.704		
	Total	150	2.41	0.765		
Technology Acceptance	Below 20 Years	40	2.79	0.814	1.371	.254
	21-30 Years	52	2.61	0.669		

(Perceived Usefulness)	31-40 Years	43	2.80	0.850		
	41-50 Years	15	3.03	0.773		
	Total	150	2.75	0.776		
Technology Acceptance (Perceived Ease of Use)	Below 20 Years	40	3.11	0.658	.479	.697
	21-30 Years	52	3.03	0.462		
	31-40 Years	43	3.17	0.553		
	41-50 Years	15	3.07	0.578		
	Total	150	3.10	0.554		
Barriers to Technology Adoption	Below 20 Years	40	3.03	0.860	.155	.926
	21-30 Years	52	2.95	0.582		
	31-40 Years	43	3.03	0.663		
	41-50 Years	15	3.02	0.691		
	Total	150	3.00	0.693		

Digital Literacy: The ANOVA results show a statistically significant difference in digital literacy across different age groups (F = 4.542, Sig = .004). The mean scores indicate that younger respondents, particularly those aged 21-30 years (mean = 2.20), have lower digital literacy compared to older age groups, especially those in the 41-50 years age group (mean = 2.88). This suggests that older individuals may feel more confident in their digital literacy skills compared to younger respondents.

Technology Acceptance (Perceived Usefulness): There is no statistically significant difference in the perceived usefulness of technology across age groups (F = 1.371, Sig = .254). However, the mean scores show a slight trend where older respondents, especially those aged 41-50 years (mean = 3.03), perceive technology as more useful compared to younger respondents, particularly those aged 21-30 years (mean = 2.61).

Technology Acceptance (Perceived Ease of Use): The results indicate no significant difference in the perceived ease of use of technology across age groups (F = .479, Sig = .697). All age groups report relatively similar levels of comfort in using technology, with mean scores ranging from 3.03 to 3.17, indicating moderate ease of use across all groups.

Barriers to Technology Adoption: There is no significant difference in the barriers to technology adoption across age groups (F = .155, Sig = .926). All age groups face similar barriers, with mean scores around 3.00, indicating moderate challenges such as internet access, affordability, and lack of knowledge or training.

FINDINGS

- The demographic data indicates several key majority trends among the respondents. In terms of gender, females slightly outnumber males, representing 51.3% of the sample. Age-wise, the majority of respondents are between 21-30 years old (34.7%), followed by the 31-40 years group (28.7%). Regarding education, most participants are either graduates (30.7%) or have completed secondary education (26.7%). Employment status shows that 42% of respondents are employed, which is the largest group, followed by self-employed individuals at 22.7%. The majority of households (44.7%) have a monthly income of below Rs.10,000, suggesting a lower-income demographic. Lastly, a larger portion of the respondents reside in rural areas (57.3%) compared to urban areas, making rural households the majority group in this study.
- The majority of respondents, 56%, have access to both the internet and digital devices such as smartphones or computers. However, a notable 44% of the population lacks access to these essential digital resources
- The data indicates that the majority of respondents with access to the internet report slightly higher levels of digital literacy and technology acceptance (perceived usefulness and ease of use), but these differences are not statistically significant. However, there is a significant difference in barriers to technology adoption, where those without internet access face greater challenges (mean rank = 66.52) compared to those with internet access (mean rank = 82.56). This suggests that internet access plays a critical role in reducing barriers to technology adoption for the majority of respondents.
- The data shows that for the majority of respondents across age groups, the levels of digital literacy and technology acceptance (perceived usefulness and ease of use) are fairly moderate. Those in the 41-50 years age group report the highest digital literacy (mean = 2.88) and perceived usefulness of technology (mean =

3.03), while younger respondents (below 20 and 21-30 years) generally have lower scores. For technology acceptance (ease of use), all age groups report similar levels, with mean scores around 3.00, indicating moderate ease in using technology. Regarding barriers to technology adoption, there are no significant differences across age groups, with mean scores around 3.00, showing that barriers such as internet access and affordability are consistent challenges for most respondents.

SUGGESTIONS:

- Since the study highlights that a significant portion of respondents without internet access face greater barriers to technology adoption, efforts should be focused on improving internet infrastructure, particularly in rural areas. Expanding affordable internet access can help bridge the digital divide and foster higher digital literacy levels and technology acceptance.
- Given that younger age groups reported lower digital literacy compared to older respondents, it would be beneficial to implement targeted digital literacy programs, especially for younger individuals. These programs should focus on building essential skills such as navigating online services, using digital tools for productivity, and addressing privacy and security concerns.
- With a large percentage of respondents coming from lower-income households, providing affordable digital devices and internet services can significantly reduce the barriers to technology adoption. Government and private sector collaborations can introduce subsidies or financial assistance programs to make digital resources more accessible to low-income families.
- The data suggests moderate levels of perceived usefulness of technology across all age groups. Campaigns or initiatives that promote the practical benefits of digital technology in improving daily tasks, education, and overall quality of life could help increase technology acceptance among respondents.
- While the overall ease of using technology is moderate, respondents across all age groups face consistent barriers such as affordability and a lack of knowledge or training. Providing regular digital training workshops and creating community-based tech support centers can help users become more comfortable with technology and reduce these barriers.

CONCLUSION

The study highlights several key findings regarding digital literacy and technology acceptance among rural and urban households in Coimbatore district. The demographic data shows that most respondents are from rural areas, have low-income backgrounds, and possess moderate levels of education, with graduates making up the largest educational group. While over half of the respondents have access to the internet and digital devices, a significant portion still lacks these resources, contributing to challenges in digital adoption.

Digital literacy and technology acceptance levels are moderate across age groups, with older respondents (particularly those aged 41-50) showing slightly higher digital literacy and perceived usefulness of technology compared to younger respondents. Despite these differences, perceived ease of use remains consistent across all age groups, indicating that most respondents are reasonably comfortable using technology. However, barriers such as limited internet access, affordability, and lack of training continue to hinder widespread technology adoption, especially among those without internet access.

Overall, the findings suggest that while there is a growing acceptance of technology, efforts to improve internet access, affordability, and digital literacy training, especially in rural and low-income populations, are critical to ensuring broader and more inclusive digital participation.

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