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Assessing Digital Literacy among the Oraon Tribe of Jharkhand: A Study

Pradeep Kumar Mahto[1,*], K.L. Mahawar[2]

Abstract

Digital literacy is essential for inclusion and socioeconomic empowerment in the digital era. This study examines the digital literacy levels of the Oraon tribe in Jharkhand, with a focus on identifying skill gaps, demographic disparities, and barriers to digital access. A mixed-methods approach was employed to gather data from respondents in the Ranchi district, utilizing structured questionnaires and interviews. Male respondents made up the majority (61.5%), with the largest age group being 26–35 years (45.9%), and the majority (34.9%) holding a degree of less than matriculation. Even though many people owned a smartphone, males were much more proficient with technology than females when it came to sending messages ($t = 3.096$, $p < .001$), using mobile apps ($t = 3.584$, $p < .001$), accessing e-governance services ($t = 2.516$, $p = .013$), and finding information online ($t = 4.295$, $p < .001$). However, there were no discernible differences in the use of digital payments by gender. The main challenges identified were low educational attainment, limited connectivity, and language limitations. To boost digital inclusion among the Oraon tribe, this study suggests infrastructure upgrades, gender-sensitive training, and locally relevant digital content.

Keywords: Digital literacy, Oraon tribe, Tribal development, ICT access, Ranchi

INTRODUCTION

Technology plays a crucial role in daily living in the modern era. A vast and ever-expanding corpus of knowledge is now easily accessible and virtually infinite because of the advent of information and communication technologies, [1-9]which have completely transformed how people use and access information (Shopova, [10]2014). Because people must increasingly use a variety of e-resources to complete activities and solve problems, digital literacy has become "an essential requirement in a digital age" (Shettappanavar et al., [9]2019). However, to advance equality, it is crucial to overcome inequalities in access to digital devices and ensure that everyone, particularly underrepresented groups, has the opportunity to utilize technology (Kaeophanuek et al.,[6] 2018) (Table 1).

***Author for Correspondence**
Pradeep Kumar Mahto
E-mail: pradeeppranay185@gmail.com

[1]Research Scholar, Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Vidya Vihar, Rae-Bareli Road, Lucknow, Uttar Pradesh, India
[2]Professor, Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Vidya Vihar, Rae-Bareli Road, Lucknow, Uttar Pradesh, India

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Digital Literacy

The word "Digital literacy" combines from two words, "digital" and "Literacy." Digital means information is a symbolic representation of data, and literacy is the capacity to write coherently, think critically about the written world, and be ready for knowledge. Researchers studying digital literacy examine various subjects and digital tools (Table 2).

Digital literacy refers to the ability to find, organize, comprehend, evaluate, and analyze information using digital technologies. It entails having a basic understanding of modern high technology and knowing how to use it effectively.

Table 1. Demographic profile

Demographic profile	Frequency	Percentage
Gender		
Male	142	61.5%
Female	89	38.5%
Age		
15-25	58	25.1%
26-35	106	45.9%
36-45	51	22.1%
46 and above	16	6.9%
Educational level		
non-matric	83	35.9%
Matric Pass	102	44.2%
Under graduate	30	13.0%
Postgraduate	16	6.9
Smartphone ownership		
Yes	137	59.3%
No	90	40.7%

Table 2. KMO and Bartlett's Test.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of sampling Adequacy		.791
Bartlett's Test of Sphericity	Approx Chi-square	651.841
	df	10
	Sig.	.000

Table 3. Access and utilization of digital tools and services in education

S.N.	Statement	F	df	Sig.
1	I am able to use a cell phone to send and receive message without assistances.	39.488	3	.000
2	I have no trouble using mobile apps like Facebook, YouTube, or WhatsApp.	27.636	3	.000
3	I can use digital platforms (like Aadhaar, ration, or health card apps) to access government services.	14.792	3	.000
4	I feel comfortable using internet banking, mobile wallets, and UPI as digital payment options.	4.653	3	.004
5	I can get news, medical information, and other helpful services for my everyday life online.	30.209	3	.000

Significant at 0.05

Digitally literate people can collaborate and communicate more effectively, particularly with others who share their expertise (Table 3).

Oraon Tribe

The Oraon tribe is one of the most important tribal communities in Jharkhand, India. Oraon is an agricultural community in India (Chandra & Paswan,[2] 2020). According to the 2011 census, the Oraon population is 1,716,618. They are the second-largest population in Jharkhand (Ghosh-Jerath et al., [4]2015). The Mundas are another important tribal group of Jharkhand, and the Munda tribal group is believed to have brought the Oraon tribe to the Chhotanagpur region. The oraon community reportedly first migrated to Rohtasgarh from the southwest region of Madhya Pradesh, where they clashed with nearby tribes (Table 4) The Oraons were divided into two groups in Rohtasgarh, one of which crossed the Son River to enter the Chhotanagpur region. They met the Mundas near the village of Mudma, near Ranchi, and were apparently greeted by them (Gautam,[3] 2025).

Table 4. Cultural and language barriers

S.N.	Statement	N	Mean	Mode	Median	S. D
1	Apps and digital devices are not available in my mother tongue	231	3.9004	4.00	4.0000	.61400
2	I can't fully understand instructions or information on digital platforms because of language barriers.	231	4.0346	4.00	4.0000	.69696
3	I am more familiar with the culture, that's why I prefer traditional knowledge sources (community leaders, oral communication) over digital ones.	231	4.1602	4.00	4.0000	.63614
4	The absence of digital content in tribal languages affects my ability to make efficient use of online resources.	231	4.1169	4.00	4.0000	.75712

Significant at 0.05

OBJECTIVE

1. To determine the access and utilization of digital tools and services among the Oraon tribe.
2. To identify the problems and challenges faced by the tribe in acquiring digital skills.
3. To investigate how cultural and language barriers affect digital literacy in tribal communities.

Hypotheses

S.N.	Hypotheses	Accept/Reject
1	There is no significant difference between gender and their ability to use a cell phone to send and receive messages without assistance.	*Reject Table 2*
2	There is no significant difference between males and females in accessing news medical information online.	*Reject Table 2*
3	There is a significant difference between gender and their ability to use mobile apps such as Facebook, YouTube, and WhatsApp.	*Accept Table 2*
4	The usage of digital payment methods (internet banking, mobile wallets, UPI) varies significantly across male and female respondents.	*Reject Table 2*

Significance of the study

Assessing the digital literacy levels, difficulties, and obstacles encountered by the Oraon tribal community, a group frequently overlooked in mainstream technological advancements, is the study's key contribution. The study offers valuable insights into how various community segments interact with digital devices, particularly smartphones and online platforms, by examining demographic factors such as age, gender, and educational background. The study helps to identify the unique needs of tribal groups by highlighting problems, including poor connectivity, lack of electricity, high device costs, limited training, and cultural-linguistic challenges. The findings are significant for development organizations, educators, and policymakers, as they underscore the importance of culturally relevant content, localized digital literacy programs, and improved infrastructure. Ultimately, the study provides a solution to bridge the digital divide, promote inclusivity, and enable tribal groups to access essential services, including economic, educational, healthcare, and government services, in the digital age.

RESEARCH METHODOLOGY

This study employed a descriptive survey method to investigate the digital skills, problems, and challenges faced by the Oraon tribe in utilizing digital technology. This method was chosen because it facilitates the statistical analysis of trends and associations while collecting both demographic and attitudinal data using a structured questionnaire. The research was conducted in the Ranchi district of Jharkhand, India. This study used purposive sampling to collect the data. Data were collected using a structured questionnaire divided into two parts: a demographic profile capturing age, gender, education, occupation, residence, cell ownership, and internet access; and a Digital Literacy Scale comprising Likert-scale items based on access and use of digital devices, assessment of digital information, knowledge of safe and ethical digital practices, and recognition of challenges faced by

Table 5. Problems and challenges faced by gender

S.N.	Challenges	Gender	N	t	Sig.
1	Poor internet connectivity	Male	142	-.399	.690
		Female	89		
2	Lack of electricity	Male	142	-.214	.8311
		Female	89		
3	High cost of smartphone	Male	142	1.322	.187
		Female	89		
4	Lack of proper training	Male	142	-1.546	.124
		Female	89		
5	Don't fully trust in online information	Male	142	1.849	0.66
		Female	89		
6	Technical issue	Male	142	2.326	0.21
		Female	89		

Significant at 0.05

the participants (Table 5). The data were coded and analyzed using SPSS, where descriptive statistics such as means, standard deviations, frequencies, and percentages were employed to summarize responses, and inferential statistics, including chi-square tests, t-tests, and ANOVA, were used to examine variations in digital literacy across demographic factors such as age, gender, and education level.

LITERATURE REVIEW

The importance of digital literacy for academic achievement, social engagement, and preparing for the demands of life and the workplace is becoming widely acknowledged (Shopova, [10]2014). Research has demonstrated the importance of motivational techniques in enhancing pupils' digital literacy abilities. For example, Lilian[7] (2022) examined 583 responses and found a favorable correlation between digital literacy competency and motivational belief systems. This highlights the significance of self-motivation in preparing children for a digital future. According to the same study, the capacity for innovation among university students is positively correlated with digital literacy, with notable variations across different educational backgrounds, academic fields, institutions, and training experiences. Adeoye and Adeoye[1] (2017) found that 60,997 Nigerian undergraduates were very confident in their ability to use media-capture devices, internet resources, and ICT literacy. They advised professors to support research and ICT-based learning methods. In a similar vein, Jan[5] (2018) found that attitudes toward ICT use were substantially correlated with digital literacy among 344 secondary students in Karachi. Regression analysis revealed that views were influenced by prior training, device use, and the frequency of use. Kaeophanuek et al.[6] (2018) investigated the growth of digital literacy among library and information science students and instructors in Thailand, based on interviews indicating difficulties with the educational environment [11] (Table 6). They found that while students and instructors used digital tools extensively, they only had intermediate abilities in terms of information transformation. Tohara et al.[12](2021) evaluated a digital literacy skills model with teachers in Malaysia and found it helpful in improving social networking-based learning practices. The model includes cognitive, technological, and ethical characteristics. Nearly 80% of the 260 Central Indian dental students surveyed by Saxena et al.[8] (2018) acknowledged the value of social media in their professional studies, and postgraduate students demonstrated greater proficiency in application use, search tactics, and research engagement. They also reported high smartphone ownership (94.23%) and Internet access (56%). (Shettappanavar et al.,[9] 2019) evaluated the ICT and internet proficiency of female postgraduate students at Karnatak University. They found that while Google was widely used and there was some awareness of Google Scholar (68.83%), there was little understanding of advanced search techniques, copyright concerns, and difficulties caused by inadequate connectivity and institutional limitations.

DATA ANALYSIS

Demographic Information

Demographic information is presented in , which reveals that the demographic profile (N = 231) consisted of 89 (38.5%) female participants and 142 (61.5%) male participants. With 106 respondents (45.9%) aged 26–35, 58 (25.1%) aged 15–25, 51 (22.1%) aged 36–45, and 16 (6.9%) aged 46 or above, the age distribution was centered on younger adults. Regarding educational attainment, most respondents were either non-matriculated (83, 35.9%) or had completed matriculation (102, 44.2%), with 30 (13.0%) holding undergraduate degrees and 16 (6.9%) holding postgraduate degrees. A total of 137 respondents (59.3%) reported owning a smartphone; the stated "No" figure (90) seems out of line with its percentage (40.7%), which would indicate roughly 94 non-owners. In general, the sample consisted of matriculated males and young adults, most of whom owned smartphones.

KMO and Bartlett's Test to Assess and Utilize Digital Tools and Services in Digital Literacy

Factor analysis is a type of multivariate statistical technique used to analyze a single set of factors. According to Shrestha [11](2021), when the KMO value exceeds 0.5, the data are suitable for further analysis. Table 2 shows that the KMO and Bartlett's test results confirm the appropriateness of the data for factor analysis. The KMO score of 0.791 indicates acceptable sampling adequacy, indicating that the variables have a sufficient proportion of variance and that the sample size is appropriate. The chi-square value of 651.841, with 10 degrees of freedom (df) and a significance value of 0.000, is below 0.05, according to Bartlett's test of sphericity. This result confirms a significant relationship between the variables and rejects the null hypothesis that the identity matrix is valid.

Table 6 shows that respondents' levels of digital literacy clearly indicate that most digital skills differ by gender. In terms of sending and receiving messages ($t = 3.096$, $p < .001$), utilizing mobile applications ($t = 3.584$, $p < .001$), accessing government digital platforms ($t = 2.516$, $p = .013$), and finding online news or medical information ($t = 4.295$, $p < .001$), men scored significantly higher than women did. According to these results, men are more competent and self-assured than women in these areas. Nonetheless, there was no discernible difference in the use of digital payment systems, such as UPI, mobile wallets, and online banking ($t = 1.614$, $p = .108$), indicating that both genders are equally comfortable with digital financial transactions. In general, there are still gender differences in information use and mobile abilities, but not in digital payments.

According to Table 3, the one-way ANOVA results show statistically significant differences between the four groups (df = 3). The ability to send and receive messages ($F = 39.488$, $p < .001$), use government digital platforms ($F = 14.792$, $p < .001$), comfort with digital payments ($F = 4.653$, $p = .004$), and ability to access news and medical information online ($F = 30.209$, $p < .001$) varied among participants.

Table 6. Access and utilization of digital tools and services between genders

Statement	Gender	N	t	p-value
I am able to use a cell phone to send and receive message without assistances.	Male	142	3.096	.000
	Female	89		
I have no trouble using mobile apps like Facebook, YouTube, or WhatsApp.	Male	142	.3.584	.000
	Female	89		
I can use digital platforms (like Aadhaar, ration, or health card apps) to access government services.	Male	142	2.516	.013
	Female	89		
I feel comfortable using internet banking, mobile wallets, and UPI as digital payment options.	Male	142	1.614	.108
	Female	89		
I can get news, medical information, and other helpful services for my everyday life online.	Male	142	.4.295	.000
	Female	89		

Significant at 0.05

The null hypothesis of equal means was rejected for all five items because of the large F-values, which indicate significant between-group variance compared to within-group variance, particularly for messaging and information availability.

The descriptive statistics show that respondents strongly agree that linguistic and cultural barriers prevent digital inclusion. There is consistently high agreement across the four language-and-culture items (N = 231) that digital use is limited by language and culture. With comparatively low standard deviations (.61–.76) and means ranging from 3.90 to 4.16 (medians and modes = 4.00 for all), the majority of respondents agree or strongly agree, and responses are closely clustered around the upper end of the scale. The greatest mean is "preference for traditional knowledge sources" (M = 4.1602), which is followed by "difficulty understanding platform instructions" (M = 4.0346) and "absence of tribal-language content affects use" (M = 4.1169); "apps not available in my mother tongue" (M = 3.9004) is also high. Practically speaking, these findings indicate pronounced language and cultural hurdles; removing them through culturally appropriate user experiences, tribal-language interfaces, and community-based digital literacy initiatives will likely boost significant digital adoption.

The problems and challenges encountered by the Oraon tribe in utilizing digital devices. The six challenge items—poor internet connectivity ($t = -0.399$, $p = .690$), lack of electricity ($t = -0.214$, $p = .831$), high smartphone cost ($t = 1.322$, $p = .187$), lack of proper training ($t = -1.546$, $p = .124$), mistrust of online information ($t = 1.849$, $p = .660$), and technical issues ($t = 2.326$, $p = .210$)— showed no statistically significant gender differences (all reported $p > .05$). Simply put, the perceptions of infrastructure, trust, cost, and training hurdles are identical for men and women in this sample.

FINDINGS AND CONCLUSION

The investigation revealed a multidimensional digital divide driven by factors such as gender, age, education, language, and infrastructure, as indicated by a survey involving 231 Oraon respondents. The demographic profile shows that the majority of respondents were male (61.5%), between the ages of 26 and 35 (45.9%), had less than a high school diploma (34.9%), and owned smartphones. Significant gender differences in digital skills were revealed by independent t-test results: while digital payment comfort did not differ significantly ($t = 1.614$, $p = .108$), males demonstrated greater competence in messaging ($t = 3.096$, $p < .001$), using mobile apps ($t = 3.584$, $p < .001$), using government platforms ($t = 2.516$, $p = .013$), and accessing online information ($t = 4.295$, $p < .001$). The data's eligibility for factor analysis and dimensional reduction was confirmed by the KMO value of 0.791 and a significant Bartlett's test result ($p = 0.000$). Education is a major factor in digital capability, as evidenced by the ANOVA results, which also reveal substantial disparities across educational groups in digital access categories. The respondents (means = 3.90–4.16) strongly agreed that language and cultural incompatibilities hamper digital adoption, particularly reliance on oral sources and difficulty in understanding platform instructions. Both sexes equally acknowledged infrastructure problems, including unstable electricity, poor connectivity, expensive devices, technological challenges, and a lack of trust in Internet sources. In summary, to close the digital divide and encourage inclusive digital participation, it is imperative to address these issues through community-led and culturally appropriate digital literacy programs, locally relevant content, and upgraded infrastructure (such as solar charging stations and reasonably priced devices).

Suggestions

- *Digital training for women:* To bridge the gender gap in digital literacy, specialized digital literacy programs should be established for Oraon women.
- *Education-based modules:* To enhance digital competence, create training at various skill levels based on education.
- *Local language content:* To overcome linguistic and cultural obstacles, provide awareness-raising resources and digital tools in Kurukh and other regional languages.
- *Boost infrastructure and trust:* To increase confidence in digital platforms, improve electricity, internet connectivity, and knowledge of online security.

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