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# Digital Inclusion and Access to E-Governance Services among Tribal Communities.

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**Abstract**
This study examines 'digital inclusion and access to e-governance services among tribal communities,' with a special focus on access, usage, satisfaction, and challenges in using digital government services provided by the government of Jharkhand. E-governance plays an important role in improving transparency, efficiency, and citizen participation in government service delivery. The study employs a survey-based research design, with data collected from tribal respondents via a structured questionnaire, and received 390 responses: male (63.1%) and female (36.9%). Most of the tribes in this study are aged 39-48. Cronbach's alpha value (.767) denotes an acceptable level. Descriptive statistics such as frequency, percentage, mean, and standard deviation are used to analyze awareness, usage patterns, and satisfaction levels. Inferential statistical tools such as the chi-square test, t-test, and ANOVA.

**Keywords:** E-governance, tribal communities, awareness, digital inclusion, survey, Jharkhand.

## Introduction

The emergence of e-government in the late 1990s marked a significant transformation in how governments worldwide began to leverage information and communication technologies (ICTs) to enhance governance, public administration, and service delivery (Yadav & Singh, 2012). The goals of this change were to increase service accessibility, lower expenses, and boost efficiency (Bhatia & Kiran, 2016; Paramashivaiah & Suresh, 2016). Countries such as the USA, UK, and China have modernized their operations (Srivastava 2015). According to Sridevi and K (2017), e-government in India has developed into a platform for information exchange and real-time citizen participation in political processes. The importance of ICT in resilience and accessibility was further highlighted during the COVID-19 pandemic (UN Government Survey 2022). Governance is rapidly replacing traditional institutions with an open, networked model as digital infrastructure expands (Paramashivaiah and Suresh, 2016).

## E governance

The use of "information and communication technology" (ICT) by the Government to deliver services, share information, and enhance relationships with residents, corporations, and other government bodies is known as "e-governance" or electronic governance. E-governance extends beyond digital service delivery by leveraging ICT to enhance transparency, citizen engagement, and institutional reform (Grigalashvili, 2022; Heeks, 2006). E-governance incorporates the three pillars of good governance: accountability,

responsiveness, and inclusivity, in contrast to e-government, which focuses on digital services (Kalsi et al., 2009; Khemchandani, 2019). Projects such as Kerala's Akshaya Project serve as prime examples of initiatives aimed at promoting sustainable development and closing the digital divide (Paramashivaiah & Suresh, 2016). In the digital age, e-governance facilitates G2C, G2B, and G2G interactions, enabling more cooperative, data-driven, and effective governance (Bannister & Suri, 2017; Bannister & Connolly, 2012).

**Background of the study**

India's e-governance projects demonstrate the integration of technology, citizen-centric approaches, and enhanced service delivery. The service-access-perception (S-A-P) paradigm has demonstrated its effectiveness in optimizing public value through initiatives such as the Driving License Project and Passport Seva (Jain & Suri, 2017). Nevertheless, many efforts encounter difficulties, leading to underutilized funding and minimal impact. Social distancing and digital readiness are two characteristics that have impacted adoption rates in the post-COVID period (Iyer & R., 2017; Singh et al., 2020). Transparency in tele center transactions, which are influenced by personnel and geography, is crucial for efficient e-governance, according to a study involving 400 citizens (Iyer & R., 2017).

A comparative analysis was conducted using multi-criteria decision-making (MCDM) methodologies, including TOPSIS, WSM, and WPM, to identify the key decision-making factors for successful implementation (Sahoo et al., 2017). Chandigarh's initiatives demonstrate a calculated application of ICT to enhance government quality, accessibility, and transparency (Kumarwad & Kumbhar, 2016; Vaidya, 2020). Similarly, the Satara District of Maharashtra established a localized conceptual framework for citizen-centric e-governance (Kumarwad & Kumbhar, 2016b). Due to local governance and stakeholder collaboration, the Municipal Corporation in Surat has successfully utilized GIS and spatial data proactively (Mukherjee, 2018).

India's commitment to enhancing rural production and service delivery is evident in national ICT projects such as E-Choupal, Akashganga, Gyandoot, Tata Kisan Kendra, and Kisan Call Centers (Bhatia & Kiran, 2016). The digital divide has been considerably reduced by initiatives such as Kerala's Akshaya, which has more than 5,000 e-Kendras (Paramashivaiah & Suresh, 2016). However, problems such as insufficient infrastructure, limited digital literacy, and weak policy frameworks still exist. The evaluations of 11 Indian states demand increased capacity building, stronger security, and higher-quality services( Kalsi & Kiran, 2015;Singh & Kiran, 2013).

It is essential to distinguish between e-governance, which involves structural and participatory reforms, and e-government, which focuses on digitalizing services (Grigalashvili 2022). Janowski (2015) provides a structured route to digital governance maturity through a four-stage model: digitization, transformation, engagement, and contextualization. The UN Government survey (2022) indicates that e-governance is developing globally; however, there are still gaps in regions such as Oceania and Africa.

The adoption of e-governance is influenced by factors such as usability, perceived value, age, education, and public trust (Carter and Belanger, 2004; Sharma, 2015). Trust, in particular, is shaped by citizens' prior experiences with governance (Grimmelikhuijsen and Meijer, 2014). While Internet technologies offer promise for democratic participation, their practical use in developed democracies remains limited( Chadwick & May, 2013). Recent research advocates incorporating AI into governance, recommending both procedural and content-level adaptations (Zuiderwijk et al., 2021).

**Objective**

- To determine the awareness of the e-governance scheme.
- To assess the level of digital engagement in Indigenous communities.
- To find out the problems and challenges faced by tribal communities when trying to use online governance platforms.

**Research gap**

Despite tremendous progress, there are still important research gaps in India's "e-governance" environment. Few studies have critically investigated why adoption remains inconsistent, particularly among rural, marginalized, and low-literacy communities (Grigalashvili, 2022; Kalsi and Kiran, 2015). Despite this, many studies have concentrated on ICT deployment and service delivery (Jain & Suri, 2017; Vaidya, 2020). Most recent research tends to overlook sociocultural, psychological, and trust-based obstacles to citizen engagement, instead focusing on administrative effectiveness or technology infrastructure (Sahoo et al., 2022). Furthermore, long-term sustainability and the effect of AI integration on governance inclusivity have received little attention (Gautam & Jain, 2017). Several regional frameworks modify national models to meet the specific demands of local communities (Kumarwad & Kumbhar, 2016). Research that incorporates contextual, participative, and equity-driven elements into the assessment and future planning of India's e-governance systems is therefore desperately needed.

**Research Methodology**

This study employed a survey-based quantitative approach. To find out the digital inclusion and access to the e-governance scheme of Jharkhand. The study was conducted in April 2025 in the rural and urban areas of the districts of Ranchi and Khunti, Jharkhand, India.

**Sample size and techniques**

This study collected data from tribal communities in Ranchi, Jharkhand. This study used purposive sampling. A total of 500 questionnaires were distributed, and 390 responses were received from the tribal communities, which means a 78% response rate.

**Data collection**

A structured questionnaire, developed based on earlier research on the adoption of e-governance and tribal digital inclusion (Bhatia and Kiran, 2016; Iyer and R.N., 2017), was used to gather data. Both closed-ended and Likert-scale questions were included in the survey to assess factors such as scheme awareness, online service accessibility, digital access connectivity, and problems and challenges. To guarantee clarity and cultural relevance, the survey was conducted in regional and tribal dialects with the assistance of local facilitators (Paramashivaiah & Suresh, 2016).

**Result and analysis**

Microsoft Excel and IBM SPSS Statistics 26v were used for data analysis. Demographic traits and awareness levels were summarized using descriptive statistics (mean, percentage, and frequency). Chi-square tests were among the inferential statistics used to investigate the correlations between e-governance awareness and demographic factors. To find significant differences in knowledge and usage across gender,

age, and educational categories, One-Way ANOVA and Independent Samples t-tests were used, along with KMO and Cronbach's alpha.

## Result and Analysis

### Demographic information

Table 1 shows the demographic details. There was moderate gender diversity, with 144 individuals (36.7%) female and 246 participants (63.1%) male. The respondents were divided into four age groups: 39–48 years old (123 respondents, 31.5%), followed by 29–38 years old (101 respondents each, 25.9%), and 18–28 years old (65 respondents, 16.7%). The mean age score of 2.6667 and standard deviation of 1.03743 indicate a broad dispersion across age groups. With a mean score of 1.6231 and a standard deviation of 0.48524, the majority of respondents (243, 62.3%) reported not having access to the Internet, while 147 (37.7%) reported having access. This suggests that respondents with limited digital connectivity may be affected in their use of digital and AI-based services.

**Table 1: Demographic information**

| Variables | Frequency | Percentage | Mean | S. D |
|---|---|---|---|---|
| Male | 246 | 63.1 | 1.3692 | .48322 |
| Female | 144 | 36.9 | | |
| **Age of the tribes** | | | | |
| 18-28 | 65 | 16.7 | 2.6667 | 1.03743 |
| 29-38 | 101 | 25.9 | | |
| 39-48 | 123 | 31.5 | | |
| 49 and above | 101 | 25.9 | | |
| **Access to the Internet** | | | | |
| Yes | 133 | 34.1 | 1.6590 | .47466 |
| No | 257 | 65.9 | | |

### Validity and Reliability

Cronbach's Alpha was used in Table 2 to assess the questionnaire's validity and reliability. With 18 items measuring the research variables, the scale yielded a Cronbach's Alpha of 0.767, indicating good internal consistency. The findings confirm that the items consistently measure the intended constructs, as indicated by an alpha value exceeding the generally recognized cutoff of 0.70. This level of dependability suggests that further statistical analysis of the questionnaire is warranted.

**Table 2: Validity and Reliability**

| Cronbach's Alpha | No of items |
|---|---|
| .767 | 18 |

### KMO and Bartlett test

The Kaiser–Meyer–Olkin (KMO) measure and Bartlett's Test of Sphericity, as shown in Table 3, were used to assess if the data were suitable for factor analysis. Meritorious sampling adequacy is indicated by the KMO score of 0.872, which suggests sufficient shared variation among the variables for factor

analysis. Furthermore, the correlation matrix is not an identity matrix, as demonstrated by the statistical significance of Bartlett's Test of Sphericity ($\chi^2 = 6502.876$, df = 78, $p < 0.001$). All of these findings show that the data are excellent candidates for factor analysis.

**Table 3: KMO and Bartlett test**

| **Kaiser-Meyer-Olkin Measure of Sampling Adequacy** | | .872 |
|---|---|---|
| Bartlett's Test of Sphericity | Approx. Chi Square | 6502.876 |
| | Df | 78 |
| | Sig. | .000 |

**Awareness about e-governance**

A one-way ANOVA analysis of awareness of e-governance services across various indigenous populations is presented in Table 3. There is a difference in mean awareness ratings between the tribes: Oraon (M = 1.58) and Lohara (M = 1.63) reported lower awareness, while Birhor (M = 1.93) and other tribes (M = 2.00) reported higher awareness. However, because the significance value is above the 0.05 level, the ANOVA indicates that this difference is not statistically significant (F = 2.696, p = 0.07). This implies that there is no significant difference in the tribal groups' awareness of e-governance services, and the observed disparities in mean scores may be due to chance rather than true group differences.

**Table 4: Awareness about e-governance service by tribes**

| **Statement** | **Tribes** | **Mean** | **S. D** | **F** | **Sig.** |
|---|---|---|---|---|---|
| Awareness about e-governance | Munda | 1.7183 | .45302 | 2.696 | 0.07 |
| | Oraon | 1.5775 | .49748 | | |
| | Santhali | 1.6610 | .47743 | | |
| | Lohara | 1.6250 | .49029 | | |
| | Karmali | 1.7174 | .45524 | | |
| | Mahali | 1.6585 | .48009 | | |
| | Ho | 1.8000 | .41039 | | |
| | Birhor | 1.9286 | .26227 | | |
| | Other | 2.0000 | .00000 | | |

**Gender-wise Awareness and Use of E-Governance Services**

Table 5 presents the awareness and use of specific e-governance services by gender, using an independent-samples t-test. The mean scores for various services, including Jharsewa, e-Tender, e-Nibandhan, e-Aadhar, Jharbhoomi, and Jansamvad, among male and female respondents, are strikingly similar, suggesting equal levels of awareness between the genders. Since all p-values are greater than 0.05, the t-test findings indicate that none of the differences are statistically significant. Both male and female respondents exhibit nearly equal levels of involvement with these platforms, indicating that gender does not have a discernible impact on awareness or use of e-governance services.

**Table 5: Gender-wise Awareness and Use of E-Governance Services**

| Statement | Gender | Mean | F | t | Sig. |
|---|---|---|---|---|---|
| Jharsewa | Male<br>Female | 1.6870<br>1.6389 | 3.477 | .973 | .331 |
| e-Tender | Male<br>Female | 1.7317<br>1.7431 | .243 | -.245 | .807 |
| e-Nibandhan | Male<br>Female | 1.7398<br>1.7361 | .026 | .081 | .936 |
| e-Aadhar | Male<br>Female | 1.7480<br>1.7500 | .008 | -.045 | .964 |
| Jharbhoomi | Male<br>Female | 1.7602<br>1.7431 | .560 | .378 | .706 |
| Jansamvad | Male<br>Female | 1.7561<br>1.7639 | 1.21 | -.173 | .863 |

**Accessibility of E-Governance Services by Gender**

Table 6 shows that the awareness and access to e-governance of male and female respondents do not differ statistically significantly, as indicated by a gender-wise independent-samples t-test. In terms of welfare portal awareness (M = 2.28 vs. 2.22; t = 0.547, p = 0.584), familiarity with online government services (M = 2.26 vs. 2.11; t = 1.211, p = 0.227), and knowledge of using government websites or mobile apps (M = 3.17 vs. 3.03; t = 1.224, p = 0.222), men reported somewhat higher mean scores. Males and females had nearly equal access to e-governance information in their native tongue (M = 1.06 vs. 1.05; t = 0.268, p = 0.789). The difference was not significant (t = −1.516, p = 0.130), despite women reporting slightly higher mean scores for obtaining information from community members or local authorities (M = 3.26 vs. M = 3.08). Overall, the results indicate that gender has no discernible impact on awareness or access to e-governance services, as all p-values exceed 0.05.

**Table 6: Accessibility of E-Governance Services by Gender**

| Statement | Gender | Mean | F | t | Sig. |
|---|---|---|---|---|---|
| Familiarity with online government services such as certificates, applications, and portals. | Male<br>Female | 2.2561<br>2.1111 | 0.94 | 1.211 | .227 |
| I am aware of online portals for welfare schemes meant for tribal communities | Male<br>Female | 2.2805<br>2.2153 | .183 | .547 | .584 |
| Accessibility of e- governance service information in your native language. | Male<br>Female | 1.0569<br>1.0486 | .256 | .268 | .789 |
| I know how to access government websites or mobile apps | Male<br>Female | 3.1707<br>3.0278 | 1.735 | 1.224 | .222 |
| I receive information about e-governance services from local authorities or community members | Male<br>Female | 3.0772<br>3.2569 | 2.001 | -<br>1.516 | .130 |

**Digital Access, Connectivity, and Inclusion in Daily Life.**

Table 7 used A one-way ANOVA to examine differences between age groups. The mean scores of respon-

dents from various age groups were compared in the analysis. According to the ANOVA results, the differences in mean scores between the age groups were not statistically significant because the computed F-value was small and the corresponding significance (p-value) was higher than 0.05. This implies that the variable being studied is not significantly influenced by age, and that the observed differences in mean values between age groups are likely due to chance rather than significant age-related changes.

**Table 7: Digital Access, Connectivity, and Inclusion in Daily Life.**

| Statements | F | t | Sig. |
|---|---|---|---|
| I have access to the smartphone or digital device for daily use. | .001 | -3.394 | .971 |
| I have regular access to the internet in my area. | 5.564 | -.700 | .019 |
| Digital technology is an important of my daily life activities. | 3.698 | .335 | .055 |
| I feel included in digital service compared to nontribal communities | 1.504 | -1.134 | .221 |

**Problem and Challenges faced by Tribes**

The findings of the one-way ANOVA, presented in Table 8, reveal notable variations in several issues and difficulties associated with the use of e-governance services. Because their p-values are below the 0.05 level, problems like poor internet connectivity ($F = 2.987$, $p = 0.031$), a lack of digital skills ($F = 4.969$, $p = 0.002$), expensive smartphones ($F = 5.174$, $p = 0.002$), fear of making mistakes when using online platforms ($F = 4.948$, $p = 0.002$), and inadequate guidance ($F = 4.111$, $p = 0.007$) exhibit statistically significant differences. However, difficulties such as technological issues ($F = 2.293$, $p = 0.078$) and government websites that are not accessible in the native language ($F = 2.096$, $p = 0.100$) do not show significant differences. Overall, the results indicate that impediments related to infrastructure, finances, and skills have a significant impact on the use of e-governance services, whereas language and technological difficulties appear to have a lesser impact.

**Table 8: Problems and Challenges**

| Problems and Challenges | F | Sig. |
|---|---|---|
| Lack of internet connectivity | 2.987 | .031 |
| Lack of digital skills | 4.969 | .002 |
| Government websites are not in my mother tongue. | 2.096 | .100 |
| High cost of Smartphone. | 5.174 | .002 |
| Technical Problem | 2.293 | .078 |
| Fear of making mistakes discourages me from using online platforms | 4.948 | .002 |
| Lack of proper guidance | 4.111 | .007 |

**Findings and conclusions**

This study represents the majority of tribal respondents, who were predominantly male (63.1%) and primarily from the 39–48 and 29–38 age categories. There was also a significant digital divide, with only 34.1% having internet access. The validity (KMO = 0.872; Bartlett's Test, $p < .001$) and reliability (Cronbach's Alpha = 0.767) attest to the statistical soundness of the data and the instrument. Although the ANOVA results show no significant differences among the tribes, awareness of e-governance services was generally moderate across all tribes, with the Birhor, Ho, and other tribes showing relatively higher

mean awareness. Males and females appear to be equally exposed to important e-governance services, including Jharsewa, e-Tender, e-Aadhar, and Jansamvad, according to gender-wise data. Similarly, there was no discernible gender difference in accessibility factors such as familiarity with online services, awareness of welfare portals, and capacity to access government websites. However, the lack of digital skills, high smartphone costs, fear of making mistakes, inadequate guidance, and poor internet connectivity were the main obstacles to effective e-governance use. These factors were all statistically significant, indicating that technological, economic, and psychological factors interact to limit the adoption of e-governance in tribal communities. Overall, the results indicate that while some knowledge exists, indigenous groups are unable to fully utilize e-governance services due to a lack of infrastructure, expertise, and support networks.

**Suggestions:**

- The government should expand mobile network coverage and internet access in remote and tribal communities.
- To boost confidence and proficiency with the e-governance system, tribal settlements should regularly conduct training and digital literacy programs.
- To improve accessibility and comprehension, e-governance websites must be offered in regional tribal languages
- Tribal communities should have access to affordable smartphones and data plans through social programs or subsidies.
- To promote the benefits of e-governance, awareness campaigns should be conducted through local authorities, educational institutions, and tribal groups.

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