IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 1, February 2025

E-Grampanchayat: Empowering Rural Governance with Native Language Technology

Mr. Om Ashok Chougule[1], Miss. Suhani Sudhakar Shinde[2], Miss Swati Parshuram Kamble[3], Miss Janavi Shrikrishna Kamble[4], Mr. Tushar Balasaheb Devkate[5]

Lecturer, Adarsh Institute of Technology and Research Centre, Vita, India[1]

Students, Adarsh Institute of Technology and Research Centre, Vita, India[2,3,4,5]

Abstract: *In the digital era, governance systems worldwide are transforming to become more efficient, transparent, and citizen-centric. However, rural governance, particularly in countries with diverse linguistic landscapes like India, continues to face significant challenges in accessibility and inclusivity. The E-Grampanchayat initiative seeks to bridge this gap by developing a digital governance framework that allows citizens to interact with their local governing bodies in their native language. This paper explores the design, implementation, and impact of a localized e-governance system that ensures rural citizens can access government services without language barriers, thereby fostering inclusivity and active civic engagement.*

Rural India, home to over 65% of the country's population, depends on the Grampanchayat system for administrative decisions, welfare schemes, taxation, and land records. Despite the government's push towards digital transformation through initiatives like Digital India, rural citizens often struggle to interact with digital platforms due to their predominant reliance on regional languages. Most e-governance platforms operate in English or Hindi, which alienates non-literate or semi-literate individuals who lack proficiency in these languages. As a result, a significant portion of rural community's remains digitally excluded, relying on intermediaries for even the most basic government services. This not only leads to inefficiencies but also increases the likelihood of corruption, misinformation, and procedural delays.

The E-Grampanchayat model is designed to address these challenges through an AI-driven, multilingual digital governance platform that enables rural citizens to access government services in their native languages. By leveraging Natural Language Processing (NLP), Speech Recognition, and AI-powered translation tools, the system ensures seamless interaction between users and government services. The proposed platform allows citizens to file grievances, apply for certificates, check land records, and pay taxes, and access welfare schemes with ease. The inclusion of voice-based assistance ensures that even those with limited literacy can interact with the system effortlessly, using their dialect or spoken language to navigate government services.

One of the core components of this system is the speech-to-text and text-to-speech technology, which allows users to submit applications or queries using voice input. The AI-powered backend then converts the speech into structured text, processes the request, and provides responses either in text or voice format in the user's preferred language. This ensures that governance is truly people-friendly, reducing dependency on third-party intermediaries. Furthermore, automated AI- driven translation services ensure that official documents, notices, and policies are dynamically converted into local languages, eliminating misinterpretation and improving citizen awareness.

A critical factor in rural digital adoption is the mobile-first approach, considering the increasing penetration of smartphones in rural areas. Unlike traditional governance models that require physical visits to government offices, the E-Grampanchayat platform is designed to work seamlessly on low-end smartphones with minimal internet connectivity, ensuring widespread usability. Additionally, offline support mechanisms, such as SMS-based queries and USSD-based services, allow citizens in areas with poor internet access to interact with the system. A key feature of the system is the integration of AI-driven chatbots, which can answer frequently asked questions in multiple languages, reducing the burden on human administrators and improving response times.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 1, February 2025

The implementation of blockchain technology within E-Grampanchayat further enhances transparency and security in rural governance. Traditional government processes often involve lengthy bureaucratic procedures, leading to inefficiencies and possible corruption. Blockchain provides a tamper-proof, decentralized record-keeping system for land records, welfare disbursements, and taxation, ensuring that all transactions are transparent and immutable. By eliminating middlemen, blockchain-based governance ensures that citizens receive direct benefits without delays or unnecessary processing fees.

To assess the effectiveness of the E-Grampanchayat model, a pilot implementation was conducted in select rural areas. The results revealed a substantial increase in citizen participation, with a 60% reduction in the time required to process government applications and a 45% increase in the number of people accessing digital governance services. Villagers, especially women and the elderly, who were previously reluctant to engage with government platforms due to language and literacy barriers, found the voice-enabled features to be a game-changer in their interaction with local governance bodies. The system also significantly reduced dependency on intermediaries, empowering citizens with direct access to their rights and entitlements.

Despite the promising outcomes, the implementation of E-Grampanchayat faces several challenges. One of the primary obstacles is digital illiteracy among rural citizens and government officials. While younger generations are more adaptable to technology, older individuals often struggle with the adoption of digital services. To address this, the study suggests conducting digital literacy workshops that familiarize citizens and local administrators with the platform, ensuring its widespread acceptance and usability. Additionally, infrastructural limitations such as poor internet connectivity and unreliable electricity supply pose barriers to the seamless operation of the system. The research proposes hybrid solutions, including community-based digital kiosks, which allow citizens to access services through village-level digital centers managed by trained facilitators.

Another challenge is linguistic diversity and dialect variations within regional languages. Many Indian languages have multiple dialects, which can sometimes lead to misinterpretation of AI-driven translations. The study proposes a collaborative approach involving linguists, AI researchers, and local governance bodies to continuously refine and train the language models based on real-time user feedback. This will ensure that the system remains adaptive and contextually relevant to different linguistic demographics.

The economic impact of E-Grampanchayat is also noteworthy. By streamlining government processes and eliminating bureaucratic inefficiencies, the system can significantly reduce administrative costs for local governing bodies. Moreover, by improving access to welfare schemes and financial services, rural citizens can benefit from timely government support, leading to economic empowerment and better resource allocation. Additionally, the implementation of a digital payment gateway within the system allows citizens to pay taxes, fines, and service fees online, reducing delays and improving revenue collection for local governance bodies..

Keywords: E-Grampanchayat, Digital Governance, E-Governance, Native Language Technology, Smart Village Initiatives