Examining The Opportunities And Challenges Of Implementing ICT In Panchayat Raj System In Tripura

Asmita Debbarma[1] , Dr. P. Sakthivel[2]

[1]*Research scholar of Annamalai University, Tamil Nadu, India Department of Political Science &Public Administration. email: debbarmaasmita63@gmail.com*
[2]*Professor Department of Political Science & Public Administration Annamalai University, Tamil Nadu, India.*

Keywords:	Abstract
Digital governance, ICT, Infrastructure constraints, Local governance.	The aim of this study is to examine the opportunities and challenges of implementing ICT in Panchayat Raj System in Tripura. The methodology used in this study involves documentary research and empirical approaches. A sample of 48 respondents, including NIC officers, web developers, technology experts, and Panchayat Raj officials, was selected using simple random and purposive sampling with simple frequency. The study addresses the challenges faced by Panchayat Raj institutions in adopting and utilizing ICT tools effectively and how it can enhance the accessibility of government services to the rural population by Implementing ICT in the Panchayat Raj system in study area. The study focuses on the specific capacity-building initiatives or training programs provided to Panchayat Raj functionaries to enhance their ICT skills and what type of changes in citizen participation and engagement in local governance due to the introduction of ICT in Panchayat Raj institutions in the study area. The study also addresses the following recommendations, which will be helpful for Panchayat Raj institutions in adopting and utilizing ICT tools effectively and to enhance ICT skills that will affect the citizens and local governance.

Introduction

The fast development of information and communication technology (ICT) in recent years has revolutionized many industries and profoundly altered how societies and organization's function. The Panchayat Raj System, a decentralized system of government in India, is essential for local self-governance and grassroots administration (Deb, T. & Saha, 2022). A growing number of people are considering how ICT might be incorporated into the Panchayat Raj System to improve efficiency, transparency, and general effectiveness as they become more aware of its possibilities. It intends to investigate the advantages and disadvantages of integrating ICT into the Panchayat Raj System, particularly in the state of Tripura. India's northeastern state of Tripura is renowned for its various communities and rich cultural heritage. With a sizable rural population, efficient and inclusive local governance is essential for the state's overall growth. Tripura's local government is based on the Panchayat Raj System, which has a three-tier structure with administrations at the village, block, and district level (Bhatnagar, S. C. 2009). However, the system confronts several difficulties, including a lack of funding, red tape, and ineffective service delivery.

The Panchayat Raj System's adoption of ICT has a huge potential to address these issues and enhance governance outcomes. ICT can speed up decision-making procedures, manage administrative chores more effectively, and increase citizen participation. ICT can bridge the gap between the government and the people by digitizing government services and creating online platforms (Biswas, R. & Chakma, B. R. 2023) to improve access to information, services, and complaint procedures. ICT in the Panchayat Raj System has benefits, but there are also obstacles. To enable the successful implementation of ICT efforts, it is crucial to solve difficulties with infrastructure, connection, digital literacy, and data security (Sonawane, M. 2020). For elected officials and Panchayat Raj personnel to effectively use ICT tools and platforms, their participation and training is also essential. Stakeholder participation, a clear plan for ICT integration, and a thorough grasp of the local context are all necessary for overcoming these obstacles.

The study intends to give policymakers, administrators, and stakeholders involved in the governance process with insights and recommendations by exploring the potential and problems associated with deploying ICT in the Tripura Panchayat Raj System. The results of this study will add to the body of knowledge already available on ICT-enabled governance and help formulate strategies for inclusive and participatory local governance in Tripura by maximizing the transformative power of technology. The study will explore the unique benefits that ICT delivers to the Panchayat Raj System, such as better service delivery, increased transparency, and citizen involvement (Rao, K. P. 2018). The difficulties with infrastructure, communication, capacity building, and data security will also be covered. It is possible to learn important lessons for the context of Tripura by looking at successful ICT efforts carried out in other locations. In the end, the Panchayat Raj System may benefit from ICT integration by becoming a more effective, responsible, and citizen-centered governing structure that advances Tripura's overall development.

Statement of the problem
The focus of the problem statement is on analyzing the benefits and drawbacks of integrating ICT into Tripura's Panchayat Raj system. While ICT offers advantages like increased effectiveness, transparency, and citizen engagement, obstacles including limited infrastructure, a lack of digital literacy, data security concerns, and financial restrictions must be overcome. Tripura can use ICT to improve service delivery, strengthen governance, and involve citizens more actively in local decision-making by recognizing and overcoming these obstacles.

Need of the study
The goal of this study is to evaluate the benefits and drawbacks of integrating ICT into Tripura's Panchayat Raj system. It will concentrate on evaluating the state's current ICT infrastructure, degree of digital literacy, and data security measures. To find prospective solutions and approaches that can be used in Tripura, the study will also examine successful case studies and best practices from other locations. The significance of utilizing ICT to improve government and grassroots development drives the necessity for this study. It is essential for policymakers, government representatives, and other stakeholders involved in local governance in Tripura to comprehend the advantages and disadvantages of integrating ICT into the Panchayat Raj system. The results of this study can be used to help create efficient policies, programme for building capacity, and plans for allocating resources in order to successfully integrate ICT into the Panchayat Raj system, which will ultimately improve service delivery, transparency, and citizen engagement.

Area of Study
The West District of Tripura, which has a variety of physical, socioeconomic, and demographic characteristics, serves as the research region. Focusing on this district enables a thorough analysis of the benefits and drawbacks of integrating ICT into the Panchayat Raj framework. The results can serve as a model for other regions in Tripura and help shape focused strategies and actions to improve local government in the district.

Methodology
The methodology used in this study involves documentary research and empirical approaches. Documentary research collects information from secondary sources like books, articles, and reports. Empirical approaches include surveys conducted through Google Forms and telephonic interviews. A sample of 48 respondents, including NIC officers, web developers, technology experts, and Panchayat Raj officials, was selected using simple random and purposive sampling with simple frequency. Ethical considerations were maintained, and data analysis involved qualitative thematic analysis and quantitative descriptive statistics. The methodology provides a comprehensive understanding of ICT implementation in the Panchayat Raj System in Tripura.

Table 1: Demographic profile of respondents in Tripura

Sl. No	Variables	Frequency	Percentage
01	Age		
	25-30 Years	14	29.2%

	30-35 Years	24	50.0%
	35 Above	10	20.8%
	Total	**48**	**100.00**
02	**Gender**		
	Male	35	72.9%
	Female	13	27.1%
	Total	**48**	**100.00**
03	**Place of Living**		
	Urban	20	41.7%
	Rural	28	58.3%
	Total	**48**	**100.00**
04	**Marital status**		
	Married	18	37.5%
	Unmarried	30	62.5%
	Total	**48**	**100.00**

Source: Survey Data

The table displays the distribution of the demographic profile of respondents in Tripura, where the study was conducted. The findings indicate that the majority (50%) of respondents was selected from the age groups of 30 to 35 years old, 29.2 per cent belong to 25 to 30 years and remaining 20.8 per cent of the respondents are above 35 years old. The gender composition of the respondents showed a higher representation of males (72.9%) compared to females (27.1%). In terms of the place of living, majority of (58.3%) respondents per cent are living in rural area and remaining 41.7 per cent respondents are living in urban area. The study revealed that a larger proportion of respondents were unmarried (62.5%) as opposed to being married (37.5%). These demographic characteristics provide valuable insights into the composition of the respondents in Tripura and help in contextualizing the findings and implications of the study.
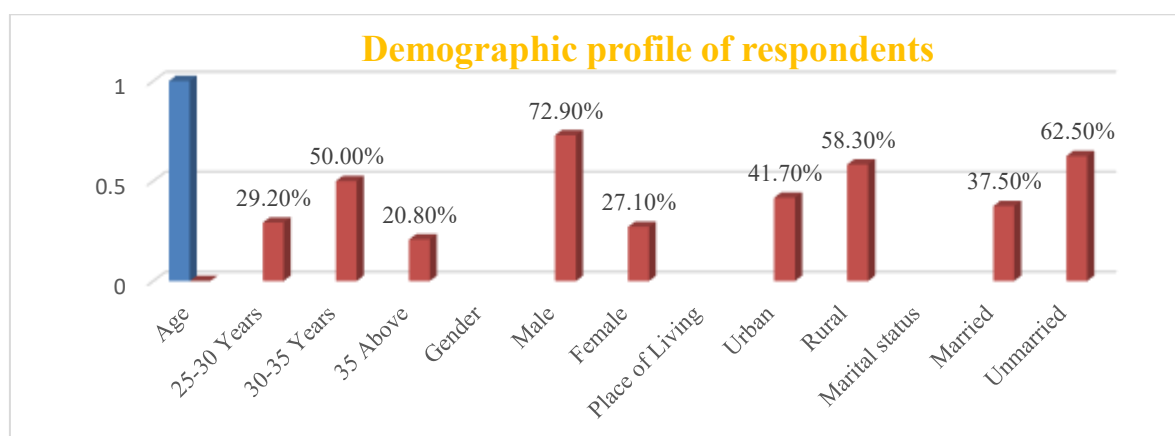
Table 2: Implementing ICT in the Panchayat Raj system in Tripura can enhance the accessibility of government services to the rural population.

Response	Count	Percentage
Yes	20	41.7%
No	20	41.7%
No Idea	8	16.6%
Total	48	100.00

Explain your views…….		

The table shows that there is an equal distribution of responses regarding the impact of implementing ICT in the Panchayat Raj system in Tripura on enhancing the accessibility of government services to the rural population. Out of the total respondents, 41.7 per cent answered "Yes," indicating their belief in the potential of ICT to enhance accessibility. Another 41.7 per cent answered "No," expressing their disagreement. The remaining 16.6 per cent responded with "No Idea," implying uncertainty about the impact. The majority of the respondents explained that implementing ICT in the Panchayat Raj system in Tripura can enhance accessibility in various ways. It can provide digital platforms for citizens to access government services like healthcare, education, agriculture, and welfare schemes. ICT enables online application submissions, tracking, and digital payments, reducing delays and corruption. It also facilitates communication between rural citizens and government officials, improving grievance redressal and feedback mechanisms. Overall, ICT implementation can bridge the rural-urban divide, improve service delivery, and empower the rural population in accessing government services.

Table 3: There is a positive impact of ICT implementation on the efficiency and effectiveness of Panchayat Raj operations in Tripura.

Response	Count	Percentage
Yes	27	56.25%
No	18	37.5%
No Idea	3	6.25%
Total	48	100.00
Explain your views……		

The table shows that 56.25 per cent of respondents agree with the positive impact of ICT implementation on the efficiency and effectiveness of Panchayat Raj operations in Tripura. Conversely, 37.5 per cent disagree, and 6.25 per cent are uncertain. This suggests a general belief among respondents that ICT adoption can bring improvements to Panchayat Raj institutions. ICT implementation enhances information management, streamlines processes, improves communication and collaboration, and promotes transparent and accountable governance. It empowers officials to make informed decisions, automate tasks, and ensure transparency. However, the dissenting opinions and uncertainties indicate the presence of concerns and reservations. Factors like infrastructure limitations, digital literacy, resistance to change, and implementation challenges may influence these responses. Addressing these concerns through effective communication, capacity-building initiatives, showcasing success stories, and providing necessary infrastructure and support is crucial for harnessing the potential of ICT in Panchayat Raj operations in Tripura.

Table 4: I am aware of challenges or barriers faced by Panchayat Raj institutions in adopting and utilizing ICT tools effectively.

Response	Count	Percentage
Yes	33	68.75%
No	12	25.00%
No Idea	3	6.25%
Total	48	100.00
Explain your views……...		

The table shows that a majority of respondents (68.75%) are aware of the challenges faced by Panchayat Raj institutions in adopting and utilizing ICT tools effectively. Conversely, 25 per cent of respondents lack

awareness, and 6.25 per cent have no idea. The awareness is crucial for understanding the complexities of implementing ICT initiatives in rural governance. Common challenges include limited infrastructure, digital literacy gaps, financial constraints, resistance to change, language barriers, and data security concerns. Respondents unfamiliar with these challenges may benefit from education and information dissemination. Panchayat Raj institutions must address infrastructure limitations, provide digital literacy programs, secure funding, raise awareness, focus on localization, and implement robust data security measures. Overcoming these barriers will enable the effective adoption of ICT tools, leading to improved operations and services for rural communities.

Table 5: The implementation of ICT has improved transparency and accountability within the Panchayat Raj system in Tripura

Response	Count	Percentage
Yes	32	66.67%
No	11	22.92%
No Idea	5	10.41%
Total	48	100.00
Explain your views…….		

The table reveals that a majority of respondents (66.67%) believe that ICT implementation has enhanced transparency and accountability within Tripura's Panchayat Raj system. However, 22.92 per cent disagreed with this statement, and 10.41 per cent were uncertain. The positive perception of ICT's impact on transparency and accountability suggests that respondents believe ICT tools have contributed to improved operations. Nonetheless, the dissenting opinions warrant further investigation into the factors influencing their views and any challenges hindering transparency and accountability. ICT has the potential to enhance transparency and accountability in the Panchayat Raj system by digitizing processes, providing online access to information and services, and enabling citizen monitoring. Online portals can track application progress, reducing corruption risks. Digital record-keeping enables effective monitoring and evaluation. Successful implementation relies on addressing infrastructure gaps, ensuring data integrity and security, and fostering a culture of transparency. By addressing these concerns, Tripura's Panchayat Raj system can maximize ICT's potential for transparency and accountability.

Table 6: I have noticed changes in citizen participation and engagement in local governance due to the introduction of ICT in Panchayat Raj institutions in Tripura.

Response	Count	Percentage
Yes	29	60.42%
No	16	33.33%
No Idea	3	6.25%
Total	48	100.00
Explain your views……		

The table indicates that 60.42 per cent of respondents have observed changes in citizen participation and engagement in local governance due to the introduction of ICT in Tripura's Panchayat Raj institutions. This reflects a positive perception of ICT's impact on citizen involvement. ICT tools and platforms have provided opportunities for increased participation by enabling access to information, facilitating discussions, and allowing citizens to contribute their feedback and suggestions. However, 33.33 per cent of respondents have not noticed such changes, highlighting the need for a comprehensive assessment of ICT's effectiveness in promoting citizen participation. To maximize citizen engagement, efforts must be made to provide digital literacy training, ensure access to ICT infrastructure, promote awareness of online platforms, and address any barriers limiting participation. By addressing these factors, Panchayat Raj institutions can further enhance citizen participation and engagement in local governance processes.

Table 7: I am not familiar with any specific capacity-building initiatives or training programs provided to Panchayat Raj functionaries to enhance their ICT skills.

Response	Count	Percentage
Yes	27	56.25%
No	14	29.17%
No Idea	7	14.58%
Total	48	100.00
Explain your views…….		

The table indicates that above fifty per cent (56.25%) of respondents are familiar with capacity-building initiatives and training programs for enhancing the ICT skills of Panchayat Raj functionaries in Tripura. However, 29.17 per cent are unfamiliar, and 14.58 per cent are uncertain about these initiatives. The awareness among respondents highlights the efforts made to equip functionaries with the necessary ICT skills. Disseminating information about these programs to all stakeholders is crucial for comprehensive understanding and utilization. The initiatives include workshops, digital literacy programs, online training modules, mentoring, and continuous skill upgrading. These efforts aim to improve computer proficiency, internet usage, data management, and mobile application utilization. To further enhance ICT skills, continuous support, collaborative learning platforms, and updated training programs are recommended. Strengthening the ICT skills of Panchayat Raj functionaries will empower them to effectively use technology in local governance and service delivery.

Result and Discussion

Status of ICT implementation in the Panchayat Raj system in Tripura.

The Government of Tripura has actively implemented ICT in the Panchayat Raj system to enhance governance and service delivery. Efforts have been made to improve infrastructure, including internet connectivity and reliable electricity supply in rural areas. Digital literacy programs have been conducted to enhance the skills of Panchayat Raj officials and the rural population in utilizing ICT tools. Various (Tiwari, N. 2014). ICT initiatives, such as e-governance portals and data management systems, have been implemented to streamline administrative processes and improve transparency. This has likely resulted in more efficient and citizen-centric service delivery, including online services for land records, taxation, welfare schemes, and grievance redressal. ICT has also facilitated citizen participation through platforms, apps, and social media channels,

encouraging their involvement in decision-making and policy formulation. For the most accurate information, referring to official government reports and publications or contacting relevant government departments is recommended.

Opportunities for ICT in Panchayat Raj System, Tripura

Implementing information and communication technology (ICT) in the Panchayat Raj system in Tripura presents numerous opportunities for improving governance, service delivery, and citizen participation. By developing e-governance portals, citizens can access government services and information online, reducing the need for physical visits (Kumar, P et.al 2014). Utilizing digital communication channels like mobile apps and social media platforms improves transparency and efficiency in communication. An online grievance redressal platform ensures timely resolution of citizen concerns and enhances service delivery. ICT tools facilitate (Suri, P. K., & Sushil. 2017) participatory decision-making, allowing citizens to contribute to policy discussions and express their views. Open data initiatives promote transparency and citizen engagement by sharing government data. Leveraging mobile technology enables the direct delivery of services to citizens mobile devices, (Rajeshwar, K. & Roy, S. M 2022) benefiting those in remote areas. Digital skills training enhance proficiency in ICT tools and platforms for effective governance participation. Localization of ICT tools in local languages promotes inclusivity. Public-private partnerships accelerate the adoption of innovative technologies and ensure sustainable implementation of ICT initiatives. By capitalizing on these opportunities, Tripura's Panchayat Raj system can achieve more efficient, transparent, and citizen-centric governance (Prabhu, C. S. R.2015).

Challenges to Successful ICT Implementation in Panchayat Raj System

The successful implementation of ICT in the Panchayat Raj system faces challenges such as the digital divide, data privacy, administrative obstacles, financial constraints, limited technical infrastructure, and lack of digital literacy, language barriers, and the need for clear policies. To address these challenges, comprehensive solutions are required, including digital literacy programs, infrastructure development, (Galaiah, M., & Srinivasa charyulu 2018) data privacy policies, sufficient funding, streamlined administrative processes, and fostering innovation. These solutions will bridge the digital divide, ensure data privacy, and enhance governance, service delivery, and citizen participation. Developing a comprehensive framework for ICT implementation in Tripura's Panchayat Raj system requires addressing key components and factors. Infrastructure development is crucial, (Rashid, A., & Bansal, K.2017) prioritizing collaboration with telecommunication companies and power suppliers to expand and improve technology infrastructure. Digital literacy and skills training programs should be developed, providing comprehensive training to officials and citizens on basic digital skills, ICT tools, and online platforms. User-friendly e-governance portals should be developed to improve service delivery and ensure seamless integration with existing government databases. Data privacy and security measures, (Patil, D. A. et.al 2006) including policies, encryption, and awareness campaigns, are essential to protect citizen data. Citizen participation and feedback mechanisms should be emphasized, utilizing online platforms, and organizing regular consultations to promote transparency and inclusivity. Collaboration with public- private partnerships, NGOs, and community organizations can enhance ICT initiatives and address financial constraints (Sharma, R. et.al 2014). Monitoring and evaluation, along with capacity building programs, are crucial for sustainability and effective utilization of ICT tools. A comprehensive framework for ICT implementation in the Panchayat Raj system should incorporate these components to enhance governance, service delivery, and citizen participation in Tripura.

Implications of the Study

The study's implications are significant for policymakers and stakeholders involved in the Panchayat Raj system in Tripura. The findings highlight the need for informed policy formulation, capacity building programs, and resource allocation to overcome challenges and effectively implement ICT initiatives. Collaboration among stakeholders is crucial for leveraging expertise and resources; while monitoring and evaluation mechanisms ensure accountability and measure the impact of ICT interventions. By considering these implications, Tripura can harness the transformative potential of ICT, leading to improved governance, enhanced service delivery, and active citizen participation in local decision-making processes.

Recommendations and suggestions

Based on the examination of the opportunities and challenges of implementing ICT in the Panchayat Raj system in Tripura, the following recommendations are provided for policymakers, government officials, and stakeholders involved in local governance:

1.   Development of Infrastructure: a. Prioritize the development of ICT infrastructure, particularly in rural areas, by expanding reliable electricity supply and internet connectivity. b. Establish telecommunication networks and mobile towers to ensure widespread access to ICT services. c. Collaborate with private sector entities to bridge the infrastructure gap and leverage their expertise and resources.

2.   Digital Literacy and Capacity Building: a. Design and implement comprehensive digital literacy programs to enhance the skills of Panchayat Raj officials and citizens in utilizing ICT tools effectively. b. Provide training and workshops on ICT usage, data management, and digital governance practices. c. Engage local educational institutions, NGOs, and private sector organizations to support capacity-building initiatives (Subramanian, M.2012).

3.   Data Security and Privacy: a. Develop and enforce robust data security measures and privacy protocols to protect sensitive citizen information. b. Establish mechanisms for regular audits and compliance checks to ensure data protection standards are met. c. Conduct awareness campaigns to educate citizens about their data rights and the importance of data privacy.

4.   Financial Resource Allocation: a. Advocate for increased financial resources dedicated to ICT implementation in the Panchayat Raj system. b. Explore alternative funding sources such as public-private partnerships, grants, and corporate social responsibility initiatives. c. Prioritize and allocate funds for essential aspects of ICT implementation, including infrastructure development, capacity building, and data security measures.

5.   Collaboration and Partnerships: a. Collaboration between government agencies, private sector entities, civil society organizations, and academic institutions to pool resources, expertise, and knowledge. b. Establish partnerships with technology companies, telecom operators, and e- governance solution providers to leverage their experience and technical support. c. Facilitate knowledge-sharing platforms and forums to exchange best practices and lessons learned from successful ICT implementations (Rao, T. R2004).

6.   Monitoring and Evaluation: a. Develop robust monitoring and evaluation mechanisms to assess the progress, impact, and effectiveness of ICT initiatives. b. Regularly review and update the implementation strategy based on the findings of evaluations. c. Incorporate citizen feedback mechanisms to ensure continuous improvement and responsiveness to their needs.

7.   Policy and Regulatory Framework: a. Formulate comprehensive policies and guidelines that address the unique context and challenge so implementing ICT in the Panchayat Raj system. b. Streamline bureaucratic processes and remove regulatory barriers that hinder the effective deployment of ICT solutions. c. Promote innovation and experimentation by creating a conducive policy environment that encourages the adoption of emerging technologies (Sodhi, I. S. 2021)

By implementing these recommendations, Tripura can foster the successful integration of ICT in the Panchayat Raj system, leading to enhanced governance, improved service delivery, and increased citizen participation. It is crucial for stakeholders to collaborate, prioritize resource allocation, and continuously evaluate and adapt their strategies to effectively harness the transformative potential of ICT for local governance in Tripura.

Major findings

1.   The study findings indicate that males in Tripura have a greater understanding and knowledge of ICT in the Panchayat Raj system compared to females. The gender disparity highlights the need to address the unequal access and opportunities for females in ICT implementation. Efforts should be made to bridge this gap and ensure equal participation for all genders.

2.   The findings of the study reveal that 30-35 years of age of respondents in Tripura have a higher level of knowledge about ICT in the Panchayat Rajsystem.

3.   The findings of the study indicate that unmarried respondents in Tripura possess a higherlevel of knowledge about ICT in the Panchayat Raj system.

4.   ICT can improve Service Delivery in Tripura's Panchayat Rajsystem.

5. ICT integration offers the potential for enhanced Governance in the Panchayat Raj system.

6. ICT can increase Public Participation at the local level in Tripura.

7. Access to Information and Services can be improved through ICT implementation.

8. Sensible Resource Use can be achieved through ICT integration in Tripura.

9. The Digital Divide poses a challenge for ICT implementation.

10. Infrastructure Development is crucial for effective ICT integration.

11. Data Privacy and Security are important considerations for successful ICT implementation.

12. Administrative Hurdles need to be overcome for smooth ICT integration.

13. Financial Limitations and Sustainability are challenges that need to be addressed for long-term ICT implementation success.

Conclusion

The examination of implementing ICT in the Panchayat Raj system in Tripura highlights the potential for technology in decentralized governance. ICT offers opportunities to enhance efficiency, transparency, and accountability. It can streamline administrative processes, automate data management, and establish communication channels for seamless information exchange. ICT tools enable citizens to monitor local governance and promote accountability. Citizen engagement is improved through online portals, mobile apps, and social media platforms. However, challenges include infrastructure, connectivity, digital literacy, data security, and financial constraints. Bridging the digital divide, providing training programs, ensuring data privacy, and identifying alternative funding sources are necessary. Understanding and addressing these challenges can strengthen governance and empower citizens. Effective strategies and policies can harness ICT's transformative potential for the progress and development of Tripura.

References

1. Ali, M. P. (2020). Rural Development in India through E-Panchayat. Rural Development in India: A Socio-Economic View,54

2. Bhatnagar, S. C. (2009). Panchayats in the 21st Century: ICT Enabled Panchayati Raj. Available at SSRN 1804060.

3. Bhatnagar, S., & Schware, R. (2000). Information and communication technology in rural development. Case Studies From India, World Bank Institute, 1-192

4. Biswas, R., & Chakma, B. R. (2023). Driving Development through Smart Village in Tripura: An Overview. The Journal of Development Practice,8

5. Chaursiya, M. V. P. Role of Digital India in Empowerment of Panchayati Raj Institutions

6. Deb,T.,&Saha,S.UpliftmentofRuralareasofTripurathroughICT:Acomposite Review

7. Debroy, B., & Kaushik, P.D. (Eds.). (2005). Energizing Rural Development Through" panchayats". Academic Foundation

8. Dossani, R., Misra, D. C., & Jhaveri, R. (2005). Enabling ICT for rural India. Asia Pacific Research Center, Stanford University and National Informatics Centre. Last Accessed July, 14,2008

9. Galaiah, M., & Srinivasacharyulu, A. (2018). Role of ICT in rural development: Opportunities and challenges (A study of MGNREGS in India). International Journal of Research in Social Sciences, 8(5),599-611.

10. Garai, A., & Shadrach, B. (2006). Taking ICT to every Indian village: Opportunities and challenges. One World SouthAsia.

11. Kalam, A. A., & through Challenges, T. P. A. J. ICT for Rural Development: An Inclusive support for North EastIndia

12. Khurana, M. (2016). Leveraging ICT for improving public service delivery.

13. Krishna, O. (2017). Digitizing rural India: Challenges and prospects. INROADS-An International Journal of Jaipur National University, 6(1),33-39

14. Krishnapillai, M. (2006). Review of" Taking ICT to every Indian village: Opportunities and challenges". International Journal of Education and Developmentusing ICT,2(4)

15. Kumar, P., Kumar, D., & Kumar, N. (2014). ICT in local self governance: A study of rural India. arXiv preprintarXiv:1401.0591

16. Manzar, O., Kumar, R., Mukherjee, E., & Aggarwal, R. Exclusion from Digital Infrastructure and Access. India Exclusion Report 2016,66

17. Mathur, D., Gupta, P., & Sridevi, A. (2009). E-governance approach in India the national e-governance plan (NeGP). Transforming Government,3

18. Patil, D. A., & Ambedkar, J. B. (2006). Information and communication technology (ICT) and rural development: Lessons from rural India. IASSI quarterly, 25(2),105-122

19. Prabhu, C. S. R. Cost Effective Solution for Effective e-Governance/e-Panchayat (Example of Exemplary Leadership and ICT Achievement of the Year).

20. Rahaman, M., Dasgupta, S., & Paul, D. Flow of Information in the Activities in Panchayat Raj Institutions in its Governance for Rural Development

21. Rajeshwar, K., & Roy, S. M. (2022). An Approach Towards Protecting Tribal Lands Through ICT Interventions. In Intelligent Sustainable Systems: Selected Papers of World S4 2021, Volume 2 (pp. 283-291). Springer Singapore

22. Raju, C. K., & Bhadoria, P. B. S. (2012). Enhancing Software Sacredness in Public ICT Applications. International Journal of Computer Applications, 975,8887

23. Rao, K. P. (2018). A study on e-governance in India: problems, and prospectus. International Journal of Management, IT and Engineering, 8(6),270-289

24. Rao, T. R. (2004). ICT and e-Governance for Rural Development. Center for Electronic Governance, Indian Institute of Management, Ahmadabad, 28,312-315

25. Rashid, A., & Bansal, K. (2017). E-Panchayat as a tool for empowering Panchayati Raj: An exploratory study of Pattan block of Baramulla District. Indian Journal of Economics and Development, 5(3), 1-14

26. Saxena, N. C., & Ravi, J. (2005). Realizing Potential of Panchayati Raj in India (No. id: 202)

27. Sharma, R., Kumar, P., & Murari, K. (2014). Amalgamation of PRIs and ICT: A Boon for the Downtrodden. International Journal of Computer Applications,87(12)

28. Singh, A. S. (2017). Affective Management of panchayats in India-an approach paper. Journal Of Indian Research, 5(3),32-46

29. Singh, S. (2013). Battling Corruption: Has NREGA reached India's Rural Poor

30. Singh, S., & Karn, B. (2012). "Right to Information Act"–a tool for good governance through ICT. Journal of Information, Communication and Ethics in Society, 10(4),273-287

31. Sodhi, I. S. (2021). 15 ICT for local governance Status, emerging issues and prospects. Handbook of Decentralized Governance and Development in India

32. Sonawane, M. (2020). Public Participation Through Panchayat Raj Institutions In India. Ilkogretim Online, 19(3),4976-4990

33. Subramanian, M. (2012). Rural E-Governance through the "Panchayati Raj" Institutions in India: Prospects and Challenges. Active Citizen Participation in E-Government: A Global Perspective,314-333

34. Subramanyam, I. (2018). Panchayati Raj–Empowering Democracy at Grass Root Level in India. Local Government Quarterly,49.

35. Suri, P. K., & Sushil. (2017). Strategic Planning and Implementation of E- governance. Springer Singapore

36. Tiwari, N. (2014). Panchayati Raj institutions as tool for empowerment at grassroots. Journal of Politics and Governance, 3(4),5-13.

37. Ullah, A. (2014). Public Private Partnership and Prospects of ICT in Sustainable Development of Rural India. International Journal of Research in Social Sciences,4(4)

38. Yadav, N., & Singh, V. B. (2013). E-governance: past, present and future in India. arXiv preprintarXiv:1308.3323