Smart Governance, Offline Citizens: Digital Illiteracy In Punjab's E-Governance System

AUTHOR NAME:-RAJNI DEVI

EMAIL I'd:- devir3410@gmail. Com

Supervisor :- DR.SANSAR SINGH JANJUA

DEPARTMENT OF PUBLIC ADMINISTRATION

DESHBHAGAT UNIVERSITY MANDI GOBINDGARH

ABSTRACT

This study examines the conundrum of smart governance in Punjab, India, where digital illiteracy is still prevalent. Despite significant advancements in digital infrastructure and e-governance platforms, such as the introduction of e-District portals, mobile governance apps, and BharatNet initiatives, a sizable section of Punjab's population is still not able to take advantage of these developments because of their low level of digital literacy. The study looks at how this digital divide, which is characterized by socioeconomic constraints, gender differences, and rural-urban divides, reduces the goals of e-governance like accountability, transparency, and citizen participation and prevents equitable access to public services. An in-depth examination of digital service adoption, infrastructure preparedness, and citizen engagement in Punjab is provided in this paper through a qualitative methodology based on secondary data from government reports, policy documents, and surveys. Results show that while educated and urban populations adjust to digital platforms well, rural residents, especially women and the elderly, find it difficult to use them because they lack the necessary knowledge and abilities. Underutilization of digital services, a decline in trust in governance, and a persistent reliance on middlemen are the results of this. The report suggests community-based training centers, women-focused programs, hybrid service models, public-private partnerships, and inclusive digital literacy programs in regional languages as ways to close the digital divide. According to the study, the promise of smart governance will not be realized unless efforts are made to empower digitally marginalized groups, which will exacerbate already-existing disparities in civic empowerment and service delivery.

Keywords: Smart governance, e-governance, digital illiteracy, Punjab, digital divide, digital literacy, citizen engagement.

1. INTRODUCTION

The rapid advancement of digital technologies has fundamentally transformed the landscape of governance worldwide, ushering in a new era commonly referred to as "smart governance." E-governance, which integrates Information and Communication Technologies (ICT) into public administration, aims to enhance the efficiency, transparency, and accessibility of government services. By leveraging innovations such as artificial intelligence (AI), the Internet of Things (IoT), and blockchain, governments aspire to create more resilient, adaptive, and citizen-centric systems that can respond effectively to the demands of modern society **(Thanga Revathi S, 2025)**. These technological interventions not only streamline service delivery but also support data-driven decision-making and foster greater civic engagement. The evolution of e-governance has been marked by several paradigm shifts. Initially, digital initiatives focused on automating basic administrative processes and providing information online. However, the emergence of E-Governance 4.0—characterized by the integration of AI, IoT, and cloud computing—has enabled real-time analytics, automated decision-making, and predictive management, thereby transforming the very fabric of public administration. This transformation is particularly evident in large-scale events and smart city projects, where digital platforms facilitate crowd management, resource allocation, and environmental sustainability. The experience of countries like Bangladesh, which has implemented comprehensive e-governance frameworks to achieve sustainable development goals, underscores the potential of digital technologies to drive inclusive growth and improve socio-economic outcomes **(Ms. Ritika Yadav & Gaurav Ashesh, 2025)**.

Despite these advancements, the transition to smart governance is fraught with challenges, especially in regions with significant digital divides. Digital illiteracy, inadequate infrastructure, and socio-economic disparities can impede the effective adoption of e-governance initiatives. In Punjab, for example, while the government has launched a range of digital platforms to deliver public services, a large segment of the population—particularly in rural areas—remains offline due to limited digital skills and access. This disconnect between technological progress and citizen readiness raises critical questions about inclusivity, equity, and the actual impact of smart governance on the ground. The problem of digital exclusion is not unique to Punjab**(Romke, 2025)**. Globally, the success of e-governance depends on the ability of governments to address the needs of digitally marginalized groups, ensuring that technological innovations do not exacerbate existing inequalities. Responsible governance frameworks must therefore prioritize inclusivity, transparency, and accountability, adopting policies that bridge the digital divide and empower all citizens to participate fully in the digital economy. This entails not only expanding digital infrastructure but also investing in digital literacy programs, developing multilingual platforms, and fostering community engagement.

2. OBJECTIVES

- To examine the impact of digital illiteracy on access to e-governance services in Punjab.
- To propose inclusive strategies to bridge the digital divide for effective smart governance.

3. METHODOLOGY

The qualitative methodology used in this study is based on secondary data from published surveys, government reports, journal articles, and policy papers. TRAI, NFHS, and the Ministry of Electronics and IT are some of the sources. With an emphasis on trends, inequalities, and the socioeconomic effects of digital illiteracy, the study use descriptive analysis to examine digital literacy, infrastructure, and e-governance access in Punjab.

4. HISTORICAL BACKGROUND OF E-GOVERNANCE IN PUNJAB

Punjab's e-governance journey started in the early 2000s as part of the Indian government's larger effort to use information and communication technology (ICT) to improve public service delivery and digitize governance. With an emphasis on increasing transparency, decreasing corruption, and facilitating citizens' access to government services, e-governance in Punjab has developed throughout time and emerged as a crucial element of the state's development goal. When the state administration realized how important ICT was to changing governance in the early 2000s, Punjab took the first moves toward e-governance. The founding of the Punjab State e-Governance Society (PSeGS) in 2003 was among the first efforts. The implementation of IT solutions across many government departments was the responsibility of this group. Reducing administrative delays, fostering openness, and improving public access to government services were the objectives. The government concentrated on creating the infrastructure required for digital governance during this time, including computerizing important divisions like land records, transportation, and revenue.

The state's e-governance journey reached a major turning point with the introduction of the e-District Project in 2006. Traditionally vulnerable to delays and corruption, the project sought to digitize and simplify public services such as income certificates, ration cards, and birth and death certificates. By computerizing and delivering government services online, the e-District initiative signaled a change in approach toward delivering services at the local level, greatly lowering reliance on intermediaries and increasing transparency. Punjab adopted a more comprehensive approach to e-governance by the late 2000s, and in 2011 the Punjab Right to Service (RTS) Act was introduced. The prompt delivery of services by government departments was required by this legislation. In order to guarantee that the goals of the act were fulfilled, the Punjab government established an online platform that enabled residents to apply for and monitor the status of different government services in real time. This was a significant step toward better accountability and governance since it made it possible for citizens to keep an eye on government operations.

The usage of digital platforms for a variety of services took off between 2010 and 2020. Through mobile phones, the Punjab M-Government Project was created to offer information services to the rural populace, particularly farmers. By giving farmers up-to-date information on farming practices, weather

forecasts, crop prices, and agricultural schemes, this program increased agricultural productivity by enabling farmers to make wise decisions. An further significant endeavor was the Punjab Education Management Information System (PEMIS), which sought to optimize the administration of educational data, including student enrollment, instructor assignments, and school records. In addition to offering useful data for policymaking, this approach significantly increased the effectiveness of administrative tasks in educational institutions. The Punjab government also worked to incorporate e-governance into the healthcare industry in 2014 by establishing the Punjab Health Systems Corporation (PHSC). With the beginning of the e-Health Project, the PHSC digitized patient data and increased access to healthcare services, particularly in rural areas. Rural communities can now consult with doctors virtually thanks to the state government's promotion of telemedicine services(S. Kumar & Singh, 2024).

5. DIGITAL LITERACY LANDSCAPE IN PUNJAB

The capacity to efficiently access information and services via computers, smartphones, and the internet is referred to as digital literacy in this context. Despite Punjab's relatively high overall literacy rate (about 75.8% in 2011)(*Literacy Rate In Punjab*, **2025**), digital literacy is a different matter. Punjab behind in a few demographic categories, according to the data available:

- **Rural vs. Urban:** Urban-rural disparity is glaring. Even while internet usage is common in cities like Chandigarh and Ludhiana, many areas still face difficulties. TRAI data, for instance, indicates that Punjab had roughly 76.96 internet users per 100 people overall, but just 42.46 users per 100 in rural areas (compared to 117.73 users per 100 in urban areas)(**Moinuddin, 2021**). As a result, the majority of rural residents are less exposed to e-services because they do not have regular internet access. In the remote Punjabi village of Kapurthala, a recent poll revealed that "more than 70 percent of the people" lack basic reading and ICT awareness. Most are unfamiliar with online forms and lack basic computer skills(**M. P. Kumar & Kumari, 2024**).

- **Gender Gap:** Punjab has a notable gender disparity in digital technology, just as the rest of India. Punjab's male and female internet usage differs by almost 23.4 percentage points, according to a 2023 study that used NFHS-5 data. This means that only about 40% of women have ever used the internet, compared to roughly 63% of males (the national percentages are 63.06% men vs 40.65% women). For example, only 70.7% of Punjabi women were literate in 2011(**Gupta et al., 2023**). This discrepancy is ascribed to social conventions and lower female literacy. In reality, a large number of Punjabi women lack smartphones or are dissuaded from using them, particularly in rural areas. English menus or online apps cause challenges even in the presence of phones.

- **Other Demographics:** Gender, age, and level of education are other important factors. Less tech-savvy tend to be the elderly and the uneducated, who tend to live in rural areas. The fact that many platforms are only available in English or Hindi makes them inaccessible to Punjabi speakers, especially the elderly, who are an additional indirect element. Importantly, lower-class households do not have access to computers or cellphones, but higher-class households do.

These differences collectively suggest that a sizable portion of Punjabis are actually "offline." They find it difficult to employ standard e-governance technologies. Importantly, a large portion of this group might not even be aware of government portals or the digital services that are accessible. Villagers commonly report that the largest obstacle to using e-services is a lack of fundamental understanding in surveys. According to one survey, the primary barrier to the adoption of e-governance was cited by 52% of rural respondents as "absence of knowledge." To put it briefly, Punjab has widespread internet access, but actual digital skill levels—particularly among rural women and the impoverished—remain too low to fully enable e-governance.

6. DIGITAL INFRASTRUCTURE AND ACCESSIBILITY IN PUNJAB

Punjab has a somewhat advanced digital infrastructure when compared to other states in India, although there are still some missing pieces:

- **Internet and Mobile Coverage:** The penetration of telecom services in Punjab is high. The state is serviced by all major carriers, and "almost 100%" of villages supposedly have 4G coverage, according to reports in the industry. Take Reliance Jio as an example; by 2019, they had 4G coverage in all 22 districts, which included more than 12,500 villages**(Roy, 2019)**. With around 76.96 users for every 100 residents, Punjab has one of the highest rates of internet users per capita in all of North India. The coverage in urban areas is over 100% (since people use numerous SIMs), but in rural areas it is significantly lower at 42.46%, therefore there is still space for improvement**(Moinuddin, 2021)**. Many rural households utilize basic mobile phones or limited data due to affordability and knowledge difficulties, even though coverage is robust.

- **Broadband and Fiber:** The goal of the national BharatNet project (formerly known as NOFN) was to provide high-speed fiber connections to all Gram Panchayats. As a result, Punjab has chosen an implementation plan using the private sector, and significant progress has been made. In early 2024, 4,781 of Punjab's village panchayats were "service-ready"—that is, connected to BharatNet. This is the foundation for broadband; there is a slow but steady rollout of connections and local wireless hotspots in places like panchayat buildings, schools, and clinics. But this update has not yet reached many panchayats (there are more than 12,000 GPs in Punjab), therefore some rural areas still lack access to stable internet**(Usof, 2025)**.

- **Digital Facilities:** The nationwide BharatNet project (formerly NOFN) aimed to connect all Gram Panchayats to high-speed fiber. Subsequently, Punjab has decided to employ the private sector for implementation, and a lot of ground has been covered. There were 4,781 "service-ready" (i.e., connected to BharatNet) village panchayats in Punjab at the beginning of 2024. A gradual but continuous rollout of connections and local wireless hotspots is taking place in locations including panchayat buildings, schools, and clinics, laying the groundwork for internet. Unfortunately, not all panchayats have received this upgrade (there are over 12,000 GPs in Punjab), therefore some remote places still do not have reliable internet.

- **Device Penetration:** The usage of mobile phones is extremely common; in fact, according to current estimates, more than 85 percent of Punjabi families use mobile phones (national surveys). Based on one projection, over 75% of homes will have a smartphone by the year 2022, indicating a fast increase in smartphone penetration. Adoption has been fueled by the country's inexpensive data plans. While some women may own smartphones with internet access, in many rural areas, numerous members of the same household share a single phone.

In general, the accessibility situation in Punjab is good, because to initiatives like BharatNet, falling data rates, and extensive 4G coverage. The one thing that is lacking is the utilization and adoption of this infrastructure by all sectors(M. Singh & Kumar, 2024). There has to be more than just spending on infrastructure, as pointed out by Kumar and Singh. Just because fiber reaches a panchayat doesn't mean the local gram panchayat office has access to computers or operators with the necessary skills. The same holds true for CSCs; the absence of knowledge or training among the villagers can mean that they see no improvement. Accordingly, infrastructure lays a solid groundwork, but it cannot eliminate digital literacy gaps on its own.

7. E-GOVERNANCE SERVICES IN PUNJAB AND CITIZEN UPTAKE

Punjab uses portals and applications to provide a wide range of e-government services. Important instances consist of:

- **e-District Punjab:** 51 public services from 19 departments are accessible online through this flagship portal (edistrict.punjab.gov.in) (e.g. income, caste, domicile certificates; land mutation; marriage registration). Citizens can pay costs online and apply for these services from any location. Government offices' backend workflows are connected to the site. Tens of thousands of applications have been processed digitally each month in recent years, according to daily transaction data (seen in annual reports) that demonstrates the expanding utilization(A. Singh, 2017).

- **Mobile Governance:** Punjab offers mobile applications such as department-specific apps (for example, farming advise), Jagriti Punjab (an awareness portal), and e-Jan Suvidha (single-window citizen services). Online filing is also made easier by the CM Helpline App and social security pension apps. These applications interface with state databases, such as ration cards and land records (Ratnani, 2023).

- **Agricultural and Rural Services:** Punjab established digital platforms for farmers in recognition of the significance of agriculture. With a professional callback, Kisan Call Center (toll-free line 1551) offers automated weather and agricultural price information. Farm-related licenses and other company clearances are streamlined by the SUWIDHA portal (Single Window e-Biz). Online programs for price discovery, crop insurance (PM Fasal Bima), and agro-credit are also available.

- **Panchayati Raj:** The Panchayat department has implemented e-governance in communities through mobile applications for monitoring tasks and reporting problems (e-Panchayat Management Information System).

- **Health and Education:** E-learning and telemedicine services have been promoted, particularly during COVID-19. Examples include tele-education classes, e-health portals for COVID statistics, and online enrollment for the Shagun scholarship.

The uptake by citizens varies despite this extensive set of services. While rural users depend more on CSCs or intermediaries to get services, urban, educated users frequently use e-District. Uneven awareness and satisfaction are shown by empirical research:

- A study of 120 villagers in rural Kapurthala asked them which e-initiatives they thought will expand. 30% of respondents chose the Kisan Call Center, which is an agricultural information hotline. At 27.5%, e-Sewa (the portal for common services) and Jagriti e-Sewa (the site for citizens) were close. Merely 19.2% of participants deemed SUWIDHA (ease-of-doing business portal) significant, which is probably a reflection of their lack of knowledge about this service. According to these findings, younger administrative portals (such as SUWIDHA) are still specialized, while agricultural support services are highly visible in rural areas.

- Villagers were also asked what kind of program had the "most significant impact" in their community. Interestingly, 20% of respondents cited "digital literacy programs" as having the greatest influence, surpassing all other services. 12.5% of respondents mentioned online medical services (telemedicine), while 19.2% mentioned agriculture information portals. In general, more than half named different e-services. This suggests that literacy and training programs are viewed as having a significant impact on the effectiveness of any e-governance.

- Urban areas have adapted well to e-services, according to adoption data from PSeGS (not readily citable), although the percentage of online applications is lower in rural districts. For instance, due to convenience or a lack of knowledge, many individuals in villages still utilize handwritten forms at local offices rather than the internet portal when applying for pensions or certificates.

8. IMPACT OF DIGITAL ILLITERACY ON SERVICE DELIVERY AND ENGAGEMENT

There are several negative effects of digital illiteracy on the results of government in Punjab:

- **Unequal Service Delivery:** Traditional routes are used by citizens when e-services are not accessible. The result might be a backlog at local offices and agents, which would be inefficient. According to officials, a significant number of assistance programs fail to pay out online benefits to their recipients since those individuals never submitted their applications digitally. So, what was once known as the "digital divide" is really a gap in development. To illustrate the point, many rural households still obtain food subsidies through in-person verification, even though digital Ration Card distribution of PDS is underused. More illiterate neighborhoods had slower adoption of

government programs like e-scholarships and pension transfers, according to official statistics. This goes against the fundamental idea of the speedier, more secure delivery that e-governance is meant to promote**(Jane, 2024)**.

- **Transparency and Accountability:** The goal of electronic governance is to lessen the need for corrupt officials to meet with citizens in person. On the other hand, intermediaries can keep opaque practices alive when citizens are unable to use portals. For instance, the return of informal payments and delays could occur if farmers are forced to depend on third-party officials or lawyers to resolve their grievances regarding land acquisition, as they are unable to do so online. Public internet notifications and other forms of transparency are supposedly less useful to areas with low levels of ICT literacy. Essentially, those who are not part of the digital economy do not benefit from the accountability improvements brought about by e-governance's transparency dividend**(M. Singh & Kumar, 2024)**.

- **Citizen Engagement:** It is potentially possible to involve citizens in feedback and involvement through digital platforms such as websites, social media, and applications. However, residents lacking fundamental abilities are unable to engage in online governance polls or use grievance redressal portals. The sample villages in the Kapurthala study did not use online grievance systems such as Punjab e-Portal. Seldom do these areas send e-complaints to local administrations. Because choices are still made at the top level with little participation from the bottom up, rural residents feel alienated. This diminishes legitimacy and erodes trust in digital governance. Portals such as CM Window in Punjab, on the other hand, receive more public ratings and input in areas with greater literacy rates, demonstrating the participation divide.

- **Financial Exclusion:** The impact on digital financial services is significant. Digital literacy is assumed by the push for online payments (for utilities, taxes, and subsidies). Online transaction rates are extremely low in Punjabi areas with low levels of digital literacy. Farmers who are not proficient in mobile banking nevertheless incur additional expenses when they travel to deposit checks or use ATMs. Family members are frequently relied upon by women, who may require the usage of DBT (Direct Benefit Transfer) for assistance. Therefore, where digital skills are limited, financial inclusion lags, undermining the objectives of technology programs to promote financial inclusivity**(R. Kumar et al., 2019)**.

- **Education and Skill Gaps:** It has a big effect on digital financial services. In order to push online payments (for utilities, taxes, and subsidies), digital literacy is assumed. Low levels of digital literacy in Punjabi areas result in very low rates of online transactions. Despite their lack of proficiency with mobile banking, farmers who go to deposit checks or use ATMs face additional costs. Women often rely on family members and may need to use DBT (Direct Benefit Transfer) to get help. Therefore, the goals of technology programs to promote financial inclusivity are undermined when financial inclusion lags in areas with poor digital capabilities.

Overall, the benefits of e-governance are diminished by digital illiteracy. While Punjab's services are online in theory, a significant portion of the population is still essentially offline in practice. The promise of electronic government has "not been realized," say Kumar and Singh. For offline citizens, the end effect is still the same level of inefficiency and marginalization. Socioeconomic disparities may expand as a result of the government's efforts to improve transparency and efficiency, which will mostly benefit the connected population. A new schism in Punjab's progress could emerge if the issue of illiteracy is not resolved.

9. POLICY RECOMMENDATIONS AND INNOVATIVE MODELS FOR INCLUSIVITY

Punjab needs inclusive, targeted efforts to close the digital divide. Here are some fresh ideas for policies and methods backed by research and real-world experience:

- **Expand Multilingual Digital Literacy Training:** Local languages must be available for training programs. "Development of multilingual e-governance services" is crucial, as Kumar & Kumari stress. In addition to Hindi and English, Punjabi should be the primary language of all PMGDISHA materials and certification courses. Workshops conducted by teachers who speak Punjabi will enhance understanding. Vernacular information, such as Punjabi-language videos explaining how to use the e-District portal, should be incorporated into digital literacy curricula. Go beyond the fundamentals of IT by integrating scenario-based learning with literacy (for example, guiding citizens through a website's real application procedure) to help trainees understand its practical importance.

- **Leverage Community Hubs and Local Champions:** Create Digital Literacy Centers in easily accessible places, such as town halls, libraries, panchayats, or anganwadis. Local volunteers with the necessary training, such as schoolteachers or youngsters, can oversee these centers. Assign "e-Government Saathis," for instance, to assist neighbors with using forms and apps. The participation of "educated, computer-savvy villagers" can greatly increase adoption, according to the Kapurthala study. Periodically, local self-government entities (Panchayats) could arrange "Digital Melas" where free instruction and assistance on government e-portals are offered.

- **Women-Focused Programs:** Create particular initiatives for women in light of the gender gap. For example, incorporate digital skills modules into current initiatives for female literacy and women's self-help organizations. Set up training sessions just for women to foster a relaxed learning atmosphere. To promote involvement, offer rewards (such as free data or modest stipends). To inspire others, showcase the achievements of women. In each district, the Digital Saksharta Abhiyan might establish goals or quotas for training rural women.

- **Mobile-Based and Offline Solutions:** A lot of people who live offline have feature phones or intermittent internet connection. Extend Punjabi-language IVRS (Interactive Voice Response) and SMS services for essential services (such as call-based pension status or land record checks). Create chatbots and voice-activated assistants in Punjabi for government information. For essential services, keep hybrid models in place: give them digital tools while keeping certain offline points of contact

(such as a bank liaison or CSC). The "Service Delivery Centers" model from Kerala, where local officials help citizens, might be modeled and implemented into Punjab's Panchayat Bhawans.

- **Incentivize Local Language Content in Portals:** Require all government e-portals to provide Punjabi-language interfaces. Modern e-District forms have the ability to translate into Punjabi automatically. For individuals who have trouble understanding text, use icons, pictures, and audio instructions. For example, farmers could be guided through scheme applications by a Punjabi smartphone app that uses photos. This proposal comes when it was discovered that many villagers were left behind by English-only programs.

- **Strengthen Infrastructure at the Last Mile:** Reliable connectivity is required, although literacy in the traditional sense is not. Make sure all of the BharatNet fiber is being used by providing public Wi-Fi and at least one computer to each linked GP. Support rural CSCs with solar energy or battery backups to combat power outages. Take into consideration Zero-Budget Network (ZBN) concepts, which use mesh networks to spread internet among villages (as demonstrated by Andhra's wireless village networks).

- **Public-Private Partnerships and Social Innovation:** Promote collaborations with private companies and NGOs. For example, telecom firms could fund digital literacy vans that visit rural areas (similar to mobile vans for agricultural markets). Free workshops in villages could be sponsored by IT companies or startups as part of their CSR (corporate social responsibility) programs. Gamification of training could be achieved through social entrepreneurs (such as Punjabi game-based learning apps). Try implementing creative approaches, such as linking literacy initiatives to financial rewards and offering subsidized smartphones or data packs to families that successfully complete digital training.

- **Monitoring and Feedback:** In governance assessments, establish metrics (e.g., the percentage of women trained, the number of communities receiving multilingual CSC services, etc.). To find out if digital services are reaching the intended recipients, use easy surveys. Make feedback loops by conducting door-to-door awareness campaigns if some communities continue to be offline. Include Gram Sabhas in the evaluation of digital gaps. In Punjab, a sub-metric on citizen digital inclusion may be included to the Good Governance Index (Digital Governance component).

- **Curriculum Integration:** Include instruction on digital literacy in adult and school courses. Make sure all high school graduates are able to use fundamental e-services in the long run. Interactive ICT modules ought to be incorporated into adult education programs, which are now prevalent in Punjab's rural development initiatives. Future generations will inevitably be more linked if digital learning is institutionalized.

These suggestions are consistent with regional best practices. Using local trainers and vernacular content, Karnataka's Saksharatha Samiti (literacy campaign) effectively trained rural women in cellphone use. The effectiveness of supported e-services has also been shown by GoI's ANGEL (Aadhaar Enabled

Public Distribution System) kiosks. Punjab may make its e-governance genuinely universal by integrating these socio-cultural solutions with its infrastructure.

10. CONCLUSION

Punjab's e-governance development is a reflection of notable developments in digital infrastructure and service delivery systems. Realizing truly inclusive and efficient smart government is still hampered by the enduring problem of digital illiteracy. Even with the widespread adoption of digital platforms, mobile applications, and 4G coverage throughout the state, a sizable section of Punjab's population—particularly women, marginalized communities, and those living in rural areas—remains disconnected. This is primarily due to a lack of digital awareness, skills, and access rather than infrastructure deficiencies. This digital isolation presents significant difficulties. In addition to limiting financial inclusion through digital banking and impeding citizen participation in governance processes, it results in unequal access to basic public services. Because of this, a significant portion of the public still does not experience the efficiency, accountability, and openness that e-governance promises. Since technology literacy limits access to information and government services, the digital gap has effectively produced a new layer of inequality. In order for smart government to be successful, Punjab needs to change its emphasis from just building infrastructure to empowering its people with inclusive digital literacy initiatives that specifically target women, people living in rural areas, and the elderly. Digital platforms must have multilingual assistance, hybrid service models, community-level training facilities, and culturally appropriate material in order to be really useable and accessible by everyone.

REFERENCES

1. Gupta, T., Jana, A., Maiti, S., & Y, M. (2023). Gender-Gap in Internet Literacy in India: A State-Level Analysis. *Scholars Journal of Economics, Business and Management*, *10*(09), 209–213. https://doi.org/10.36347/sjebm.2023.v10i09.002

2. Jane, K. (2024). Impact of Digital Literacy on E-GovernmentUtilization. *Researchgate*. https://www.researchgate.net/publication/384725164_Impact_of_Digital_Literacy_on_E-Government_Utilization

3. Kumar, M. P., & Kumari, C. (2024). Towards Inclusive Governance: Examining And Adoption Of E-Governance In Rural Punjab. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*, *29*(05), 14–19.

4. Kumar, R., Mishra, V., & Saha, S. (2019). DIGITAL FINANCIAL SERVICES IN INDIA: AN ANALYSIS OF TRENDS IN DIGITAL PAYMENT. *International Journal of Research and Analytical Reviews*, *06*(02), 6–22.

5. Kumar, S., & Singh, M. (2024). E-GOVERNANCE IN PUNJAB: AN ANALYSIS OF STRATEGIES AND ITS IMPACT ON CITIZEN SERVICES. *ShodhKosh Journal of Visual and Performing Arts*, *05*(01), 2941–2950. https://doi.org/10.29121/shodhkosh.v5.i1.2024.310 9

6. *Literacy Rate In Punjab*. (2025). https://www.punjabdata.com/Literacy-Rate-In-Punjab.aspx

7. MOINUDDIN, S. (2021). Contours of Internet Access in Rural-Urban Landscapes in India. *Regions*,

1. https://doi.org/10.1080/13673882.2021.00001100

8. Ms. Ritika Yadav, & Gaurav Ashesh. (2025). E-Governance 4.0: Integrating AI and IoT for Sustainable and Smart Management of Maha Kumbh 2025. *International Journal of Latest Technology in Engineering Management & Applied Science*, *14*(3), 426–433. https://doi.org/10.51583/IJLTEMAS.2025.140300048

9. Ratnani, D. (2023). *Digital Punjab Online*. Egovernance. https://egovernance.vikaspedia.in/viewcontent/e-governance/states/punjab?lgn=en

10. Romke, R. A. (2025). Navigating the Socio-Economic Impact of Digital Bangladesh: An Overview. *International Journal of Research and Scientific Innovation*, *XII*(III), 55–69. https://doi.org/10.51244/IJRSI.2025.12030004

11. Roy, V. C. (2019). In Punjab, over 70% people access internet on phone. *The Tribune*, 1. https://www.tribuneindia.com/news/archive/business/in-punjab-over-70-people-access-internet-on-phone-766809/#:~:text="Reliance Jio carries two,said Reliance Jio spokesperson

12. Singh, A. (2017). E-Governance Services in Punjab. *World Wide Journal of Multidisciplinary Research and Development*, *03*(09), 57–62.

13. Singh, M., & Kumar, S. (2024). E-GOVERNANCE IN PUNJAB: AN ANALYSIS OF STRATEGIES AND ITS IMPACT ON CITIZEN SERVICES. *ShodhKosh: Journal of Visual and Performing Arts*, *5*(1). https://doi.org/10.29121/shodhkosh.v5.i1.2024.3109

14. Thanga Revathi S. (2025). Decentralized E-Voting and Governance System Using Blockchain. *Journal of Information Systems Engineering and Management*, *10*(2s), 61–68. https://doi.org/10.52783/jisem.v10i2s.201

15. Usof. (2025). *BharatNet Project*. Usof. https://usof.gov.in/en/bharatnet-project#:~:text=8 Madhya Pradesh 5290 9,Maharashtra 8975 10 Punjab 4781