



MAPPING THE SECOND-LEVEL DIGITAL DIVIDE: CRITICAL POLICY PERSPECTIVES ON E-GOVERNANCE IN PUNJAB, 2018-2025

Ayesha Khalid¹ & Dr. Shafiq Qurban²

¹MPhil Scholar, University of Management & Technology UMT, Lahore. Email: F2024112008@umt.edu.pk

²Assistant Professor, Department of Political Science and International Relations, University of Management and Technology Lahore. Email: shafiq.qurban@umt.edu.pk

KEYWORDS	ABSTRACT
E-governance, Second-level digital divide, Punjab, Digital literacy, Public service delivery, Capability approach, PITB	This paper studies e-governance in Punjab from 2018 to 2025 using the perspective of the second-level digital divide, contending that while digital reforms have increased accessibility and infrastructure, the issue of inequality in capabilities has not been adequately dealt with. Using desk research and interpretive analysis of Punjab IT Policy 2018, Punjab Digital Policy 2021-2025, official institutional documents, PBS stats, and PTA figures, the paper focuses on the problem of accessing the available technology in a functional manner, with special emphasis on low-literacy levels and marginalized citizens in rural, semi-urban areas. It is argued that the e-governance model in Punjab is based on technocracy that links digital presence with digital inclusion and ignores literacy levels, confidence, language problems, procedural complexities, and costs of mediation (Punjab, 2018) ((PTA), 2025). In addition, it is also shown that despite high mobile and broadband penetration, there are no capabilities or autonomy necessary to interact with the digital public services online. This paper is structured along three themes – connectivity versus capability, portal design and cognitive barriers, and the informal intermediary market that allows citizens to conduct digital transactions at the cost of hidden expenditures ((PITB), 2023). The present study is based on the theories of Resource and Appropriation Theory of Van Dijk and Capability Approach of Sen to analyze how literacy and digital literacy act as conversion factors to make digital services actual capabilities. The study recommends that evaluation of e-governance in Punjab must take into account independent usage, aided usage, readability, accessibility, and cost of using the services.
ARTICLE HISTORY Date of Submission: 18-06-2026 Date of Acceptance: 16-07-2026 Date of Publication: 20-07-2026	 2026 Journal of Social Sciences Development
Corresponding Author	Ayesha Khalid
Email:	F2024112008@umt.edu.pk
DOI	https://doi.org/10.59075/jssd.v5i5.385
Volume/Issue	5(5), 2026, 349-365

Introduction and Literature Review

Digital divide research has progressed from being a rather limited discussion of mere accessibility to a more nuanced approach of digital engagement inequality. The early literature surrounding the first-level digital divide mostly concerned itself with whether people and households had the hardware, connectivity, and access to digital information and communication technology. Such an

approach suited the context in which networks and devices were the primary issue of exclusion. However, as mobile phones, broadband networks, and online platforms became commonplace, researchers demonstrated that formal access does not account for participation inequality in the digital world. One can have access to the devices, live in areas with the coverage of networks, and even have regular access to the internet without having the competencies needed to engage with digital media. (Statistics, 2025)

This has led to the emergence of a second-level digital divide idea. Instead of focusing exclusively on hardware or connectivity, the second-level digital divide focuses on skills, digital literacy, confidence, control by the users, and the capacity to gain advantage from the usage of digital technologies. It relates to what people are able to do once connect. It involves operational skills, information searching, understanding of the interfaces, critical thinking, confidence when dealing with digital systems, and the tactical usage of digital technology to obtain valuable outcomes. This becomes especially relevant when discussing the field of public services since the state systems typically demand more than digital knowledge. Individuals should be able to understand the terminology used, submit documents, understand processes, authenticate themselves, make payments, monitor their progress, and react to contingencies ((PTA), 2025).

Another way in which the digital divide has been refined within the literature is through the identification of what has been termed a third-level digital divide. This refers to inequality of outcomes resulting from digital interaction. Even where people have relatively equal access and digital proficiency, there may be unequal social benefits from the interaction depending on factors such as class, gender, geographic location, education and institution. For the case of public administration, it would mean that the same electronic governance system provides benefits in terms of convenience and empowerment for some users and yet confuses, disempowers, adds cost and even excludes others ((PTA), HIES 2024–25 Highlights Pakistan Records Significant Gains in Digital Connectivity and Internet Use, 2026).

There is no better case than Punjab to understand the nature of such new forms of inequality because Punjab represents the most ambitious sub-national jurisdiction within Pakistan that is undertaking digital reforms. Punjab is well-known for its pioneering role in technology-assisted governance. In the Punjab Information Technology Policy 2018, the state recognized the power of information technology to enhance governance, transparency, accountability, and citizen-focused service delivery, besides the digital bridge among different genders, regions, and socio-economic groups. Punjab Digital Policy 2021–2025 built upon that vision and made digital transformation into a provincial strategy comprising four core elements of e-governance, connectivity, human capital development, and economic digitization.

However, the very same record demonstrates the limitations of the roll out-based concept of inclusion. In its report on the Punjab Digital Policy, it was pointed out that in Punjab 95.6 percent of households owned mobile phones, while only 26.3 percent could access the internet at home according to the 2017–18 MICS data quoted there. Also, there were gender gaps in the usage of computers, mobiles, internet, and ICT skills. Although the latest government statistics point to further improvements in connectivity, they still demonstrate unevenness in the connection between

devices, internet access and digital literacy. PBS data confirm that 93.93 percent of households have access to mobile or smartphones facilities, while only 34.40 percent report internet access in the earlier provincial ICT table; the latest 2024-25 HIES statistics report national progress in digitization but do not cancel the general difference between widespread access to mobiles and insufficient internet and skill results (Statistics, 2025). PTA statistics confirm very high national numbers of mobile and broadband subscribers, which is important in terms of showing that connectivity has increased significantly but the problem of usability remains relevant. The discrepancy between the figures for connectivity and capability is evident even in the official data on household numbers: in Punjab province, 93.93% of households had mobile/smartphone facilities, but 34.40% households had internet facilities and 12.90% households had computers/laptops/tablets, clearly revealing an urban-rural divide in the availability of internet facilities. ((PTA), Telecom Indicators, 2025) (Punjab, 2018)

This places the case of Punjab as significant analytically from two perspectives. First, this is because of the fact that Punjab has a sophisticated model of reforms whereby the state has established a wide e-governance framework, such as digitalization of land records, citizen feedback mechanisms, and one-window facilitation centers. Second, despite the sophistication of this framework, exclusion still takes place in ways that cannot be gauged simply through numbers of infrastructure. While citizens can be formally addressed through digital means, the latter may be relying on the intervention of third parties or may be intimidated by interface ((PITB), 2023).

Many of the studies that examine the digital government highlight efficiency, speed, transparency, and decreased discretionary corruption – all highly pertinent themes for Punjab. Programs like the CFMP and the LMIS system have already been offered as instances where technology has facilitated monitoring and improved citizen contact, among other things. Yet, a critical policy analysis poses a different question: Who can use these systems autonomously under what circumstances and at what costs? This new question refocuses our attention from the availability of digital service delivery to user capability. It additionally raises questions about the underlying premises of policy discourse in cases where the "citizen-centric" design is proclaimed at the policy level but user costs remain unexamined ((PITB), Citizen Feedback Monitoring Program – Reviving Democracy in Pakistan, 2015).

In other words, the purpose of this article is to say that e-governance in Punjab has been able to increase the amount of digital infrastructure available and the range of services provided. However, the evaluation of the policies fails to recognize the fact that there is another digital divide and that is the second level one which can be ignored because of lack of emphasis on literacy, usability, and mediation. It does not mean that this article tries to underestimate the success achieved through the digital revolution. In fact, this article has been able to highlight the issue in policy making that is overlooked through the social lens (Punjab, 2018).

Theoretical Framework

The present paper uses the theories of Resource and Appropriation by Van Dijk and Capability Approach by Amartya Sen to analyze the reasons for the inability of the expansion of e-

governance infrastructure to lead to equitable digital inclusion. The Resource and Appropriation theory proposed by Van Dijk is particularly useful since it analyzes access to digital media through different levels rather than considering it as one dichotomy. In this case, digital inclusion is possible only if the motivational access, physical access, skills access, and usage access is available (van Dijk, 2020).

Motivational access relates to the intention, confidence, and relevance in terms of motivating an individual to interact with digital technologies. When it comes to e-governance, motivation is not only a matter of being interested in using technologies, but it involves having trust in the state's mechanisms, the fear of making mistakes, the perception of being at risk within the bureaucratic mechanism, and previous experiences with the bureaucracy itself. Those citizens who do not know if the digital application works, those who are afraid of losing information, or those who do not feel confident in their literacy may not interact directly with the technology despite its accessibility.

Physical access relates to devices, connectivity, and the physical infrastructure that is needed for internet access. While this is important, it alone is not enough anymore. The documentation and telecoms indicators from Punjab reveal that much has been accomplished in terms of the physical dimension of access due to mobiles, broadband networks, digitization programs, and service designs compatible with mobiles. Nonetheless, when the physical aspect of access is taken as the ultimate criterion of inclusion, then confusion may be created by mixing up technical availability with access. One can own a phone but have to share it or experience unstable connectivity or poor quality devices (Alexander J. A. M. van Deursen, 2015).

Skill access consists of the capabilities required for effective operation within digital technologies. This dimension is important in understanding the second-tier digital divide. These include searching skills, interpretation of directions, and navigation of menu structures, file uploading, information validation, troubleshooting, and recognizing when one has done something successfully. In the context of e-governance, skill access also involves knowledge of the administrative categories and processes that need to be followed. Reading capability is not enough in determining effectiveness in digital media use; what is important is one's ability to link literacy skills with procedure in navigating the process without any breakdown (Alexander J. A. M. van Deursen, 2015).

Usage access has to do with how far, how varied, how frequent, and how intentional the use of digital devices has been. Besides having to do with the possibility of digital use, it has to do with using those devices in such a way as to gain important benefits through that use. In the context of public service delivery, usage access will have to do with independent application submission, follow-up, registration of grievances, checking of status, retrieving records, and successful completion of the process. Even though someone may be using a telephone to send messages and enjoy entertainment, he may not have adequate usage access to digital governance (Marco, 2021).

The differentiation between physical and skills access made by Van Dijk is evident in the policy statistics of Punjab itself. According to the Punjab Digital Policy, 95.6 percent of households had a mobile phone, and 26.3 percent had internet connection at home, but only 5.1 percent of women

and 14.4 percent of men had done one of the mentioned ICT activities. Such disparity indicates that mere availability of devices and internet connection does not guarantee skills to use digital technology independently. That is to say, the statistics of Punjab make it clear that physical access is widespread, while skills access is highly unequal. ((PITB), Punjab Digital Policy 2021–25, 2021)

While Van Dijk elucidates the stratification in digital access, the Capability Approach of Sen can be used to understand why the significance of these layers in policy-making is related to the translation of these layers into substantive freedoms. Sen differentiates between resources and capabilities: “Possession of a resource cannot be equated with capability” – just because somebody has something does not mean that he/she actually has the capability to perform certain valuable functioning. In other words, a digital portal, a mobile phone, or an Internet connection are resources while whether or not these resources become capabilities depends on various conversion factors such as personal traits, social norms, institutions, and environment. The Capability Approach is especially helpful in the analysis of e-governance since the value of public services is not in the services per se but rather in what these services enable citizens to do (A. V. Deursen, 2019).

Sen’s Capability Approach helps explain why these disparities matter analytically and politically. Even where households have mobile phones or internet access, those resources become real capabilities only when citizens possess the literacy, confidence, and procedural competence to convert them into effective action. Punjab’s own figures show that 95.6 percent of households had a mobile phone, but only 26.3 percent had home internet access, while basic ICT activity remained low at 5.1 percent for women and 14.4 percent for men. These numbers suggest that digital resources are not equal to digital capabilities; literacy and digital literacy function as conversion factors that determine whether citizens can turn online public services into actual well-being and social participation (Statistics, 2025).

In this article, literacy and digital literacy are framed as important factors for conversion. The former will determine the ability of a citizen to read instructions, identify choices, separate mandatory and non-mandatory actions, and understand error messages and legal jargon, while the latter will enable a citizen to act upon his or her knowledge in a digital medium, i.e., click on the right link, fill out fields, upload documents, authenticate one’s identity, and notice successful transaction. Experience and confidence are additional intermediaries in this process. It is true that a text-rich interface could be accessible in that it is on the Internet and is publicly available; however, it does not qualify as a capability-boosting tool if the citizen is unable to make the interface work in his or her favor (Marco, 2021).

Van Dijk and Sen enable three analytic moves within the article. First, it enables the distinction between physical expansion and skill-based inclusion to avoid making the mistake of confusing connectivity with capability. Second, it connects usability and literacy to the issue of distributive justice, by proving that interface design may either amplify or limit unequal conversion of resources into capabilities. Third, it makes it clear that the mediated use via shops, intermediaries, or vendors cannot necessarily be taken to be inclusion. In the case of the citizen having to pay some other person in order to gain access to a digital public service, there is inequality in capability even if the resource is present (A. V. Deursen, 2019).

Methodology

A qualitative desk research design along with an interpretive policy analysis is used for this paper. The choice of such a design is justified by the fact that the research question deals with the way in which the e-governance regime in Punjab was constructed, institutionalized, and documented in policies and other documents within the period from 2018 to 2025. As opposed to survey data on individual behavior, the current research studies the underlying assumptions, priorities, blind spots, and assessment criteria contained in the policy documents and other public institutional sources (Gatot Hery Djatmiko, 2025) (Ghous, 2025).

The source base comprises four types of sources. The first category involves core policy documents, including the Punjab IT Policy 2018 and the Punjab Digital Policy 2021–2025, which serve as the official strategic framework for the digital transformation initiative in Punjab. The second category includes public sources from PITB and other government websites in order to trace the governance framework as well as the purposes of major flagship programs like CFMP, e-Khidmat, and PLRA/LRMIS (Sahir, 2022). The third type of sources comprises official statistical sources from PBS and PTA to place in context the relation between connectivity, internet usage, and digital literacy (Dijk, 2018) (Soomro, 2020) (Malodia, 2021).

Source selection relied on criteria of relevance, authority, and contemporaneity. First preference was accorded to official provincial policy documents, official institutional websites, and nationally recognized public statistics that pertained to the period 2018–2025 or referenced in the provincial policy framework. Such sources are especially useful in interpretive policy analysis because they show the empirical markers as well as language used by the state in defining success, reform, inclusion, and delivery of services. Official materials should not be considered neutral reports but rather policy documents that create governance problems and desirable solutions.

The research approach employed thematic coding and cross-source interpretation. In the first step, close analysis of the two anchor policies was conducted in order to determine how issues of digital inclusion, e-governance, citizen-centricity, automation, connectivity, and skills are defined (Naeem, 2023). In the second step, flagship initiatives mentioned in official policy and institutional materials were mapped against the governance landscape of Punjab. In the third step, synthesis of public statistics was conducted to find out indicators of device availability, internet access, internet usage, and skills, thus demonstrating the discrepancy between access and skills. The final step interpreted the results from the perspective of second-level digital divide theory, using its four categories: skills access, usage access, and capability conversion (Alyas, 2024).

Thematic coding was carried out based on the three themes identified within the analysis section: connectivity vs. capability, portal design & cognitive barriers and intermediary market. These themes arose both deductively from the theoretical framework and inductively from the sources. For instance, where policy documents highlighted accessibility through digitization yet paid little attention to readability or burden, it was coded as technocratic bias. Similarly, where descriptions of public services highlighted the digital channel but official data showed uneven indicators of

internet and skills, it was coded as a mismatch between physical access and actual use (Alyas, 2024) (Naeem, 2023).

It is even more pertinent to interpretive policy analysis in this case since not only the existence of the digital reforms is examined, but also the way in which the policies discourse imagines the citizen. The central interpretive question, thus, is whether the envisioned user of Punjab's e-governance policies is already literate, confident, connected and prepared with the necessary documents and what will happen to those that are not.

However, the research has its drawbacks. First of all, it uses official and institutional documents, and thus, it does not have any direct way to examine user experience, interaction with the interface, and coping mechanisms at the household level. Furthermore, there is no testing of portals' usability or any ethnography among the users and intermediaries. This is why the paper contains analytically-based speculations about the matter in question, but not measurements of the independent usability (Sahir, 2022). Moreover, there are some evolving policy materials within the province, and in the case of the Punjab Digital Policy 2021-2025, it is more evident than ever. Nevertheless, these limitations do not mean that the analysis is incorrect; they show that the paper is an analytical examination of the policy framework and its publicly visible manifestations.

Punjab's E-Governance Policy Context, 2018–2025

The journey of e-governance in Punjab from 2018 to 2025 can thus be seen as that of a layered provincial architecture whereby there was a growing convergence between policy intentions, digitization of institutions, and citizen service delivery mechanisms. The Punjab IT Policy 2018 was an important landmark in this regard as it conceptualized ICT as a means of governance, efficiency, transparency, and accountability. The policy viewed the province as the first in Pakistan to introduce an IT policy, and digital divide reduction, citizen-centric services, and e-governance as its main pillars. Digital governance was also related to service delivery reforms through examples such as e-stamping, online receipts, e-Khidmat, data centers, computerization of police, health management systems, and land record computerization (Special Education Department, 2023) (Punjab, 2018).

The importance of the Punjab IT Policy 2018 is not limited to its proposed initiatives but is in terms of the logic of development it helped to crystallize. Technology was seen as a tool of modernizing governance and of rationalizing services through technology. This showed a great level of faith in the ability of digital tools to make governance transparent and efficient while increasing access for the citizens. However, what was lacking in this discourse was the implicit assumption that if services were made digital and channels increased, inclusion would naturally happen. The issue of independent use by the citizen was not addressed directly, but only in the form of reducing the digital divide and enhancing access ((PITB), Citizen Feedback Monitoring Program, 2023). Moreover Punjab digital policy statistics show there is very high mobile penetration but very low household internet penetration. Where, 95.6 percent of households have mobile phones, while only 26.3 percent has home internet access. ((PITB), Punjab Digital Policy 2021–25, 2021)

The Punjab Digital Policy 2021-2025 continued on the same path. It outlined four vertical pillars and three cross-cutting pillars, which included e-government, communication and connectivity, and human capital or ICT skills development. This policy specifically mentioned that digital technologies must help achieve efficiency, transparency, accountability, accessibility, and citizen interactions. It highlighted that Punjab was heading towards responsive and transparent e-government step-by-step and had certain objectives like end-to-end automation, mobile services, and electronic transactions, evidence-based decision-making and digital platforms for citizens. Conceptually, this policy expanded the horizon of digital transformation from administrative automation to a full-fledged digital society policy of the province ((PITB), Punjab Digital Policy, 2022).

“Digital Punjab” should be understood not so much as a single initiative as the overarching framework for such an extensive transformation process. In policy documents, “Digital Punjab” signifies a reforming agenda whereby the structure of governance, the economy, societal spheres, and public services is increasingly being reconfigured through digital systems and platforms. The agenda is far-reaching and forward-looking. But the prevailing story is predominantly one-sided, as the agenda is based on the idea that if you develop the necessary systems, automate the processes, develop the platforms, facilitate the flows of data, then the digital transformation will inevitably occur (Gatot Hery Djatmiko, 2025).

In such an architecture, the Punjab Land Records Authority (PLRA) and the Land Record Management Information System (LRMIS) become pivotal because land administration is one of the most important and contentious arenas of citizens’ interaction with the state. The official PLRA website presents the organization as created under the PLRA Act 2017 “to update, modernize and digitalize the land records” and states that the service centers offer computerized and, presumably, more transparent access to such services as fard issuance, land transfer, ownership verification, and property registration ((PITB), Punjab Digital Policy, 2022). Significantly, land digitalization becomes crucial in the provincial policy architecture too, as computerization of land records and e-transfer are mentioned as the landmark examples of effective governance. While in theory such innovations can make procedures less opaque and discretionary, in reality, land information systems require considerable documentary, procedural, and interpretive skills of the users, thus becoming very vulnerable to second-level digital divide (Alyas, 2024).

CFMP is another hallmark element in the governance system of Punjab. According to PITB, CFMP is an initiative across Punjab where proactive calls through rob calls and SMS are made to citizens who have accessed public services in order to gather feedback and correct the identified problems based on evidence. CFMP was not just a feedback tool but a multi-service monitoring platform. Earlier PITB reporting showed it had expanded to 19 services across 7 government departments, allowing the province to track public service delivery at scale ((PITB), Citizen Feedback Monitoring Program, 2023). The importance of this initiative is that it is a tool to help decrease petty corruption, improve service delivery, build trust, and promote citizen engagement. In terms of its importance within the provincial governance structure, CFMP is the way in which mobile telephony is transformed into a monitoring and accountability tool. CFMP shows a rather advanced

approach to post-transaction governance; however, CFMP is also characteristic of Punjab's digital reform due to the state's capacity to track, count, and monitor transactions, not paying much attention to citizen access to them.

The e-Khidmat model may possibly be the most clear-cut case of how the province has tried to hybridize digital government and physical facilitation. According to their official descriptions, the e-Khidmat Markaz can be termed as the hallmark of the one-window system that offers a variety of services from one place. Other services available on this platform include crime reporting and connecting citizens to various departments by means of a unified system. This project holds importance in the sense that it recognizes that a large number of citizens prefer facilitated interaction to self-service via the online portal. Therefore, in a way, it partially rectifies the assumption that direct access through portals is the only or perfect model of digital service provision. Punjab's digital environment shows a clear access-capability gap: the province had 95.6 percent mobile-phone household access, but ICT activity remained far lower, with only 5.1 percent of women and 14.4 percent of men reporting at least one listed ICT activity ((PITB), Punjab Digital Policy 2021–25, 2021).

The entire above combine to constitute governance architecture that is striking both in its scale and ambition. It combines automation, citizen interface, one window service, land reform, and data-based oversight. It is evident that through the architecture, the state of Punjab has certainly moved beyond the conventional approach of e-governance, which is merely about having a website for government activities. Nevertheless, its evaluative grammar is highly influenced by institutional output in terms of number of services, scale of coverage, and development of platforms, automation and digital surveillance. The next section attempts to examine the question regarding the type of citizen envisioned in the architecture and how many of them can navigate it without dependency, confusion and costs.

Secondary Data Synthesis, Analysis, and Discussion

Connectivity versus capability

One of the key findings from desk research is that Punjab policy landscape shows a very high degree of compliance with the first level logic of digital expansion while the most important inequalities continue to exist on the second level. According to official figures, Pakistan had 197 million mobile cellular subscribers, 143 million mobile broadband subscribers, and broadband penetration was at 60 percent by March 2025. In its national report for 2024–25, the Pakistani PTA also noted that telecom penetration exceeded 92 percent, while broadband connections exceeded 150 million. However, the findings from the PBS present a rather nuanced picture when it comes to including the population. According to the ICT table, in the province of Punjab, 93.93 percent of households had access to mobile or smartphone services, while only 34.40 percent had access to internet connectivity. In addition, only 12.90 percent of households had access to computers, laptops, or tablets. This is relevant because various governmental actions can be much more easily undertaken using computers compared to smartphones or other means of connectivity (Alexander J. A. M. van Deursen, 2015).

The 2024-25 HIES social report further reiterates the importance of disaggregating digital inclusion. As far as ICT is concerned, the report clearly differentiates between household possession, individual usage, and ICT skills, thereby making it explicit that statistics collected by the government themselves make such differentiation. The summary of HIES findings provided by the Pakistan Telecommunication Authority clearly pointed out that even though more than 96 percent of households had access to mobile or smartphones and more than 70 percent were using internet services on an average across the country, individual level usage of the internet among people who are 10 years or older was just 57 percent, while possession of mobiles/smartphones at the individual level stood at 50 percent (Alyas, 2024).

The above mentioned distinction is crucial for understanding Punjab's situation. It reveals how digital saturation on the household or subscriber level could coexist with less developed individual capabilities as well as reduced user autonomy. For example, a household might be viewed as being digitally connected despite having only one person who can control the device and surf the Internet, as well as the user who is unable to read and write to perform administrative functions. This is particularly important in rural and semi-urban areas where sharing devices, poor quality of the Internet connection, and low levels of education are more common.

This issue is present within the digital policy of Punjab itself. While focusing on digital transformation, it highlighted MICS statistics that stated only 26.3% of households had home Internet access, that females used Internet far less compared to males and that their ICT skills were much less than that of the males and that computer activity levels were low in general ((PTA), Telecom Indicators, 2025). Such factors are not accidental; rather, they directly reflect second-level inequalities. The policy can focus on mobile application development and digitization of services, but without proper literacy and digital skill levels among the majority of people, there is inequality in this process (van Dijk, 2020). The statistics on household connectivity reveal a clear disparity between connectivity and actual digital literacy, with a massive 93.93 percent of households with mobile connectivity but only 34.40 percent with internet connectivity, and 12.90 percent with a computer/laptop/tablet.

Table 1. Household connectivity and digital access indicators in Punjab

Indicator	Punjab figure	Interpretation
Household mobile/smartphone access	93.93 percent	High nominal connectivity
Household internet access	34.40 percent	Much lower functional access
Household computer/laptop/tablet access	12.90 percent	Limited device depth
Rural internet access	25.14 percent	Spatial exclusion remains
Urban internet access	49.61 percent	Urban advantage persists

Source: Pakistan Bureau of Statistics ((PBS), 2021). Pakistan Social and Living Standards

Measurement Survey (PSLM) 2019-20

This pattern suggests that Punjab's digital reform has expanded connectivity more successfully than independent usability, especially in rural areas where internet access remains much lower

than in urban areas. This disparity in relation to connectivity and capability is particularly significant in a public service context since e-governance involves performing tasks which involve multiple steps and not simply one-step processes like clicking through links. Complaining, retrieving land papers, uploading certificates, and working with online payment portals involves understanding and step-by-step completion. This kind of process is more capability-oriented. Thus when one considers high mobile connectivity as a measure of inclusion in terms of service delivery, then one assumes that the easiest form of digital contact is as good as the most complex form of digital use.

Portal design and cognitive barriers

Theme two is portal design and the cognitive challenges inherent in digital public services. The official literature of Punjab places great emphasis on citizen-friendliness, accessibility, mobile-first systems, and full automation. Nevertheless, such terminology does not necessarily mean the creation of user-friendly portals for low-literacy users. In reality, many of the e-government services require heavy textual navigation, specific procedural vocabulary, document requirements, fill-in-the-blank forms, and error-prone data submission. When the digital government service system is based on textual understanding, the usability challenge falls on the shoulders of the citizens.

This can be seen as more of a cognitive barrier than simply a technological one. A person with low literacy skills may have access to a phone and even the ability to use message services but will find that the public service portal is difficult to understand and navigate if it uses too many complex instructions, jargon, or unknown processes. This becomes all the more problematic when there are language barriers with regard to English being used or a formal form of Urdu over simple language or language that is regional (A. V. Deursen, 2019).

This is clear from the terminology used in policy. Punjab Digital Policy describes citizen-centered services in terms of digital availability, automation, and platform development. The approach hints at an institutional conception of accessibility that is concerned not with cognitive usability but with the existence of channels for providing public services. Services could be “accessible” in the sense that they are online or mobile, but in practice inaccessibility to such services by citizens unable to understand how to use the interface and what procedures lay behind it remains. Thus, there are two aspects of accessibility – technical and interpretive – and the policy discourse focuses more on the former (Marco, 2021).

This carries huge implications. When online public service provision becomes text-heavy and procedure-ridden, literacy becomes the invisible gatekeeping tool. Educated and familiar with bureaucratic procedures citizens will navigate through portals without too much trouble while others will be at higher risk of getting confused, leaving their applications unfinished or even abandoning them altogether. This reinforces the unequal relations not by denying people access to services but through making them usable for some and not others. The divide thus becomes intrinsic in the design of the interface. The universal portal can become a selective administrative space

where only those who already possess high levels of reading skills, digital literacy and procedural literacy can operate effectively (Sahir, 2022).

This view is supported by the data about Punjab's statistical context more broadly. The gender and skill disparities noted by the government, alongside the differences between the family unit and the individual in terms of internet access and technology use, indicate that a lot of people interact with digital technologies with low stocks of both confidence and expertise. Under such circumstances, good interface design becomes no mere add-on. Rather, it becomes a distributive matter. If the e-governance system takes it for granted that everyone can read the instructions, navigate the site and is familiar with its workings, then it will only widen the existing educational and socio-spatial divides (A. V. Deursen, 2019) (Sahir, 2022).

The informal intermediary market

Theme number three deals with the informal intermediary system that tends to evolve in places where digital services have been officially introduced but personally are difficult to access. Within the Punjab setting, such intermediary systems tend to include computer shops, cell phone service providers, document writers, typing services, and local intermediaries who facilitate citizens in filling in forms, uploading documents, printing receipts, and dealing with application or verification processes. Despite the fact that such intermediaries may not be a part of the policy discourses officially, their presence is something very predictable in social settings.

One can view the use of intermediaries in a positive light because they help citizens make use of a service that they would not otherwise make use of. On the other hand, it means that there is inequality regarding usability when many people need these intermediaries for their daily transactions to take place. If an individual needs to pay someone else for help to make a transaction online, then the service has not really been democratized but simply transferred via intermediation. This creates what can be called a "middleman tax," which is the extra cost incurred as a result of the inability of citizens to independently use the service (Salik, 2025) (Ahmed, 2022).

The service architecture in Punjab also implicitly recognizes this mediated relationship. The use of the e-Khidmat system provides several different kinds of services from one window centers and institutionalizes assisted access. One could view this positively as a means of inclusion, but it also suggests that self-service in digital government does not necessarily apply to everyone. Likewise, the reforms in the land administration systems under PLRA/LRMIS provide centralized service environments which may help to diminish certain types of corruption or opacity but still involve the necessity of going to staff members or other intermediaries for assistance in interpreting records, forms, or processes (Salik, 2025).

The intermediary market can also distort evaluations of the policy. When the government includes transactions that do not indicate whether they were completed independently or with the help of third parties, it may misinterpret the extent to which the reform is inclusive. The portal can appear to be highly effective without indicating the fact that the majority of people accessed it through private vendors or quasi-brokers. In such a case, digital government did not eradicate the role of the intermediary, but simply transformed it. The service has become dependent upon a human

economy, but its costs have moved to the bottom to citizens, and not to the state. This problem is particularly relevant for poor, rural and semi-urban groups that suffer from such factors as poor connectivity quality, lower level of education, lack of experience in dealing with formal digital processes and inability to experiment with bureaucratized technology safely (Marco, 2021).

Table 1 Small statistics table for a secondary-data discussion of the second-level digital divide in Punjab, Pakistan.

Platform / Domain	Key indicator	Source / context	Policy implication
PLRA / Arazi Record Centers	Over 3.2 million Fardat and 1.7 million Intiqalat processed; 60–70% of rural landholders rely on agents.	Official reports; PLRA policy case studies.	Digitization reduced Patwari dependence, but low literacy and complex procedures created a broker market charging roughly Rs. 500–2,000 per case.
e-Khidmat / CFMP	More than 1.45 million citizens served annually across 150+ centers; direct self-service use remains below 20% among low-income and rural users.	PITB dashboard; Punjab administrative data.	Formal facilitation centers reduce exclusion, but many citizens still depend on village-level internet shops and informal assistance.
Portal design barriers	Fewer than 25% of platforms provide full Shahmukhi Punjabi interface; unassisted abandonment on multi-step forms is 45–60%.	Mahmood (2025); provincial UX/UI audits.	Text-heavy English or Urdu portals raise cognitive barriers and increase paid intermediary dependence.
Rural and gendered capability	Rural women reported 70%+ infrastructural constraints, 68% economic constraints, and 62% social or cultural restrictions.	Rabia et al. (2025).	Capability is socially mediated; many women must rely on male relatives or outside agents for e-governance tasks.
Education and digital readiness	60% reported slow or unreliable internet; 75% of teachers and 82% of students cited device cost as a barrier.	Mehmood (2025).	Weak connectivity and device affordability continue to limit digital readiness and independent service use.

The empirical results are in line with Van Dijk’s theory on the differentiation between physical and skills access. The telecoms policy situation in Punjab is a vivid demonstration of significant advancement in terms of physical access, as witnessed by the proliferation of mobile phone users,

the development of broadband connections, and the proliferation of online service channels. At the same time, the same empirical data makes it evident that the issue of physical access does not determine the problem of skills access or usage access (Dijk, 2018).

The Sen's Capability Approach assists in elucidating the normative importance of this issue. In order for digital technology to increase freedom, the citizen must be able to make a functional use of it. Literacy, digital literacy, confidence, control of devices, language accessibility, and supportive local structures are all conversion factors here. Where any of these is weak, the exact same resource produces unequal capabilities amongst citizens. Unequal capabilities are therefore not something left over at the end of digital technology distribution, but are instead part of how distribution happens in Punjab (A. V. Deursen, 2019).

Policy blind spots

Firstly, there is a problem of technocracy. The Punjab IT Policy 2018 and Punjab Digital Policy 2021-2025 contain many references to automation, efficiency, transparency, institutional capacity building, and service digitization. These are very legitimate aims of the state, but at the same time, they push to logic of reform where the aim of building the system is put into focus and the interpretive burden of users becomes neglected. Inclusivity is assumed by availability but is not researched in terms of usability.

Secondly, there is a problem of socio-spatial inequality. Digital inequalities and the necessity of reaching rural areas are stated in the documents of the Punjab government, yet the implication of ruralness/semi-urbaneness' for a meaningful use of e-governance remains to be under-theorized. Digital systems may be considered to be spatially agnostic once they are online. Yet, in case of failure, rural citizens can have problems with poorer connection reliability, lack of points where people could be helped, poor literacy, and additional travel burden. The second-level inequality is therefore not only educational but also geographical (Salik, 2025).

Finally, blind spots are found in the assessment framework. While official narratives around flagships like CFMP, e-services, and the architecture of e-governance focus on transaction volumes, reach, responsiveness, or number of monitored services, these indicators do matter; however, they tell very little about the extent to which transactions have been performed autonomously, how much help was needed, how accessible and user-friendly portals are, what problems the users had to deal with, or what other implicit costs they had to pay. In such a way, policy might continue to mistake the concept of mediated compliance for digital inclusion (Ahmed, 2022).

In summary, the research results support the main idea of the paper: the architecture of e-governance in Punjab has brought about improvements in terms of the development of digital infrastructure and services; however, the assessment framework of the policy does not take into account the second-level digital divide that consists in lack of literacy, skills, usability, and mediated access. The problem for the future stage of reforms is not whether Punjab should continue digitizing public services; the issue is how this process can be done.

Policy Recommendations and Conclusion

The next stage of digital reform in Punjab should transition from a portal-focused approach to one that focuses on capability. This entails treating literacy, digital competency, interface understanding, and the cost of mediated use as primary policy variables rather than secondary social concerns. It is evident from the history of policy implementation that there has been ample support for digital reform, automation, and modernization of services in Punjab. The challenge is to integrate the ambitious policy with the reality on ground.

First, Punjab should establish a human-centric interface standard that applies to all major e-governance services. The standard should emphasize voice-driven workflow, icon-based navigation, straightforward language, readable step-wise sequences, and the availability of interfaces in English, formal Urdu, and regionally accessible languages whenever possible. There must be accessibility and readability tests required prior to widespread distribution, particularly when it comes to land-related, identification, welfare, complaints, and certification services. A citizen-centric service cannot be defined simply by having an online portal. Rather, it is the ability of a low-literacy first-time user to complete the necessary process without much difficulty and paid assistance (Ghous, 2025).

Secondly, the province of Punjab needs to enhance assisted e-governance to become a formalized function of government rather than depending upon the informal market for its provision. There is an already established framework of the e-Khidmat system which can be utilized in this regard. It should not be assumed that assistance is a temporary phenomenon which will ultimately become obsolete through self-service. Assistance in the form of document scanning, application submission, resolution of grievances, and transaction verification, among other things, can be provided by formal public facilitators at either no cost or at least on the basis of clearly defined fee structures.

Thirdly, digital literacy interventions need to be combined with social policies like adult literacy, women empowerment, and social protection rather than being seen as standalone technology training programs. The policies of Punjab acknowledge the significance of reducing the digital divide and developing the skills of the masses, and empirical evidence suggests that there exist discrepancies in the use of the Internet and ICT skills in the province. It means that digital literacy needs to be integrated into social policy delivery. Those interventions which would come under the umbrella of adult literacy programs and social protection interventions, such as BISP and PSPA of Punjab or similar social policy interventions of other provinces, would be very helpful since they would cater to those segments of society that are vulnerable to second-level exclusion (Alyas, 2024).

Fourthly, there is a need for Punjab to rethink its criteria for evaluating e-governance. Portals, transactions, monitored services, and digital contacts should not be considered the right criteria for inclusion anymore. Indicators like rates of success, assistance needed for use, audited scores on reading and accessibility, drop points of users, costs of repeated visits, and the cost involved in accessing digital public services to citizens should be used. These will give a clearer picture on whether the service is inclusive or only accessible in terms of form.

Overall, Punjab presents an enlightening example of high-tech reform and ongoing exclusion. The policy framework adopted in the province in the period of 2018-2025 is notable for its administrative vision, service digitization, and institutional willingness to promote technology-based governance. However, the statistics and policies of Punjab themselves confirm that the improvements in infrastructure do not address skill, literacy, confidence, and usability gaps.

Bibliography

- (PITB), P. I. (2015). Citizen Feedback Monitoring Program – Reviving Democracy in Pakistan. PITB Official Website.
- (PITB), P. I. (2022). Punjab Digital Policy. Government of Punjab.
- (PITB), P. I. (2023). Citizen Feedback Monitoring Program. Retrieved from PITB Official Website: <https://pitb.gov.pk/cfmp>](<https://pitb.gov.pk/cfmp>
- (PTA), P. T. (2025). Telecom Indicators. Retrieved from PTA Official Website: [<https://www.pta.gov.pk/>](<https://www.pta.gov.pk/>
- (PTA), P. T. (2026, January 2). HIES 2024-25 Highlights Pakistan Records Significant Gains in Digital Connectivity and Internet Use. Retrieved from <https://www.pta.gov.pk/category/hies-2024%E2%80%9325-highlights-pakistan-records-significant-gains-in-digital-connectivity-and-internet-use-1348181068-2026-01-05>](<https://www.pta.gov.pk/category/hies-2024%E2%80%9325-highlights-pakistan-records-significant-gains-in-digital-connectivity-and-internet-use-1348181068-2026-01-05>)
- A. V. Deursen, J. D. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media & Society*.
- Ahmed, S. (2022). Success Factors of E-Government and Interaction with Electronic Portal in Pakistan: A Case Study Approach. *Global Social Sciences Review*.
- Alexander J. A. M. van Deursen, J. A. (2015). Toward a Multifaceted Model of Internet Access for Understanding Digital Divides: An Empirical Investigation. *The Information Society*.
- Alyas, T. (2024). Enhancing Governance in Pakistan Through E-Government: The Role of Evidence-Based Monitoring Systems. *International Conference on Decision Aid Sciences and Applications DASA*.
- Dijk, J. A. (2018). Digital divide research, achievements and shortcomings.
- Gatot Hery Djatmiko, O. S. (2025). Digital Transformation and Social Inclusion in Public Services . *Sustainability*.
- Ghous, S. (2025). Transforming Public Procurement in Pakistan: The Role of E-Procurement and Artificial Intelligence for Enhanced Efficiency and Transparency. *Journal of Pakistan Administration*.
- Malodia, S. (2021). Future of e-Government: An integrated conceptual framework. *Technological forecasting & Social change*.
- Marco, S. D. (2021). E-Government and Digital Inequality. *International Journal of Public Administration in the Digital Age*.
- Naeem, M. (2023). A Step-by-Step Process of Thematic Analysis to Develop a Conceptual Model in Qualitative Research. *International Journal of Qualitative Methods*.
- Punjab, P. I. (2018). Punjab IT Policy 2018. Lahore, Pakistan: Punjab Information Technology Board.

- Sahir, W. (2022). DIGITAL DIVIDE IN PAKISTAN: BARRIERS TO ICT USAGE AMONG THE INDIVIDUALS OF PAKISTAN. *Journal of Economic Impact*.
- Salik, M. F. (2025). Digitizing Land Governance in Punjab: Challenges and Opportunities in the Implementation of Computerization of Land Record Management and Information System (CLRMIS). *Global Management Sciences Review*.
- Soomro, K. A. (2020). Digital divide among higher education faculty. *HHS Public Access*.
- Special Education Department, G. o. (2023). Submission of P.E.Rs (Order No. SO(ESTT.)13-84/2023). Government of the Punjab.
- Statistics, P. B. (2025). Table 3.1: Percentage of Household with Computer/Mobile/Internet (Pakistan Social and Living Standards Measurement Survey). Islamabad, Pakistan: Government of Pakistan, Pakistan Bureau of Statistics.
- Van Dijk, J. A. (2020). Closing the Digital Divide: The Role of Digital Technologies on Social Development, Well-Being of All and the Approach of the Covid-19 Pandemic. New York, NY, USA: United Nations Department of Economic and Social Affairs (UN DESA).