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Meeting Digital Access Halfway: User Insights into Barriers and Enablers of Access to Public Services

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Abstract:

The proliferation of information technology in the public sector is considered a viable solution to simplify access, bringing public services just a click away from citizens. However, the increased reliance on digital technologies has exposed the extent to which access disparities can exacerbate social inequalities, leaving marginalized populations further behind. Instead of removing physical barriers, digital solutions often introduce barriers of a new kind. Prior research has indicated the spillover of access inequalities from the social sphere into the digital domain, focusing primarily on offline resources and digital interactions. This paper identifies barriers in the offline-to-digital access transition and suggests enablers that facilitate this experience. We approach this endeavor by interviewing citizens of North Macedonia from diverse backgrounds. The paper employs thematic analysis and hybrid reasoning to identify perceived barriers and enablers patterns. Findings reveal that barriers related to trust, motivation, and digital skills are more prevalent than those related to accessibility and affordability as physical factors affecting the transition to digital access to public services. The practical implications of this study could inform policymakers in developing inclusive strategies that 1) enhance early stages of digital transformation processes and 2) effectively address barriers that impede access to public services by implementing customized solutions corresponding to users' contextual circumstances. Additionally, this study contributes to conceptualizing barriers and enablers as central in the broader study of socio-digital inequalities.

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1. Introduction

Access to public services is considered foundational to sustaining and improving the quality of life of individuals and advancing overall social development (Lee, 2021; Jackson, 2020; Plata & Pérez, 2019). As the first instance of communication between citizens and public institutions, access profoundly shapes citizens' perception of trust and the system's responsiveness. The right to equal access to public services is an established international legal standard, supporting social justice and fostering prosperity (see Article 21 of the Universal Declaration of Human Rights, United Nations General Assembly, 1948). The United Nations Sustainable Development Goals (2015) further emphasize the importance of access in addressing inequalities under the principle of 'leaving no one behind.' At the macro level, the benefits of access support public value creation through the achievement of policy and social goals such as public service efficiency, citizen equity, social inclusion, accountability, individual and community well-being (Dobrolyubova, 2021; Lindgren et al., 2019; Cordella & Bonina, 2012; Moore, 1997, 2019). In the long term, this ensures systems built on the principles of fairness, justice, transparency, and enhanced trust in institutions - values for which modern democracies strive.

Earlier studies suggest that different individual and contextual circumstances create unequal starting points for access to public services (Helsper, 2012, 2021; Ragnedda, 2020; Ragnedda et al., 2022; Van Dijk, 2017, 2020; Helsper & Van Deursen, 2016; Robinson et al., 2015; DiMaggio et al., 2004). Traditional face-to-face access (hereinafter offline access) has been burdened by proximity to the service provider (Saunders et al., 2014), infrastructure (Wiewiora et al., 2015), costs (Lo Storto, 2016) and conditioned by specific socio-demographic and socio-economic characteristics such as age, income, education level, gender, and place of residence (Eynon & Helsper, 2010; Helsper & Van Deursen, 2016; Van Deursen et al., 2017; Ramesh, 2020). Aiming to overcome existing barriers to offline access, governments worldwide have turned to information and communication technology (ICT) as a potential remedy (Androniceanu & Georgescu, 2021; Debeljak & Dečman, 2022), shifting conventional channels to digital communication methods. However, this shift brought its challenges and introduced new types of barriers. Hence, the disparities remained. Previous research has noted issues related to internet connectivity and digital device ownership (Van Dijk & Hacker, 2003; Asio et al., 2021), and the skill gaps resulting from users' lack of digital literacy (Hargittai et al., 2019). Other studies have addressed inequalities in usage, i.e., differences in outcomes or benefits among different groups of service recipients (Van Deursen & Van Dijk, 2013; Ebbers et al., 2016).

Pioneering research in the field has been exploring the interaction between social

and digital inequality (Warren, 2007; Ragnedda, 2020), the links and patterns that exist between them (Helsper, 2012; Van Dijk, 2005, 2017; Van Dijk & Hacker, 2003), whether digital inequalities reinforce social inequalities (Ragnedda, 2020) and whether technology-driven public reforms make 'the rich digitally richer' (Helsper & Van Deursen, 2016). In other words, these studies examined the relationship between social resources and digital interactions and how these digital interactions further reduce or amplify social inequalities (Ragnedda, 2020). Technology as a resource for participation implies that unequal access to digital technologies leads to unequal participation in society, reinforcing categorical inequalities (Van Dijk, 2017). These occurrences urge governments to create tailored solutions that ensure equal access by equipping users with the necessary skills, tools, and knowledge to navigate digital channels.

As ICT in the public sector becomes prevalent, access to technology and digital tools becomes a fundamental prerequisite for individuals to utilize public services. Building on this stance, the research explores what hinders or enables access to public services for individuals from different socio-demographic and socio-economic backgrounds. However, while previous research mainly focuses on resource inequalities from the social sphere replicating in the digital domain, we concentrate on the specific barriers citizens encounter when accessing public services. While the state of resources cannot be changed overnight, e.g., one cannot instantly improve one's educational level or socio-economic status, addressing barriers through customized solutions could lead to immediate effects that prevent further widening the access inequalities gap. In this regard, this study sets out to identify the barriers faced by individuals of different socio-demographic and socio-economic backgrounds in both offline and digital access to public services. The study also explores the factors and strategies that can help mitigate the barriers, facilitating the transition from offline to digital access.

Adhering to previous research in the field, this qualitative paper provides a conceptual framework for studying equal access to public services by integrating the conceptual model of barriers and enablers (Figure 1). As a result, this study seeks to advance the understanding of access barriers and enablers in less digitally developed environments by providing a conceptual basis for further qualitative and quantitative research designs. We were motivated by the case of North Macedonia, a country making bold efforts in digitally transforming its public sector. However, despite the political will and the extensive legislation, utilization of digital public services lags behind the European context (Eurostat, 2024). The overall score in the European Commission eGovernment Benchmark Report (2024), which monitors the digitalization of public services in Europe, places the country in the penultimate position based on data from 2022 and 2023. To understand the demand side and identify potential reasons behind these occurrences, we conducted semi-structured interviews with citizens of North Macedonia. The study focused on the experience of accessing public services offered at the national level, including offline access through the physical offices of institutions and digital access through the National e-Services Portal. All respondents included in

the study had offline access experience, while some did not have experience with digital public services. Thematic analysis was employed to examine the collected qualitative data, utilizing a hybrid approach combining deductive and inductive reasoning (Braun & Clarke, 2006; Clarke & Braun, 2017; Swain, 2018; Fereday & Muir-Cochrane, 2006). The analysis was guided by the interpretivist paradigm, which considers individual experiences in explaining reality, while adhering to research protocols to draw informed study findings (Mergel et al., 2019). Findings reveal that barriers related to trust, motivation, and digital skills are more prevalent than those related to accessibility and affordability as physical factors affecting the transition to digital access to public services. Digital access is often disabled due to involuntary digital exclusion rather than resistance to use. In this vein, conducting a needs assessment and responding to citizens' contextual circumstances could facilitate the offline-to-digital access transition.

To better understand the key concepts of the study, the following section defines access, barriers, and enablers. The methodology section explains the development of the interview guide, presents the profiles of the respondents included in the study, and justifies the methodological approach used to analyse the data. The derived sub-themes, themes, and users' supporting statements are presented in the results section. The discussion section revisits the research objective, frames the results in the context of previous research, and suggests points for policymakers. Finally, the conclusion emphasizes the study's contribution to research on the barriers and enablers of access to public services in socio-digital inequalities.

2. Conceptual framework

2.1 Access

Access has been central in studies addressing the user-service provider relationship, yet it has not stood on common conceptual grounds for long. In response to conceptual ambiguity, Penchansky and Thomas (1981) first proposed a concrete access framework comprised of five specific dimensions: availability, accessibility, affordability, accommodation, and acceptability. Availability is the relationship between the volume of services offered and users' needs; accessibility refers to the location of supply and the location of the user; affordability is concerned with service prices and users' ability to pay; accommodation is the way services are organized and users' ability to adapt to those conditions; and acceptability encompasses both users' attitudes towards service providers and service providers' attitudes towards users (Penchansky & Thomas, 1981). In this regard, access is defined more qualitatively, highlighting the alignment of users' needs with service provision. Later studies conceptualized access as 'the ability to derive benefits from things' (Ribot & Peluso, 2003), echoed in arguments of current studies on socio-digital inequalities focused on the effect of benefits or outcomes of service use for users of different backgrounds (Helsper, 2021).

Contextual changes led to the further upgrade of the original access framework.

Saurman (2016) highlighted awareness as the sixth integral component, in addition to the original access framework of Penchansky and Thomas (1981). Awareness is critical in informing about the overall service characteristics, terms, and conditions of use (Saurman, 2016). Alternatively, based on synthesis on supply-side and demand-side access determinants, Levesque et al. (2013) suggest the following access framework: approachability, acceptability, availability and accommodation, affordability, and appropriateness. Although initially developed in health care services provision, these frameworks have been extensively applied in broader public service access research (Logan & Guikema, 2020; Ashik et al., 2020; Wei & Mukherjee, 2024).

In digital terms, the widely acknowledged access framework of Van Dijk (2005, 2020) presents the multifaceted nature of access in technology appropriation. The framework consists of four sequential levels: motivation, material access, and digital skills, aimed at the goal of technology appropriation – usage. Motivation refers to the attitudes and perceptions of users towards using a service; material access refers to the tools and infrastructure needed to access the service; digital skills refer to the competences needed for users to obtain and utilize service-related information online; and lastly, usage refers to the actual uptake of the services online (Van Dijk, 2005). Variations in service utilization may be attributed to how effectively each access dimension meets the specific needs of users.

2.2 Barriers and Enablers

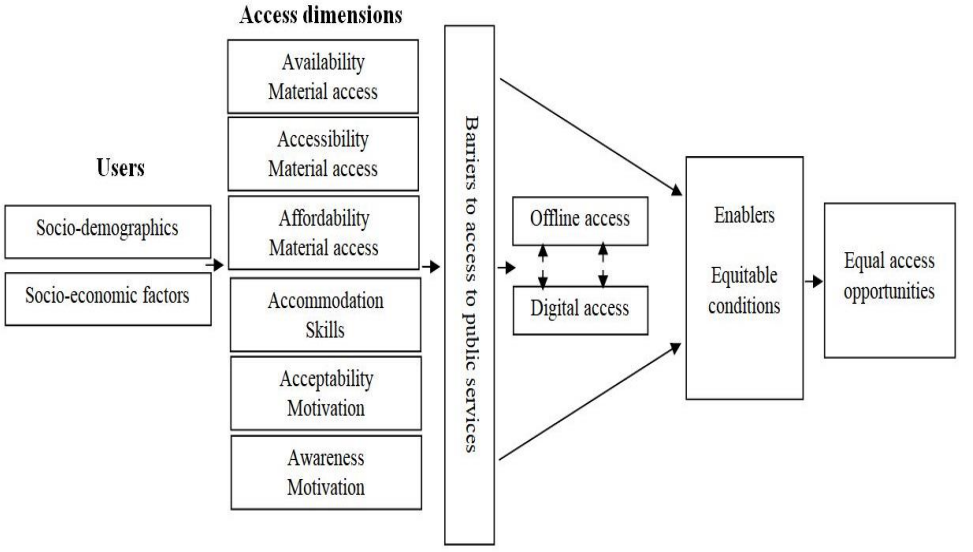
Literature on access inequalities often delves into identifying barriers and enablers without first providing a conceptual definition of the terms. Previous studies often consider the etymological meaning of barriers as limitations or obstacles and enablers as facilitators (Keyworth et al., 2022; Clifton et al., 2019). Additionally, Haynes and Loblay (2024) argue that studies on barriers and enablers often present a list of inherently 'bad' and 'good' things as the main finding. However, research on barriers and enablers should transcend this dichotomy, seeking to explore and understand the experiences and positions related to barriers and enablers (Haynes & Loblay, 2024).

To deepen the understanding of barriers and enablers, we present the conceptual stance that forms the foundation of our study. First, we build on the premise of Helsper (2021) that both 'our physical and digital environments are constructed in ways that facilitate or hinder certain behaviors and interactions'. Additionally, extrinsic environmental factors create demands on individuals, which they may or may not be able to meet depending on their resources, skills, or knowledge. In this context, barriers do not stem from personal or intrinsic factors, but rather from inadequate service design or society's failure to provide solutions that meet the specific needs of users (Oliver, 2013). In the same line, many access barriers result from discriminatory laws, policies, and social norms that perpetuate inequalities and disparities (UN Sustainable Development Cooperation Framework, 2019). As barriers stem from the environment, the government must provide equitable conditions that facilitate barrier-free access for

everyone. In line with the research objective to identify barriers and suggest enablers, we propose the following conceptual framework:

Figure 1:

Conceptual framework



Source: Authors, based on Penchansky and Thomas (1981), Van Dijk (2005), and Saurman (2016)

The conceptual framework incorporates the access dimensions of Penchansky and Thomas (1981) and the awareness component of Saurman (2016). Additionally, we frame the levels of digital access within the six offline access dimensions. We connect availability, accessibility, and affordability to material access, relating to technical infrastructure, tools, and resources; accommodation to skills, referring to the appropriateness of service design for users' skill levels; and acceptability and awareness to motivation, relating to users' attitudes, behaviors, and level of information. The framework posits that the interaction of different socio-demographics and socio-economic factors shapes individuals' positions when accessing public services (Mubarak et al., 2020; Salemink et al., 2015; Helsper & Van Deursen, 2016). The barriers to access are explored concerning offline and digital access, considering their mutual reinforcement between the two domains (Helsper 2012, 2021; Ragnedda, 2020; Ragnedda et al., 2022). Lastly, enablers are identified based on respondents' perceptions of what could help overcome their barriers. Implementing the identified enablers can help mitigate existing barriers, leading to more equal access opportunities for all.

3. Methodology

3.1 Data collection method

This study employed semi-structured interviews to gain deeper insights into citizens' experiences with offline and digital access to public services offered at a national level. The qualitative approach was preferred to achieve a nuanced understanding of citizens' realities. Interviews are a standard method in qualitative research, providing a reliable, one-on-one setting that facilitates in-depth and comprehensive discussions (Small & Cook, 2021; Peters & Halcomb, 2015; Gill et al., 2008). We chose interviews over group discussions to minimize constraints in sharing users' experiences that may arise from differences in socio-economic backgrounds, personal views, or mutual influence among respondents. The flexibility of semi-structured interviews allowed respondents to introduce or delve into concepts not anticipated by the interview guide (Gill et al., 2008; Adeoye-Olatunde & Olenik, 2021). This approach is valuable in acquiring new knowledge and enables the researcher to discover concepts of interest for the research context.

3.2 Casing/sampling

Identifying respondents was targeted to reflect diverse profiles, considering factors such as age, education, income, ethnicity, and type of residence, as potential drivers of access inequalities (Mubarak et al., 2020; Salemink et al., 2015; Van Deursen et al., 2017). Respondents were selected using purposive and snowball sampling as a standard approach to identify interlocutors of specific backgrounds with relevant experiences to provide rich and detailed data (Mergel et al., 2019; Smith, 2016; Bekele & Ago, 2020). The information was disseminated through community centers, multi-ethnic neighborhoods, and civil society organizations in both urban and rural areas. Community liaisons were very helpful in creating a trustworthy atmosphere and encouraged open and honest participation in the interviews. The first author visited respondents at their home or in their preferred physical or digital environment to provide a familiar setting that supports a productive interview (Kvale & Brinkmann, 2009; Gill et al., 2008). The authors initially determined a sample size of 20 respondents to ensure a compact yet diverse profile across designated social groups, with data collection continuing until saturation was reached (Saunders et al., 2018; Morse, 2015). To capture a broader range of perspectives, five additional respondents from different regions were later included, bringing the total to 25 participants in the study. While generalizability is not the goal of qualitative studies, including respondents from various regions allowed for a more comprehensive understanding of the diverse needs of citizens. Respondents were of different occupations, including students, employed individuals across various sectors, unemployed individuals, retirees, farmers, and members of socially disadvantaged groups (Table 1). All respondents had experience with offline access to public services, while some had not used digital public services. The semi-structured interviews provided an opportunity to explore users' experiences

and identify what prevents non-users from utilizing digital public services.

Table 1:

Respondents' demographics and socio-economic characteristics

Participant ID	Gender	Age	Ethnicity	Highest level of education	Employment	Type of residence
P1	Female	46	Macedonian	PhD degree	Yes	Urban
P2	Male	26	Albanian	BA degree	Yes	Urban
P3	Male	36	Bosniak	High school	Yes	Urban
P4	Female	52	Macedonian	High school	Retired	Urban
P5	Female	30	Bosniak	BA degree	Yes	Urban
P6	Male	37	Macedonian	BA degree	Yes	Urban
P7	Male	41	Turkish	High school	Yes	Urban
P8	Female	33	Macedonian	BA degree	Yes	Urban
P9	Male	69	Macedonian	High school	Retired	Rural
P10	Male	65	Macedonian	Incomplete primary education	No	Rural
P11	Female	63	Macedonian	Incomplete primary education	No	Rural
P12	Male	66	Macedonian	High school	Retired	Rural
P13	Male	40	Macedonian	BA degree	Yes	Rural
P14	Female	63	Macedonian	High School	Retired	Rural
P15	Male	67	Macedonian	Associate degree	Retired	Rural
P16	Female	67	Macedonian	Primary school	Retired	Rural
P17	Female	63	Macedonian	Medical Doctor	Yes	Urban
P18	Male	64	Vlach	BA degree	Retired	Urban
P19	Female	35	Macedonian	MA degree	Yes	Urban
P20	Female	33	Macedonian	BA degree	Yes	Urban
P21	Male	38	Albanian	MA degree	Yes	Urban
P22	Female	35	Macedonian	BA degree	Yes	Rural
P23	Male	19	Macedonian	High School	Yes	Urban
P24	Female	39	Albanian	MA degree	Yes	Rural
P25	Female	28	Roma	High School	Yes	Urban

Source: Authors' own, 2025

3.3 Interview guide

The interview guide consisted of two parts, with questions related to offline and digital access. The questions were not necessarily asked in the given order, but the interview followed the course of respondents' answers (Swain, 2018). Additionally, depending on respondents' digital access experience, questions were adjusted for users and non-users of digital public services. The structure was developed based on the access framework of Penchansky and Thomas (1981) and Saurman (2016) and aligned with the research objective. The interviews started with a broader question on general experiences. Then they moved to the structured access dimensions using probes to encourage respondents

to share significant insights or reveal another aspect not envisaged with the interview guide.

Table 2:

Interview guide offline access

Offline access interviews	
Availability	How would you describe a recent experience of accessing public services in person?
Awareness	How did you find the procedure to obtain the public service? Were you familiar with the information and steps for getting public service?
Accessibility	How would you describe getting to and accessing the building of the public institution? How would you describe the experience of locating the exact office or counter you needed?
Affordability	Were there any costs related to accessing the public service? How has this affected your budget?
Accommodation	How would you describe the quality-of-service delivery? Was it according to your needs and expectations?
Acceptability	How would you describe the communication and support from service providers?

Source: Authors' own, 2025

Table 3:

Interview guide digital access

Digital access interviews	
Availability (Material access)	Are you familiar with digital public services? How do you find the current offer of available digital public services?
Accessibility (Material access)	How do you usually access the Internet? Which devices and locations do you typically use?
Affordability (Material access)	How do you find the monthly Internet subscription fee? How do you find the market prices of digital devices? Do you own a digital device?
Accommodation (users) (Skills and service design)	How would you describe the overall experience of registering and navigating the portal? Was there any additional support offered?
Accommodation (non-users) (Skills)	How confident are you in using the Internet? How would you assess your skills in accessing digital public services?
Acceptability (users) (Trust and motivation)	How did you find the overall process of accessing public services online? Any considerations regarding personal data protection online? What are the benefits of digital access to public services?
Acceptability (non-users) (Trust and motivation)	How do you find the idea of digital access to public services? Any considerations regarding personal data protection online? What would be some benefits of digital access to public services?
Awareness (Motivation)	Are you informed about how and where you can access digital public services? What could help you become better informed? What would encourage you to start or continue using digital public services?

Source: Authors' own, 2025

3.4 Data analysis approach

The interviews were audio-recorded and transcribed verbatim as a common practice to keep respondents' words intact while enabling deeper analysis and sharing data with other researchers (Bryman, 2016). Prior to the commencement of the interviews, respondents were familiarized with the research aim, and informed consent was obtained (Alsaawi, 2014). Since it was conducted initially in the Macedonian language, the first author carefully translated the transcripts into English, ensuring a faithful word-for-word representation of respondents' intent, without introducing any interpretation bias (McKown et al., 2020).

The data was analyzed using reflexive thematic analysis, following the steps outlined by Braun and Clarke (2006) and Clarke and Braun (2017). First, we conducted multiple rounds of reading to familiarize ourselves with the content. Then, to code the data, we developed a content analysis grid (Creswell, 2014), taking the access dimensions as predefined broad themes. As codes were often too detailed and overlapping, we opted to group them directly into sub-themes. This approach allowed for a more coherent and meaningful data grouping, avoiding granularity. Sub-themes were nested under each access dimension, considered a theme in this case, and supported by respondents' statements. In the analysis, we employed deductive reasoning to nest patterns and sub-themes under predefined themes, and inductive reasoning to explore and identify emerging concepts beyond the established framework (Feredey & Muir-Cochrane, 2006; Swain, 2018). Both authors practiced reflexivity through open discussions and awareness of how their previous experiences or positions could influence the data analysis process (Creswell, 2014).

4. Results

Twenty-five respondents - 13 female and 12 male, 15 from urban areas and 10 from rural areas participated in the study (Table 1). All 25 respondents had offline access experience, while 10 had also used digital public services. Data collection was conducted during February and March 2024. Twenty semi-structured interviews were conducted in person, while five were conducted via Zoom online. The interviews focused on administrative public services provided at the national level, offline at the counters and offices of public institutions, and online through the National e-Services Portal or other public institutions' portals.

4.1 Offline access

Table 4 presents the sub-themes identified from users' experiences regarding offline access to public services. The sub-themes include obstacles encountered in accessing services, suggestions of adaptation strategies or enablers from users' perspectives, and examples of positive experiences.

Table 4:

Offline access thematic analysis results

Access framework/ Themes	Sub-themes	Supporting statements/examples
Availability	Inconsistent service hours	I waited for more than 45 minutes, not because of queues, but because the employee was not there [P1].
	Insufficient service counters	I think we should have more counters available, so we can get the documents in a shorter time without facing crowds [P13].
Accessibility	Proximity and transportation issues	I usually reach the institutions with my own car; otherwise, I need to pay for a taxi. There is no other option from our village [P9].
	Uncoordinated physical locations	We do not have a clear picture of where the needed offices are located. I feel as though I am walking through labyrinths [P2].
Affordability	Unexpected fees	I encountered increased administrative fees on-site without prior information [P3].
	Transportation costs	This is a big city, and it costs a lot to reach the institutions. I either need to take the bus or drive and pay for parking [P8].
	Opportunity costs	If I am unable to get the service today due to crowds or queues, I have to return the next day. This means double the expenses and missing out on my daily work obligations [P15].
Accommodation	Complex procedures	We still have to go from counter to counter through complex procedures [P22].
	Delayed service delivery	At first, I could not manage to schedule an appointment. When I finally did, the scheduled time was not respected [P6].
	Queues and crowds	Most of the time, I face crowds and people not respecting the order in the queue [P5].
	Satisfied users	In general, I do not face any issues. So far, it has been good [P12].
Acceptability	Inconsistent user support	User support depends on the employee's personality and their willingness to assist [P18].
	Favoritism and connections	People who know someone in the institutions have easier and faster access to services. The others have to wait [P23].
	Satisfied with user support	I was satisfied with the support from public employees and the procedural guidance I received [P25].
Awareness	Lack of procedural information	I needed some help and guidance in filling out the form, as the instructions were unclear [P23].
	Additional documents required	Sometimes it happens that I miss some 'hidden' document as part of the procedure without being informed in advance [P20].

Source: Authors' own, 2025

All respondents in the study use offline access; for some, it is the only channel to access public services. The interviews identified common and specific barriers across respondents of different socio-demographic and socio-economic backgrounds.

Starting with availability, it could be improved by increasing the number of available counters and supportive employees [P3, P7, P9, P13] due to queues and long wait times during periods of high demand for specific services (e.g., documents tied with specific deadlines).

Regarding accessibility, proximity requires citizens living in rural areas to arrange their own transportation to reach public institutions, incurring costs that sometimes exceed their budget [P10, P11, P14, P16]. Similarly, their urban counterparts face expenses for reaching service points in larger cities, where services are frequently spread across multiple locations instead of centralized in one place [P1, P2, P8, P21].

Besides material costs related to affordability, citizens face opportunity costs, as accessing services often requires time away from their regular jobs or obligations [P13]. To overcome these inconveniences, respondents suggest centralized, interoperable systems, simplified procedures, and better coordination of service location information in urban areas [P1, P2, P8] and mobile teams or dispersed centers in rural areas [P13, P15].

About accommodation, nearly all respondents shared that the user experience consists of long wait times and disorganized queues, often with appointments not being respected. Some descriptions included 'chaotic and disorganized' [P7]; 'crowds' [P2, P16]; 'pretty chaotic and crowds' [P18] or 'waiting in queues' [P15, P17, P23]. Respondents suggested implementing a numbered ticketing system similar to those in bank offices to improve queue organization [P4, P5, P13, P14, P23]. On the other hand, other respondents shared positive impressions, noting 'no encountered issues' [P12] or getting the service in a 'timely and efficient manner' [P19, P25]. These positive experiences may stem from the smaller size of the community where respondents live, where crowds, access to institutions, or scheduling appointments are not seen as problematic. However, individual perceptions may still vary, as factors beyond community size influence the overall user experience.

Regarding acceptability and support from service providers, some respondents experienced fair and professional treatment [P12, P21, P25]. In contrast, others felt unequal treatment, highlighting biases favoring personal connections [P3, P4, P7, P11, P15, P22, P23], or receiving support based on the personality or willingness of the public employee to assist [P7, P9, P18, P21]. Inconsistency in service hours was also experienced, as employees were not present at the premises during designated work hours [P12, P18, P24]. To enhance user experience and improve overall service delivery, one participant [P15] suggested prioritizing merits and professionalism over political affiliation in hiring, *"We need more professional employees in the institutions and fewer political party members. People must be employed based on quality."*

Additionally, in close-knit communities, social ties between employees and

residents may also influence acceptability and perceptions of service providers.

Lastly, in terms of awareness, respondents shared several examples of not being fully informed about the process in advance, often leading to requests for additional documents on the spot [P1, P20, P25]. To address these procedural inconveniences, respondents suggested transparent procedures, info-panels at public institutions, and checklists of the required documents [P20, P25].

4.2 Digital access users

Table 5 presents the identified sub-themes from 10 respondents who have experienced accessing public services online. We name this group 'digital access users.' The sub-themes are followed by supporting statements by respondents sharing their experience regarding the specific access dimension.

Table 5:

Digital access (users) thematic analysis results

Access framework/ Themes	Sub-themes	Supporting statements/examples
Availability	Limited offer of available services	At the moment, there is an insufficient offer of public services available in digital format [P6].
Accessibility	Internet access	I can access the Internet from a place that is convenient for me, whether at home, work, or anywhere else I go [P8].
	Technical system issues	Sometimes the portal system crashes, preventing me from completing the process and accessing the service [P19].
Affordability	Possession of digital devices	We have about ten digital devices at home, and I mostly use a laptop or a smartphone [P5].
	Internet fees	I have Internet access at home, and I am satisfied with the fee for the quality and speed I receive [P25].
Accommodation	Complex service design	I spent nearly a day learning how to access digital public services, even asking friends and colleagues for help [P1].
	Positive experiences	Accessing digital public services was quick, easy, and efficient. I received the document within 10 minutes [P20].
Acceptability	Perceived benefits	There are some great benefits to digital public services. First, you save time, and second, you save on transportation costs [P3].
	Trust and privacy concerns	I am a bit skeptical about sharing personal data online and unsure about the effectiveness of any specific software protection [P20].
	Recognition of documents	I am unsure whether all institutions will accept electronically issued documents [P21].
Awareness	Self-initiated information seeking	I am trying everything, looking for information, exploring available digital public services, and learning on my own. [P3]

	Lack of ubiquitous information	You learn on your own, because there is no official institution or organization dedicated to sharing information about digital public services [P6].
	Reliance on personal networks	I gather information from institutional websites, colleagues, or friends [P5].

Source: Authors' own, 2025

Ten out of 25 respondents had used digital public services. Regarding socio-demographics, all users live in urban areas, are employed, have higher education, and are between the ages of 26 and 46.

In terms of accessibility, affordability, and material aspects of digital access, all users reported having an internet connection at home, multiple digital devices, and mobile Internet, allowing them to access public services online from a convenient location. Regarding accommodation, besides being proficient internet users, some respondents found the services' portal navigation complex and suggested additional support through phone assistance, chatbots, or step-by-step video guides [P1, P8, P5]. Other users assessed the process as very fast, easy, and convenient [P3, P19, P20, P25], but highlighted occasional issues with portals going down, preventing the completion of procedures. The positive experiences may stem from respondents' daily exposure to digital public services, resulting from the nature of their work, their younger age, and urban residence.

Regarding acceptability, respondents generally reported positive experiences with digital public services, referring to time and cost savings. However, significant concerns were voiced regarding protecting personal data in light of recent cyberattacks and instances of data misuse [P2, P3, P6, P8, P20]. Furthermore, some respondents encountered issues with the validity of electronic documents submitted to institutions, although improvements in this area were made over time [P19, P21]. Addressing validity concerns is crucial for fostering trust and the continued use of digital public services.

The dimensions of availability and awareness often intersect, as limited information hinders knowledge about the availability of digital public services. Many users highlighted the insufficient information on digital public services and emphasized self-reliance in searching for information through websites, personal networks, and professional connections [P5, P8, P1]. Other users, however, found information related to digital public services to be well-presented in both traditional and online media [P25]. While opinions on information availability vary, there is a growing common perception of the need for targeted training to support less digitally savvy citizens [P1, P2, P20, P3, P5, P6, P21]. As participant [P1] noted: *"If I face difficulties accessing public services online, while I use the Internet daily, I cannot imagine how non-advanced users feel. I think there should be customized ICT solutions to streamline access."* Overall, users perceive the current volume of digital public services as insufficient for effective digital transformation and wider usage [P6, P8].

4.3 Digital access non-users

Table 6 presents the identified sub-themes from 15 respondents who have not experienced accessing digital public services. We name this group 'digital access non-users'. The interviews with non-users aimed to identify the reasons for not using digital public services and explore enablers for potential future use. The sub-themes are supported by respondents' statements related to specific access dimensions.

Table 6:

Digital access (non-users) thematic analysis results

Access framework/ Themes	Sub-themes	Supporting statements/examples
Availability	Unfamiliarity with available services	I have not been informed which public services are available in digital format [P13].
Accessibility	Internet connection	The Internet in our village is of low quality. It goes down when you need it [P12].
Affordability	Internet and digital devices	We have Internet at home, but I do not know how to use it. Also, I do not have a smartphone [P11].
Accommodation	Perceived complexity of services	I have not used digital public services and do not know how to use them. I think it is difficult [P10].
	Need for training and education	We need more training. As adults, we must start from the basics, like first-graders [P9].
	Lack of knowledge/skills Support from younger family members	We have Internet access and digital devices at home, but I do not know how to use them. I only use them with the help of my grandson [P16].
Acceptability	Perceived benefits	Accessing public services online would save me time and money and be faster [P13].
	Trust and privacy concerns	I feel insecure. I do not use digital public services as I do not trust the process. Personal data can be misused, as we often witness nowadays [P7].
	Involuntary digital exclusion	Getting documents from the comfort of our home is better. I would prefer to do it online, but I do not know how to access the services [P11].
Awareness	Self-initiated information seeking	Information about available digital services is not widely public. You must find it on your own [P24].
	Lack of ubiquitous information	I am not well-informed about electronically available services. Institutions can do better by informing us through various media, messages, or campaigns [P22].

Source: Authors' own, 2025

Fifteen out of 25 respondents have not used digital public services. Regarding socio-demographics, three respondents live in urban areas and 12 in rural areas. Their

ages range from 41 to 69 years. Eight are employed, two are unemployed, and five are retired. Education levels range from a few grades of primary school to a university degree.

Regarding accessibility and affordability, all respondents stated having Internet access and digital devices at home. However, usage varies from basic tasks like information searching or reading the news [P7, P12, P17, P23] to more advanced activities such as paying bills or working online [P13, P18, P23]. Internet connection quality is reported to be lower in rural areas [P12, P15, P22], although urban residents also seek improvements in speed and stability [P7, P18]. Some respondents stated that despite owning digital devices, they cannot use the Internet due to a lack of knowledge [P9, P10, P11, P16].

In terms of accommodation, the main issue reported by respondents is a lack of knowledge and skills to use the available services and the Internet in general. Elderly respondents either rely on younger family members for support [P12, P16] or do not know how to use the Internet at all [P9, P10, P11]. For younger respondents, insufficient information about digital public services discourages their intention to use them [P22, P23, P24].

Referring to acceptability, all respondents from this non-user group recognize the benefits of digital public services, such as saving time, money, and resources. However, lacking skills leaves many reliant on offline access as their only option. As [P9] notes: *"I think using digital public services is good, but we do not know how to use them. So, our only choice for now is going in person to the counter."* Most non-users experience involuntary exclusion due to a lack of skills, rather than resistance to use [P9, P10, P11, P12, P14, P15]. While aware of the benefits, they emphasize the need for training and hybrid support centers in their communities. Additionally, concerns about personal data protection persist, with respondents calling for stronger cybersecurity measures to build trust in digital public services [P7, P22, P24].

For non-users, availability and awareness nearly overlap, as the lack of information limits their awareness of available digital public services. Therefore, they emphasize the need for widespread information, promotion, campaigns, training, and support [P8, P12, P17, P18, P22, P23].

4.4 Summary of access barrier and enablers

When analyzing the themes and sub-themes, we did not examine the categorization into barriers and enablers in detail. However, a clear definition of barriers and enablers is important for the research design of future quantitative research. To this end, building on the theoretical background (Penchansky & Thomas, 1981; Saurman, 2016; Helsper, 2012, 2021; Van Dijk, 2005, 2017; Ragnedda, 2020; Ragnedda et al., 2022) and our findings, we developed the conceptual model of barriers and enablers in offline and online access. Table 7 shows the integrated results across all access dimensions, split by offline access, digital access users, and digital access non-users.

Table 7:

Summary of barriers and enablers in offline and digital access to public services

Access dimension	Offline access barrier	Offline access enabler	Digital access barrier users	Digital access enabler users	Digital access barriers non-users	Digital access enablers non-users
Availability (Material access)	Lack of available service counters	Opening more service counters	Limited-service offer	Increase number of available services	n/a	n/a
	Service unavailable during service hours	Reliable and consistent service hours				
Accessibility (Material access)	Proximity	Mobile teams or centers in villages	Website system failures	Reliable systems in place	Low Internet connection quality	Optimized Internet connection
	Limited transportation Dispersed service locations	Available public transportation Service offered in one building				
Affordability (Material access)	Transportation costs	Transportation alternatives	n/a	n/a	Cannot afford digital devices	Subsidies for digital devices
	Unexpected fees	Transparent fees				
	Opportunity costs	Efficient access to public services				
Accommodation (Skills)	Queues and crowds	Organized queuing system	Complex digital public services design	Streamline digital public services design	Lack of digital skills and knowledge	Additional support, training, and education
	Unreliable appointment system	Respecting scheduled time				
	Complex forms and procedures	Interoperable institutions				
	Lack of signage at service locations	Clear instructions and navigation signs				
Acceptability (Trust and motivation)	Priority of personal connections	Professional public administration	Trust and data privacy concerns	Enhanced personal data protection	Trust and data privacy concerns	Enhanced personal data protection
	Inconsistent user support	Training for public employees	Refusal to accept digital documents	Legalization of digital documents	Distrust in the overall process	Building trust in the process
Awareness (Motivation)	Lack of procedural information	Described service steps in advance	Lack of ubiquitous information	Widespread promotion	Lack of ubiquitous information	Widespread promotion

Source: Authors' own, 2025

At first glance, offline access is associated with multiple barriers across the access dimensions. However, the transition to digital solutions introduces new layers of complexity, again hindering access. The proposed enablers reflect the users' perceptions towards finding optimal solutions. This bottom-up approach could help build tailored strategies that address users' needs effectively. The discussion section delves into the analysis of how the exposed barriers and enablers vary across different socio-demographic and socio-economic profiles in the transition from offline to digital access.

5. Discussion

This study investigated barriers and enablers of access to public services shaped by users' socio-demographic and socio-economic characteristics. Findings show that in the case of offline access, common barriers include proximity, transportation, costs to access the services, service delays, and lack of provider support. These indications are in line with the research of Saunders et al. (2014), Wiewiora et al. (2015), and Lo Storto (2016), which confirmed the role of geographical locations, infrastructure, and service-related expenses in generating barriers to access. Lajante et al. (2023) reaffirmed the effect of empathy training for service providers in enhancing users' satisfaction.

Within-group differences and encountering barriers at the individual level are also observed. For instance, among rural residents, some have their own means of transportation, while others must rely on public or paid alternatives. These findings align with Ramesh (2020), who confirmed that the intersection of specific determinants such as age, ethnicity, education, and income level impacts equality of access to public services. This evidence underscores the need for customized access solutions based on users' circumstances.

In some aspects of digital access, users and non-users encounter unique barriers; in others, they face similar challenges. Users experienced downtime of services portals, system crashes, complex interface, and poor usability, challenges similarly noted by Nikiforova and McBride (2021), Kumar et al. (2018), and Faisal et al. (2016) in their studies on users' experience with electronic government portals. Non-users highlighted the lack of information and promotion, leading to low awareness and motivation, as discussed by Distel (2020) and Hassan et al. (2011). The need for additional digital skills training leaves some respondents with offline access as their only option, despite their awareness of the benefits of digital access. This form of involuntary digital exclusion risks further marginalization and impacts the willingness to participate in the online domain as addressed by Park and Humphry (2019). The findings of Eynon and Helsper (2010) shed a different light, considering both users' choice and involuntary digital exclusion as decisive in online engagement.

Both users and non-users emphasized the need for more public services available online, widespread information, and promotion, similar to private sector platforms. This suggestion aligns with Kitsing (2017), displaying Internet banking as a basis for the development of online government services. Another common concern among respondents is mistrust in personal data protection and the need to strengthen cybersecurity for public services platforms. These concerns echoed in studies exploring the trust-adoption rate relations pace of digital public services adoption (Kozel & Dečman, 2022; Alzahrani et al., 2017; Bélanger & Carter, 2008).

Overall, in our case, barriers related to accommodation (skills), acceptability (trust, motivation), and awareness (information) are more prominent than barriers related to accessibility and affordability (Internet access and devices). This trend aligns

with the findings of Hernandez and Faith (2023), calling for identifying barriers beyond internet access, and somewhat contrasts with Van de Walle et al. (2018), arguing that hardware and Internet availability remain an issue for adopting digital services.

When transitioning from offline to digital access, some respondents' demographic and socio-economic profiles place them in a better position to overcome offline barriers and explore alternatives. For instance, a 35-year-old, highly educated, employed female with urban residence stated: *"The first thing I do when accessing public services is check whether the service is available online. If yes, I do it online as it is much simpler for me."* On the contrary, a 66-year-old retired female who had completed primary school and rural residence noted: *"There is no easier way or improvement for us. We just simply need to go there (in institutions) and just wait."* These examples align with the studies of Taipale (2013), Helsper and Van Deursen (2016), and Mubarak et al. (2020), confirming the links between demographic traits and socio-economic status on access to digital services.

Consequently, the transition from offline to digital access is relatively seamless for some of the respondents. They tend to seek information independently or through personal networks while being more digitally savvy, enabling them to overcome barriers in offline access by leveraging digital alternatives. Conversely, other users face obstacles in accessing offline services and cannot transition to digital public services. Limited skills, knowledge, or digital tools still make these services inaccessible to them, adding new challenges instead of providing solutions.

5.1 Points for practitioners

Based on the interview findings, we propose key points for practitioners, summarized in Tables 8 and 9, which could serve as enablers to overcome access barriers.

Table 8:

Offline access enablers

Access dimension	Enabler	Expected outcome
Availability	Open more counters or offices in times of high service demands.	Reduced queues and crowds.
Accessibility	More public transportation options available.	Accessible transportation alternatives.
	Establish a service point in one village to serve nearby communities.	Reduced need for long-distance travel.
Affordability	Keep administrative fees consistent.	Enhanced trust in transparency of administrative processes.
	Provide transparent information about administrative fees.	No 'hidden' costs encountered.

Accommodation	Implement a queue management system with numbered tickets, modeled on the example of private sector institutions such as banks.	Established an organised queuing system, resulting in no crowds.
Acceptability	More professional, knowledgeable, and supportive service provider employees.	Improved trust and satisfaction with the overall service delivery process.
Awareness	Provide transparent information on the procedures to obtain public services.	Enhanced trust and certainty in administrative processes.

Source: Authors' own, 2025

Table 9:

Digital access enablers

Access dimension	Enabler	Expected outcome
Availability	Communicate with citizens to identify the services that need to be offered.	Aligned service supply with citizen demand.
Accessibility	Ensure quality and stable Internet connection. Ensure stable and reliable service portals.	Consistently accessible Internet for all. Preventing downtime of service portals.
Affordability	Subsidies for digital devices or internet fees.	Affordable material digital access prerequisites for all.
Accommodation	Simplified design of digital public services. Training to enhance citizens' digital skills.	Service design matching citizen skills. Combat involuntary digital exclusion.
Acceptability	Hybrid centers and virtual user support offered at service portals. Effective cybersecurity strategies.	Enhanced individual confidence in using digital public services. Enhanced trust in digital public systems.
Awareness	Digital service promotion across various media platforms.	Increased citizen awareness and engagement with digital public services.

Source: Authors' own, 2025

By considering offline access in Table 8, we highlight the need to uphold quality standards to prevent growing disparities for those continuing to rely on offline services as digital adoption increases. In this context, the proposed improvements target proximity, limited public transportation options, lack of trust and transparency, and the challenge of crowds and queues as common barriers that citizens face. The suggested enablers for digital access in Table 9 aim to create favorable conditions and encourage greater usage of digital public services. For users, the enablers optimize the user experience by extending the range of available services and providing simple, reliable, and secure service portals. For non-users, enablers encourage usage by widespread promotion, easing access to digital devices and the Internet, providing digital skills training, and enhancing trust in digital processes as paramount to combat involuntary digital exclusion. All of the proposed enablers result from user needs and practical

requirements. The strength of this approach lies in addressing past critiques that digital solutions often follow top-down approaches that overlook user needs (Van Winkle et al., 2017). This direct feedback loop is pivotal for driving meaningful change and ensuring digital solutions meet real-world requirements.

6. Conclusion

This study investigated access barriers to public services as perceived by users and identified enablers for improvement. To contribute to a more nuanced conceptual understanding of barriers and enablers in contexts in the early stages of digital transformation, this study developed a conceptual framework to explore further achieving equal access. Additionally, the study identified specific types of barriers encountered by users from diverse backgrounds, highlighting the need for policymakers to tailor strategies to address these challenges and adapt to contextual circumstances.

The research approach considered offline and digital access to public services, aiming to investigate the potential spillover of barriers from offline to digital domains. To achieve this, the study employed a face-to-face interview approach, which respondents validated as an effective method for eliciting their needs and optimizing access to public services. While offline access posed challenges for all respondents, the transition to digital services introduced new and distinct barriers. This interplay between offline limitations and emerging online challenges can potentially hinder access for specific population groups disproportionately. Addressing these emerging disparities requires a comprehensive strategy aligned with user needs and contextual demands. A thorough and diligent assessment of users' needs, resources, and environments is crucial for devising equitable solutions that enable equal access to public services, leaving no one behind in the technology appropriation process.

While the study provides insightful findings by identifying barriers and promoting enablers to equal access to public services, its scope could be expanded to larger populations. Future research could incorporate data collection methods such as focus groups to capture better the specific barriers different groups face, and design tailored solutions accordingly. As the qualitative approach limits statistical generalization, a subsequent quantitative study would provide a more solid basis for developing interventions to overcome barriers and facilitate the offline-to-digital access transition for different population groups.

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References

Adeoye-Olatunde, O. A., & Olenik, N. L. (2021). Research and Scholarly Methods: Semi-structured Interviews. *JACCP Journal of the American College of Clinical Pharmacy*, *4*(10), 1358–1367. https://doi.org/10.1002/jac5.1441

Alsaawi, A. (2014). A Critical Review of Qualitative Interviews. *European Journal of Business and Social Sciences*, *3*(4), 149-156. https://doi.org/10.2139/ssrn.2819536

Alzahrani, L., Al-Karaghouli, W., & Weerakkody, V. (2017). Analysing the critical factors influencing trust in e-government adoption from citizens' perspective: A systematic review and a conceptual framework. *International Business Review*, *26*(1), 164–175. https://doi.org/10.1016/j.ibusrev.2016.06.004

Androniceanu, A., & Georgescu, I. (2021). E-Government in European Countries, A comparative approach using the principal components analysis. *NISPAcee Journal of Public Administration and Policy*, *14*(2), 65–86. https://doi.org/10.2478/nispa-2021-0015

Ashik, F. R., Mim, S. A., & Neema, M. N. (2020). Towards vertical spatial equity of urban facilities: An integration of spatial and aspatial accessibility. *Journal of Urban Management*, *9*(1), 77–92. https://doi.org/10.1016/j.jum.2019.11.004

Asio, J. M. R., Gadia, E., Abarintos, E., Paguio, D., & Balce, M. (2021). Internet Connection and learning device availability of college students: Basis for Institutionalizing flexible learning in the new Normal. *Studies in Humanities and Education*, *2*(1), 56–69. https://doi.org/10.48185/she.v2i1.224

Bekele, W. B., & Ago, F. Y. (2020). Good governance practices and challenges in local government of Ethiopia: the case of Bonga Town Administration. *Research in Educational Policy and Management*, *2*(2), 97–128. https://doi.org/10.46303/repam.2020.6

Bélanger, F., & Carter, L. (2008). Trust and risk in e-government adoption. *The Journal of Strategic Information Systems*, *17*(2), 165–176. https://doi.org/10.1016/j.jsis.2007.12.002

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Bryman, A. (2016). *Social research methods*. Oxford University Press.

Clarke, V., & Braun, V. (201). Thematic analysis. *The Journal of Positive Psychology*, *12*(3), 297–298. https://doi.org/10.1080/17439760.2016.1262613

Clifton, J., Fuentes, D. D., & García, G. L. (2019). ICT-enabled co-production of public services: Barriers and enablers. A systematic review. *Information Polity*, *25*(1), 25–48. https://doi.org/10.3233/ip-190122

Cordella, A., & Bonina, C. M. (2012). A public value perspective for ICT enabled public sector reforms: A theoretical reflection. *Government Information Quarterly*, *29*(4), 512–520. https://doi.org/10.1016/j.giq.2012.03.004

Creswell, J. W. (2014). *Research Design: Qualitative, quantitative and mixed methods approaches* (4th ed.). Sage Publications.

Debeljak, A., & Dečman, M. (2022). Digital transformation of Slovenian urban municipalities: A quantitative report on the impact of municipality population size on digital maturity. *NISPAcee Journal of Public Administration and Policy*, *15*(2), 25–51. https://doi.org/10.2478/nispa-2022-0012

DiMaggio, P., Hargittai, E., Celeste, C., Shafer, S., & Neckerman, K. (2004). From Unequal Access to Differentiated Use: A Literature Review and Agenda for Research on Digital Inequality. In *Social inequality* (pp. 355–400). Russell Sage Foundation.

Distel, B. (2020). Assessing citizens' non-adoption of public e-services in Germany. *Information Polity*, *25*(3), 339–360. https://doi.org/10.3233/ip-190214

Dobrolyubova, E. (2021). Measuring Outcomes of Digital Transformation in Public Administration: literature review and possible steps forward. *NISPAcee Journal of Public Administration and Policy*, *14*(1), 61–86. https://doi.org/10.2478/nispa-2021-0003

Ebbers, W. E., Jansen, M. G., & Van Deursen, A. J. (2016). Impact of the digital divide on e-government: Expanding from channel choice to channel usage. *Government Information Quarterly*, *33*(4), 685–692. https://doi.org/10.1016/j.giq.2016.08.007

European Commission. (2024). *Digital Decade 2024: eGovernment Benchmark*. https://digital-strategy.ec.europa.eu/en/library/digital-decade-2024-egovernment-benchmark

Eurostat. (2024). *E-government activities of individuals via websites.* https://ec.europa.eu/eurostat/databrowser/view/isoc_ciegi_ac/default/table?lang=en&category=isoc.isoc_i.isoc_ci_egi

Eynon, R., & Helsper, E. (2010). Adults learning online: Digital choice and/or digital exclusion? *New Media & Society*, *13*(4), 534–551. https://doi.org/10.1177/1461444810374789

Faisal, M., Al-Qouz, H., & and Husain, F. (2016). A direct method for measuring user experience in E-government portals (May 2016), *2016 15th International Conference on Information Technology Based Higher Education and Training (ITHET)*, Istanbul, Turkey, 2016, 1-4. https://doi.org/10.1109/ITHET.2016.7760706

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: a hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, *5*(1), 80–92. https://doi.org/10.1177/160940690600500107

Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Methods of data collection in qualitative research: interviews and focus groups. *BDJ*, *204*(6), 291–295. https://doi.org/10.1038/bdj.2008.192

Hargittai, E., Piper, A. M., & Morris, M. R. (2019). From internet access to internet skills: digital inequality among older adults. *Universal Access in the Information Society*, *18*(4), 881–890. https://doi.org/10.1007/s10209-018-0617-5

Hassan, H., Shehab, E., & Peppard, J. (2011). Recent advances in e-service in the public sector: state-of-the-art and future trends. *Business Process Management Journal*, *17*(3), 526–545. https://doi.org/10.1108/14637151111136405

Haynes, A., & Loblay, V. (2024). Rethinking Barriers and Enablers in Qualitative Health Research: Limitations, Alternatives, and enhancements. *Qualitative Health Research*, *34*(14), 1371–1383. https://doi.org/10.1177/10497323241230890

Helsper, E. (2021). *The Digital Disconnect: The social causes and consequences of digital inequalities*. https://doi.org/10.4135/9781526492982

Helsper, E. J. (2012). A corresponding fields model for the links between social and digital exclusion. *Communication Theory*, *22*(4), 403–426. https://doi.org/10.1111/j.1468-2885.2012.01416.x

Helsper, E. J., & Van Deursen, A. J. a. M. (2016). Do the rich get digitally richer? Quantity and quality of support for digital engagement. *Information Communication & Society*, *20*(5), 700–714. https://doi.org/10.1080/1369118x.2016.1203454

Hernandez, K., & Faith, B. (2023). Online but still falling behind: measuring barriers to internet use 'after access.' *Internet Policy Review*, *12*(2). https://doi.org/10.14763/2023.2.1713

Jackson, E. A. (2020). Importance of the public service in achieving the UN SDGS. In *Encyclopedia of the UN sustainable development goals* (pp. 551–561). https://doi.org/10.1007/978-3-319-95867-5_20

Keyworth, C., Alzahrani, A., Pointon, L., Hinsby, K., Wainwright, N., Moores, L., Bates, J., & Johnson, J. (2022). Barriers and Enablers to Accessing Support Services Offered by Staff Wellbeing Hubs: A Qualitative Study. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.1008913

Kitsing, M. (2017). Internet Banking as a Platform for E-Government. *Annual International Conference on Innovation and Entrepreneurship (IE 2017)*, 99–107. https://doi.org/10.5176/2251-2039_ie17.30

Kozel, E., & Dečman, M. (2022). The Impact of Trust in Government – Young Voters' Behavioral Intention to Use i-voting in Slovenia. *NISPAcee Journal of Public Administration and Policy*, *15*(1), 61–87. https://doi.org/10.2478/nispa-2022-0004

Kumar, R., Sachan, A., Mukherjee, A., & Kumar, R. (2018). Factors Influencing E-Government Adoption in India: A Qualitative Approach. *Digital Policy Regulation and Governance*, *20*(5), 413–433. https://doi.org/10.1108/dprg-02-2018-0007

Kvale, S., & Brinkmann, S. (2009). *InterViews: Learning the Craft of Qualitative Research Interviewing* (2nd ed.). SAGE Publications.

Lajante, M., Del Prete, M., Sasseville, B., Rouleau, G., Gagnon, M., & Pelletier, N. (2023). Empathy Training for Service Employees: A Mixed-methods Systematic Review. *PLoS ONE*, *18*(8), e0289793. https://doi.org/10.1371/journal.pone.0289793

Lee, Y. (2021). Government for Leaving No One Behind: Social Equity in Public Administration and Trust in Government. *SAGE Open*, *11*(3), 215824402110292. https://doi.org/10.1177/21582440211029227

Levesque, J., Harris, M. F., & Russell, G. (2013). Patient-centred Access to Health Care: Conceptualising Access at the Interface of Health Systems and Populations. *International Journal for Equity in Health*, *12*(1), 18. https://doi.org/10.1186/1475-9276-12-18

Lindgren, I., Madsen, C. Ø., Hofmann, S., & Melin, U. (2019). Close Encounters of the Digital Kind: A Research Agenda for the Digitalization of Public Services. *Government Information Quarterly*, *36*(3), 427–436. https://doi.org/10.1016/j.giq.2019.03.002

Lo Storto, C. (2016). The Trade-off Between Cost Efficiency and Public Service Quality: A Non-parametric Frontier Analysis of Italian Major Municipalities. *Cities*, *51*, 52–63. https://doi.org/10.1016/j.cities.2015.11.028

Logan, T. M., & Guikema, S. D. (2020). Reframing Resilience: Equitable Access to Essential Services. *Risk Analysis*, *40*(8), 1538–1553. https://doi.org/10.1111/risa.13492

McKown, S., Acquadro, C., Anfray, C., Arnold, B., Eremenco, S., Giroudet, C., Martin, M., & Weiss, D. (2020). Good Practices for the Translation, Cultural Adaptation, and Linguistic Validation of Clinician-Reported Outcome, Observer-Reported Outcome, and Performance Outcome Measures. *Journal of Patient-Reported Outcomes*, *4*(1). https://doi.org/10.1186/s41687-020-00248-z

Mergel, I., Edelmann, N., & Haug, N. (2019). Defining Digital Transformation: Results from Expert Interviews. *Government Information Quarterly*, *36*(4), 101385. https://doi.org/10.1016/j.giq.2019.06.002

Moore, M. H. (1997). Creating Public Value: Strategic Management in Government. Harvard University Press.

Moore, M. H. (2019). Reflections on the Public Value Project. In *Routledge eBooks* (pp. 351–371). https://doi.org/10.4324/9781315163437-24

Morse, J. M. (2015). Critical Analysis of Strategies for Determining Rigor in Qualitative Inquiry. *Qualitative Health Research*, *25*(9), 1212–1222. https://doi.org/10.1177/1049732315588501

Mubarak, F., Suomi, R., & Kantola, S. (2020). Confirming the Links Between Socio-Economic Variables and Digitalization Worldwide: The Unsettled Debate on Digital Divide. *Journal of Information Communication and Ethics in Society*, *18*(3), 415–430. https://doi.org/10.1108/jices-02-2019-0021

Nikiforova, A., & McBride, K. (2021). Open Government Data Portal Usability: A User-Centred Usability Analysis of 41 Open Government Data Portals. *Telematics and Informatics*, *58*, 101539. https://doi.org/10.1016/j.tele.2020.101539

Oliver, M. (2013). The Social Model of Disability: Thirty Years on. *Disability & Society*, *28*(7), 1024–1026. https://doi.org/10.1080/09687599.2013.818773

Park, S., & Humphry, J. (2019). Exclusion by Design: Intersections of Social, Digital and Data Exclusion. *Information Communication & Society*, *22*(7), 934–953. https://doi.org/10.1080/1369118x.2019.1606266

Penchansky, R., & Thomas, J. W. (1981). The Concept of Access. *Medical Care*, *19*(2), 127–140. https://doi.org/10.1097/00005650-198102000-00001

Peters, K., & Halcomb, E. (2015). Interviews in Qualitative Research. *Nurse Researcher*, *22*(4), 6–7. https://doi.org/10.7748/nr.22.4.6.s2

Ragnedda, M. (2020). Connecting the Digital Underclass. In *Springer eBooks* (pp. 85–104). https://doi.org/10.1007/978-3-030-49079-9_5

Ragnedda, M., Ruiu, M. L., & Addeo, F. (2022). The Self-reinforcing Effect of Digital and Social Exclusion: The InequalityLoop. *Telematics and Informatics*, *72*, 101852. https://doi.org/10.1016/j.tele.2022.101852

Ramesh, R. (2020). How Equal is Access to Public Services? The Impact of Sociodemographic Background on Public Service Delivery in Sri Lanka. *Journal of Developing Societies*, *37*(1), 7–29. https://doi.org/10.1177/0169796x20970882

Plata, J. A. R., & Pérez, M. C. G. (2019). Access to Basic Services: From Public Benefit Practice to a Sustainable Development Approach. In *Encyclopedia of the UN sustainable development goals* (pp. 1–10). https://doi.org/10.1007/978-3-319-71061-7_80-1

Ribot, J. C., & Peluso, N. L. (2003). A Theory of Access. *Rural Sociology*, *68*(2), 153–181. https://doi.org/10.1111/j.1549-0831.2003.tb00133.x

Robinson, L., Cotten, S. R., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., Schulz, J., Hale, T. M., & Stern, M. J. (2015). Digital Inequalities and Why They Matter. *Information Communication & Society*, *18*(5), 569–582. https://doi.org/10.1080/1369118x.2015.1012532

Salemink, K., Strijker, D., & Bosworth, G. (2015). Rural Development in the Digital Age: A Systematic Literature Review on Unequal ICT Availability, Adoption, and Use in Rural Areas. *Journal of Rural Studies*, *54*, 360–371. https://doi.org/10.1016/j.jrurstud.2015.09.001

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2018). Saturation in Qualitative Research: Exploring its Conceptualization and Operationalization. *Quality & Quantity*, *52*(4), 1893–1907. https://doi.org/10.1007/s11135-017-0574-8

Saunders, M. R., Lee, H., Maene, C., Schuble, T., & Cagney, K. A. (2014). Proximity Does not Equal Access: Racial Disparities in Access to High Quality Dialysis Facilities. *Journal of Racial and Ethnic Health Disparities*, *1*(4), 291–299. https://doi.org/10.1007/s40615-014-0036-0

Saurman, E. (2016). Improving Access: Modifying Penchansky and Thomas's Theory of Access. *Journal of Health Services Research & Policy*, *21*(1), 36–39. https://doi.org/10.1177/1355819615600001

Small, M. L., & Cook, J. M. (2021). Using Interviews to Understand Why: Challenges and Strategies in the Study of Motivated Action. *Sociological Methods & Research*, *52*(4), 1591–1631. https://doi.org/10.1177/0049124121995552

Smith, J. A. (2016). Interpretative Phenomenological Analysis: Getting at lived experience. *The Journal of Positive Psychology*, *12*(3), 303–304. https://doi.org/10.1080/17439760.2016.1262622

Swain, J. (2018). A Hybrid Approach to Thematic Analysis in Qualitative Research: Using a Practical Example. In *SAGE Publications Ltd eBooks*. https://doi.org/10.4135/9781526435477

Taipale, S. (2013). The Use of E-Government Services and the Internet: The Role of Aocio-demographic, Economic and Geographical Predictors. *Telecommunications Policy*, *37*(4–5), 413–422. https://doi.org/10.1016/j.telpol.2012.05.005

United Nations. (2015). Transforming our World: The 2030 Agenda for Sustainable Development. Resolution adopted by the General Assembly on 25 September 2015. (No. 42809, 1–13). https://digitallibrary.un.org/record/3923923?v=pdf

United Nations Sustainable Development Cooperation Framework. (2019). *United Nations Sustainable Development Group*. https://unsdg.un.org/resources/united-nations-sustainable-development-cooperation-framework-guidance

Universal Declaration of Human Rights. United Nations General Assembly. (1948). https://www.un.org/en/about-us/universal-declaration-of-human-rights

Van De Walle, S., Zeibote, Z., Stacenko, S., Muravska, T., & Migchelbrink, K. (2018). Explaining Non-adoption of Electronic Government Services by Citizens: A Study among Non-users of Public e-Services in Latvia. *Information Polity*, *23*(4), 399–409. https://doi.org/10.3233/ip-170069

Van Deursen, A. J., & Van Dijk, J. A. (2013). The Digital Divide Shifts to Differences in Usage. *New Media & Society*, *16*(3), 507–526. https://doi.org/10.1177/1461444813487959

Van Deursen, A., Helsper, E., Eynon, R., & Van Dijk, J. (2017). The Compoundness and Sequentiality of Digital Inequality. *International Journal of Communication*, *11*, 452–473.

Van Dijk, J. (2005). *The Deepening Divide: Inequality in the Information Society*. https://doi.org/10.4135/9781452229812

Van Dijk, J. (2020). *The Digital Divide*.

Van Dijk, J. A. G. M. (2017). Digital Divide: Impact of Access. *The International Encyclopedia of Media Effects*, 1–11. https://doi.org/10.1002/9781118783764.wbieme0043

Van Dijk, J., & Hacker, K. (2003). The Digital Divide as a Complex and Dynamic Phenomenon. *The Information Society*, *19*(4), 315–326. https://doi.org/10.1080/01972240309487

Van Winkle, B., Carpenter, N., & Moscucci, M. (2017). Why Aren't Our Digital Solutions Working for Everyone? *The AMA Journal of Ethic*, *19*(11), 1116–1124. https://doi.org/10.1001/journalofethics.2017.19.11.stas2-1711

Warren, M. (2007). The Digital Vicious Cycle: Links Between Social Disadvantage and Digital Exclusion in Rural Areas. *Telecommunications Policy*, *31*(6–7), 374–388. https://doi.org/10.1016/j.telpol.2007.04.001

Wei, Z., & Mukherjee, S. (2024). An Integrated Approach to Analyze Equitable Access to Food Stores under Disasters from Human Mobility Patterns. *Risk Analysis*, *45*(2), 342–355. https://doi.org/10.1111/risa.16873

Wiewiora, A., Keast, R., & Brown, K. (2015). Opportunities and Challenges in Engaging Citizens in the Co-Production of Infrastructure-Based Public Services in Australia. *Public Management Review*, *18*(4), 483–507. https://doi.org/10.1080/14719037.2014.999820