

Digital administrative burden as a civic education problem: A conceptual and methodological framework for digital citizenship, social justice, and citizenship rights among vulnerable groups

Rifai * 

* Universitas Mbojo Bima, Indonesia
stisiprifai@gmail.com

Haeril 

Universitas Mbojo Bima, Indonesia
haeril.terminator@gmail.com

Rahmad Hidayat 

Universitas Mbojo Bima, Indonesia
rahmad.hidayat@universitasmbojobima.ac.id

*Corresponding Author

Article Info

Article History

Submitted:

18 May 2026

Revised:

28 June 2026

Accepted:

27 July 2026

Keywords

administrative burden;
citizenship rights; civic
education; digital citizenship;
Pancasila; vulnerable groups

Abstract

As public services move onto digital platforms, civic education must prepare citizens not only to use technology responsibly but also to understand, claim, and contest the services through which their rights are realised. This article develops a conceptual and methodological framework that reframes digital administrative burden in Indonesia as a problem of citizenship formation and substantive rights. For citizens facing poverty, disability, old age, rural remoteness, or limited literacy, opaque digital procedures do more than create technical difficulty; they erode civic agency. Drawing on administrative burden theory, Marshall's citizenship rights, Sen's capability approach, and digital citizenship scholarship, the article proposes a model linking learning, compliance, and psychological costs to perceived access, service justice, and civic confidence. It situates this model within Indonesian civic education through Pancasila's principle of social justice and outlines a fieldwork protocol for future empirical testing. The article argues that digital access is never merely administrative: it is where citizens learn whether the state recognises them as equal, rights-bearing members of a democratic community.

Article Link: <https://journal.uny.ac.id/index.php/civics/article/view/98075>

Introduction

In a digital state, citizenship is increasingly learned and practised through encounters with public service platforms. Citizens do not meet the state only in classrooms, elections, public meetings, or service counters. They also meet it through login pages, online forms, document upload systems, status notifications, and digital complaint channels. When these encounters are understandable and humane, they may strengthen civic confidence. When they are confusing, inaccessible, or intimidating, they may teach the opposite lesson: that rights are formally promised but practically difficult to claim. This article therefore begins from a civic education concern rather than a narrow administrative one. Digital public service access



matters because it shapes civic agency, the capacity of citizens to understand institutions, claim entitlements, question decisions, and participate in public life with dignity.

This concern is directly related to *Pendidikan Pancasila dan Kewarganegaraan* (Pancasila and Civic Education). Civic education is expected to form citizens who understand their rights and duties, respect democratic procedures, care about public problems, and act on the basis of justice. In the Indonesian context, this orientation is inseparable from Pancasila, especially the fifth principle, *Keadilan Sosial bagi Seluruh Rakyat Indonesia* (social justice for all the people of Indonesia). If vulnerable citizens cannot obtain public services because procedures have moved into digital systems that they cannot meaningfully use, the issue is not only a service delivery problem. It is also a failure to realise social justice in the practical life of citizenship.

Indonesia's Electronic-Based Government System, known as SPBE, provides the immediate policy context for this discussion. Presidential Regulation No. 95/2018 seeks to integrate government business processes, data, applications, and infrastructure through digital governance. The policy logic is understandable. Digital platforms can support faster processing, clearer monitoring, better coordination, and lower administrative costs. For citizens who have reliable devices, stable connectivity, adequate literacy, and confidence in dealing with official platforms, digital services can make interaction with the state more convenient (Pereira et al., 2018; Wirtz et al., 2019). Yet convenience for some citizens should not be mistaken for civic access for all citizens. This trajectory mirrors a global pattern; the United Nations (2020) Roadmap for Digital Cooperation similarly frames the expansion of digital public services as central to achieving universal connectivity and inclusive digital governance.

The difficulty begins when digital access is treated as equivalent to actual access. A citizen may own a phone but still be unable to interpret eligibility rules, upload the correct document, understand a rejected application, protect personal data, or ask for help without feeling embarrassed. Internet access statistics therefore tell only part of the story. BPS reported that 72.78 per cent of Indonesia's population accessed the internet in 2024, but this figure cannot show whether citizens can use digital public services effectively, safely, and with dignity (Badan Pusat Statistik, 2025). International digital divide scholarship shows that inequalities have shifted from simple connectivity to material access, skills, confidence, and patterns of use (van Deursen & van Dijk, 2014, 2019). Indonesian civic education scholarship similarly reminds us that digital citizenship must be tied to ethical responsibility, civic awareness, and Pancasila values rather than reduced to technical competence (Armawi & Wahidin, 2020; Yusuf, Wibowo, & Budiono, 2024).

Marshall's (1950) classic distinction between civil, political, and social rights clarifies the stakes of citizenship. Public services are one of the main procedural channels through which these rights become usable in everyday life. Identity documents support civil recognition; complaint mechanisms and public information channels support political voice; education, health, and social assistance services support social rights. Sen's (1999) capability approach further sharpens this point. A citizen may formally possess a right, yet lack the substantive capability to exercise it when procedures are too complex, costly, or humiliating. Digital administrative burden therefore marks the distance between formal citizenship and lived citizenship.

Administrative burden theory provides the middle-range conceptual language for examining this distance. Moynihan, Herd, and Harvey (2015) identify three forms of burden in citizen-state encounters. Learning costs arise when citizens must find, interpret, and understand rules. Compliance costs appear when they must gather documents, complete forms, repeat verification steps, or travel to offices after online procedures fail. Psychological costs include fear, stress, stigma, humiliation, and the feeling of being distrusted by the system. Digitalization can reduce some compliance costs, but it can also create new burdens when administrative work is transferred from trained officers to citizens who are expected to serve themselves (Herd & Moynihan, 2018; Madsen et al., 2022; Peeters, 2023).

Recent scholarship has shown that administrative burden is not distributed evenly. Christensen et al. (2020) connect burden with citizens' cognitive resources, while Masood and Nisar (2021) show that administrative capital is unequally distributed. Halling and Baekgaard (2024) map the rapid development of this research field and identify the need for clearer measurement. Vogel (2025) also cautions that vulnerability does not operate in exactly the same way across all administrative procedures. These findings are important for digital government because the digital interface often makes burden less visible. A platform may look efficient from the agency's side while remaining confusing, exhausting, or exclusionary from the citizen's side. Aaroe, Baekgaard, Christensen, and Moynihan (2021) further show that policymakers' own personality traits shape their tolerance for administrative burdens in welfare services, suggesting that burden is not only experienced unevenly by citizens but also designed unevenly by officials. Cao and Ma (2025) illustrate this dynamic empirically in China's Old Age Allowance Policy, where digital transformation reshaped burdens for both frontline bureaucrats and older citizens.

The Indonesian context makes this problem especially urgent. The country is archipelagic, linguistically diverse, and administratively decentralised. Public services are delivered through national, provincial, district, village, and sectoral platforms that do not always share the same interface, login procedure, document requirement, or complaint mechanism. Citizens in remote areas may face unstable connections. Older adults may struggle with small screens and unfamiliar verification steps. Persons with disabilities may encounter portals that do not fully support screen readers, keyboard navigation, adjustable fonts, or accessible instructions. Low-income citizens may rely on borrowed devices or paid intermediaries. Women with caregiving responsibilities may have too little time and privacy to complete complex procedures. These patterns are consistent with the Ombudsman Republik Indonesia's (2024) annual report, which recorded a substantial volume of public service complaints linked to unclear procedures and unequal treatment across digital and offline channels.

For civic education, these experiences are not peripheral. They are moments of civic learning. Torney-Purta et al. (2001) emphasise civic knowledge, interpretive skills, trust, attitudes, and expected participation as central dimensions of civic learning. Westheimer and Kahne (2004) distinguish personally responsible, participatory, and justice-oriented conceptions of citizenship. Digital public service encounters touch all of these dimensions because they teach citizens what kind of institution the state is, whether public authority can be questioned, and whether rights can be claimed without humiliation. The Profile of Pancasila Students (*Profil Pelajar Pancasila*) in the *Kurikulum Merdeka* (Emancipated Curriculum) also stresses holistic character formation, including global diversity, mutual cooperation, independence, critical reasoning, creativity, and noble conduct (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2022). Digital administrative competence can be read as a practical extension of these civic capacities.

When public services become digital by default, civic competence must include more than the ability to operate a device. Citizens need administrative literacy, data privacy awareness, the ability to read service procedures, the courage to question decisions, and the confidence to use complaint channels. These are expressions of civic knowledge, civic skills, and civic dispositions in a digital administrative environment. Digital citizenship frameworks, including Ribble's (2015) emphasis on digital access, literacy, rights and responsibilities, and security, are useful here because they move the discussion beyond mere platform use toward responsible and empowered participation. In this article, digital citizenship is understood as the ability to use digital systems in ways that protect dignity, enable participation, and support the exercise of rights.

Existing studies on digital government have often focused on adoption, satisfaction, efficiency, and technology acceptance. A growing literature has shifted attention toward digital administrative burden, social infrastructure, and the role of intermediaries in welfare and

public service systems (Giest & Samuels, 2023; Heggertveit et al., 2022; Höglund Rydén et al., 2024; Rydén & de Andrade, 2023). Liu, Zhou, and Liang (2025) further advance this debate by reviewing digital inclusion in public services for vulnerable groups through a public service ecosystem lens. However, to date no conceptual framework has systematically connected digital administrative burden with civic education, citizenship rights, and Pancasila-based social justice. The conceptual bridge between digital administrative burden and civic education therefore remains underdeveloped, especially in the Indonesian setting where digital governance, Pancasila values, and citizenship education meet in concrete service encounters. This is the specific gap the present article addresses.

This article addresses that gap by offering a conceptual and methodological framework rather than claiming statistical findings. Its purpose is to clarify the theoretical model, strengthen its fit with civic education and citizenship studies, and provide a rigorous protocol that can guide future empirical testing. The article asks: How can digital administrative burden be conceptualised as a problem of citizenship rights and civic education? How can the burden of digital public services be linked to civic knowledge, civic skills, civic dispositions, and civic confidence? What constructs and indicators should be used to measure that burden among vulnerable groups? What methodological safeguards are needed before the model can be tested as an empirical study?

The contribution is threefold. First, the article reframes digital administrative burden as a problem of citizenship formation and social justice, not simply a service delivery problem. Second, it connects administrative burden theory with Marshall's citizenship rights, Sen's capability approach, digital citizenship, and civic education by showing how burdens influence civic knowledge, civic skills, civic dispositions, and confidence in public institutions. Third, it proposes a research design, survey instrument, and validation protocol that future studies can apply in Indonesian public service contexts before advancing empirical claims. In doing so, the article positions digital public service navigation as a practical arena of civic education and a test of whether *Keadilan Sosial* is realised in the digital era.

Conceptual Foundation

Administrative burden is especially significant in digital public services because digital systems often shift administrative work onto citizens. Unlike face-to-face encounters, platforms require citizens to interpret rules on their own. Digital services are not inherently exclusionary, but they are inclusive only when designed for the full range of citizens, not merely the default user imagined by designers.

The theoretical starting point is that citizenship is both a formal status and a lived capacity. Marshall's (1950) civil, political, and social rights become meaningful only when citizens can pass through the procedures that make them usable. As civil documents, social assistance, health services, and complaints are increasingly claimed through digital interfaces, administrative burden can interrupt the conversion of legal citizenship into experienced citizenship. Sen's (1999) capability approach clarifies why formal availability is insufficient: devices, internet access, time, literacy, disability accommodation, and trustworthy assistance act as conversion factors that determine whether a service becomes a real opportunity. Social justice is therefore achieved not when the same digital form is offered to all, but when citizens in unequal circumstances are enabled to use services with dignity. This aligns with Pancasila's fifth principle, *Keadilan Sosial bagi Seluruh Rakyat Indonesia*, which directs attention to who carries the heaviest procedural, emotional, and technological burden. A platform that is formally available but practically difficult for older adults, rural citizens, persons with disabilities, or low-income families may reproduce inequality while appearing neutral.

These burdens take three forms. Learning costs involve finding the right platform, understanding eligibility, and following instructions; they are linguistic and cultural as well as cognitive, since bureaucratic language can feel distant even to fluent readers of Bahasa

Indonesia, let alone speakers of local languages. Compliance costs include data charges, scanning, repeated uploads, login recovery, and travel when online channels fail; digitalisation may shorten office queues while creating new ones in households, village offices, and informal kiosks, so burden is redistributed rather than eliminated. Psychological costs, often the most hidden, include fear of mistakes, anxiety about losing benefits, embarrassment, and distrust. Repeated confusion and shame may teach citizens that rights are hard to claim and that institutions are not designed for people like them. Eubanks (2018) shows that such costs can become embedded features of digital welfare systems that profile, police, and punish low-income citizens. Because these costs fall unequally, a minor adjustment for a middle-class urban user may be a serious barrier for a rural older adult, a person with disabilities, or a woman caregiver with limited time and privacy. Digital burden thus reflects the social organisation of access rather than individual competence.

Digital citizenship explains why this is a civic issue. Isin and Ruppert (2015) argue that digital environments are spaces where citizenship is enacted and shaped; public service platforms therefore form part of the citizenship infrastructure, where the right to be served is exercised through passwords, forms, and automated messages. Mossberger, Tolbert, and McNeal (2008) define digital citizenship as the effective and regular use of technology for social and political participation, while Choi (2016) emphasises democratic participation, critical awareness, and responsible action. Ribble's (2015) elements of digital access, literacy, rights and responsibilities, security, and communication offer a practical language for educational outcomes. Read through public service encounters, digital citizenship includes administrative citizenship: knowing which institution is responsible, preparing documents, understanding automated decisions, seeking assistance, and using complaint channels. These capacities correspond to civic knowledge, skills, and dispositions.

Civic education provides the normative bridge. A rights-based digital citizenship curriculum should include administrative literacy, digital privacy, complaint mechanisms, inclusive design awareness, and critical reflection on how technology reproduces inequality. For *Pendidikan Pancasila dan Kewarganegaraan*, this shifts digital citizenship from a behavioural topic to a democratic competence, in which learners evaluate whether digital procedures are fair and imagine inclusive alternatives. In sum, Marshall explains why public services matter for citizenship rights; Sen explains why access must be judged by capability; digital citizenship scholarship identifies the required skills; and Pancasila provides the normative standard of social justice. Administrative burden connects these perspectives by showing where rights, capabilities, and justice commitments break down in everyday service encounters.

Research Propositions

Because this article is presented as a conceptual and methodological framework, the following statements are formulated as research propositions rather than tested hypotheses. Each proposition is derived from the theoretical relationship among administrative burden, citizenship rights, capability, digital citizenship, and civic education. They are intended to guide future field testing after ethical clearance, instrument validation, and data collection have been completed.

P1. Learning costs, compliance costs, and psychological costs are expected to reduce citizens' perceived access to digital public services. Administrative burden theory suggests that citizens withdraw, delay, or depend on others when they cannot understand rules, meet requirements, or manage the emotional pressure of the procedure. In digital services, these costs appear through platform confusion, repeated uploads, data costs, verification failure, and anxiety about mistakes. Perceived access is therefore treated as the procedural outcome closest to the service encounter.

P2. Digital administrative burden is expected to weaken perceived service justice. Service justice refers to whether citizens feel that the procedure is equal, respectful, transparent, and open to correction. This proposition follows the idea that a formally available service may still be experienced as unjust when only digitally confident citizens can complete it without humiliation, informal fees, or dependence on untrained intermediaries.

P3. Digital administrative burden is expected to weaken the perceived fulfilment of citizenship rights and civic confidence. Drawing on Marshall, public services are part of the practical infrastructure through which social rights are claimed. Drawing on Sen, citizens need real capability, not only formal entitlement, to convert rights into actual benefits. When burden is high, citizens may feel less recognised by the state and less confident in questioning or participating in public institutions.

P4. Structural vulnerability is expected to increase exposure to specific burden mechanisms. Poverty may intensify data costs and intermediary dependence; old age may intensify navigation difficulties; disability may intensify interface barriers; rural residence may intensify connectivity and transport burdens; and caregiving responsibility may intensify time pressure. This proposition treats vulnerability as a structural condition that shapes the type of burden citizens are most likely to face.

P5. Cumulative vulnerability is expected to produce heavier burden than single-category vulnerability. A citizen who is simultaneously rural, older, low-income, and responsible for caregiving may face overlapping constraints that cannot be captured by one vulnerability marker alone. Future empirical work should therefore record overlapping vulnerability markers and examine whether combined disadvantage has additive or interactive effects.

P6. Digital literacy is expected to buffer, but not fully remove, the negative relationship between digital administrative burden and perceived access. Digital literacy can help citizens navigate platforms, manage files, read notifications, and avoid basic security risks. However, literacy cannot compensate for poorly designed systems, inaccessible interfaces, unstable infrastructure, or unclear decisions. It should therefore be treated as a protective resource rather than as a complete solution.

P7. Social support is expected to buffer the negative relationship between digital administrative burden, citizenship rights, and civic confidence. Family members, village officers, community organisations, public service counters, and help desks can help citizens translate procedures into usable actions. At the same time, overreliance on informal support may raise privacy, dependency, and unofficial cost concerns. Future research should therefore distinguish trusted institutional support from informal or paid intermediary support.

Proposed Conceptual Model

The proposed model begins from the premise that digital administrative burden is produced at the intersection of service design, citizen resources, and structural vulnerability. Learning, compliance, and psychological costs form the core burden dimensions. These burdens are expected to influence perceived access, service justice, citizenship rights, and civic confidence. Digital literacy and social support are not treated as simple solutions; they are protective resources that may reduce the impact of burden while leaving the deeper design problem intact.

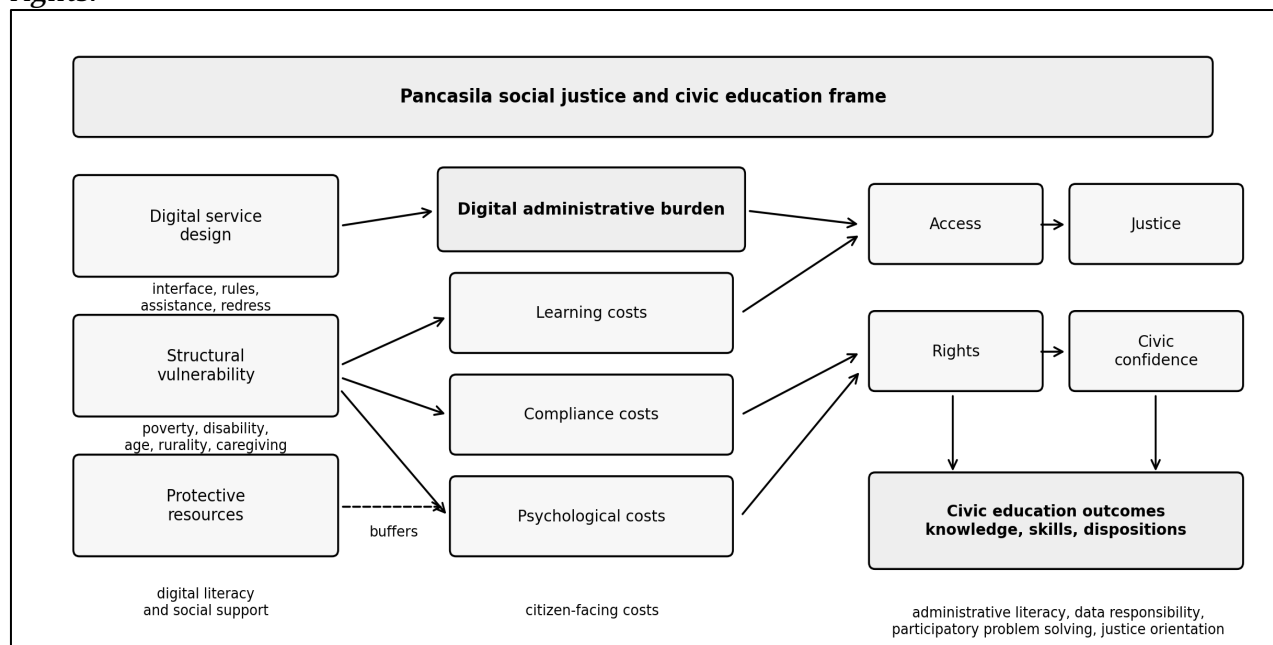
The model also recognises that vulnerability is cumulative. Poverty, old age, disability, rural residence, and caregiving responsibility do not merely add separate difficulties. They can interact in everyday life. A rural older woman with limited income may face device constraints, unstable connection, limited time, low confidence, and fear of losing benefits at the same time. Future empirical work should therefore avoid presenting vulnerable groups as a single homogeneous category. Disaggregated and intersectional analysis is necessary for a fair reading of digital public service access.

The civic education element enters the model through civic confidence and digital citizenship capacities. If citizens can understand procedures, protect their data, seek assistance, and challenge unfair decisions, digital services can become spaces for practising citizenship. If they cannot, the digital service encounter may silently teach exclusion. This is why the outcome of interest should extend beyond satisfaction or service quality. The question is whether citizens can exercise rights and participate in public life with dignity.

Figure 1 translates the conceptual argument into a path model. It shows that digital public service design and structural vulnerability shape learning, compliance, and psychological costs. These burdens are then expected to influence perceived access, service justice, citizenship rights, and civic confidence, while digital literacy and social support work as protective resources rather than as substitutes for inclusive service design.

Figure 1.

Proposed conceptual model of digital administrative burden, civic education, and citizenship rights.



The figure also clarifies the civic education logic of the article: digital service encounters are learning environments in which citizens develop, or lose, confidence in their ability to understand institutions, protect rights, and participate in public problem-solving.

Table 3.

Summary of the Proposed Conceptual Model

Model Component	Core Elements	Theoretical Function
Administrative burden	Learning costs, compliance costs, psychological costs	Expected to reduce access, justice, rights, and civic confidence.
Protective resources	Digital literacy and social support	Expected to weaken, but not erase, the negative effect of burden.
Structural vulnerability	Low income, older age, disability, rural residence, caregiving responsibility	Expected to increase burden and independently constrain outcomes.
Citizenship outcomes	Perceived access, service justice, citizenship rights, civic confidence	Used to evaluate whether digital services support substantive citizenship.
Civic education link	Civic knowledge, civic skills, civic dispositions, digital citizenship	Explains why public service navigation is part of citizenship formation.

Proposed Methodological Framework for Future Empirical Validation

The methodological framework below is designed to guide future empirical implementation through a transparent research protocol. No numerical result is claimed in this version of the manuscript.

Research Design and Proposed Site

A future empirical study should employ a cross-sectional quantitative survey design supported by a small qualitative pre-test. The design is appropriate for measuring relationships among latent constructs and for comparing perceived burdens across vulnerability categories. Before fieldwork, the instrument should be reviewed by experts in public administration, civic education, disability access, and survey methodology. Cognitive interviews with vulnerable citizens should then be used to ensure that item wording is understandable and culturally appropriate.

The proposed empirical setting is Bima City and Bima Regency, West Nusa Tenggara, Indonesia, with possible extension to other districts in eastern Indonesia if resources allow. This setting is methodologically useful because it contains urban and rural service contexts, varying levels of digital infrastructure, and communities in which national public service platforms intersect with local administrative practices. The site should be stated clearly in any empirical version so that readers can assess the representativeness, contextual limits, and transferability of the findings. Ramadoan, Firman, Sahrul, and Haeril (2024) similarly highlight the urgency of e-government optimisation in Bima District, providing local empirical grounding for selecting this research site.

The unit of analysis is the individual citizen who has used, or attempted to use, at least one digital public service within the previous twelve months. Services may include civil registration, social assistance, health administration, educational services, licensing, complaint platforms, village administration portals, and citizen information services. Including unsuccessful attempts is important because people who fail to complete a procedure are often precisely those who experience the highest burden. The scope of services follows Lindgren, Madsen, Rydén, Heggertveit, Hofmann, and Sæbø's (2024) classification of which public services are most suitable for digitalisation, which highlights that high-stakes services used by vulnerable citizens require particular caution in digital design.

Population and Sampling Plan

The target population consists of citizens whose social position may expose them to higher risks of digital exclusion. The primary recruitment categories should include low-income households, older adults aged 60 years and above, persons with disabilities, rural residents, women with primary caregiving responsibilities, and a non-vulnerable comparison group. These categories should not be treated as mutually exclusive identities. A respondent may belong to more than one category, and all overlapping markers should be recorded to allow intersectional analysis. This categorisation follows Pérez-Escolar and Canet's (2023) taxonomical framework for research on vulnerable people and digital inclusion, which groups vulnerability across economic, physical, cognitive, and social dimensions.

A purposive stratified sampling plan is recommended. The proposed minimum sample is 420 respondents, divided into six primary recruitment quotas of approximately 70 respondents each: low-income households, older adults, persons with disabilities, rural residents, women caregivers, and non-vulnerable comparison respondents. This quota structure is retained because it gives each category enough cases for descriptive comparison while still allowing cross-category overlaps to be recorded.

The figure of 420 respondents is not presented as empirical data; it is a proposed minimum for future fieldwork. The proposed survey instrument contains 41 observed items in Appendix A. Following the common rule of thumb of at least 10 respondents per observed item

for factor analysis, the minimum would be 410 respondents. The proposed 420 respondents provide a small buffer above this threshold and allow a balanced quota allocation of 70 respondents across six recruitment categories (Hair et al., 2019).

Before actual data collection, the final empirical study should conduct an a priori power analysis, for example using G*Power, to confirm that the sample is sufficient for multiple regression, moderation analysis, and group comparisons. The power analysis should specify the expected effect size, alpha level, statistical power, number of predictors, and planned interaction terms (Faul et al., 2009). If the instrument is expanded, if missing data are expected to be high, or if intersectional subgroup analysis is prioritised, the sample should be increased beyond 420 respondents.

The final empirical report should also explain how respondents were recruited, which institutions or community groups assisted recruitment, whether any incentives were provided, how disability accommodations were arranged, and how the researchers prevented the underrepresentation of citizens with low literacy or limited internet access.

Data Collection Procedure

Data collection should be multimodal. Digitally confident respondents may complete an online questionnaire. Respondents who need assistance should be offered enumerator-assisted questionnaires. Respondents without stable internet access should be allowed to complete a paper-based form. This approach is not merely a logistical choice; it is part of the study's ethics. A study about digital burden would reproduce exclusion if it only accepted responses from people who can already complete an online survey without help.

Enumerators should receive training on informed consent, disability-sensitive communication, privacy protection, and neutral assistance. Assistance may clarify item meaning or help respondents mark an answer, but it must not pressure respondents toward any response. When respondents require help from family members or community facilitators, the researcher must protect confidentiality and avoid exposing sensitive information about income, disability, benefit status, or service failures.

Operationalisation of Variables

Table 1.

Revised Operationalisation of Research Variables

Construct	Conceptual Indicators	Scale and Interpretation
Learning costs	Difficulty locating information, understanding eligibility, interpreting procedural language, following digital workflows, and knowing what to do after rejection or delay.	Five-point Likert; higher score indicates heavier burden.
Compliance costs	Time, money, documents, data charges, upload attempts, identity verification, transport, and repeated visits needed to complete a digital service.	Five-point Likert; higher score indicates heavier burden.
Psychological costs	Stress, fear of mistakes, shame in asking for help, distrust, anxiety about benefit denial, and feeling powerless before the platform.	Five-point Likert; higher score indicates heavier burden.
Digital literacy	Device competence, application navigation, file management, data security awareness, and ability to interpret notifications or status messages.	Five-point Likert; higher score indicates stronger protective resource.
Social support	Family support, officer guidance, community assistance, help desk availability, village office support, and accessible offline channels.	Five-point Likert; higher score indicates stronger support.
Perceived access	Ease of use, affordability, speed, clarity of status, availability of assistance, and possibility of	Five-point Likert; higher score indicates better access.

Construct	Conceptual Indicators	Scale and Interpretation
Service justice	completing the service without unnecessary barriers. Perceived equality of treatment, respectful interaction, non-discrimination, transparency, and ability to challenge unclear decisions.	Five-point Likert; higher score indicates stronger justice perception.
Citizenship rights	Perceived ability to obtain administrative entitlements, social rights, and public services as an equal citizen through digital or hybrid channels.	Five-point Likert; higher score indicates stronger rights fulfilment.
Civic confidence	Confidence that citizens can understand, question, and participate in public service procedures without intimidation or exclusion.	Five-point Likert; higher score indicates stronger civic confidence.

Source: Developed from Moynihan et al. (2015), Herd and Moynihan (2018), Baekgaard and Tankink (2022), Peeters (2023), Giest and Samuels (2023), Marshall (1950), Sen (1999), Mossberger et al. (2008), Choi (2016), Ribble (2015), Torney-Purta et al. (2001), and Westheimer and Kahne (2004).

To reduce conceptual overlap among the outcome constructs, the empirical version should define their boundaries before analysis. Perceived access refers to procedural reachability: whether citizens can enter, understand, and complete the service process. Service justice refers to the perceived fairness of treatment, explanation, assistance, and appeal opportunities during the process. Citizenship rights refers to substantive rights fulfilment: whether the service enables citizens to obtain administrative and social entitlements as equal members of the polity. Civic confidence refers to the citizen's perceived capacity to ask questions, report problems, and participate in improving public services. These distinctions should be tested empirically through CFA and discriminant validity procedures, especially HTMT, so that access, justice, rights, and confidence are not treated as interchangeable constructs.

Instrument Validation Protocol

Table 2.

Proposed Instrument Validation and Diagnostic Tests

Validation Step	Procedure	Expected Reporting
Content validity	Expert review by scholars and practitioners in public administration, civic education, disability inclusion, and survey methods.	Items revised for conceptual fit, plain language, and cultural appropriateness.
Cognitive pre-test	Interviews with 15-20 respondents from vulnerable groups to test whether items are understood as intended.	Ambiguous terms revised before pilot testing.
Pilot reliability	Pilot survey with approximately 30-50 respondents.	Cronbach alpha and item-total correlations examined; weak items revised or removed.
Exploratory Factor Analysis	EFA conducted using suitable extraction and rotation methods after checking KMO and Bartlett tests.	Items should load clearly on intended constructs and avoid problematic cross-loadings.
Confirmatory Factor Analysis	CFA conducted on field data, or on a split sample if the total sample permits.	Model fit, standardized loadings, composite reliability, and construct structure reported.

Validation Step	Procedure	Expected Reporting
Convergent validity	Average Variance Extracted and standardized loading values examined.	AVE should generally reach 0.50 or higher; loadings should be theoretically defensible.
Discriminant validity	HTMT and/or Fornell-Larcker criteria reported.	Constructs should be empirically distinguishable, especially burden, access, justice, and rights.
Common method bias	Procedural remedies plus Harman single-factor test, marker variable, or full collinearity approach.	Evidence reported to show that relationships are not primarily method artifacts.
Multicollinearity	Variance Inflation Factor examined in regression models.	VIF values above 5 should be treated as a warning and addressed before interpretation.
Residual diagnostics	Normality, linearity, homoscedasticity, and influential cases checked.	Robust methods or transformations considered if assumptions are violated.

Analytical Strategy

After validation, descriptive statistics should be used to profile respondents and describe the distribution of digital administrative burden. Group comparisons may be conducted using one-way ANOVA or non-parametric alternatives when assumptions are not met. Bonferroni-corrected pairwise comparisons should be reported in the main text or appendix, rather than mentioned without tabulation.

Hierarchical regression can be retained, but the order of variable entry must be justified theoretically. Block 1 should include control variables, such as age, gender, education, income, residence, and frequency of digital service use, because these factors represent background resources and exposure. Block 2 should include the three burden dimensions, because they are the core explanatory variables. Block 3 should add digital literacy and social support, because these are protective resources. Block 4 should add vulnerability markers, because structural position may shape outcomes beyond measured burden. Block 5 should include interaction terms to test moderation. This sequence moves from background conditions to burdens, resources, structural vulnerability, and conditional effects.

The measurement model should be evaluated before any substantive interpretation of the propositions. Particular attention should be given to the empirical separation of perceived access, service justice, citizenship rights, and civic confidence because these constructs are theoretically related but not identical. CFA should report standardized loadings, composite reliability, AVE, and fit indices, while HTMT or Fornell-Larcker results should demonstrate discriminant validity. If the constructs overlap excessively, items should be revised or the model should be respecified before regression or SEM analysis is interpreted. Common method bias should be assessed using a full collinearity approach (Kock, 2015), and burden items should where possible follow the short, validated wording recommended by Jilke, Baekgaard, Herd, and Moynihan (2024) to keep respondent burden in the instrument itself to a minimum.

Moderation analysis should be visualized using simple slopes or interaction plots. At minimum, the empirical study should show how the relationship between burden and perceived access changes at low, medium, and high levels of digital literacy and social support. These plots are important because interaction coefficients are difficult to interpret without visual evidence. If the study proceeds to structural equation modelling, the same logic can be

tested through latent interactions or multi-group comparisons, provided measurement invariance is established.

Discussion

The article's contribution is deliberately conceptual and methodological: it explains why digital administrative burden matters, how to measure it, why it belongs within civic education, and what safeguards are needed before making empirical claims. For public administration, the framework insists that we assess digital transformation from the citizen's side. A platform may reduce paperwork while increasing anxiety, or report high registration numbers while silently excluding those who abandon the process. Administrative burden analysis reveals these hidden costs and prevents judging reform by institutional convenience alone.

For civic education, the framework widens digital citizenship beyond online ethics, misinformation, and social media behaviour. Citizens also meet the state through service platforms, where they learn whether procedures are fair and whether they can claim rights without humiliation. Public service navigation is therefore a civic skill. *Pendidikan Pancasila dan Kewarganegaraan* curricula should introduce administrative rights, service standards, complaint channels, data privacy, and disability-sensitive design, and invite learners to analyse real scenarios, such as an older adult seeking a health referral or a rural family applying for social assistance. This supports a justice-oriented citizenship. Among Westheimer and Kahne's (2004) personally responsible, participatory, and justice-oriented citizens, digital administrative burden calls for the last: it asks not only whether citizens can use applications, but whether the applications themselves are fair and accountable. This echoes the social equity tradition that treats equity as a core governance value alongside efficiency (Ricucci et al., 2019).

Social support deserves particular attention. Families, village officers, libraries, and volunteers often bridge citizens and digital systems. Giest and Samuels (2023) highlight the role of social infrastructure, while Höglund Rydén et al. (2024) show that intermediaries reduce burdens but become an invisible part of service co-production. In Indonesia, relatives, village staff, kiosk operators, or informal brokers may play this role, bringing privacy risks, dependency, and unofficial costs. Hofmann et al. (2024) find that digitalised welfare shifts responsibility onto vulnerable citizens unless intermediary roles are formally recognised, consistent with Nabatchi et al.'s (2017) account of citizens as active, often uncompensated coproducers. Higgins et al. (2022) stress that public authorities, not informal networks, must remove access barriers. Support must therefore be designed into the service, staffed by trained officers, and evaluated as a core quality indicator.

Finally, digital literacy training alone is insufficient and becomes unfair when it places the whole burden on citizens. A rights-based approach requires a double movement: civic education equips citizens to claim rights, while inclusive design, through plain language, predictable steps, accessible interfaces, and offline alternatives, ensures those rights are not hidden behind technical complexity.

Implications for Civic Education and Digital Citizenship

The implications for civic education go beyond a simple recommendation to teach students how to use government applications. Digital public service navigation should be treated as a concrete arena where citizenship is learned, practised, and evaluated. In this arena, citizens do not only need technical skills. They need to understand rights, recognise unfair treatment, protect personal data, communicate with institutions, and work with others to improve public services. This is why the framework belongs within *Pendidikan Pancasila dan Kewarganegaraan* and digital citizenship education.

First, the framework can strengthen civic knowledge. Learners should be introduced to the meaning of public service rights, the state's duty under public service law, the difference

between formal eligibility and actual access, and the relationship between digital procedures and substantive citizenship. Marshall's idea of civil, political, and social rights can be translated into classroom questions such as: What does the right to be served mean when the service is delivered through a platform? Who is excluded when a platform assumes that every citizen has a device, literacy, time, and confidence? How can Pancasila's principle of social justice guide the evaluation of digital service reform?

Second, the framework can develop civic skills. Students can learn how to read service requirements, check official information, prepare documents safely, identify personal data risks, use complaint channels, and communicate respectfully with public officers. These are not merely administrative skills. They are practical citizenship skills because they enable citizens to move from passive recipients of policy to active rights claimants. At school level, teachers can design simulations in which students help a fictional older adult, rural family, or person with disability navigate a digital public service while identifying points where the procedure becomes unfair or unclear.

Third, the framework can cultivate civic dispositions. Civic education should encourage empathy toward vulnerable citizens, critical awareness of unequal access, willingness to assist others without exploiting them, and readiness to question systems that distribute burden unfairly. This connects directly with the *Profil Pelajar Pancasila*, especially critical reasoning, mutual cooperation, independence, and social responsibility as dimensions of character and competence formation (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2022; Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi, 2024).

Fourth, digital administrative burden can be used as a project-based learning theme. In *Projek Penguatan Profil Pelajar Pancasila* (Pancasila Student Profile Strengthening Project) or university civic education courses, learners can conduct a small accessibility audit of a public service website, compare digital and offline procedures, interview community members about service barriers, map the role of intermediaries, and prepare recommendations for local service units. Such activities make civic education more grounded because students encounter real public problems rather than only memorising institutional concepts.

Fifth, the framework is useful for teacher education and higher education. Prospective civic education teachers need to understand that digital citizenship is not limited to online manners, cyberbullying, misinformation, and social media participation. It also includes administrative literacy, data responsibility, rights-claiming capacity, and the ability to evaluate whether digital governance serves citizens fairly. Lecturers can use the proposed survey instrument as a teaching resource by asking students to examine whether each item measures knowledge, skill, disposition, access, justice, or rights.

Sixth, the framework is relevant to community-based civic education. Many vulnerable citizens are no longer in formal schooling, yet they remain directly affected by digital public services. Universities, schools, village offices, libraries, disability organisations, and civil society groups can collaborate to provide public learning sessions on service rights, safe data practices, complaint mechanisms, and inclusive assistance. This form of civic education treats citizens as rights-bearing participants rather than as users who must adjust silently to every new platform.

Overall, the contribution to civic education is shifting digital government from a purely administrative topic into the domain of citizenship formation. A digitally capable citizen is not simply someone who can click through an application. A digitally capable citizen understands why the procedure exists, can protect personal dignity and data, can ask for reasons when a decision is unclear, can support others ethically, and can participate in improving public institutions.

Table 4.

Translation of the framework into civic education practice.

Civic education focus	Learning orientation	Example activity	Expected civic capacity
Administrative literacy	Understanding how rights are realised through service procedures.	Students trace the steps for obtaining an identity document, health referral, or social assistance service and identify where citizens may face learning costs.	Civic knowledge about public service rights and procedural fairness.
Digital rights and data responsibility	Connecting digital citizenship with privacy, consent, and safe use of personal data.	Students analyse a case where a citizen shares identity data with an informal intermediary and discuss safer alternatives.	Responsible digital citizenship and data protection awareness.
Participatory problem solving	Using civic skills to diagnose and improve public service access.	Students conduct a mini accessibility audit of a public service website or village service information board.	Critical reasoning, communication, and public problem-solving skills.
Justice-oriented disposition	Recognising whose burden increases when services are designed for confident digital users only.	Students compare the service experience of an urban student, an older adult, a person with disability, and a rural caregiver.	Empathy, social justice orientation, and willingness to advocate inclusive services.

This table is intended as a pedagogical bridge. It shows how the conceptual model can be used not only for future research, but also for classroom learning, teacher education, and community-based citizenship education.

Policy Recommendations

For public institutions, four measures are essential. First, every new digital public service should undergo an administrative burden assessment before launch, examining information clarity, procedural steps, language, document and device requirements, help options, complaint pathways, and disability access, with testing that involves vulnerable users rather than only technically proficient ones. Second, institutions should provide hybrid support channels, such as call centres, village office assistance, accessible counters, mobile units, and partnerships with schools, libraries, and civil society, treating them as core service components rather than temporary assistance. Third, government platforms should follow universal design principles, including simple language, adjustable text, screen-reader compatibility, audio guidance, clear progress indicators, and transparent status tracking; as Scholta and Lindgren (2025) argue, accessibility must be a design requirement rather than a remedial patch. Fourth, grievance and redress mechanisms must themselves be accessible, offering citizens a clear and humane route to ask why, correct errors, and appeal, since a difficult complaint system merely adds a second layer of burden.

For civic education, two further measures follow. Schools, universities, and community learning centres should integrate digital citizenship into civic education programmes, covering public service navigation, administrative rights, data protection, and complaint mechanisms, without displacing the state's duty to simplify procedures. Civic education stakeholders should

also translate this framework into learning modules, simulations, and community projects in which learners map service procedures, audit portal accessibility, and propose fairer designs for vulnerable citizens. Such practice grounds digital citizenship education in local realities and in the Pancasila commitment to social justice.

Limitations and Future Empirical Agenda

This article is conceptual and methodological. It presents a testable framework rather than numerical estimates. The proposed relationships among burden, access, justice, citizenship rights, digital literacy, social support, and civic confidence should therefore be examined with actual respondents before causal or generalisable claims are made. The proposed sampling plan is also context-bound. Bima City and Bima Regency are suitable for developing an eastern Indonesian case, but they cannot represent the entire Indonesian digital service landscape. Future studies should compare multiple provinces and service sectors, including civil registration, social assistance, health services, education services, licensing, and complaint systems.

Future research should combine survey data with qualitative observation. Quantitative models can show patterns, but they may not fully capture how citizens feel when an upload fails, when a password cannot be recovered, when an officer gives unclear instructions, or when a family member handles sensitive data on their behalf. Ethnographic observation of actual service encounters would add depth to the survey model. Longitudinal research is also needed. Administrative burden may accumulate over time. Citizens who repeatedly fail to navigate digital systems may withdraw from service claims altogether. Cross-sectional data can miss this slow erosion of civic confidence. A longitudinal design would allow researchers to see whether improvements in service design actually reduce burden and strengthen citizenship outcomes.

Conclusion

Digital administrative burden should be understood as a problem of citizenship formation rather than a technical weakness in service delivery. In a digital state, citizens learn the meaning of rights through the procedures they follow, the assistance available to them, and the dignity with which institutions treat them; when vulnerable citizens cannot understand, access, or contest digital services, civic agency itself is weakened. This article has proposed a framework that examines this problem through civic education, Pancasila social justice, and citizenship rights. Marshall's theory clarifies why public services matter for citizenship rights, Sen's capability approach shows why formal entitlement is insufficient without real capacity, and administrative burden theory explains how learning, compliance, and psychological costs render formally available rights practically unreachable. For civic education, the framework shows that digital citizenship encompasses administrative literacy, data responsibility, complaint competence, empathy toward vulnerable citizens, and the courage to question unfair systems, all of which are central to forming *warga negara yang baik* (good citizens) in the digital era. For *Pendidikan Pancasila dan Kewarganegaraan*, simulations, accessibility audits, and community projects can show learners that citizenship is practised whenever people claim services, protect their data, and demand fair treatment. Ultimately, digital government becomes democratic only when it enables citizens to exercise rights with dignity, embodying *Keadilan Sosial bagi Seluruh Rakyat Indonesia* in the design of every public service pathway.

Funding Statement

This research received no specific funding from any government agency, private enterprise, non-governmental organisation, or external funding body. The authors prepared the manuscript independently.

Ethics Approval

This manuscript is a conceptual and methodological article and did not involve direct data collection from human participants. Ethics approval is therefore not applicable at this stage. Any future empirical implementation of the proposed survey must obtain approval or exemption from the relevant research ethics committee before fieldwork begins.

Consent to Participate

Consent to participate is not applicable to this conceptual manuscript because no human participants were recruited. In future fieldwork, all respondents must receive accessible information about the study and provide informed consent before completing the questionnaire or participating in interviews.

References

- Aaroe, L., Baekgaard, M., Christensen, J., & Moynihan, D. P. (2021). Personality and public administration: Policymaker tolerance of administrative burdens in welfare services. *Public Administration Review*, 81(4), 652–663. <https://doi.org/10.1111/puar.13381>
- Armawi, A., & Wahidin, D. (2020). Optimalisasi peran internet dalam mewujudkan digital citizenship dan implikasinya terhadap ketahanan pribadi siswa [Optimising the role of the internet in realising digital citizenship and its implications for students' personal resilience]. *Jurnal Civics: Media Kajian Kewarganegaraan*, 17(1), 29–39. <https://doi.org/10.21831/jc.v17i1.30146>
- Badan Pusat Statistik. (2025). *Statistik telekomunikasi Indonesia 2024* [Telecommunication statistics in Indonesia 2024]. <https://www.bps.go.id/en/publication/2025/08/29/beaa2be400eda6ce6c636ef8/statistik-telekomunikasi-indonesia-2024.html>
- Badan Standar, Kurikulum, dan Asesmen Pendidikan. (2022). *Dimensi, elemen, dan subelemen Profil Pelajar Pancasila pada Kurikulum Merdeka* [Dimensions, elements, and sub-elements of the Pancasila Student Profile in the Emancipated Curriculum]. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.
- Baekgaard, M., & Tankink, T. (2022). Administrative burden: Untangling a bowl of conceptual spaghetti. *Perspectives on Public Management and Governance*, 5(1), 16–21. <https://doi.org/10.1093/ppmgov/gvab027>
- Cao, J., & Ma, L. (2025). Digital transformation, administrative burden, and citizen–state interactions: A case of the Old Age Allowance Policy in China. *Review of Policy Research*. Advance online publication. <https://doi.org/10.1111/ropr.70063>
- Choi, M. (2016). A concept analysis of digital citizenship for democratic citizenship education in the internet age. *Theory & Research in Social Education*, 44(4), 565–607. <https://doi.org/10.1080/00933104.2016.1210549>
- Christensen, J., Aaroe, L., Baekgaard, M., Herd, P., & Moynihan, D. P. (2020). Human capital and administrative burden: The role of cognitive resources in citizen–state interactions. *Public Administration Review*, 80(1), 127–136. <https://doi.org/10.1111/puar.13134>
- Eubanks, V. (2018). *Automating inequality: How high-tech tools profile, police, and punish the poor*. St. Martin's Press.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149–1160. <https://doi.org/10.3758/BRM.41.4.1149>

- Giest, S., & Samuels, A. (2023). Administrative burden in digital public service delivery: The social infrastructure of library programs for e-inclusion. *Review of Policy Research*, 40(5), 626–645. <https://doi.org/10.1111/ropr.12516>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Halling, A., & Baekgaard, M. (2024). Administrative burden in citizen–state interactions: A systematic literature review. *Journal of Public Administration Research and Theory*, 34(2), 180–195. <https://doi.org/10.1093/jopart/muad023>
- Heggertveit, I. (2024). Navigating privacy regulations: Administrative burden of digital self-services for vulnerable citizens. In M. Rohde Johannessen, C. Csaki, L. Danneels, S. Hofmann, T. Lampoltshammer, P. Parycek, G. Schwabe, E. Tambouris, & J. Ubacht (Eds.), *Electronic participation: 16th IFIP WG 8.5 International Conference, ePart 2024* (Lecture Notes in Computer Science, Vol. 14891, pp. 16–30). Springer. https://doi.org/10.1007/978-3-031-70804-6_2
- Heggertveit, I., Lindgren, I., Madsen, C. Ø., & Hofmann, S. (2022). Administrative burden in digital self-service: An empirical study about citizens in need of financial assistance. In R. Krimmer (Ed.), *Electronic participation* (Lecture Notes in Computer Science, Vol. 13392, pp. 173–187). Springer. https://doi.org/10.1007/978-3-031-23213-8_11
- Herd, P., & Moynihan, D. P. (2018). *Administrative burden: Policymaking by other means*. Russell Sage Foundation.
- Higgins, N., Ferri, D., & Donnellan, K. (2022). Enhancing access to digital culture for vulnerable groups: The role of public authorities in breaking down barriers. *International Journal for the Semiotics of Law*, 35, 2087–2106. <https://doi.org/10.1007/s11196-022-09959-6>
- Hofmann, S., Sæbø, Ø., & Rydén, H. H. (2024). Implications of digitalised welfare services from a vulnerable citizens' perspective. *Nordic Welfare Research*, 9(2), 127–141. <https://doi.org/10.18261/nwr.9.2.2>
- Höglund Rydén, H., Hofmann, S., Alonso de Andrade, L. H., & Heggertveit, I. (2024). Mitigating administrative burdens: Understanding the role of intermediaries in co-producing digital self-services. In M. Rohde Johannessen, C. Csaki, L. Danneels, S. Hofmann, T. Lampoltshammer, P. Parycek, G. Schwabe, E. Tambouris, & J. Ubacht (Eds.), *Electronic participation: 16th IFIP WG 8.5 International Conference, ePart 2024* (Lecture Notes in Computer Science, Vol. 14891, pp. 31–46). Springer. https://doi.org/10.1007/978-3-031-70804-6_3
- Indonesia. (2009). Undang-Undang Nomor 25 Tahun 2009 tentang Pelayanan Publik [Law Number 25 of 2009 on Public Services]. <https://peraturan.bpk.go.id/Details/38748/uu-no-25-tahun-2009>
- Indonesia. (2016). Undang-Undang Nomor 8 Tahun 2016 tentang Penyandang Disabilitas [Law Number 8 of 2016 on Persons with Disabilities]. <https://peraturan.bpk.go.id/Details/37251/uu-no-8-tahun-2016>
- Indonesia. (2018). Peraturan Presiden Nomor 95 Tahun 2018 tentang Sistem Pemerintahan Berbasis Elektronik [Presidential Regulation Number 95 of 2018 on the Electronic-Based Government System]. <https://peraturan.go.id/id/perpres-no-95-tahun-2018>
- Isin, E., & Ruppert, E. (2015). *Being digital citizens*. Rowman & Littlefield International.
- Jilke, S., Baekgaard, M., Herd, P., & Moynihan, D. P. (2024). Short and sweet: Measuring experiences of administrative burden. *Journal of Behavioral Public Administration*, 7, 1–12. <https://doi.org/10.30636/jbpa.71.340>

- Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. (2024). Peraturan Menteri Pendidikan, Kebudayaan, Riset, dan Teknologi Nomor 12 Tahun 2024 tentang Kurikulum pada Pendidikan Anak Usia Dini, Jenjang Pendidikan Dasar, dan Jenjang Pendidikan Menengah [Regulation of the Minister of Education, Culture, Research, and Technology Number 12 of 2024 on the Curriculum for Early Childhood, Primary, and Secondary Education]. <https://peraturan.bpk.go.id/Details/281847/permendikbudriset-no-12-tahun-2024>
- Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, 11(4), 1–10. <https://doi.org/10.4018/ijec.2015100101>
- Lindgren, I., Madsen, C. Ø., Rydén, H. H., Heggertveit, I., Hofmann, S., & Sæbø, Ø. (2024). What public services are suitable for digitalization? A classification of public service characteristics. In M. Janssen, J. Cromptvoets, J. R. Gil-Garcia, H. Lee, I. Lindgren, A. Nikiforova, & G. Viale Pereira (Eds.), *Electronic government: 23rd IFIP WG 8.5 International Conference, EGOV 2024* (Lecture Notes in Computer Science, Vol. 14841, pp. 201–217). Springer. https://doi.org/10.1007/978-3-031-70274-7_13
- Liu, H., Zhou, Q., & Liang, S. (2025). Digital inclusion in public services for vulnerable groups: A systematic review for research themes and goal action framework from the lens of public service ecosystem theory. *Government Information Quarterly*, 42(1), Article 101995. <https://doi.org/10.1016/j.giq.2025.101995>
- Madsen, C. Ø., Lindgren, I., & Melin, U. (2022). The accidental caseworker: How digital self-service influences citizens' administrative burden. *Government Information Quarterly*, 39(1), Article 101653. <https://doi.org/10.1016/j.giq.2021.101653>
- Marshall, T. H. (1950). *Citizenship and social class and other essays*. Cambridge University Press.
- Masood, A., & Nisar, M. A. (2021). Administrative capital and citizens' responses to administrative burden. *Journal of Public Administration Research and Theory*, 31(1), 56–72. <https://doi.org/10.1093/jopart/muaa031>
- Mossberger, K., Tolbert, C. J., & McNeal, R. S. (2008). *Digital citizenship: The internet, society, and participation*. MIT Press.
- Moynihan, D. P., Herd, P., & Harvey, H. (2015). Administrative burden: Learning, psychological, and compliance costs in citizen–state interactions. *Journal of Public Administration Research and Theory*, 25(1), 43–69. <https://doi.org/10.1093/jopart/muu009>
- Nabatchi, T., Sancino, A., & Sicilia, M. (2017). Varieties of participation in public services: The who, when, and what of coproduction. *Public Administration Review*, 77(5), 766–776. <https://doi.org/10.1111/puar.12765>
- Ombudsman Republik Indonesia. (2024). *Laporan tahunan Ombudsman Republik Indonesia 2023* [Annual report of the Ombudsman of the Republic of Indonesia 2023]. https://ombudsman.go.id/produk/?c=19&s=SUB_LT_5a1ea951d55c4
- Peeters, R. (2023). Digital administrative burdens: An agenda for analyzing the citizen experience of digital bureaucratic encounters. *Perspectives on Public Management and Governance*, 6(1), 7–13. <https://doi.org/10.1093/ppmgov/gvac024>
- Pereira, G. V., Parycek, P., Falco, E., & Kleinhans, R. (2018). Smart governance in the context of smart cities: A literature review. *Information Polity*, 23(2), 143–162. <https://doi.org/10.3233/IP-170067>

- Pérez-Escolar, M., & Canet, F. (2023). Research on vulnerable people and digital inclusion: Toward a consolidated taxonomical framework. *Universal Access in the Information Society*, 22, 1059–1072. <https://doi.org/10.1007/s10209-022-00867-x>
- Ramadoan, S., Firman, F., Sahrul, S., & Haeril, H. (2024). Optimizing public accessibility: A review of the urgency of e-government for Bima District. *The International Journal of Politics and Sociology Research*, 12(1), 1–9. <https://doi.org/10.35335/ijopsor.v12i1.230>
- Ribble, M. (2015). *Digital citizenship in schools: Nine elements all students should know* (3rd ed.). International Society for Technology in Education.
- Riccucci, N. M., Van Ryzin, G. G., & Jackson, K. (2019). Social equity in public administration: A call to action. *Perspectives on Public Management and Governance*, 2(4), 283–299. <https://doi.org/10.1093/ppmgov/gvz016>
- Rydén, H. H., & de Andrade, L. A. (2023). The hidden costs of digital self-service: Administrative burden, vulnerability and the role of interpersonal aid in Norwegian and Brazilian welfare services. In *Proceedings of the 16th International Conference on Theory and Practice of Electronic Governance* (pp. 473–478). Association for Computing Machinery. <https://doi.org/10.1145/3614321.3614403>
- Scholta, H., & Lindgren, I. (2025). Digital government inclusion: Exploring strategies for inclusive government automation. *Government Information Quarterly*, 42(2), Article 102019. <https://doi.org/10.1016/j.giq.2025.102019>
- Sen, A. (1999). *Development as freedom*. Oxford University Press.
- Torney-Purta, J., Lehmann, R., Oswald, H., & Schulz, W. (2001). *Citizenship and education in twenty-eight countries: Civic knowledge and engagement at age fourteen*. International Association for the Evaluation of Educational Achievement.
- United Nations. (2020). *Roadmap for digital cooperation*. https://www.un.org/en/content/digital-cooperation-roadmap/assets/pdf/Roadmap_for_Digital_Cooperation_EN.pdf
- van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2014). The digital divide shifts to differences in usage. *New Media & Society*, 16(3), 507–526. <https://doi.org/10.1177/1461444813487959>
- van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media & Society*, 21(2), 354–375. <https://doi.org/10.1177/1461444818797082>
- Vogel, D. (2025). Do vulnerable citizens (really) perceive higher bureaucracy costs? Testing a key claim of the administrative burden framework. *Public Administration Review*. Advance online publication. <https://doi.org/10.1111/puar.13932>
- Westheimer, J., & Kahne, J. (2004). What kind of citizen? The politics of educating for democracy. *American Educational Research Journal*, 41(2), 237–269. <https://doi.org/10.3102/00028312041002237>
- Wirtz, B. W., Weyerer, J. C., & Geyer, C. (2019). Artificial intelligence and the public sector: Applications and challenges. *International Journal of Public Administration*, 42(7), 596–615. <https://doi.org/10.1080/01900692.2018.1498103>
- Yusuf, N., Wibowo, A. P., & Budiono, B. (2024). Digital citizenship education: Pancasila as a source of digital ethics in Indonesia. *JED (Jurnal Etika Demokrasi)*, 9(1), 70–83. <https://doi.org/10.26618/jed.v9i1.11721>

