



Policy Strategies to Increase Public Participation through Digital Building Permits in Indonesia: A Qualitative Literature Review of SIMBG/OSS

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Abstract:

This study aims to identify enabling conditions and develop strategies for strengthening public participation through the digitalization of building-permitting services using SIMBG/OSS-RBA. The study employed a qualitative research design with a literature review approach, analyzing peer-reviewed articles, regulations, government documents, and relevant institutional reports published between 2015 and 2025. Data were analyzed using the Miles and Huberman interactive model through data condensation, thematic display, comparison, and conclusion verification. The findings show that meaningful public participation depends on five interconnected dimensions: digital infrastructure and interoperability, public digital literacy, regulatory simplification, information transparency, and responsive e-participation mechanisms. Digitalization improves efficiency, traceability, transparency, and accountability, but technological availability alone does not ensure inclusive participation. The study concludes that SIMBG/OSS-RBA should be developed as an integrated governance instrument rather than merely an administrative platform. The implication is that local governments need to strengthen data integration, operator capacity, digital literacy, accessible information, complaint mechanisms, and participation indicators to create inclusive, transparent, responsive, and accountable building-permitting services.

INTRODUCTION

Digital transformation in government has become increasingly important for improving public services that are transparent, efficient, accountable, and accessible. One strategic service is building permits because they directly concern public safety, spatial order, investment certainty, and the quality of the urban environment. The digitalization of Building Approvals (PBG) and Certificates of Functional Worthiness (SLF) through the Building Management Information System (SIMBG) is expected to simplify procedures and improve information transparency. Regulatory reforms through Law No. 11/2020 and Government Regulation No. 16/2021 have reinforced this direction by promoting integrated digital-based licensing services (Kasuma et al., 2025; Riau et al., 2025). Therefore, digital building permitting is important not only for government institutions but also for citizens as service users and public actors who can contribute to monitoring and improving the quality of public services.

Despite the potential benefits of digital building permitting, citizens continue to face various difficulties in accessing and participating in PBG and SLF processes. These difficulties include limited information about procedures, complex administrative requirements, unequal digital literacy, inadequate technological infrastructure, and weak two-way communication between government and citizens (Atar et al., 2025; Xu & Dai, 2024). Such conditions tend to position citizens merely as service users rather than as stakeholders who can provide input, submit complaints, and monitor government decisions. Public participation is essential to ensure that construction activities comply with regulations and accommodate broader public interests. Salsabila et al. (2025) indicate that limited public participation can contribute to weaker compliance and reduced legitimacy of government decisions. Therefore, the fundamental challenge is not simply how to digitalize building permitting services, but how to ensure that digitalization creates meaningful opportunities for citizens to participate in decision-making, monitoring, and accountability processes.

Field conditions indicate that the implementation of SIMBG as an instrument of PBG digitalization has not been uniform across Indonesian regions. Several studies have found that SIMBG can improve service accessibility and simplify licensing procedures. Still, its implementation continues to face challenges, including limited operator capacity, insufficient training, unclear institutional responsibilities, differences in technological infrastructure, and limited user readiness (Aminudin et al., 2024; Riau et al., 2023). These conditions demonstrate a gap between the design of digital policies and the capacity to implement them at the local level. Furthermore, participation channels such as online consultations, electronic complaints, access to permit-status information, and publication of licensing data have not yet become fully integrated components of the PBG process. Consequently, digitalization may merely transfer administrative procedures into a digital environment without fundamentally transforming government citizen relations toward greater openness, interaction, responsiveness, and public participation (Sundberg & Holmström, 2024; Fan, 2025).

Previous studies demonstrate that digitalized permitting can provide benefits such as faster processing, greater transparency, stronger accountability, and opportunities for spatial-data integration and automated technical verification (Ataide et al., 2023; Noardo et al., 2022). International literature also emphasizes the importance of data interoperability, GIS integration, audit trails, and business-process transformation in improving the effectiveness of digital permitting. However, Bloch and Fauth (2023) argue that digitalization without adequate institutional and human-resource capacity may reinforce inequalities in access and increase administrative burdens. Meanwhile, Indonesian studies on SIMBG have primarily focused on service effectiveness, institutional readiness, operator capacity, and technical-administrative barriers (Aminudin et al., 2024; Riau et al., 2023). Thus, an important research gap remains concerning the explicit relationship between digital building-permitting design and mechanisms for meaningful public participation. Addressing this gap is essential for ensuring that digital transformation produces broader public value.

This limitation is also evident in the literature on e-participation. Previous research suggests that successful digital participation should not be assessed merely by the number of citizens providing input, but also by accessibility, representativeness, interaction quality, responsiveness, and the extent to which public input influences government decisions (Nurhidayat et al., 2024; Noardo et al., 2022). Nevertheless, these principles have rarely been systematically integrated into the context of digital building permitting in Indonesia. Previous studies also tend to rely on individual regional case studies, making it difficult to formulate a comprehensive strategy that local governments

can adapt more broadly (Wadipalapa et al., 2024) This research gap is important because successful digital government should not be measured solely through processing speed or platform usage. It should also be assessed through transparency, responsiveness, inclusiveness, and opportunities for public oversight. Therefore, integrating digital-permitting and e-participation perspectives is necessary to develop a more comprehensive approach to digital building governance.

The novelty of this study lies in developing a strategic framework that connects digital building permitting with enhanced public participation through SIMBG and its integration with the OSS-RBA system. Unlike previous studies that predominantly emphasize technical, administrative, or institutional readiness, this study positions public participation as an important indicator of successful digital transformation in PBG and SLF services. The literature is synthesized to identify critical enabling conditions, including data interoperability and GIS integration, institutional and human-resource capacity, participatory process design, regulatory support, and strategies for addressing the digital divide (Ataide et al., 2023a; Bloch & Fauth, 2023). These conditions are subsequently translated into actionable policy strategies for local governments. This approach is important because digitalization should not merely produce faster and more efficient services, but should also create public services that are inclusive, transparent, responsive, and capable of strengthening citizen oversight and institutional accountability.

Based on these issues, this study addresses how digitalized PBG services through SIMBG/OSS can be designed and used to strengthen public participation in building-permitting processes. The central argument is that digitalization does not automatically increase public participation; rather, meaningful participation can only emerge when technology is supported by institutional arrangements, information transparency, human-resource capacity, data interoperability, and responsive participation mechanisms. Accordingly, this study aims to identify the critical enabling conditions that allow digital permitting to generate meaningful public participation and to formulate implementable strategies for local governments. These strategies include strengthening GIS integration, improving operator capacity, expanding digital literacy, providing online complaint and consultation channels, increasing permit-status transparency, and establishing participatory performance indicators (Nurhidayat et al., 2024). Ultimately, this study seeks to contribute to stronger digital governance and more inclusive public institutions in line with Sustainable Development Goal 16.

RESEARCH METHODS

This study employed a qualitative research design using a literature review approach. This design was selected because the study aims to explore, interpret, and synthesize existing knowledge concerning strategies for increasing public participation through the digitalization of building permits (PBG/SIMBG). A qualitative literature review enables researchers to understand patterns, concepts, challenges, and policy implications from previous studies without relying on statistical measurement (Sugiyono, 2017). The research was conducted through literature sources rather than a physical field location. The literature setting covered Indonesia, with particular attention to studies concerning SIMBG, PBG, OSS-RBA, e-participation, and digital governance. Indonesia was selected as the research context because the digital transformation of building permitting is being implemented nationally and varies across local governments in terms of infrastructure, institutional capacity, and public participation.

Data were collected through systematic literature searching and documentation. The sources consisted of peer-reviewed journal articles, Indonesian laws and regulations, government policy documents, and reports from relevant international institutions

concerning digital building permits, public participation, and digital governance. The literature search focused on publications from 2015 to 2025 in both Indonesian and English. Relevant sources were identified using keywords such as “digital building permit,” “e-permitting,” “SIMBG,” “OSS-RBA,” “public participation,” “e-participation,” and “digital governance.” The selected sources were screened for relevance to the research objectives and scope. Relevant information was then extracted, organized, and documented systematically to facilitate subsequent data analysis.

Data analysis followed the qualitative interactive model of Miles, Huberman and Saldana (1992) consisting of data condensation, data display, and conclusion drawing/verification (Narti & Khamim, 2024). Data condensation was conducted by selecting, simplifying, coding, and categorizing relevant information into themes such as infrastructure and interoperability, digital literacy and inclusion, regulatory transparency, participation mechanisms, and institutional responsiveness. The condensed findings were then displayed through thematic matrices to identify relationships between problems, enabling conditions, and proposed strategies. Verification was conducted by comparing recurring findings across different sources and ensuring that conclusions were supported by adequate evidence. Data validity was strengthened through source triangulation by comparing peer-reviewed articles, Indonesian regulations, government documents, and institutional reports. Consistency checks and iterative peer review of the theme-to-strategy mapping were also conducted to strengthen the credibility and dependability of the findings.

RESULTS AND DISCUSSION

Results

The literature review identifies key themes linking digital building permitting and public participation. SIMBG/OSS-RBA can accelerate licensing, improve transparency, and strengthen accountability, but digitalization alone does not guarantee meaningful participation. Effective participation requires interoperable data, adequate infrastructure, digital literacy, equal access, regulatory clarity, institutional capacity, and responsive e-participation mechanisms. Based on these findings, the study proposes ten policy strategies to strengthen inclusive public participation through digital building permitting.

Strengthening Digital Infrastructure

Strengthening digital infrastructure in SIMBG/OSS-RBA encompasses technological systems, data interoperability, digital connectivity, cybersecurity, audit trails, user-support facilities, and institutional technical capacity. The literature indicates that adequate infrastructure improves the efficiency, transparency, traceability, and consistency of digital building-permitting processes. Hanifah and Frinaldi (2025) and Sendika and Frinaldi (2025) show that digital workflows can reduce face-to-face interaction, shorten processing times, and strengthen administrative traceability, while Atkinson et al. (2022) and Noardo et al. (2022a) emphasize interoperability, standardized data, spatial-data integration, and automated verification. Thus, infrastructure functions not only as a technological facility but also as an institutional mechanism that supports accountability and more effective public services.

However, the literature also demonstrates that infrastructure limitations can restrict both digital service effectiveness and public participation. Jayanthi and Dinaseviani (2022), Nurhidayat et al. (2024a), and Riau et al. (2023) identify inadequate ICT infrastructure, limited connectivity, insufficient equipment, operator capacity, and institutional coordination as significant barriers. These challenges may create new forms

of exclusion, particularly for communities and users with limited digital access. Therefore, infrastructure strengthening should extend beyond investment in technology by incorporating mobile-friendly platforms, helpdesks, assisted submission services, operator training, and inclusive access mechanisms. This finding demonstrates that infrastructure quality functions as an enabling condition for digital transformation rather than as an independent outcome.

Overall, the literature demonstrates a positive relationship between digital infrastructure capacity, service efficiency, transparency, accountability, and opportunities for meaningful public participation. Integrated databases and interoperability reduce repetitive processes, reliable platforms and audit trails strengthen transparency, while trained operators ensure effective implementation (Atkinson et al., 2022; Noardo et al., 2022a; Hanifah & Frinaldi, 2025). Conversely, weak connectivity and limited institutional capacity may reproduce existing administrative problems in digital form (Jayanthi & Dinaseviani, 2022; Riau et al., 2023). Therefore, strengthening infrastructure should follow an integrated model comprising interoperability, reliable technology, human-resource capacity, cybersecurity, institutional coordination, and inclusive access to ensure that SIMBG/OSS-RBA becomes an efficient, transparent, accountable, and participatory public-service system.

Table 1. Strengthening Digital Infrastructure

Source	Evidence/Statement from Literature	Indicator
Atkinson et al. (2022)	Digital building-permitting systems can support data integration and improve the efficiency of regulatory processes.	Data integration and digital interoperability
Noardo et al. (2022)	Digital permitting can facilitate interoperability, spatial-data integration, automated checking, and traceable workflows.	GIS integration, interoperability, automation
Hanifah & Frinaldi (2025)	SIMBG-based online workflows can reduce face-to-face interaction and improve transparency through digital processes.	Online service efficiency and transparency
Sendika & Frinaldi (2025)	Digital workflows can support faster service delivery and traceability of administrative processes.	Processing time and audit trail
Jayanthi & Dinaseviani (2022)	Digital public services face infrastructure and accessibility challenges in areas with limited technological resources.	ICT infrastructure and accessibility
Nurhidayat et al. (2024a)	Digital participation requires accessibility, digital literacy, and mechanisms that allow citizens to engage with government.	Digital inclusion and e-participation
Riau et al. (2023)	SIMBG implementation is constrained by operator capacity, ICT infrastructure, and institutional coordination.	Operator capacity and institutional readiness

Table 1 explains that strengthening digital infrastructure is a multidimensional factor in improving the implementation of digital building permits through SIMBG/OSS-RBA. Atkinson et al. (2022) and Noardo et al. (2022a) emphasize interoperability and data integration, while Hanifah and Frinaldi (2025) and Sendika and Frinaldi (2025) highlight improved efficiency, reduced face-to-face interaction, and digital traceability. However, Jayanthi and Dinaseviani (2022), Nurhidayat et al. (2024), and Riau et al. (2023) demonstrate that infrastructure gaps, unequal access, limited digital literacy, operator capacity, and weak coordination remain significant barriers. Therefore, Table 1 shows that infrastructure strengthening requires more than technological investment; it must integrate interoperability, cybersecurity, human resource development, institutional coordination, user assistance, and inclusive access. These elements are essential for

transforming SIMBG/OSS-RBA into an efficient, transparent, accountable, and participatory public-service system.

Improving Public Digital Literacy

Improving public digital literacy in SIMBG/OSS-RBA refers to strengthening citizens’ knowledge, skills, confidence, and ability to access and use digital building-permitting services. Digital literacy includes understanding PBG procedures, navigating digital platforms, completing applications, accessing information, monitoring application status, and using consultation, feedback, and complaint mechanisms. The literature indicates that digital literacy is an important enabling condition for meaningful public participation because citizens who understand digital procedures are more capable of engaging with government services beyond basic administrative submission (Saputra et al., 2022; Mawardi Syam et al., 2023; Suhendra, 2021). Thus, digital literacy functions as a foundation for transforming citizens from passive service users into active participants in PBG and SLF governance.

The reviewed studies demonstrate that citizens’ ability to participate is closely related to the availability of guidance, outreach, and practical assistance. Saputra et al. (2022) emphasize the importance of procedural understanding and platform responsiveness, while Mawardi Syam et al. (2023) and Suhendra (2021) highlight community assistance, step-by-step guidance, and training in encouraging digital-service adoption. Without adequate support, citizens may use SIMBG only to submit applications, without utilizing consultation, monitoring, or complaint mechanisms. Therefore, local governments should provide simplified manuals, training programs, user assistance, SIMBG clinics, mobile-friendly guidance, and hybrid services to improve citizens’ confidence and ability to participate actively.

The literature also shows that digital literacy must address unequal technological capacities among different social groups. Jayanthi and Dinaseviani (2022) demonstrate that limited digital skills, inadequate connectivity, and restricted access to digital devices can create digital inequality and exclude vulnerable users from electronic public services. Consequently, digital literacy should not be treated solely as an individual responsibility but also as part of the government’s inclusive service strategy. Community-based training, assisted submission, accessible interfaces, and alternative service channels are necessary to ensure that citizens with different levels of technological competence can access and participate in SIMBG/OSS-RBA equally.

Overall, the findings reveal three interconnected patterns: digital literacy improves users’ ability to navigate SIMBG/OSS-RBA, practical guidance increases confidence and adoption, and inclusive literacy programs can reduce the digital divide (Saputra et al., 2022; Mawardi Syam et al., 2023; Suhendra, 2021; Jayanthi & Dinaseviani, 2022). Digital literacy therefore functions as a bridge between technological availability and meaningful public participation. The availability of digital participation features alone is insufficient if citizens lack the knowledge and confidence to use them. Accordingly, strengthening public digital literacy should become an integral component of local-government strategies to create accessible, inclusive, responsive, and participatory digital building-permitting services.

Table 2. Improving Public Digital Literacy

Source	Evidence/Statement from Literature	Indicator
Saputra et al. (2022)	Citizen participation increases when users understand digital-service procedures and perceive the platform as accessible and responsive.	Understanding of procedures; ease of use; responsiveness
Mawardi Syam	Outreach and community assistance can encourage	Outreach; community

et al. (2023)	citizens to adopt and use digital government services.	assistance; digital-service adoption
Suhendra (2021)	Step-by-step guidance and user support contribute to the utilization of e-government services.	User guidance; technical assistance; user capability
Jayanthi & Dinaseviani (2022)	Digital literacy is important for reducing digital inequality and ensuring vulnerable groups can access digital services.	Digital inclusion; digital literacy; equal access
Saputra et al. (2022)	Users who understand digital procedures have greater opportunities to engage beyond basic administrative submission.	Consultation; monitoring; complaint participation
Mawardi Syam et al. (2023)	Community-based assistance can facilitate the transition from conventional to digital public services.	Community training; assisted digital services
Jayanthi & Dinaseviani (2022)	Mobile and alternative access mechanisms are needed where digital infrastructure and skills remain limited.	Mobile accessibility; hybrid/offline assistance

Table 2 shows that public digital literacy is a critical factor in enabling meaningful participation through SIMBG/OSS-RBA. Saputra et al. (2022), Mawardi Syam et al. (2023), and Suhendra (2021) indicate that citizens need procedural understanding, practical skills, guidance, and assistance to move beyond basic application submission toward consultation, monitoring, and complaint mechanisms. Jayanthi and Dinaseviani (2022) further demonstrate that limited digital skills, connectivity, and device access can create exclusion. Therefore, digital literacy must be integrated with inclusive service strategies, including training, simplified manuals, SIMBG clinics, mobile-friendly interfaces, and hybrid assistance. The table demonstrates that digital literacy is not merely an individual capability but a government responsibility that can strengthen accessibility, participation, responsiveness, and inclusion in digital building-permitting services.

Simplified Regulations and Information Transparency

Simplified regulations and information transparency refer to the availability of clear, consistent, accessible, and publicly disclosed information concerning building-permitting requirements, procedures, fees, processing times, service standards, and application status. In the context of SIMBG/OSS-RBA, these aspects are operationalized through standardized requirements, transparent service costs, expected processing periods, digital application tracking, and accessible procedural information. Clear regulatory and service information can reduce uncertainty, minimize administrative confusion, and strengthen citizens' trust in government institutions (E. Setiawan et al., 2021). Therefore, regulatory simplification and information transparency are important conditions for enabling citizens to understand the permitting process and exercise effective oversight of PBG and SLF services.

The reviewed literature indicates that transparency in digital licensing can strengthen accountability by allowing citizens to compare actual service performance with established standards. E. Setiawan et al. (2021) emphasize that transparent information regarding requirements, fees, processing times, and application procedures can reduce uncertainty and increase public trust. In SIMBG/OSS-RBA, publishing permit requirements and application status through digital platforms or dashboards enables users to monitor their applications without relying entirely on direct interaction with government officials. Thus, transparency should not be understood merely as information disclosure, but also as an accountability mechanism that provides citizens with opportunities to monitor government performance and identify potential administrative irregularities.

The literature further demonstrates that transparency must be accompanied by regulatory simplification. Complex, overlapping, or ambiguous requirements may prevent citizens from understanding the permitting process even when information is digitally available. Therefore, SIMBG/OSS-RBA should provide standardized procedures, clear service standards, consistent information across government agencies, and user-oriented explanations of requirements, costs, processing times, and application status. Regulatory simplification makes information easier to understand, while transparency makes government implementation easier to monitor. Together, these elements can create more predictable, accessible, and accountable digital permitting services.

Overall, the findings show that simplified regulations and transparent digital information are complementary factors in strengthening public participation and accountability. Digital building permitting becomes more effective when citizens can easily understand requirements, monitor application progress, access service standards, and identify follow-up procedures. The relationship between regulatory clarity, transparency, accountability, and public trust indicates that SIMBG/OSS-RBA should function not only as a platform for submitting applications but also as an information and public-oversight mechanism. Consequently, simplifying regulations and improving information transparency can reduce uncertainty, strengthen public trust, and provide greater opportunities for citizens to monitor and participate in PBG/SLF implementation (E. Setiawan et al., 2021).

Table 3. Simplified Regulations and Information Transparency

Source	Evidence/Statement from Literature	Indicator
E. Setiawan et al. (2021)	Transparent service standards reduce uncertainty and strengthen public trust in digital licensing services.	Regulatory clarity; service transparency
E. Setiawan et al. (2021)	Publication of requirements, fees, processing times, and application status supports accountability.	Requirements; fees; processing time; application tracking
E. Setiawan et al. (2021)	Digital information enables users to monitor service implementation and government performance.	Public monitoring; accountability
E. Setiawan et al. (2021)	Clear service standards can improve predictability in licensing processes.	Service standards; predictability

Table 3 explains that simplified regulations and information transparency are important factors in improving the effectiveness and accountability of digital building-permitting services. Findings from E. Setiawan et al. (2021) show that clear service standards, transparent requirements, fees, processing times, and application status information can reduce uncertainty and strengthen public trust. Furthermore, accessible digital information enables citizens to monitor government performance and assess whether services are implemented according to established standards. Therefore, Table 1 demonstrates that regulatory clarity and information transparency not only facilitate public understanding but also create opportunities for citizen oversight, increase service predictability, and strengthen accountability in digital building-permitting processes.

Public Participation in E-Government

Public participation in e-government refers to citizens' involvement in digital government processes through access to information, consultation, feedback, complaints, monitoring, and interaction with public institutions. In the context of digital building permitting, e-participation can be implemented through public dashboards, online consultations, electronic complaints or whistleblowing channels, feedback mechanisms, and access to PBG and SLF information. A. Setiawan et al. (2021) indicate

that user-oriented digital services can strengthen government responsiveness and public trust. Therefore, e-participation should not be understood merely as citizens' interaction with digital platforms, but as their ability to access information, monitor processes, provide input, and influence government actions through accessible and responsive digital mechanisms.

The reviewed literature demonstrates that digital participation mechanisms can broaden opportunities for citizen–government interaction and strengthen transparency. A. Setiawan et al. (2021) emphasize the importance of public dashboards, accessible procedural information, electronic complaints, and feedback channels, while Oh et al. (2019), Tamrin et al. (2024), and Lubis et al. (2024) indicate that online participation can expand engagement compared with conventional systems. However, the effectiveness of these mechanisms depends on government responsiveness. When complaints or feedback receive no explanation, follow-up, or resolution, e-participation may become merely symbolic. Therefore, SIMBG/OSS-RBA requires a functioning feedback loop in which citizen input is recorded, processed, responded to, and, when appropriate, incorporated into government decisions or enforcement actions.

Meaningful participation should also be assessed based on its quality rather than merely the number of interactions. Luluk Harida Budianti (2018) and Gao et al. (2024) emphasize that meaningful participation requires accessibility, representativeness, and demonstrable influence on decision-making processes. Thus, a high number of complaints or online interactions does not necessarily indicate successful participation if certain groups dominate the process or citizen input has no visible consequences. Accordingly, SIMBG/OSS-RBA should establish measurable participation indicators covering accessibility, representativeness, responsiveness, response time, and the influence of public input on government decisions or enforcement actions.

Overall, the findings indicate that effective e-participation requires more than providing digital communication channels; it requires accessible platforms, responsive institutions, and clear consequences for citizen input. Public dashboards, consultation mechanisms, feedback channels, and electronic complaints can strengthen transparency and participation when they are connected to concrete government actions. The absence of follow-up, conversely, can weaken public trust and discourage future participation. Therefore, responsiveness becomes the central link between digital access and meaningful participation. The implementation of e-participation through SIMBG/OSS-RBA should consequently be supported by clear follow-up procedures, response-time standards, and measurable performance indicators to ensure that citizen involvement contributes to transparent, accountable, and participatory building-permitting governance.

Table 4. Public Participation in E-Government

Source	Evidence/Statement from Literature	Indicator
A. Setiawan et al. (2021)	Digital public dashboards, procedural information, complaints, and feedback channels can strengthen citizen engagement.	Public dashboard; e-complaints; feedback
Oh et al. (2019)	Online participation mechanisms can broaden citizen engagement and strengthen transparency.	Digital participation; transparency
Tamrin et al. (2024)	E-government participation mechanisms can improve interaction between citizens and government.	Citizen–government interaction
Lubis et al. (2024)	Digital participation is more effective when government responds to citizen input.	Responsiveness; feedback loop
Luluk Harida Budianti (2018)	Participation quality should consider accessibility and representativeness.	Accessibility; representativeness
Gao et al. (2024)	Meaningful participation requires demonstrable influence on decisions or government actions.	Policy influence; enforcement impact

Table 4 shows that public participation in e-government can be strengthened through accessible digital mechanisms, including public dashboards, e-complaints, feedback channels, and online participation platforms. The findings indicate that digital participation not only expands citizen engagement but also improves transparency and interaction between citizens and government. However, meaningful participation depends on government responsiveness, accessibility, representativeness, and the extent to which citizen input influences decisions or enforcement actions. Therefore, Table 4 demonstrates that effective e-participation requires more than providing digital channels; it requires responsive government institutions that transform citizen input into concrete follow-up and accountable actions.

Discussion

The findings of this study show that strengthening digital infrastructure, digital literacy, regulatory simplification, information transparency, and e-participation are interconnected factors in increasing public participation through SIMBG/OSS-RBA. This finding is consistent with Atkinson et al. (2022) and Noardo et al. (2022a), who emphasize interoperability, data integration, and automation as foundations of effective digital permitting. Similar findings are also reported by Hanifah and Frinaldi (2025) and Riau et al. (2023), who demonstrate that SIMBG implementation is influenced by infrastructure, operator capacity, and institutional coordination. However, this study extends previous findings by positioning infrastructure not merely as a technical requirement but as a prerequisite for creating public access, transparency, and participation. Thus, digitalization is understood as a governance transformation rather than simply the conversion of manual services into digital platforms.

The findings concerning digital literacy reinforce the studies of Saputra et al. (2022), Mawardi Syam et al. (2023), Suhendra (2021), and Jayanthi and Dinaseviani (2022), which demonstrate that users' knowledge, skills, and access to assistance determine the successful adoption of digital services. This study finds that citizens need more than the ability to submit PBG applications; they must also understand consultation, monitoring, complaint, and feedback mechanisms. This finding is consistent with previous literature while providing additional emphasis on the relationship between digital literacy and the quality of participation. Theoretically, the findings strengthen the digital governance perspective that successful digital transformation depends on the interaction between technology, human capacity, and institutional capacity. Practically, local governments need to provide training, simplified guidelines, assistance services, and hybrid mechanisms so that digitalization does not create new forms of exclusion among groups with limited digital access and technological skills.

Furthermore, the findings concerning regulatory simplification and information transparency are consistent with E. Setiawan et al. (2021), who emphasize that clear requirements, fees, processing times, and application-status information can reduce uncertainty and increase public trust. This study finds that transparency has a broader function as an instrument of accountability and public oversight. Citizens need information not only to complete applications but also to assess government performance and monitor service implementation. Theoretically, this finding implies that digital transparency should be understood as part of participatory governance rather than merely administrative disclosure. Practically, local governments need to provide information that is simple, consistent, accessible, and regularly updated. The contribution of this study lies in integrating regulatory clarity, transparency, and public participation

within a digital building-permitting framework oriented toward public accountability. Therefore, transparent information can simultaneously facilitate service access, strengthen trust, and create opportunities for citizen oversight.

The findings concerning e-participation are consistent with A. Setiawan et al. (2021), Oh et al. (2019), Tamrin et al. (2024), and Lubis et al. (2024), who show that public dashboards, electronic complaints, and feedback channels can expand interaction between government and citizens. However, this study emphasizes that the existence of participation channels does not automatically produce meaningful participation. This finding reinforces Luluk Harida Budianti (2018) and Gao et al. (2024), who argue that participation quality should be assessed through accessibility, representativeness, government responsiveness, and influence on decisions. Theoretically, the findings extend the concept of e-participation from simple digital interaction toward a participation cycle involving access, input, government response, follow-up, and impact. Practically, governments should establish response-time standards, complaint follow-up procedures, and participation indicators so that citizens can observe the concrete consequences of their involvement in PBG/SLF processes. This approach can strengthen trust and institutional legitimacy.

Overall, this study contributes by integrating the findings of previous literature into a framework that connects technological capacity, citizen capacity, regulatory transparency, and participation mechanisms. Unlike previous studies that tend to examine SIMBG effectiveness, institutional readiness, or technical barriers separately, this study demonstrates that increasing public participation requires an ecosystem approach, interoperability provides the technological foundation, digital literacy provides user capacity, transparency creates trust and oversight opportunities, while e-participation connects citizens with government decision-making processes (Firtin et al., 2026; Molobela, 2025). The practical implication is that local governments should implement an integrated strategy through the ten proposed policies, including data integration, audit trails, digital literacy programs, helpdesks, regulatory simplification, public dashboards, electronic complaints, and participation indicators. The main contribution of this study is therefore a policy-oriented framework for transforming SIMBG/OSS-RBA from an administrative digital platform into an inclusive, transparent, responsive, accountable, and participatory digital governance instrument.

CONCLUSION

This study concludes that digitalization of building-permitting services through SIMBG/OSS-RBA can strengthen public participation only when supported by adequate digital infrastructure, public digital literacy, regulatory simplification, information transparency, institutional capacity, and responsive e-participation mechanisms. The key lesson is that digital transformation should not be understood merely as technological modernization, but as a governance process that creates accessible, transparent, and accountable relationships between government and citizens. The main scholarly contribution of this study lies in integrating technological, institutional, regulatory, and participatory dimensions into a policy-oriented framework and proposing ten actionable strategies for strengthening public participation in digital building permitting. Nevertheless, this study is limited by its reliance on secondary literature and policy documents, without direct empirical observation, interviews, or quantitative measurement of participation outcomes across regions. Future research should therefore conduct comparative empirical studies across local governments, examine actual SIMBG user experiences, measure trust and participation quality, and utilize operational data to evaluate the effectiveness of the proposed strategies.

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REFERENCES

- Aminudin, Suryani BB, & Suci Nurzakinah. (2024). Transformasi E-Government Dalam Persetujuan Bangunan Gedung. *Journal Publicuho*, 7(2), 765–799. <https://doi.org/10.35817/publicuho.v7i2.432>
- Ataide, M., Brahल्ली, O., & Siegele, D. (2023). Digital Transformation of Building Permits: Current Status, Maturity, and Future Prospects. *Buildings*, 13(10), 2554. <https://doi.org/10.3390/buildings13102554>
- Atar, E., Güler, F., & Usta, Y. (2025). Digital Transformation in Local Governance: A Study on Opportunities and Challenges in Türkiye. *Transforming Government: People, Process and Policy*. <https://doi.org/10.1108/TG-03-2025-0053>
- Atkinson, R. A., Zaborowski, P., Noardo, F., & Simonis, I. (2022). Smart Cities - Systems of Systems Interoperability and OGC Enablers. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, X-4/W3-2022, 19–26. <https://doi.org/10.5194/isprs-annals-X-4-W3-2022-19-2022>
- Bloch, T., & Fauth, J. (2023). The Unbalanced Research on Digitalization and Automation of the Building Permitting Process. *Advanced Engineering Informatics*, 58, 102188. <https://doi.org/10.1016/j.aei.2023.102188>
- Fan, Y. (2025). The Role of Artificial Intelligence in the Digital Transformation of Government: Opportunities and Ethical Challenges. *Frontiers in Public Health*, 13, 1694996. <https://doi.org/10.3389/fpubh.2025.1694996>
- Firtin, C. E., Akyuz, M., Bilbil, E. T., & Karkin, N. (2026). Digital Accountability through E-Participation: The Moderating Role of the Digital Divide. *Public Money & Management*, 46(5), 610–622. <https://doi.org/10.1080/09540962.2025.2573784>
- Gao, Q., Huang, Y., Zerhouni, E. G., & Zheng, Y. (2024). How to Improve Citizen Engagement on Public Service Platforms? The Impact of Government Responsiveness. <https://doi.org/10.2139/ssrn.4963536>
- Hanifah, Z., & Frinaldi, A. (2025). Inovasi Budaya Organisasi di Sektor Publik: Strategi Adaptasi terhadap Disrupsi Digital. *Social: Jurnal Inovasi Pendidikan IPS*, 5(2), 296–305. <https://doi.org/10.51878/social.v5i2.5377>
- Jayanthi, R., & Dinaseviani, A. (2022). Kesenjangan Digital dan Solusi yang Diterapkan di Indonesia Selama Pandemi COVID-19. *JURNAL IPTEKKOM Jurnal Ilmu Pengetahuan & Teknologi Informasi*, 24(2), 187–200. <https://doi.org/10.17933/iptekkom.24.2.2022.187-200>
- Kasuma, Moh. R. S., Djafar, L., & Mozin, N. (2025). Efektivitas Pelayanan Publik Izin Mendirikan Bangunan di Dinas PUPR Kota Gorontalo. *KNOWLEDGE: Jurnal Inovasi Hasil Penelitian dan Pengembangan*, 5(2), 402–408. <https://doi.org/10.51878/knowledge.v5i2.5590>
- Lubis, S., Purnomo, E. P., Lado, J. A., & Hung, C.-F. (2024). Electronic Governance in Advancing Sustainable Development Goals through Systematic Literature Review. *Discover Global Society*, 2(1), 77. <https://doi.org/10.1007/s44282-024-00102-3>

- Luluk Harida Budianti. (2018). Identification of Public Satisfaction on Quality of Website Design Online Musrenbang of Surabaya City Related to Participatory Planning Process. *International Journal of Engineering Research and*, V7(07). <https://doi.org/10.17577/IJERTV7IS070085>
- Mawardi Syam, B., Sutisna, S., Kurniadi, A., & Kusuma. (2023). The Role of Digital Literacy Capability of Babinsa Kodim 0705/Magelang to Improve Community Preparedness for Natural Disasters. *E3S Web of Conferences*, 464, 04001. <https://doi.org/10.1051/e3sconf/202346404001>
- Molobela, T. (2025). Implementing E-Participation Platforms to Enhance Citizen Engagement and Participation within South African Municipalities. *JeDEM - EJournal of eDemocracy and Open Government*, 17(1), 80–103. <https://doi.org/10.29379/jedem.v17i1.953>
- Narti, W., & Khamim, S. (2024). Implementation of Islamic Spiritual (Rohis) Extracurricular Activities in Cultivating Students' Religious Character: A Qualitative Case Study at an Indonesian Public Senior High School. *Jurnal Ilmu Pendidikan dan Sosial*, 3(2), 166–175. <https://doi.org/10.58540/jipsi.v3i2.1603>
- Noardo, F., Guler, D., Fauth, J., Malacarne, G., Mastrolembu Ventura, S., Azenha, M., Olsson, P.-O., & Senger, L. (2022a). Unveiling the Actual Progress of Digital Building Permit: Getting Awareness through a Critical State of the Art Review. *Building and Environment*, 213, 108854. <https://doi.org/10.1016/j.buildenv.2022.108854>
- Nurhidayat, N., Nurmandi, A., & Congge, U. (2024a). Bridging the Digital Divide: Analyzing Public Participation in Indonesia's E-Government through the E-Participation Index. *Otoritas: Jurnal Ilmu Pemerintahan*, 14(2), 481–498. <https://doi.org/10.26618/ojip.v14i2.14435>
- Oh, Y., Jeong, S., & Shin, H. (2019). A Strategy for a Sustainable Local Government: Are Participatory Governments More Efficient, Effective, and Equitable in the Budget Process? *Sustainability*, 11(19), 5312. <https://doi.org/10.3390/su11195312>
- Rachman, T., & Napitupulu, D. (2020). The Quality of Public Participation in E-Government through Citizen Acceptance Factors. *International Journal of Innovation, Creativity and Change*, 12(5), 340–351.
- Riau, D. P., Akadira, T., & Diana, B. A. (2023). Improvement Licensing Services Based Digital on Building Management Information System (SIMBG). *KnE Social Sciences*, 2023, 414–429. <https://doi.org/10.18502/kss.v8i5.13014>
- Riau, D. P., Sunarya, A., & Diana, B. A. (2025). Optimization of Technical Service Capacity in Increasing Public Participation in the Administration of Building Functional Certificates. *International Journal of Sustainable Development and Planning*, 20(2), 667–681. <https://doi.org/10.18280/ijstdp.200217>
- Riau, D. P., Thaha, A. R., Wulandari, F. R., Pamungkas, G. B., & Koespiadi. (2025). Urban Building Safety through Public Participation and Digital Governance in Indonesia. *International Journal of Safety and Security Engineering*, 15(7), 1501–1508. <https://doi.org/10.18280/ijssse.150717>
- Salsabila, B. P., Nadia, N., Putri, S. A., & Ni'mah, P. (2025). Evolusi Regulasi Izin Mendirikan Bangunan (IMB) di Indonesia: Dari IMB ke Persetujuan Bangunan Gedung (PBG). *Jurnal Kajian Hukum dan Kebijakan Publik*, 2(2), 1032–1036. <https://doi.org/10.62379/fefvks02>

- Saputra, D., Assaf, R. A., & Achmad, A. Z. (2022). Enhancing Community Participation in Public Services through Participatory Innovation. *Jurnal Ilmiah Ilmu Administrasi Publik*, 12(2), 677. <https://doi.org/10.26858/jiap.v13i1.45357>
- Sendika, M., & Frinaldi, A. (2025). Transformasi Budaya Organisasi di Sektor Publik: Inovasi Menuju Pelayanan Publik yang Lebih Responsif. *Social: Jurnal Inovasi Pendidikan IPS*, 5(2), 371–380. <https://doi.org/10.51878/social.v5i2.5376>
- Setiawan, A., Alexandri, M. B., & Candradewini, C. (2021). Implementasi Program GAMPIL (Gadget Mobile Application for Licence) di Kota Bandung. *Responsive*, 4(4), 195. <https://doi.org/10.24198/responsive.v4i4.34740>
- Setiawan, E., Winarno, W. W., & Fudholi, D. H. (2021). Analisis Faktor Penerimaan Layanan E-Government dengan Menggunakan Model UTAUT2 dan GAM di Kabupaten Gunungkidul. *Jurnal Media Informatika Budidarma*, 5(1), 34. <https://doi.org/10.30865/mib.v5i1.2565>
- Suhendra, A. (2021). Electronic Licensing as a Solution to Licensing Process Problems in Siak and Karo District. *International Journal of Regional Innovation*, 1(3), 1–7. <https://doi.org/10.52000/ijori.v1i3.19>
- Sundberg, L., & Holmström, J. (2024). Citizen-Centricity in Digital Government Research: A Literature Review and Integrative Framework. *Information Polity*, 29(1), 55–72. <https://doi.org/10.3233/IP-220047>
- Tamrin, U., Ibrahim, I., & Syam, S. (2024). Penerapan Good Governance di Desa Patongloan Kecamatan Baroko Kabupaten Enrekang. *CENDEKIA: Jurnal Ilmu Pengetahuan*, 4(1), 1–9. <https://doi.org/10.51878/cendekia.v4i1.2709>
- Wadipalapa, R. P., Katharina, R., Nainggolan, P. P., Aminah, S., Apriani, T., Ma'rifah, D., & Anisah, A. L. (2024). An Ambitious Artificial Intelligence Policy in a Decentralised Governance System: Evidence from Indonesia. *Journal of Current Southeast Asian Affairs*, 43(1), 65–93. <https://doi.org/10.1177/18681034231226393>
- Xu, X., & Dai, M. (2024). Evaluation of Local Government Digital Governance Ability and Sustainable Development: A Case Study of Hunan Province. *Sustainability*, 16(14), 6084. <https://doi.org/10.3390/su16146084>