



Technical service capacity, SIMBG adoption, and public participation in SLF administration: Evidence from Malang Regency and Batu City

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ABSTRACT

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SLF management.

This study aims to analyze the influence of technical service capacity, including human resources and communication, on SIMBG adoption, examine the effects of public participation on SIMBG use and SLF service quality, assess the mediating role of SIMBG in improving licensing outcomes, and identify institutional barriers to SLF administration in Malang Regency and Batu City, East Java. The mixed-methods approach included a quantitative survey of 200 SLF applicants (analyzed using PLS-SEM via SmartPLS) with qualitative data from interviews, focus group discussions, observations, and documents, ensuring triangulation for strong validity. The findings indicate that SIMBG implementation significantly improves SLF service quality ($\beta=0.458$, $p<0.001$) and mediates the relationship between capacity factors and service outcomes. Community participation has a direct effect ($\beta=0.336$, $p<0.001$) and an indirect effect through SIMBG ($\beta=0.212$, $p=0.035$), while human resources have a weak direct effect ($\beta=0.104$, $p=0.222$). The model's R^2 value is high (SIMBG: 0.653; service quality: 0.682), confirming the TOE framework. Practically, recommendations include human resources training, SIMBG improvement, intensive outreach through digital media and community forums, a flexible organizational structure, and multi-stakeholder coordination to optimize the SLF process, encourage compliance, and can be replicated in similar areas.

Contribution/Originality: This study contributes to the existing literature by integrating public participation, technical service capacity, and SIMBG-based digital governance in SLF administration. This study uses a new PLS-SEM mixed-method estimation approach. This study is one of the very few examining SIMBG mediation effects. The paper's primary contribution is evidence that SIMBG adoption significantly improves SLF service quality and public participation.

1. INTRODUCTION

In Law Number 11 of 2020 concerning Job Creation, Law Number 1 of 2013 concerning Flats, Law Number 28 of 2002 concerning Buildings, and Government Regulation Number 16 of 2021 concerning Buildings. Buildings must have a certificate of functional feasibility as a guarantee of utilization and habitability. The current condition of public business buildings SLF has become a credit guarantee for business buildings such as hotels, hospitals, factories, housing, and others. Although residential buildings are still not an obligation due to the urgency of their benefits (Hamdani, Fauzia, & Wahid, 2023).

According to data from the Ministry of Public Works and Public Housing (PUPR) in June 2022, 16,108 building users in Indonesia submitted SLF applications, and 3,827, or 11.47%, had already been issued SLFs. Meanwhile, according to 2025 data, according to Google Maps, Batu City had 402,529 buildings. Only 86 buildings had SLFs between 2023 and 2025. In Malang Regency, of the 1,060,014 buildings, only 155 had SLFs.

Merilee Grindle, in her study of bureaucratic reform and public policy in developing countries, stated that institutional capacity is key to realizing an effective bureaucracy. She emphasized that: "Capacity is critical to performance. Without adequate organizational capacity, even the best-designed policies and reforms will fail". Anderson emphasizes the effective execution of public organization, encompassing structure, resources, leadership, and personnel competency, in her book *Public Policy Making* (Djani, 2022).

The ability of the implementing organization, which includes a number of crucial elements like structure, resources, leadership, and staff competency, is crucial to the implementation of public policy. In this situation, organizational structure plays a crucial role in determining how well policies are implemented. According to Roberto (2004) organizational capacity is made up of interconnected components, such as a suitable organizational structure and the financial and human resources required for successful policy implementation (Roberto, 2004). Implementing policies will face numerous challenges in the absence of a clear framework and sufficient resources (Riau, Thaha, Wulandari, Pamungkas, & Koespiadi, 2025).

The dynamic relationship between digital change and community participation in the context of public engagement was explored in an earlier study on public participation by Mannayong, Muh. Rizal, Herling, and Faisal (2024). There is a growing need to emphasize how these technological advancements might improve public involvement as digital technologies are increasingly integrated across numerous sectors. The study's conclusions emphasize how important digital platforms, such as social media, online forums, and mobile applications, are in promoting direct communication between citizens and governmental organizations. Additionally, the study shows that successful digital transformation not only broadens the scope of public projects but also gives citizens the ability to voice their thoughts, offer suggestions, and actively participate in the policy-making process. This research contributes to a deeper understanding of the potential of digital transformation to reshape the landscape of public engagement, ultimately promoting a more participatory and inclusive democratic society (Mannayong et al., 2024).

Research conducted by Nurani R This research aims to find out and describe in detail the Capacity of the One-Stop Integrated Investment and Licensing Service (DPMPSTSP) in Providing Building Permit Services (IMB) in Tebing Tinggi City. The results of the study indicate that the Capacity of the One-Stop Integrated Investment and Licensing Service (DPMPSTSP) in Providing Building Permit Services (IMB) in Tebing Tinggi City is still not optimal in its services. This can be seen from the need to improve the quality of human resources; infrastructure, technology, and financial resources are expected to be able to maintain facilities, strategic leadership has not been carried out optimally, programs and process management have not been effective, and relationships and cooperation with other parties can be maintained their relationships (Rindu, 2024).

Research conducted by Aminudin, Suryani, Kambolong, and Nurzakinah (2024). This research aims to determine the application of e-government in building approval services through SIMBG at the Kendari City Investment and One-Stop Integrated Services Service. Building Approval Services through SIMBG at the Kendari City One-Stop Integrated Services and Investment Service can be seen from: 1) Physical evidence of the availability of good and adequate public service locations. 2) The Reliability Dimension (reliability) of the Kendari City one-stop capital investment and service department is still not in accordance with applicable regulations and SOPs. 3) Responsiveness, which is still not good, can be seen from the lack of response from employees to complaints or complaints from the public about services related to the PBG permit application process through SIMBG. 4) The insurance dimension is good, as seen from the existence of several guarantees, namely data and document security guarantees, PBG document authenticity guarantees, and service guarantees. 5) Empathy, this can be seen from the lack of professionalism of employees towards applicants regarding PBG services through SIMBG (Aminudin et al., 2024).

The formulation of the problem based on the description above can be stated as follows: How is the Optimization of the Capacity of Technical Services in Increasing Public Participation in the Administration of Building Functional Certificates? While the purpose of this study is to study and analyze the Capacity of Technical Services in increasing Public Participation in the administration of Building Functional Certificates in Batu City and Malang Regency, East Java Province.

Despite the mandatory status of the Certificate of Functional Worthiness (SLF), empirical evidence shows that SLF ownership remains extremely low in many Indonesian regions, including Malang Regency and Batu City. This gap is driven by limited technical service capacity, weak public participation, and suboptimal utilization of the Building Management Information System (SIMBG). Existing studies largely focus on Building Approval (PBG) services, while empirical research examining SLF administration, particularly the mediating role of SIMBG and public participation, remains scarce. Accordingly, this study is guided by the following research objectives: 1) to analyze the effect of technical service capacity (human resources and communication) on SIMBG adoption in SLF administration, 2) to examine the influence of public participation on SIMBG adoption and SLF service quality, 3) to assess the mediating role of SIMBG adoption in improving the quality of SLF licensing services, and 4) to identify institutional and technological constraints affecting SLF implementation in Malang Regency and Batu City.

2. LITERATURE REVIEW

2.1. Technical Service Capacity: Human Resources and Communication

Organizational capacity is widely recognized as a critical determinant of policy implementation and public service performance. (Grindle, 1997) argues that institutional capacity, comprising human resources, organizational structure, leadership, and coordination, directly influences the effectiveness of public policies. In the regulatory and licensing services, insufficient staff competence and weak inter-agency communication often lead to procedural delays, inconsistent service quality, and low public compliance (Andrews & Bonta, 2014).

Empirical studies in public administration show that human resource capacity, particularly technical expertise and institutional knowledge, has a significant impact on the reliability and responsiveness of services (Andrews & Boyne, 2010; Pollitt & Bouckaert, 2017). Communication capacity is also crucial because its clarity affects the understanding of service implementers and users (Hupe & Hill, 2016). However, most existing research still focuses on pre-construction permits such as building approvals and planning licenses. Research on post-construction regulatory instruments, including Certificates of Occupancy (SLF), is still very limited. As a result, the relationship between technical service capacity and SLF service outcomes has not been adequately explored, especially in the context of decentralized local government.

2.2. Digital Governance and SIMBG Adoption

Digital governance literature emphasizes that e-government systems can improve transparency, efficiency, and accountability in public service delivery when supported by adequate organizational capacity (Hegazy, 2026). Technology Acceptance Model (TAM) and related frameworks suggest that perceived usefulness, ease of use, and institutional support are key predictors of digital system adoption (Venkatesh, Thong, & Xu, 2016). Studies on digital licensing systems have shown that information systems can make administrative procedures more efficient, lower (Criado & Gil-Garcia, 2019) transaction costs, and improve service quality (Criado & Gil-Garcia, 2019). Nonetheless, digital platforms do not function independently; their success hinges on the capacity of implementing institutions and on users' competence to engage effectively with the system. Although digital permitting platforms are increasingly used, much empirical research still views technology as a direct driver of service performance. Only a few studies examine how digital systems mediate the relationship between organizational capacity and service quality improvement. In the context of SIMBG, limited evidence exists as to whether the system serves merely as a technical instrument or as a governance tool that strengthens institutional performance in SLF management

2.3. Public Participation in Licensing and Regulatory Services

A key tenet of democratic administration, public engagement has been demonstrated to enhance service outcomes, policy legitimacy, and compliance (Fung, 2006). Citizen participation can promote conformity to administrative requirements, lower resistance, and raise awareness in regulatory environments (Irvin & Stansbury, 2004). By reducing information barriers and promoting communication between governments and citizens, the integration of digital platforms has further increased prospects for public participation (Irvin & Stansbury, 2004). However, digital engagement depends on user trust, system accessibility, and institutional responsiveness (Macintosh, 2004). The majority of empirical research on public participation focuses on public service delivery, budgeting, or urban planning. There is little data on how public involvement affects technical licensing services, especially post-construction certifications like SLF. Furthermore, nothing is known about the indirect effects of engagement via digital platforms like SIMBG.

2.4. Research Gap and Hypothesis Development

Three significant gaps are found in the literature review. First, compared to studies on building approvals and planning permits, there is currently a dearth of empirical research on SLF administration. Second, previous research seldom combines digital governance, public involvement, and technical service capabilities into a unified analytical framework. Third, there hasn't been enough research done on how digital systems mediate the relationship between public participation, organizational capability, and service quality. As a result, this study creates an integrated model that may examine the connections between public involvement, SIMBG acceptance, SLF service quality, and technical service capacity (human resources and communication). This work adds to the body of knowledge on participatory regulation, digital governance, and public administration by empirically testing SIMBG as a mediating mechanism.

3. METHODOLOGY

In addition to a case study approach centered on the implementation of the SIMBG in Malang Regency and Batu City, East Java Province, this investigation used mixed methodologies using quantitative and qualitative descriptive approaches (Creswell, 2009). Using both quantitative data and detailed narratives, the approach seeks to determine the efficacy of SIMBG deployment from multiple angles. A variety of complementary methods were used to collect the data. Building permit applicants were given questionnaires to complete in order to collect quantitative data. Furthermore, firsthand observations were carried out at the research sites, the PUPR and DPMPTSP in Malang Regency and Batu City. There were observations made. Observations were conducted openly, with researchers directly involved in the process of observing and systematically recording the phenomena that occurred (Hadi, 2004).

In the meantime, structured interviews with pre-selected informants were used to carry out a qualitative approach. The themes and subjects pertinent to the research focus served as the basis for the design of these interviews. Since gathering information is the primary objective of this study's data collection, data collection procedures are essential (Sugiyono, 2017). To learn more about participants' perspectives, experiences, and opinions regarding the application of SIMBG, a moderator-led Focus Group Discussion (FGD) was held in addition to interviews. Additionally, the FGD helped to establish consensus on the topics discussed, compare points of view, and clarify concepts (Riau, Sunarya, & Diana, 2025).

To strengthen data validity, documentation techniques were used, including SIMBG operational information and records. All data obtained was tested for accuracy through source triangulation, namely by comparing interview results between subjects and matching them with relevant documents (Creswell, 2015). This aims to build a coherent and scientifically accountable argument. Data analysis was carried out using two approaches. Quantitative data were analyzed using the Smart PLS application to test the models and hypotheses that had been formulated. Meanwhile, qualitative data were analyzed using the interactive analysis technique from Miles and Huberman (1984) which includes three main stages: data reduction, data presentation, and concluding. Data reduction was carried out by

sorting and filtering raw data from the field to obtain relevant and significant information. Data presentation was carried out in the form of matrices and narratives that describe the main issues that emerged during the research. The final stage was drawing conclusions based on scientific logic and the results of the analysis that had been carried out.

This study surveyed 200 SLF applicants from Batu City and Malang Regency. Respondents were recruited using a convenience sampling approach among applicants who processed SLF applications through SIMBG between 2023 and 2025. Inclusion criteria were: (1) applicants who had submitted an SLF application via SIMBG, either independently or through representatives/consultants; and (2) willingness to participate voluntarily. Incomplete questionnaires were excluded; missing data were minimal (<5%) and handled through listwise deletion. While the sample reflects actual SLF applicants across multiple years, findings should be interpreted as representative of active applicants, not the full population of building owners.

This study employs Partial Least Squares–Structural Equation Modeling (PLS-SEM) using SmartPLS 4. PLS-SEM was selected for three reasons. First, the research is prediction-oriented and focuses on explaining variance in SIMBG adoption and SLF service quality. Second, the model includes multiple latent constructs and mediation effects, making PLS-SEM suitable for estimating complex relationships with relatively moderate sample sizes. Third, PLS-SEM does not require multivariate normality, which aligns with the characteristics of survey-based public administration data. Measurement quality was assessed using established thresholds: outer loadings > 0.70, Composite Reliability (CR) > 0.70, Cronbach's Alpha > 0.70, and Average Variance Extracted (AVE) > 0.50. Structural relationships were evaluated using path coefficients, t-statistics (>1.97), p-values (<0.05), and R² values to assess explanatory power.

3.1. Conceptual Model

This study examines the influence of Human Resources (HR), communication, and the SIMBG application on the quality of building permit services. Based on previous literature, six hypotheses are formulated as follows:

H₁: Public participation positively influences the quality of building permit services.

H₂: Communication positively influences the quality of building permit services through the SIMBG application.

H₃: Communication influences the disposition and quality of building permit services.

H₄: Human resources influence the quality of Certificate of Functional Worthiness (SLF) permit services.

H₅: The SIMBG application influences the disposition and quality of building permit services.

H₆: Public participation, communication, human resources, and the SIMBG application simultaneously influence the quality of building permit services.

The constructs and hypotheses regarding their interactions are illustrated in the conceptual model in Figure 1.

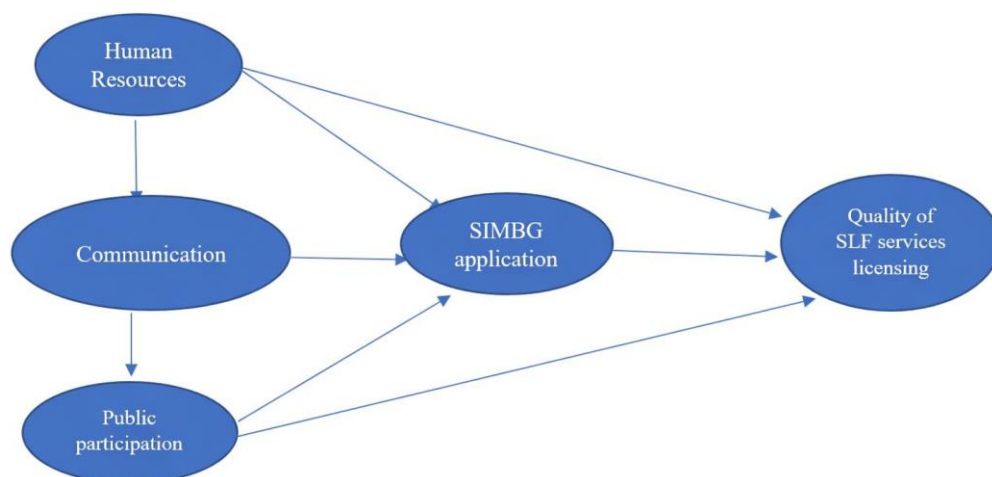


Figure 1. Public Participation Model in SLF Ownership in 2025.

4. FINDINGS AND DISCUSSION

The development of SLF implementation in Indonesian regencies and cities shows that public enthusiasm for building owners is still low compared to the development of Building Approval Applications (PBG). Calculating the number of buildings in the field using Google Maps yields the following figures, as shown in Table 1 and Figure 2:

Table 1. Number of existing buildings.

No.	Building Function	Number of Buildings in Malang Regency	Number of Buildings in Batu City
1	Residence	1.047.934	398.405
2	Religious	2.538	2.052
3	Business	4.209	1.346
4	Social and Cultural	5.246	711
5	Special	87	15
	Amount	1.060.014	402.529

Source: Google Map analysis 2024.

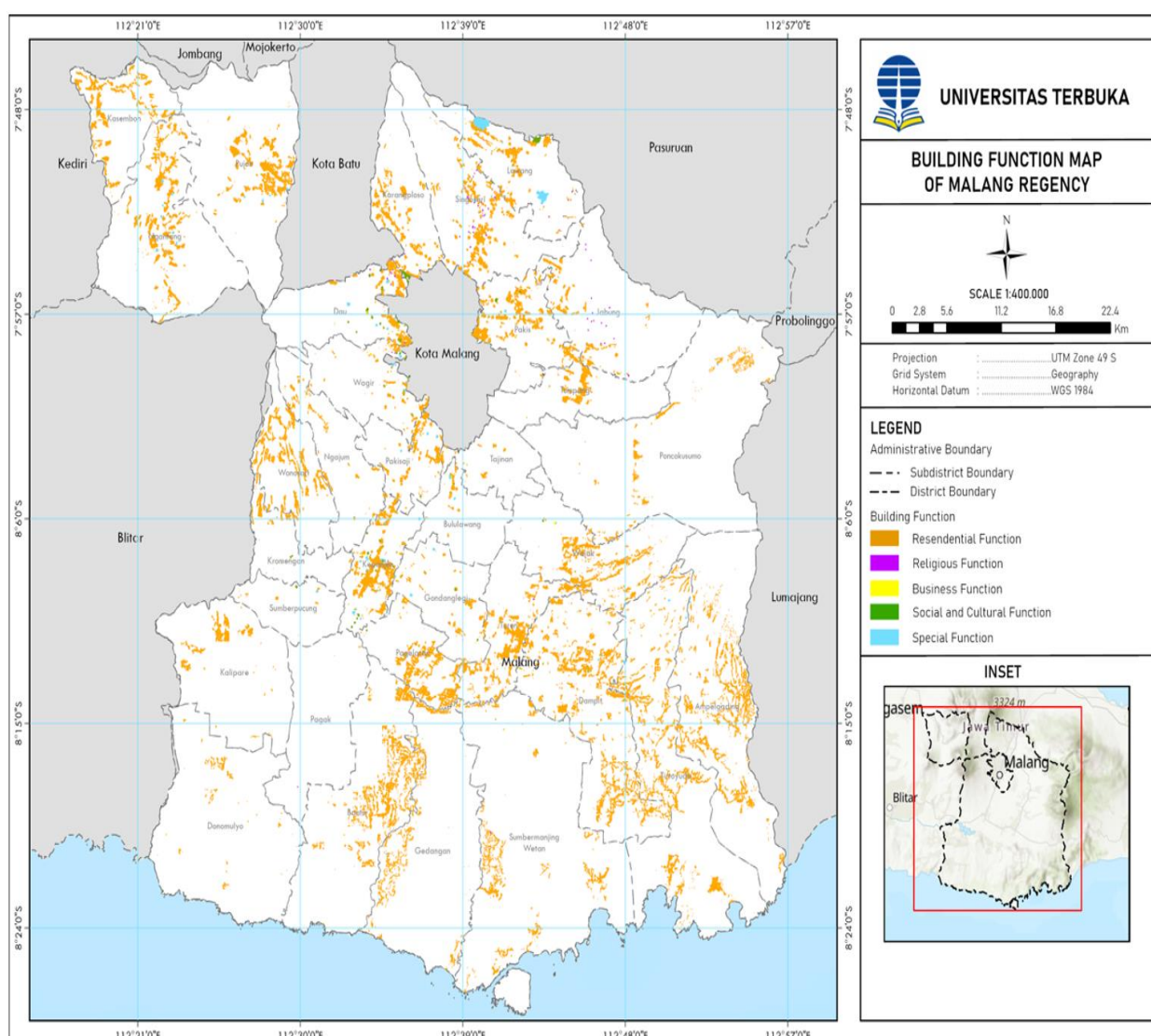


Figure 2. Map of Building Distribution by Function in Malang Regency.

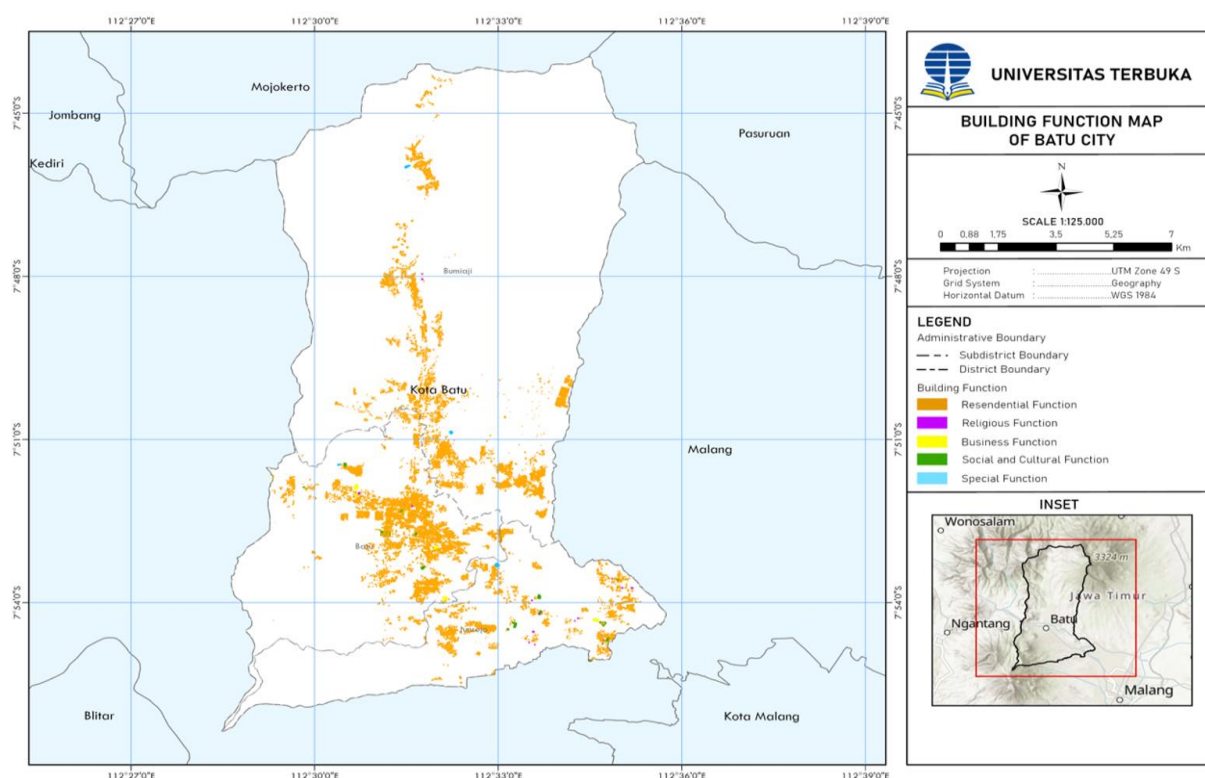


Figure 3. Map of Building Distribution by Function in Batu City.

Figure 3 present Map of Building Distribution by Function in Batu City.

According to data from the Batu City Housing and Settlement Agency and the Public Works Agency, Housing and Settlement Areas show that 265 buildings have applied for SLF with SIMBG operator verification results from 2023-2025, and 86 buildings have been issued/submitted. SLF Utilization Status Data can be seen in Table 2.

Table 2. SLF Utilization Status.

Years	SIMBG operator verification		SLF publishing	
	Batu City	Malang Regency (PBG & SLF)	Batu City	Malang Regency
2023	39	229	38	43
2024	185	305	40	28
2025	41	309	8	84
Amount	265	843	86	155

Source: Dinas PPCK Malang Regency dan DCKPP Batu City 2025.

Capacity is very influential in achieving organizational goals; one aspect is the bureaucratic structure, which is a formal relationship system between tasks and authorities that control and coordinate resources to achieve goals (Jones, 2004). This was also conveyed by Hodge, Anthony, and Gales (1996) "structure refers to the total of how an organization divides its labor into distinct tasks and then coordinates among them" (Hodge et al., 1996) and Robbins and Coulter (2005) in his book "Organizational Behavior" defines organizational structure: "an organizational structure defines how job tasks are formally divided grouped and coordinate (Hidayatno, Zagloel, Purwanto, & Sutrisno, 2012; Robbins & Coulter, 2005).

The Bureaucratic Structure of the Building Technical Service in Indonesia follows the Functional Structure by dividing the work according to the functional implementation of building construction, starting from planning or design, construction implementation, control, and utilization, because SLF follows the affairs of building construction under the Building Section. The current condition of the section equivalent to echelon IV in the Service Structure is no longer there, replaced by the sub-coordinator of the Technical Service. According to the Sub-coordinator of Public

Works and Spatial Planning of Madiun City, "The management of PBG and SLF is handled by two Sectors, namely PBG in the Spatial Planning Sector and SLF in the Building Sector". While the number of human resources under the building sector is only a few, and on average, they serve in the tasks and functions of implementing building construction, many of them handle local government projects. The implementation of SLF permits in Regencies/Cities follows the settlement sector, which is one with the implementation of PBG permits; some follow the building sector. For example, in Madiun City, SLF management is under the Building Section, while PBG management is under the Spatial Planning Division. However, in Gresik Regency, PBG and SLF management are under one division under the Public Works Division. Meanwhile, in Probolinggo City, PBG and SLF management are under one division under the City Planning Division. The organizational structure of the two East Java cities is shown in Table 3.

Table 3. SLF organizational structure and number of human resources.

No.	Regency/City	SLF organizational structure	Number of human resources for SLF management	SLF Budget (Rp.)
1	Malang Regency	One in the field of creative works	24	500.000.000
2	Batu city	One in the housing sector	14	126.000.000

Source: Dinas PPKK Malang Regency dan DCKPP Batu City 2025.

Public involvement in a program is inseparable from the public interest in the submitted application, namely the SLF to the Regency/City Government through SIMBG. Concerning government programs regarding public services, it cannot be separated from legislative supervision or members of the Regency/City DPRD in overseeing the implementation of the executive. Moreover, if there is a public report regarding the obligation of building structures to have SLF, especially for business function buildings such as hotels, then DPRD members will hold a hearing with the Regional Government and the community to find common ground in the implementation of SLF. Linblom and Woodhouse stated: "The actions of policy implementers are considered to be political, because they have the possibility of altering and influencing political decisions based on their own knowledge, insights, and interest" (Anthony, 1996). It is also said that there is political bargaining in the process of policy implementation. Political bargaining is an unavoidable reality when the implementation process occurs in the public sphere containing heterogeneous interests. The interaction of actors from both government and non-government circles creates political dynamics that accompany the policy implementation process and will give rise to government actions supported by two things, namely: government resources and the goals achieved. In the view of Kiviniemi (1986) in Purwanto and Sulistyastuti (2012), non-government actors are called environmental factors in the implementation process. A good policy environment will cause the implementation of SLF policies to be successful, while a bad policy environment will hinder or fail the implementation of SLF policies. Environmental factors or public support will influence the policy process. Interaction in the implementation process with its environment produces four categories or typologies of implementation, namely cooperation, conformity, counter-action, and detachment. These four typologies of implementation are the meeting of two main variables, namely: first, stakeholder agreement on the content of the policy, and second, the resources owned by the stakeholders (Rudyanto & Siregar, 2018).

Building technical equipment also presents an obstacle for applicants if the SLF process does not require a single consultant, as many consultants already possess SKA AR 103 for building maintenance and upkeep, as stipulated in Presidential Regulation No. 12 of 2021 concerning Procurement of Goods/Services. If there is only one consultant, the cost becomes a monopoly for the consultant. If there is more than one consultant, the building owner can choose the most affordable cost to complete the technical provisions or the Simak list in the SLF. The number of human resources an organization has mandated to implement a policy will affect the organization's capacity to carry out its mission and realize its goals (Goggin, Bowman, Lester, & O'Toole, 1990). The availability of information technology

through SIMBG facilitates the bureaucratic apparatus of the Technical Service and DPMPTSP in processing the SLF, from the technical aspects to its issuance by DPMPTSP. Commitment (motivation) and competence (expertise) are two important requirements (two sides of the same coin) that must be possessed by personnel who are given the mandate to achieve policy objectives in the implementation of SLF. Commitment refers to the seriousness of personnel in carrying out the tasks given. Commitment will contribute to producing maximum output if the personnel have the expertise and competence in carrying out the tasks. In running an organization, structure and coordination between those carrying out tasks are needed to ensure that the objectives are achieved. Moreover, the implementation of the SLF is carried out by two agencies, namely the Building Technical Agency and the Investment and One-Stop Licensing Services Agency (DPMPTSP). Coordination is understood as the process of integrating the goals and activities of separate work units to achieve organizational goals. O'Toole (1986) and O'Toole and Montjoy (1984) said: "If implementation is essentially a problem of cooperation, one might ask what inducements are available to bestir individuals, whether in one or multiple agencies, to work together toward a common policy product."

In order for coordination and cooperation to be carried out well (O'Toole & Montjoy, 1984; O'Toole, 1986), proposed three supporting factors for good coordination namely: authority, common interest, and exchange (Hall & O'Toole, 2000). These three factors support the process of unifying various activities from different work units. It should be noted that the success of coordination is inversely proportional to the number of work units involved in the implementation of the SLF policy. Jennings and Ewalt (1998) note that coordination will become more difficult the more work is involved in implementing a policy (Jennings & Ewalt, 1998).

4.1. Descriptive Information

Based on Table 4, it can be concluded that of the 200 applicants for Building Functional Worthiness Certificates (SLF) who responded to this study, 50% came from Batu City and 0% from Malang Regency. The majority were female (63%) and male (37%), with 32% in the 25-30 age group. The SLF application type was 60% in Batu City and 40% in Malang City.

Table 4. Respondents' demographic statistics.

Demographic statistic	Category	Frequency	Percentage
City of origin	Batu City	80	50%
	Malang Regency	80	50%
Gender	Male	74	37%
	Female	126	63%
Age (years)	18–24	56	28%
	25–30	63	32%
	31–35	36	18%
	36–40	23	12%
	41–45	13	7%
	46–50	5	3%
	51–55	4	2%
Type of application	SLF (Building feasibility certificate)	200	100%
SLF application processed by	Consultant	61	31%
	Others	3	2%
	Another person	31	16%
	Self	105	53%
Building function	Office Building	1	1%
	Residential	95	48%
	Religious	3	2%
	Special Purpose	3	2%
	Cultural-Social	3	2%
	Commercial/Business	95	48%

Source: Survey Results, 2025.

4.2. Model Analysis

The measurement model was assessed to ensure the quality of SLF service delivery in accordance with Standard Operating Procedures (SOPs). The assessment involved factor analysis, indicator reliability measurements, and discriminant validity. Each assessment has a recommended minimum value. For outer loading items, the minimum is 0.7, Cronbach's Alpha (CA) internal consistency is at least 0.7, and Average Variance Extracted (AVE) is at least 0.5. The results showed that the outer loadings and active CA for each construct were higher than the minimum values. Furthermore, the AVE results for each construct exceeded the minimum value, indicating met validity. Complete results regarding the measurement constructions are shown in Table 5. After assessing the measurement model and evaluating the results, data analysis continued with a structural model assessment to assess the hypothetical relationships between the constructs and the predictions of the conceptual model, still using six indicators. In the Smart PLS calculation, the independent variable Public Participation Indicator X3.2 for Indirect SLF Services had a value of 0.735 or below 0.8, which did not meet the requirements, and the calculation in Figure 4, model, was used.

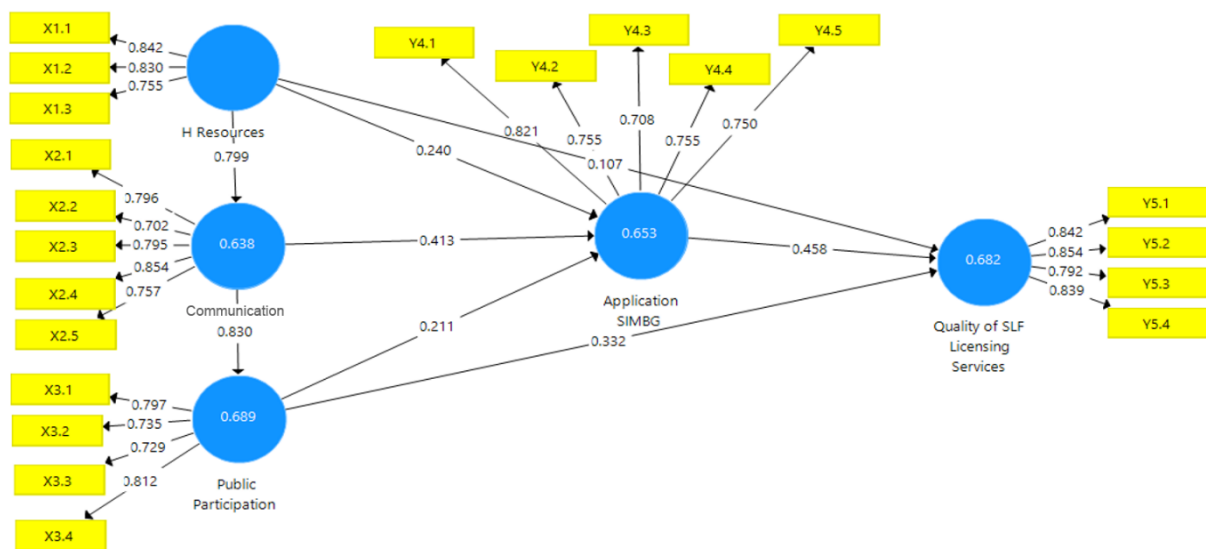


Figure 4. Model optimization of SLF technical service capacity. (PLS Algorithm).

Table 5. Measurement constructs (PLS Algorithm).

Constructs and items	Outer loadings	Cronbach's alpha	Composite reliability (CR)	AVE (Average variance extracted)
X. 1 Human resources		0.737	0.851	0.656
X1.1 Number of staff	0.842			
X1.2 Skilled	0.830			
X1.3 Knowledge of SIMBG	0.755			
X. 2 Communication		0.840	0.887	0.612
X2.1 Clarity of information	0.796			
X2.2 Information transmission to communicants	0.702			
X2.3 SLF management has been socialized	0.795			
X2.4 SLF information transmission	0.854			
X2.5 Effect	0.757			
X. 3 Public participation		0.769	0.853	0.592
X3.1 Direct participation	0.797			
X3.2 Indirect Participation	0.735			
X3.3 Need aspiration	0.729			
X3.4 Public expectations	0.812			
Y.1 Application of SIMBG		0.816	0.871	0.676

Constructs and items	Outer loadings	Cronbach's alpha	Composite reliability (CR)	AVE (Average variance extracted)
Y1.1 Adequate/Good (Perceived Usefulness)	0.821			
Y1.2 Application requirements (Perceived ease of use)	0.755			
Y1.3 Attitude toward using technology	0.708			
Y1.4 Behavioral intention	0.755			
Y1.5 Actual use of technology	0.750			
Y.2 Quality of SLF Service Licensing Services		0.852	0.900	0.693
Y2.1 Tangibility	0.842			
Y2.2 Reliability	0.854			
Y2.3 Responsiveness	0.792			
Y2.4 Assurance	0.839			

Source: Analysis, 2025.

4.3. Measurement Model Evaluation

After running the PLS-SEM algorithm, the hypothetical relationships and path coefficients between constructions were evaluated. This study used several criteria to assess the hypothesis, including coefficients, t-statistics, and p-values. The coefficient value indicates the relationship between variables; if the coefficient value is positive, the relationship between the variables is positive. In this study, the significance level used was 5%, so the study had a 95% confidence level, with a t-statistic value of 1.97. If the t-statistic value is greater than 1.97, the influence between the variables is significant. P-values are used to test the significance of a research result. The value required for a hypothesis to be accepted is <0.005 . If all three criteria are met, the previously formulated hypothesis is accepted, and vice versa. If any of the criteria are not met, the previously formulated hypothesis is not accepted.

Figure 4 shows the positive effects of the three constructions on the adoption of Public Participation, Communication, and Human Resources (SIMBG) applications, as well as on the Quality of Service (QoS). Overall, the relationship hypotheses in H1-H3 are supported by the data, which emphasizes Public Participation, Communication, and Human Resources as significant predictors of SIMBG application adoption. All path coefficients within the constructs in the structural model meet this criterion. These results imply the importance of Public Participation, Communication, and Human Resources, as well as the SIMBG application, for building quality services. The results demonstrate the importance of developing Human Resources, Communication, internal SIMBG applications, and developing the SIMBG application as factors influencing the level of quality service in buildings.

Table 6. Hypothesis model calculation results.

Hypothesis	Path	Coefficient	T-Statistic	P-Value
H1	Public participation > Quality of SLF service licensing service	0.336	3.337	0.001
H2	Public participation > Application SIMBG	0.212	2.114	0.035
H3	Communication > Application SIMBG	0.413	3.700	0.000
H4	Communication > Public participation	0.830	26.922	0.000
H5	Human Resources > Application SIMBG	0.239	2.291	0.022
H6	Human Resources > Quality of SLF service licensing service	0.104	1.223	0.222
H7	Human resources > Communication	0.799	26.385	0.000
H8	SIMBG Application > Quality of SLF service licensing service	0.458	4.349	0.000

To further test the model hypotheses, t-statistics were evaluated. The results for all constructions were significant. This finding differs from several other studies, which found that factors were insufficient to encourage

the use of e-business in the quality of building permit services (Chatzoglou & Chatzoudes, 2016; Darman, Judijanto, Harsono, & Putra, 2023). In this study, the quality of building permit services was well-functioning, supported by communication, human resources, and the SIMBG application, which were designed to improve the quality of building permits. These results are presented in Table 6 of the Hypothesis model calculation and Figure 5.

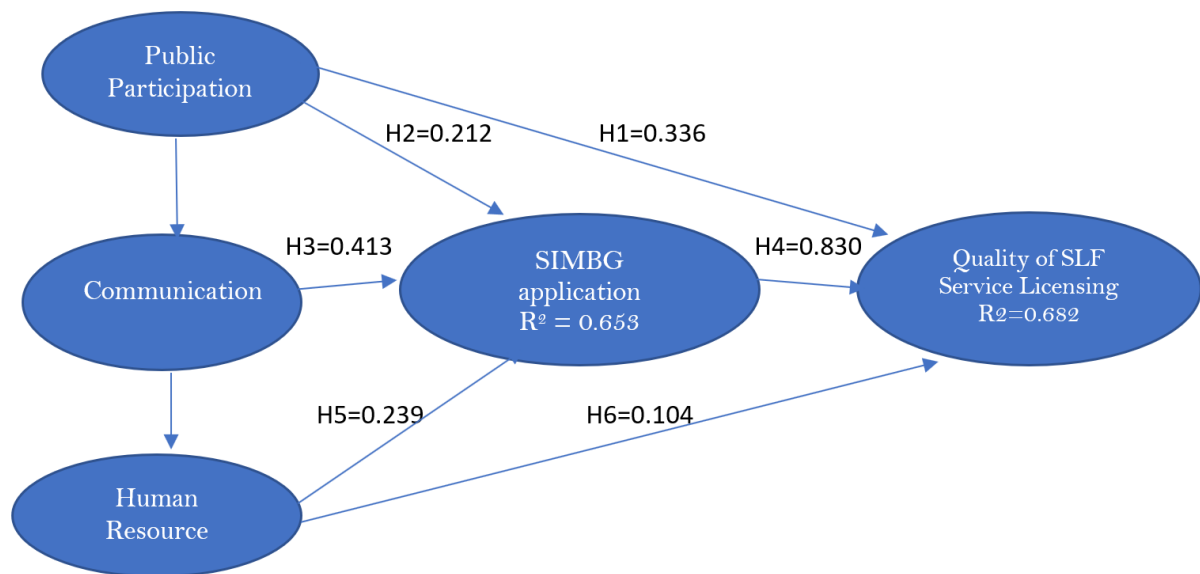


Figure 5. Research model of regional government capacity in Managing SLF 2025.

Beyond direct effects, this study explicitly tested indirect (mediated) relationships. Results indicate that SIMBG adoption significantly mediates the relationship between organizational capacity and SLF service quality. Public participation shows a direct effect on service quality ($\beta = 0.336$, $p = 0.001$) and an indirect effect via SIMBG adoption ($\beta = 0.212$, $p = 0.035$). Similarly, communication and human resources improve service outcomes primarily through enhanced SIMBG utilization. The magnitude of these indirect effects confirms SIMBG's role as a critical digital governance mechanism rather than a standalone technological tool.

According to Hair, Risher, Sarstedt, and Ringle (2019), the minimum value range used for R^2 is 0.25, 0.5, and 0.75. These values are described as weak, moderate, and substantial, respectively. Based on the PLS-SEM algorithm, the value shows that the R^2 for the adoption of the SIMBG Application is 0.653. This value indicates that the three TOE factors explain 65.3% of the variance of the e-SIMBG Application. This result indicates that the conceptual model has sufficient predictive capacity in explaining the SIMBG role of public application, communication, and human resources to the quality of SLF Service Licensing. In addition, the adoption of the SIMBG Application can lead to an increase in the value chain, as indicated by the R^2 value chain of 0.682. As the results show, the adoption of Public Participation and Communication through the SIMBG application greatly affects the Model. In the analysis conducted on the adoption of the SIMBG application, an (R^2) value of 0.653 was obtained in the analysis of the SIMBG application's adoption, indicating that the model exhibits a medium to substantial predictive capacity for explaining the variance in the e-SIMBG application based on the Technology, Organization, and Environment (TOE) framework (Issa & Al-Salami, 2023). This shows that the model fits the empirical data well and is consistent with earlier PLS-SEM studies that yield similar (R^2) values for different constructs, highlighting the framework's capacity to offer insightful information about this process of digital transformation (Rejikumar, 2015; Tunio, Hamid, Latiff, Hafeez, & Tunio, 2024).

Moreover, the practical use of the SIMBG application was underscored by its impact on the value chain, indicated by an (R^2) value of 0.682. This notable outcome illustrates how the SIMBG application boosts public involvement and communication, which in turn enhances the quality-of-service licensing through better engagement with stakeholders (Jelodar, van Heerden, & Chawynski, 2020). The evaluation emphasizes the essential function of

technology in strengthening the organizational capabilities and improving the quality of public services (Issa & Al-Salami, 2023). In additional empirical research analyzing public service frameworks, comparable R^2 values have validated the favorable relationship between effective community participation and service quality, highlighting the importance of implementing integrated technological solutions within municipal environments (Fu et al., 2020; Masuku & Molope, 2020).

The implications stemming from these (R^2) findings are substantial, as they highlight the need for strategic public participation initiatives linked to technological advancements (Hutabarat, 2024). By employing the SIMBG application, advancements in public participation, communication, and service delivery are elucidated, thereby improving the landscape of e-governance and fostering more active civic engagement (Suaree, Kader, & Osman, 2024). Thus, the model's predictive validity not only supports theoretical assertions presented in the literature about the efficacy of public applications but also provides practical frameworks for enhancing local governance through technology integration. The results generally describe the factors that influence adoption priorities, starting from public service factors, communication, and then human resources factors. On the other hand, from the perspective of participation, good SIMBG Application adoption in the Service Capacity will provide added value to the SIMBG Application, especially in the value chain. The findings of this study are expected to have contributed to the literature to improve participation in improving the quality of SLF services. Efficiency in administrative services and timeliness of technical document validation are crucial to meet the expectations of IMB applicants in using the SIMBG system (Adhi Darma, Astana, & Dewi, 2022). Improving the quality of services through the SIMBG application is very important to ensure the sustainability and success of adoption in the context of public services (Adhi Darma et al., 2022; Khodijah & Teturan, 2021). This can also help officers in processing IMB applications more efficiently, while allowing the public to submit applications anytime and anywhere (Riau et al., 2025).

4.4. Qualitative Results

Five problems, namely Human Resources, Communication, SIMBG Application, Disposition, and Quality, are the applications that have the most problems. Furthermore, the results of the analysis of interview data in Batu City and Malang Regency can be concluded that community participation in Batu City is quite good, although they still face obstacles in fulfilling technical and administrative requirements, so many use the services of consulting bureaus. In contrast, Malang Regency shows a stronger increase in participation, driven by more intense community-based socialization. This shows that the community approach in Malang Regency is more effective, while Batu City needs efforts to overcome information distortion in the community. Although the Building Management Information System application aims to simplify licensing, implementation in the field still faces various technical and non-technical obstacles (Adhi Darma et al., 2022). These issues include applicants' lack of understanding of document upload requirements, which often leads to complaints and operational obstacles. This is exacerbated by an unstable network, and not all people are able to operate the application, so the licensing process is slow and requires ongoing routine socialization (Septiani et al., 2022). Regarding the capacity of technical services, both regions experience limitations in human resources (HR), infrastructure, and funding. In Batu City, HR comes from the old unit without the formation of a special formation for PBG/SLF, while Malang Regency faces additional obstacles in the form of data synchronization issues and SIMBG data rollbacks from the central government. This situation indicates the need to increase institutional capacity by establishing a special training program and improving the information system so that the implementation of SIMBG and SLF can run more optimally. The need to increase institutional capacity through the formation of a special formation and improving the information system to optimize the implementation of SIMBG and SLF (Kasuma, Djafar, & Mozin, 2025). Both regions need to increase institutional capacity through the formation of special formations and improvements to information systems to optimize the implementation of SIMBG and SLF (Serang, Bahri, & Nurkaidah, 2025). Batu City and Malang Regency require increased institutional capacity, including special training and improvements to information systems (Abdurrohim & Setyaningsih, 2022).

The need for the formation of special formations and improvements to information systems to increase the institutional capacity of PBG/SLF in Batu City and Malang Regency (Zaeni, Kirana, Mahandi, Handayani, & Fauzi, 2021).

In terms of SIMBG services, Batu City is still not optimal, with a focus on digitalization and external collaboration, supported by digitalization education and mobile services through university collaborations. In contrast, Malang Regency implements a hybrid system that combines digital and manual services in the event of disruptions, making it more adaptive to local conditions. This illustrates the adaptation of services tailored to the characteristics of each region. In the context of SIMBG services in Batu City and Malang Regency, several key aspects reflect the different approaches and strategies implemented by each region. Batu City is currently in the stage of optimizing digitalization and external collaboration services. This is evident in the challenges faced in the transition to a digital-based service system, where improving service quality still faces various obstacles, such as the need to digitize citizen identity data (Irkham, Kamil, & Saiman, 2019). In addition, there are efforts to increase public education regarding digitalization, supported by collaboration with educational institutions, although the implementation is not yet fully effective and requires more attention (Maharani & Ulfa, 2022). In contrast, Malang Regency has implemented a hybrid system that combines digital and manual services. This approach provides schools, villages, and communities with greater flexibility in addressing challenges, especially when digital systems experience disruptions (Octavian, Susanti, & Bonti, 2023). This approach demonstrates good adaptation to local conditions and community needs, and requires attention to input provided by the public, which is in line with the principles of e-governance (Ramahyanti, Hakim, & Febriantini, 2022). Lessons learned from the service model in Malang Regency demonstrate the importance of flexibility in public service systems, rather than relying solely on digital solutions.

Both regions reflect different adaptation needs based on their respective local characteristics. Batu City, which focuses on digitalization, tends to experience challenges related to public understanding and infrastructure that is not yet fully supportive (Kurniawati & Mursyidah, 2023). On the other hand, Malang Regency is taking progressive steps by implementing a more inclusive strategy, utilizing hybrid service methods in public administration to reach all levels of society more effectively (Asriani, Alam, Dasmin, & Elfrianto, 2023).

Collaborative steps in these two regions can be a useful learning model in developing more responsive and adaptive public services, where local wisdom and information technology factors support each other to improve the quality of life (Pratama & Rahaju, 2022). Thus, the Batu City Government must evaluate and adapt its service strategy based on best practices and real-world conditions in Malang Regency.

The technical building issues in both regions are similar, particularly regarding incomplete documentation and the high number of buildings that do not meet distance and intensity requirements. The need for field technical assistance prior to submission is essential to improve building technical compliance. The outreach strategies employed also vary; Batu City is more intensive in conducting mobile services and outreach through print and radio media, while Malang Regency is more diverse, with the additional use of social media, videotrons, and community groups.

The role of third parties is very dominant in both regions due to the extensive use of consultant services in the processing of SIMBG and SLF, which, although helpful in the administrative process, has the potential to create a risk of information distortion. The ideal time for SLF issuance also varies, with Batu City being faster (around 14 days, depending on the completeness of the documents), while Malang Regency requires up to 28 days according to regulatory requirements. In the context of SIMBG services in Batu City and Malang Regency, there are several key aspects that reflect the different approaches and strategies implemented by each region. Batu City is currently still in the stage of optimizing digitalization services and external collaboration. This is evident in the challenges faced in the transition to a digital-based service system, where improving service quality still faces various obstacles, such as the need to digitize citizen identity data (Irkham, Kamil, & Saiman, 2019). In addition, there are efforts to increase public education regarding digitalization, supported by collaboration with educational institutions, although the implementation is not yet fully effective and requires more attention (Maharani & Ulfa, 2022).

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From the discussion of the results of the quantitative data analysis discussed above and followed up with a discussion group forum, the following recommendations were obtained:

1. Strengthening Organizational Capacity

Improve human resource competency. Based on the SMART PLS analysis, the influence of Human Resources on the Quality of SLF Service Licensing Service (P-Value 0.222) is insufficient to improve SLF Service Quality. Technical training on SLF, SIMBG workshops, and professional certification are needed. Organizational restructuring is needed to be more flexible, with a clear division of tasks between PBG and SLF management. The SLF budget allocation was increased to support community outreach and assistance.

2. Optimizing SIMBG Technology

Improve the SIMBG system to make it more user-friendly and reduce technical and bureaucratic obstacles. Integrate SIMBG with other licensing services to expedite the SLF process. Provide a digital helpdesk and operator training to improve responsiveness.

3. Strategy for Increasing Public Participation

Intensify outreach and dissemination of information about the urgency of SLF through digital media, community forums, and collaboration with professional associations. Provide technical assistance for building owners, especially small and medium-sized businesses. Encourage legislative oversight (DPRD) to ensure compliance with SLF regulations.

4. Innovative Policy

Consider a one-year provisional SLF to expedite building utilization while meeting requirements. Develop an incentive scheme for building owners who promptly apply for an SLF, such as reduced administrative costs.

5. Multi-Stakeholder Collaboration

Strengthen coordination between the Technical Office, the Department of Public Works and Public Housing (DPMPSTP), the Professional Expert Team (TPA), and construction service consultants. Engage local communities and developer associations to support SLF implementation.

6. Academic and Practical Implications

This research contributes to the public policy literature related to optimizing bureaucratic capacity and adopting e-government technology. Practically, these results can serve as a model for SLF implementation in other regions with similar circumstances.

5. CONCLUSION

Based on the results and discussion above, it can be concluded that the capacity of the Technical Service can be increased through emphasizing a flexible organizational structure, internal coordination with the Technical Service apparatus and the Technical Professional Team (TPT) and the Expert Professional Team (TPA), as well as external coordination with DPMPTSP, private elements of construction services, and the community; improving the competence of building staff human resources through training and SLF Technical Workshops, and increasing the SLF implementation budget.

There is a need to improve SLF management to the community through socialization and dissemination of the importance of SLF as a basis for building utilization. Legislative supervision of executive performance for buildings that are already operational but do not have an SLF continues to be carried out, ensuring the community complies with the implemented regulations. This study has several limitations. First, the cross-sectional design limits causal inference and does not capture changes in participation or system adoption over time. Second, findings are context-specific to Malang Regency and Batu City and may not be fully generalizable to other regions with different administrative capacities.

Third, reliance on self-reported survey data introduces potential measurement bias. Future research should employ longitudinal designs, comparative inter-regional analysis, and objective performance indicators. Further studies may also explore regulatory enforcement mechanisms, cost-benefit aspects of SLF compliance, and comparative digital platforms beyond SIMBG.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

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