

Determinants of Public Service Satisfaction in Smart Governance: The Roles of Transparency, Collaboration, Participation, and Accountability

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Abstract. The development of information and communication technologies (ICT) has brought changes not only to industrial sectors but also to public services, promising efficiency and effectiveness in their implementation. Entering 2025, Indonesia is at a crucial point in digital transformation, with an estimated 67.66% of the population living in urban areas, creating an urgent need for infrastructure and public services. Smart governance, as a bureaucratic reform, emphasizes the importance of adopting digital technology to streamline public services and ensure transparency for users. This study addresses this gap by investigating the impact of smart governance on public satisfaction, offering novelty through an integrated empirical assessment of these three specific dimensions within Indonesia's digital bureaucracy framework. A descriptive quantitative approach was adopted to provide an objective, scalable measurement of citizen perceptions. Primary data were collected via structured questionnaires distributed to 324 respondents selected to ensure adequate statistical power for complex variable modeling. Data were analyzed using Structural Equation Modeling with Analysis of Moment Structures (SEM-AMOS), preceded by Confirmatory Factor Analysis (CFA) to validate the measurement model's construct reliability and convergent validity before evaluating structural paths. In alignment with standard reporting guidelines, tabular and graphical models were structured to present standardized path coefficients and fit indices clearly. The results demonstrate that all three constructs exert a statistically significant positive influence on public satisfaction. Accountability emerged as the strongest predictor (CR = 6.426), followed by transparency (CR = 3.821) and collaboration (CR = 3.475), all significantly exceeding the critical threshold of 1.96. In conclusion, these findings confirm that while transparent and collaborative channels enhance public engagement, robust administrative accountability is the primary driver of citizen satisfaction in smart city governance. Policymakers must prioritize anti-corruption mechanisms and real-time service tracking alongside digital interface rollouts to maximize public trust.

Keywords: : Smart Governance; Public Service; Transparency; Accountability

Received:16-03-2026 **Revised:**17-04-2026 **Accepted:**27-06-2026

INTRODUCTION

Improvements in information and communication technologies guarantee efficiency and effectiveness in the delivery of public services, as well as changes to manufacturing and industries (Liu & Yuan, 2015; Triyanto et al., 2025). With an estimated 67.66% of the population living in cities as of 2026, (Mutiarra et al., 2018) (Sulistyaningsih et al., 2023). This increase in urbanisation necessitates a change from traditional governance to a smart governance model that can manage resources effectively and efficiently to keep cities livable (Herdiyanti et al., 2019; Kaiser, 2024; Pereira et al., 2018a).

It is assumed that the idea of "smart governance" takes into account the demands of society, especially when it comes to cutting-edge public services that rely on information and communication technology (ICT) (Desouza et al., 2021; Nastjuk et al., 2022). Adopting digital technology is crucial for streamlining public services and guaranteeing transparency for those who use them, according to bureaucratic reform (Milakovich, 2012; Shabnam Sharmin & Rakibul Hasan Chowdhury, 2025). Smart governance is frequently viewed as a leapfrogging tactic for developing nations to deal with the strains of budgetary constraints and fast urbanisation (Tan & Taeihagh, 2020). Smart governance is defined as the government's capacity to use collaborative governance and ICT-based tools to make better decisions (Pereira et al., 2018b).

To satisfy the needs of a knowledge-based society, this idea involves redesigning strict democratic governance, going beyond merely utilising technology (e-government) (Chadwick, 2003). According to Scholl and Scholl (Scholl, 2006), this is the ability to manage and make decisions using clever and flexible actions. Especially in Indonesia, this successful and efficient digital-based government governance is turning into a calculated strategy to help the government deliver public services (Jurnal Analisis Kebijakan dan Pelayanan Publik et al., 2025). Since the early 2000s, Indonesia has embraced the five pillars of smart cities, which were reinforced by Presidential Instruction Number 3 of 2003 concerning National Policies and Strategies for E-Government Development (Lisdawati et al., 2025). Since 2010, several Indonesian cities have started to embrace digital technology. Smart cities are viewed as an approach that incorporates urban development as well as a manual-to-digital transformation in public service aspects. With the release of the Electronic-Based Government System (SPBE) policy (Anto et al., 2025), which is governed by Presidential Regulation Number 95 of 2018, the implementation of smart cities is growing more robust. The urgency of smart governance in integrating digital government systems is first established by this policy (Nur Soulthoni & Itasari, 2025). The smart governance model requires big data and IoT analysis to help optimise critical infrastructure, including waste management, transportation, and energy (Soomro et al., 2019). The community's physical well-being and standard of living are directly impacted by the cleaner and more effective environment that this seeks to create (Ercan & Kutay, 2021).

Medan City is one city that makes use of smart governance in relation to digital public services. Many digital public services in public administration are available to the public. These include managing permitting platforms through the Online Single Submission (OSS) platform, population administration services through the SIBISA platform, complaint services through the LAPOR and Medan Rumah Kita platform, and a command centre that forwards complaints to

regional work units. The use of digital services for smart governance has been the subject of several assessments and complaints thus far. The purpose of this evaluation is to enhance Medan's digital-based public services. The Digital Divide, the disparity in internet access and smart devices between urban and rural areas, is the most frequent problem that emerges, aside from the lack of digital literacy among vulnerable groups (the elderly and the poor) regarding digital-based public services.

Data security and user privacy, particularly the exploitation of personal information by irresponsible parties, are additional issues with the implementation of digital public services. This is a result of a loose regulatory framework: Many regions still lack strong legal protections and data security policies to protect both state information and personal information. Additionally, there is frequent confusion in public institution planning because each government institution releases its own applications without conforming to any national standards. As a result, no unified data platform that is appropriate for decision-making is developed, and resources are wasted. Another problem is human resources. The lack of digital literacy among civil workers and a lack of skilled IT professionals to handle complicated systems are obstacles to digitally based public services (Milakovich, 2012)

Smart governance implementation has been criticised and evaluated as a result of the "hype and hide" phenomenon in local governments, which has drawn a lot of public attention. To create a favourable impression in the eyes of foreign investors, local governments frequently employ a "hype and hide" strategy, which entails heavily promoting technological advancements (like applications or command centres) while hiding serious financial issues, budget deficits, or failures in economic growth

In terms of raising the standard of living for citizens, smart governance refers to a set of calculated actions meant to improve the standard of living by using information and communication technology (ICT) to manage municipal resources more effectively and in response to community demands. By using digitalisation to solve complicated public bureaucratic issues, smart governance can lower costs for the general public by improving the speed, accuracy, and transparency of services. The government can better address pressing public needs, like public safety and healthcare management, by utilising Big Data and the Internet of Things (IoT) (Tresiana et al., 2024).

The majority of smart city research is still theoretical and conceptual in nature (Kaiser, 2024; Mutiara et al., 2018; Pereira et al., 2018a). Researchers point out that a thorough analysis of the actual effects of putting the smart city concept into practice on citizens' quality of life has

not yet been completed. Even though digitalisation is still growing, there aren't enough empirical studies to fully demonstrate how smart governance and technology are actually raising the public's service satisfaction. Another significant barrier to measuring smart governance is the absence of standardised indicators, measures, and indices. Insufficient knowledge of the different elements of smart governance and the metrics used to measure them. For instance, certain indicators and formulas used to measure the smart governance dimension in Indonesia have limitations. This makes it challenging to assess the degree to which policy goals have been accurately met and to compare success across regions (Herdiyanti et al., 2019; Radika et al., 2025; Sulistyaningsih et al., 2023).

This study also emphasises how the government intends for community involvement to take place online. However, given that many impoverished residents lack access to online participation due to a lack of communication tools, it is unclear if this participation can meet the needs and goals of the community. The implementation of smart cities is fragmented, with policies frequently lacking consistency and integration amongst government agencies. There are still few in-depth studies on how to match community needs with national policy directives, particularly in rural or peripheral areas that face different infrastructure and human resource challenges than major cities (Puspitasari & Ishii, 2016; Silva et al., 2025). This study aims to examine how Medan City residents' satisfaction of public services is impacted by accountability, transparency, and collaboration.

METHOD

This study adopts a descriptive quantitative approach with a causal research design. A quantitative method was selected because it provides an objective, empirical, and standardized framework to measure citizen perceptions across a broad demographic (Hair et al., 2018). Furthermore, a causal design is specifically required to evaluate the direct structural relationships and underlying cause-and-effect interactions between the independent dimensions of smart governance (transparency, collaboration, and accountability) and the dependent variable (public service satisfaction). A non-probability sampling strategy utilizing a hybrid purposive and snowball sampling technique was employed. This strategy was chosen because a complete sampling frame of all active digital public service users in Medan City was unavailable. Purposive criteria ensured that respondents were Medan residents aged 17 or older who had actively utilized municipal digital platforms (e.g., OSS, SIBISA, or LAPOR) within the past year.

To expand reach across diverse urban sub-districts, data collection leveraged the snowball sampling mechanism via online channels. The survey instrument was constructed using Google

Forms and initially distributed to key seed contacts across local community groups, social media platforms, and direct messaging networks. These initial respondents were then requested to forward the questionnaire to their broader peers and networks. This approach facilitated access to hard-to-reach urban populations and ensured a diverse, uniform cross-section of respondents. Following the sample size guidelines established by Hair et al. (2010; 2018), which specify that maximum likelihood estimation in structural modeling requires a minimum ratio of 5 to 10 observations per measured indicator, a total sample size of 324 valid responses was secured. This sample size exceeds the minimum threshold, ensuring adequate statistical power, model stability, and generalizability for complex variable testing.

Data were gathered using a structured questionnaire. All latent constructs were operationalized into multi-item measurement scales adapted from established smart governance and public satisfaction literature: Transparency: Measured through items evaluating operational clarity, information accessibility, and real-time process tracking; Collaboration: Measured through user participation mechanisms, feedback loops, and co-creation channels. Accountability: Measured through service responsibility, complaint handling speed, and administrative integrity. Public Satisfaction: Measured through overall user fulfillment, service reliability, and user experience. Data analysis was conducted using Structural Equation Modeling (SEM) implemented via IBM SPSS AMOS Version 26. SEM was chosen over traditional multiple regression analysis because of its superior capacity to simultaneously evaluate complex structural path relationships, estimate latent variables while accounting for measurement error, and validate multidimensional construct frameworks (Kline, 2016).

RESULT AND DISCUSSION

Descriptive data analysis was done after two months of data gathering. For each variable, the state of the respondents' responses is described by this analysis. Three hundred and twenty-four questionnaires were distributed by respondents. There were 324 completed surveys that met the sample requirements and were returned. The tendency of respondents' responses about the conditions of each study variable is then determined using the findings of the questionnaire responses.

In this study, confirmatory factor analysis was utilized to test the dimensions before using structural equation modeling (SEM) for data analysis. The SEM model's evaluation will also be examined in order to determine and assess the suggested model's adequacy. Once all of the data processing outcomes are known, they will be discussed, and finally, conclusions based on the analysis of these results. This section will explain the descriptive data obtained from the

respondents. Descriptive research data is presented so that the profile of the data can be seen in

Table 1. Distribution of Respondent

Gender	Frequency	Percentage
Male	164	50,6%
Female	160	49,4%
Total	324	100,0%

Source: Processed from Primary Data

Table 1 presents the distribution of respondents according to gender. From the total 324 respondents, 164 persons or 50.6% are males, and the remaining 160 persons or 49.4% are females. Thus, these results indicate a relatively balanced composition of respondents between males and females. This is evident from the difference in percentage between the two, which is only 1.2%. This balance indicates that the data is not dominated by either gender, allowing it to proportionally represent the perceptions of both groups. It is because of the almost even distribution of survey respondents that biases due to gender in the analysis can be minimized. Therefore, the results regarding the studied variables, such as perception, satisfaction, or service evaluation, will be representative of the perceptions of both genders and can be generalized to societal views without significant differences based on gender.

SEM Result

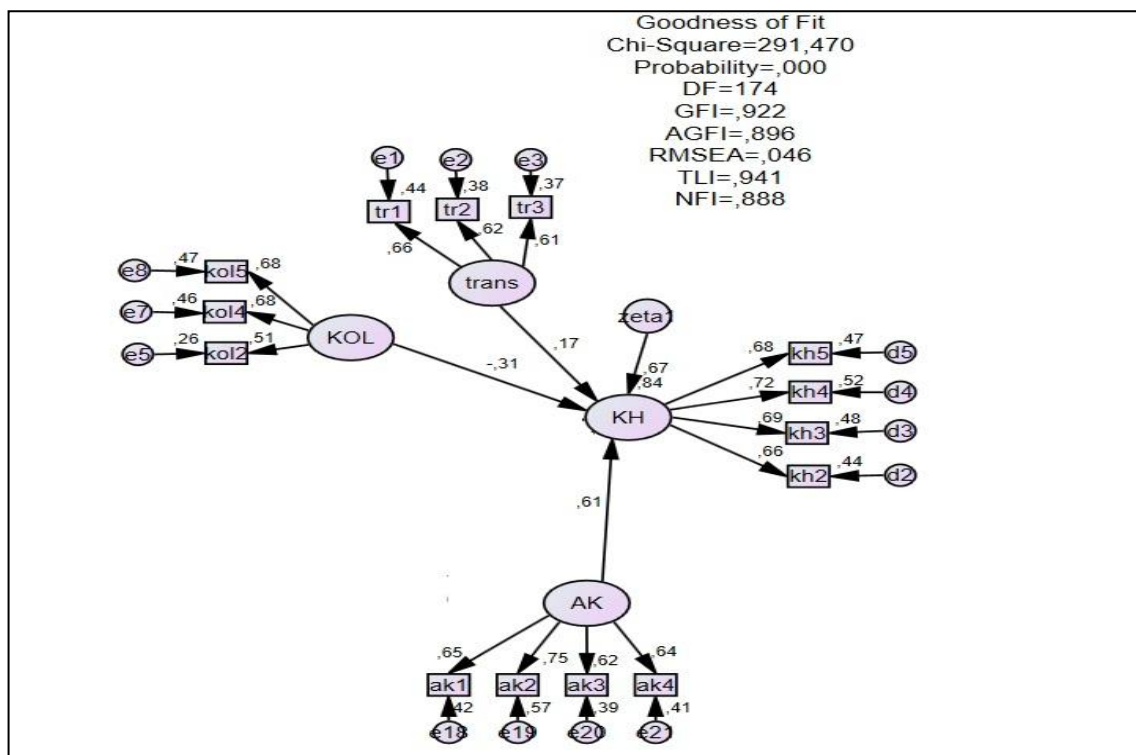


Figure 1. Result of Structural Equation Model (SEM)

SEM analysis modeling requires developing a measurement model as well as a structural causality model. The measuring model will provide an assessment of convergent and discriminant validity. Meanwhile, the structural model will test predictive validity. This study's hypothesis testing, which uses the SEM model, is carried out using AMOS 24.0 software. Figure 1 depicts the goodness of fit (GOF) values for the whole model SEM. The goodness of fit (GOF) test yielded the following results: Chi-Square = 291.470, probability = 0.000, degree of freedom = 174, CMIN/DF = 1.015, GFI = 0.922, AGFI = 0.896, NFI = 0.888, RMSEA = 0.046, and RMR = 0.017. The GOF criterion results met the required cut-off value, indicating that the research model is a suitable fit for analyzing and testing the suggested hypothesis.

Validity Test

Validity testing assesses the research instrument's ability to measure the research phenomenon. This testing is critical to ensuring that the data collected accurately represents the phenomenon under study, so preparing the instrument for future research. This test determines if the questionnaire items or indicators in a model accurately capture the core of the variable being examined.

Table 2 shows the results of the construct validity test utilizing the factor loading values for each indication in each research variable, which are Public Satisfaction, Transparency, Collaboration, and Accountability. A factor loading value of > 0.50 shows that an indicator accurately represents the construct being measured.

Table 2. Validity Test

Construct	Indicator	Loading Factor	Conclusion
Public satisfaction	service PS1	0,662	Valid
	PS2	0,582	Valid
	PS3	0,621	Valid
	PS4	0,623	Valid
	PS5	0,609	Valid
Transparency	TRANS1	0,656	Valid
	TRANS2	0,668	Valid
	TRANS3	0,566	Valid
Collaboration	COL1	0,522	Valid
	COL2	0,510	Valid
	COL3	0,687	Valid
	COL4	0,765	Valid
Accountability	ACC5	0,518	Valid
	ACC4	0,697	Valid
	ACC3	0,624	Valid
	ACC2	0,749	Valid
	ACC1	0,591	Valid

Source: Processed from Primary Data

Reliability Test

Table 3. Reliability Test Results Based on the Fit Model

Variables	Composite Reliability ≥ 0.7	Variance Extracted ≥ 0.5	Result
Public service satisfaction	0,75	0,57	Reliabel
Transparency	0,73	0,53	Reliabel
Collaboration	0,79	0,62	Reliabel
Accountability	0,77	0,59	Reliabel

Source: Processed from Primary Data

Table 4. Structural Parameter Estimates Direct Effect: Path Analysis Model (N=324)

Hypothesis	Structural Path	CR	t-value	p	Conclusion
H1	Transparency → Public service satisfaction	3,821	1,96	0,00	significant
H2	Collaboration → Public service satisfaction	3,475	1,96	0,00	significant
H3	Accountability → Public service satisfaction	6,426	1,96	0,00	significant

Source: Processed from Primary Data

The Relationship Between Transparency and Public Service Satisfaction

Table 4 shows a significant association between transparency and public service satisfaction ($3.821 > 1.96$, $p < 0.05$), supporting the hypothesis. Transparency influences public service satisfaction. Within the Smart Governance paradigm, data transparency is an important driver of public satisfaction with public services (Minarni, 2025). Transparency is not simply a technological component, but also a tool for empowering citizens and building confidence between the government and the community (Hsu, 2025). This suggests that information transparency is the most important characteristic perceived by the public when evaluating the quality of government services.

Public satisfaction is strongly dependent on the government's capacity to settle public issues swiftly and easily. Procedure transparency (for example, explicit SOPs made available through a public information portal). This is done to reduce uncertainty, allowing people to understand their rights and obligations while also monitoring the service status in real time. Transparency also alleviates the burden of bureaucracy through digital technology, streamlining procedures, saving time, and cutting transaction costs for the general public (Shabnam Sharmin

& Rakibul Hasan Chowdhury, 2025). Transparency serves as a tool for increasing public trust. When the government releases data on choices, budget usage, and institutional performance, the public may be confident that services are provided honestly and without discrimination. This high credibility immediately boosts citizens' positive perceptions of any services they get (Park & Blenkinsopp, 2011).

Table 4 shows that the hypothesis is supported since the link between Collaboration and Public Service Satisfaction has a value of $3.475 > 1.96$ with a significance level of < 0.05 . Public service satisfaction is impacted by collaboration. Collaboration is a transforming element that transforms service delivery from an administrative procedure to an engagement that affects the welfare of the community (Neumann et al., 2019). Partnerships with the community and cross-agency cooperation guarantee that government services and activities actually address the demands of the populace (Viale Pereira et al., 2017). Through this active participation, the bureaucracy no longer designs public services unilaterally; rather, it gains a thorough awareness of community expectations, which immediately raises community satisfaction levels (Pandey, 2024). In smart governance, citizens are seen as partners and co-creators in the creation of public services (co-production), in addition to being consumers of services (Kaiser, 2024). Because their opinions are respected, the community benefits psychologically and practically from increased innovation and acceptance of government decisions brought about by community involvement in policymaking and implementation (Volkery & Ribeiro, 2009). Through cooperation, governments can take advantage of local resources to come up with creative answers to challenging urban issues. The government can remove obstacles to services that cannot be addressed by traditional means, resulting in a more effective and efficient service experience, by providing a forum for citizens, the private sector, and academics to exchange ideas (Sulistyaningsih et al., 2023).

The Relationship Between Collaboration and Public Service Satisfaction

Service Satisfaction has a value of $3.475 > 1.96$ with a significance level of < 0.05 . Public service satisfaction is impacted by collaboration. Collaboration is a transforming element that transforms service delivery from an administrative procedure to an engagement that affects the welfare of the community (Neumann et al., 2019). Partnerships with the community and cross-agency cooperation guarantee that government services and activities actually address the demands of the populace (Viale Pereira et al., 2017). Through this active participation, the bureaucracy no longer designs public services unilaterally; rather, it gains a thorough awareness

of community expectations, which immediately raises community satisfaction levels (Pandey, 2024).

From a theoretical standpoint, these findings affirm that collaboration functions as a transformative governance element, shifting public service delivery away from traditional, top-down administrative procedures toward dynamic civic engagements that directly enhance community welfare (Neumann et al., 2019). In modern municipal administration, multi-stakeholder partnerships and cross-agency integration ensure that public policies and digital platforms remain responsive to the evolving needs of the citizenry (Viale Pereira et al., 2017). By replacing unilateral service design with structured civic dialogue, municipal institutions develop a nuanced understanding of public expectations, which directly elevates institutional legitimacy and user satisfaction (Pandey, 2024)

Within smart governance paradigms, citizens are no longer conceptualized as passive recipients of state services; rather, they serve as essential co-creators and partners in public service provision—a process widely recognized as service co-production (Kaiser, 2024). Solicitous inclusion of community inputs in policy formulation yields both practical and psychological benefits: it accelerates municipal innovation, drives policy compliance, and strengthens democratic trust (Volkery & Ribeiro, 2009)

In practical terms for developing metropolitan contexts like Medan City, collaborative governance enables local authorities to leverage distributed local intelligence, private sector agility, and academic research to address complex urban challenges (Sulistyaningsih et al., 2023). By establishing accessible digital feedback loops and collaborative platforms (such as Medan Rumah Kita and LAPOR), the municipal administration can dismantle structural service barriers that conventional bureaucratic channels fail to resolve, ultimately delivering a more agile, transparent, and citizen-centric service experience

The Relationship between Accountability and Public Service Satisfaction

Table 4 shows a significant link between Accountability and Public Service Satisfaction ($6.426 > 1.96$, $p < 0.05$), supporting the hypothesis. Accountability influences public service satisfaction. Accountability has a substantial positive impact on public satisfaction and people's quality of life within the context of wise governance. This connection is founded on the idea that holding government accountable for its activities would result in more effective and trustworthy public services (Manenji & Marufu, 2016). Accountability guarantees that public resources and assets are handled honestly and efficiently, which is critical in providing high-quality services (Wong & Welch, 2004). The commitment of responsible leaders is reflected in the improvement of

public administration, with every policy aimed at satisfying residents' real needs promptly (Lindquist & Huse, 2017).

From a theoretical perspective, accountability serves as a cornerstone for elevating public satisfaction and enhancing citizens' overall quality of life within modern urban environments. Grounded in institutional theory, this relationship reflects the fundamental premise that enforcing institutional responsibility directly optimizes public service efficacy while fortifying civic trust (Manenji & Marufu, 2016). Within smart governance ecosystems, accountability mechanisms guarantee that public assets, digital infrastructure, and municipal funds are managed with fiscal integrity and operational efficiency, factors essential for delivering high-quality, reliable services (Wong & Welch, 2004).

In the empirical context of Medan City, these findings highlight that technological adoption alone is insufficient without transparent backend responsiveness. The dedication of administrative leadership to operational accountability manifests in administrative modernization, ensuring that digital policy initiatives directly target real-time civic grievances in a prompt and reliable manner (Lindquist & Huse, 2017). When citizens observe that municipal platforms such as integrated complaint channels yield actionable, closed-loop resolution rather than administrative inertia, institutional credibility rises, driving direct improvements in perceived service quality.

CONCLUSION

This study investigated the structural impacts of smart governance dimensions specifically transparency, collaboration, and accountability—on public service satisfaction within the context of Medan City's digital transformation initiatives. Grounded in Structural Equation Modeling (SEM) analyzing 324 valid responses, the empirical findings confirm that all three dimensions exert a statistically significant, positive influence on citizen satisfaction, with all Critical Ratio (CR) values comfortably exceeding the critical threshold of 1.96 ($p < 0.05$). Among the tested constructs, accountability emerged as the single strongest predictor of public service satisfaction, demonstrating the highest critical ratio (CR=6.426). This finding underscores that while digital tools streamline administrative processes, citizens place the highest premium on institutional responsiveness, complaint resolution efficacy (e.g., via platforms like LAPOR), and administrative integrity. Transparency registered the second-highest impact (CR=3.821), highlighting that clear Standard Operating Procedures (SOPs) and real-time tracking of public service workflows reduce procedural ambiguity and foster civic trust. Finally, collaboration demonstrated a significant positive effect (CR=3.475), proving that involving citizens and cross-sectoral stakeholders as co-creators in public service delivery significantly enhances perceived service value.

Acknowledgment

The author expresses his deepest gratitude to the Research Institute of the University of North Sumatra (USU) for financial support provided through the Basic Research/Novice Lecturer Research Scheme for the 2022 Fiscal Year. This support has made this research possible. The author also expresses his appreciation to colleagues in the Public Administration Study, Faculty of Social and Political Sciences, and all parties who provided technical contributions during the research.

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