

## THE ROLE OF GOOD CORPORATE GOVERNANCE AND INFORMATION AND COMMUNICATION TECHNOLOGY IN IMPROVING SERVICE QUALITY THROUGH SERVICE EFFICIENCY: EVIDENCE FROM PT PLN (PERSERO) UP3 BERAU

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### Abstract

The development of the Society 5.0 era requires State-Owned Enterprises (SOEs) to improve public service quality amid increasing technological disruption and rising public expectations. However, public service delivery in SOEs continues to face strategic challenges, such as complaints regarding delays, inefficiency, procedural uncertainty, and low responsiveness. This study aims to examine the effects of Good Corporate Governance and Information and Communication Technology on service quality through service efficiency at PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan Berau. The study population consisted of 72 employees, and 69 valid responses were obtained using a census (saturated sampling) method. Data were collected through structured five-point Likert questionnaires and organizational documents, and analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS). The results indicate that GCG significantly improves both service quality and service efficiency, and indirectly enhances service quality through service efficiency. ICT significantly influences service efficiency and indirectly improves service quality, although its direct effect on service quality is not significant. Service efficiency was found to mediate the relationships between GCG and ICT with service quality. These findings highlight the importance of implementing GCG principles and integrating ICT to streamline processes, enhance efficiency, and ultimately improve the quality of public services in SOEs.

**Keyword:** *Good Corporate Governance, Information and Communication Technology, Service Efficiency, Service Quality*

### INTRODUCTION

The development of the Society 5.0 era requires State-Owned Enterprises (SOEs) to enhance the quality of public services in a professional manner and with strong orientation toward societal needs (Rohayati & Abdillah, 2024; Zhang et al., 2022). SOEs are confronted with increasingly complex competitive challenges arising from technological disruption, rapid changes in the business landscape, and the demand to adapt to technological integration such as artificial intelligence, the Internet of Things, and integrated digital systems. Under these conditions, SOEs are also required to balance their dual roles as business entities and public service providers effectively and sustainably (Xie et al., 2022). Issues related to public service quality in SOEs remain a strategic concern. Numerous public complaints indicate that public services provided by the government, both at the national and regional levels, are still suboptimal (Rohayati & Abdillah, 2024). The increasing number of public complaints each year reflects serious problems in public service delivery, including service delays, procedural uncertainty, illegal levies, and low responsiveness of public officials (Komolafe, 2021).

To date, the quality of public services as an outcome of governmental decentralization has remained below public expectations (Sander & Prathama, 2021). As state-owned entities that interact directly with the public, SOEs play a strategic role in providing public goods and services. Global competition and rising public expectations compel SOEs to continuously adapt, particularly by improving the efficiency of resource utilization to deliver high-quality services (Akbar et al., 2020). Organizational efficiency is a critical factor as it contributes to cost reduction, increased productivity, and the achievement of competitive advantage (Andhika, 2025). In the context of public service delivery, service efficiency reflects an organization's ability to optimally manage resources to produce services that

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are timely, accurate, and aligned with public needs (Valackiene & Giedraitiene, 2024). Improving public service quality is closely linked to the implementation of Good Corporate Governance (GCG) principles. GCG represents a corporate governance system based on the principles of transparency, accountability, responsibility, independence, and fairness, as stipulated in the Regulation of the Minister of State-Owned Enterprises No. PER-02/MBU/03/2023. In public service contexts, GCG serves as an essential instrument to ensure that organizational management is conducted professionally, transparently, and in the public interest. Effective implementation of GCG is believed to enhance public trust as well as the effectiveness and efficiency of public services (Amir et al., 2023; Razak et al., 2023). In addition to GCG, the utilization of Information and Communication Technology (ICT) is also a crucial factor in improving the efficiency and quality of public services. Service digitalization through e-government, web-based administrative systems, and online complaint mechanisms has improved service accessibility and responsiveness. Empirical studies indicate that digital technology adoption can reduce operational costs, enhance service efficiency, and strengthen governmental transparency and accountability (Hutabarat & Lubis, 2025; Lubis & Nasution, 2024; Zein et al., 2025). Nevertheless, digitalization initiatives continue to face significant challenges, including limited infrastructure, digital divides, and low levels of technological literacy among public officials and the broader community.

Challenges related to service quality and efficiency are also evident at PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan (UP3) Berau, a state-owned enterprise responsible for electricity provision. PT PLN (Persero) UP3 Berau frequently receives customer complaints related to power outages caused by energy deficits, generator failures, distribution issues in remote areas, and external factors such as extreme weather conditions. Service disruption data indicate that the number of customer complaints increased significantly, peaking in May 2025, suggesting that the quality of service delivery remains suboptimal. As a state-owned enterprise, PT PLN (Persero) is obligated to implement Good Corporate Governance as mandated by the Regulation of the Minister of State-Owned Enterprises No. PER-01/MBU/2011. The implementation of GCG is not merely a regulatory requirement but also a strategic necessity to ensure business sustainability, enhance corporate value, and strengthen competitiveness. However, in practice, PT PLN (Persero) UP3 Berau continues to face various challenges, including operational inefficiencies, limited human resource capabilities, resistance to change, and suboptimal utilization of digital technology.

Previous studies have demonstrated that the implementation of GCG positively affects improvements in public service quality (Amir et al., 2023) and management efficiency in SOEs (Razak et al., 2023). Additionally, ICT has been shown to enhance organizational efficiency and service quality (Hutabarat & Lubis, 2025; Lubis & Nasution, 2024; Zein et al., 2025). Service efficiency also contributes to increased customer satisfaction and perceived service quality (Rahmawati & Tjenreng, 2025; Raymond et al., 2015). However, there remains a limited number of studies that specifically examine the role of service efficiency as a mediating variable in the relationship between good corporate governance, information and communication technology, and service quality. Based on this research gap, the present study aims to examine the effects of Good Corporate Governance and Information and Communication Technology on Service Quality through Service Efficiency at PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan Berau. This study adopts an employee perspective in assessing the implementation of GCG and the utilization of ICT as efforts to improve service efficiency and service quality. Accordingly, this research is expected to contribute empirically to the development of public service management literature, particularly regarding the mediating mechanism of service efficiency, while also providing practical implications for SOEs in designing sustainable strategies to enhance service quality.

## LITERATURE REVIEW

### Theoretical Foundation

#### Stewardship Theory

Stewardship Theory is grounded in the assumption that managers are inherently trustworthy, responsible, and oriented toward organizational goals rather than personal interests. Raharjo (2007), citing Davis et al (1997), explains that this theory originates from psychological and sociological perspectives that view managers as stewards who act in the best interests of the organization and its principals. In this perspective, organizational success is aligned with the satisfaction of owners and stakeholders, encouraging managers to emphasize accountability, transparency, and performance improvement. Stewardship Theory is therefore relevant in explaining governance mechanisms that rely on trust, ethical conduct, and effective managerial responsibility to achieve sustainable organizational outcomes.

### **Resource-Based Theory**

Resource-Based Theory (RBT) was initially introduced by Wernerfelt (1984) and later developed by (Alvarez & Barney, 2014), emphasizing that firm performance and sustainable competitive advantage are derived from internal resources and capabilities (Davis et al., 1997). According to Barney & Arian (2005), resources that generate sustained advantage must be valuable, rare, inimitable, and non-substitutable (VRIN). From this perspective, intangible resources such as corporate governance structures, information and communication technology, and human resource competencies are strategic assets that can enhance organizational efficiency and service quality. RBT thus provides a strong theoretical foundation for examining how governance and technological resources contribute to superior service performance.

### **Service Quality**

Service quality refers to the degree of excellence expected and the organization's ability to meet or exceed those expectations (Tjiptono & Diana, 2017, 2022). Eisaguirre et al (2019), as cited in Wijaya et al (2019), define service quality as the extent to which delivered services match customer expectations. High service quality plays a critical role in shaping customer satisfaction and organizational image, as services that meet or surpass expectations are perceived as high quality (Pasaribu et al., 2026; Supardin & Dharasta, 2022). Kotler et al (2016) conceptualize service quality through five key dimensions: reliability, tangibles, responsiveness, assurance, and empathy. In the context of public services, service quality reflects not only operational performance but also an organization's commitment to fulfilling its obligations to the public efficiently and responsibly (Pasaribu et al., 2026; Supardin & Dharasta, 2022). Consequently, service quality represents a key outcome of effective governance and efficient service delivery.

### **Service Efficiency**

Service efficiency is defined as the relationship between inputs and outputs, indicating how well an organization utilizes its resources to achieve optimal results (Sudiro et al., 2024). Efficiency is achieved when minimal inputs—such as time, cost, and labor—produce maximum or optimal outputs (Blocher & Harris Jr, 2021a, 2021b; Kotler et al., 2016). Monoarfa (2012) highlights that efficient public services are characterized by simplified procedures, shorter service times, reasonable costs, and continuous innovation. Efficient service delivery is closely linked to service quality, as streamlined and well-managed processes enhance customer experience and satisfaction (Munarko, 2022). Therefore, service efficiency is often viewed as a mediating mechanism through which organizational governance and technological resources influence service quality.

### **Good Corporate Governance**

Good Corporate Governance (GCG) refers to the system and processes by which organizations are directed and controlled to enhance performance, accountability, and long-term value creation while considering stakeholder interests (KEP-117/M-MBU/2002). The National Committee on Governance Policy (KNKG, 2021) emphasizes that GCG establishes effective checks and balances through principles of transparency, accountability, responsibility, independence, and fairness. Effective implementation of GCG promotes efficient organizational management and strengthens service performance by ensuring ethical conduct, managerial accountability, and strategic oversight (Riyandika & Saad, 2020; Sarafina & Saifi, 2017). In the context of state-owned enterprises, GCG serves as a fundamental framework for delivering professional, transparent, and sustainable public services.

### **Information and Communication Technology**

Information and Communication Technology (ICT) encompasses systems and tools used to collect, process, store, and disseminate information effectively (Santoso et al., 2021). Rogers (2021) argues that appropriate utilization of ICT enhances organizational efficiency and communication effectiveness by enabling rapid information exchange and interactive engagement (A. G. Rogers & Leung, 2023). Key indicators of ICT include the availability of computer systems, communication infrastructure, and user competence (Meiryani et al., 2019; Sultana et al., 2025), as well as the ability to access accurate, real-time information supported by adequate facilities and human resources (Khairunnisa & Sari, 2022). In public service organizations, ICT acts as a critical enabler of service efficiency by streamlining processes, improving transparency, and supporting data-driven decision-making. Consequently, ICT plays a strategic role in enhancing both service efficiency and service quality.

## **Hypothesis Development**

### **Good Corporate Governance and Service Quality**

Good Corporate Governance (GCG) plays a crucial role in enhancing organizational performance through improved decision-making processes, accountability, and transparency. The implementation of GCG principles—such as transparency, accountability, responsibility, independence, and fairness—encourages organizations to operate more efficiently and focus on fulfilling stakeholder needs, particularly customers. In the context of public service organizations, strong governance mechanisms ensure that services are delivered in a consistent, reliable, and customer-oriented manner. Empirical evidence supports this argument. Ferlinda (2010) found that the implementation of GCG at PT Telkom Banyuwangi was effective and significantly improved service quality by strengthening governance principles across organizational processes. Based on this theoretical and empirical foundation, the following hypothesis is proposed:

H1: Good Corporate Governance has a significant effect on service quality at PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan Berau.

### **Information and Communication Technology and Service Quality**

Information and Communication Technology (ICT) has become a key driver of service quality improvement in both public and private sectors. ICT enhances service delivery by increasing efficiency, accessibility, transparency, and personalization. The adoption of digital systems accelerates administrative processes, reduces bureaucratic complexity, and enables real-time tracking of service status, thereby improving customer satisfaction. Nur Mansyur et al (2025) demonstrated that optimal utilization of ICT in public services contributes positively to service quality and public satisfaction by modernizing service systems and strengthening interactions between service providers and users. Accordingly, this study proposes the following hypothesis:

H2: Information and Communication Technology has a significant effect on service quality at PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan Berau.

### **Good Corporate Governance and Service Efficiency**

GCG also contributes to improved service efficiency by promoting professional management, minimizing abuse of authority, and optimizing resource allocation. Transparent and accountable governance structures facilitate better operational control and process optimization, leading to more efficient service delivery. Razak et al (2023) examined the effect of GCG on the efficiency of state-owned enterprises and found that public ownership positively influences management efficiency, although the roles of boards of directors and independent commissioners varied. These findings indicate that governance mechanisms remain essential determinants of efficiency in public organizations. Therefore, the following hypothesis is formulated:

H3: Good Corporate Governance has a significant effect on service efficiency at PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan Berau.

### **Information and Communication Technology and Service Efficiency**

ICT significantly enhances service efficiency by enabling task automation, accelerating service processes, improving communication, and increasing information accessibility. Digitalization reduces operational costs, improves productivity, and supports faster and more accurate decision-making. Zein et al (2025) found that digital transformation in Indonesia's public sector effectively reduced bureaucratic complexity, improved accountability, and enhanced operational efficiency, despite ongoing challenges such as infrastructure limitations and digital literacy gaps. Based on these findings, the following hypothesis is proposed:

H4: Information and Communication Technology has a significant effect on service efficiency at PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan Berau.

### **Service Efficiency and Service Quality**

Service efficiency refers to the ability to achieve optimal outputs with minimal inputs, while service quality emphasizes customer satisfaction through dimensions such as reliability, responsiveness, assurance, empathy, and tangibility. These two concepts are closely interrelated. Efficient service processes result in faster and more responsive service delivery, which positively shapes customer perceptions of service quality. Previous studies have consistently shown that efficiency contributes to positive customer experiences. Munarko (2022) highlighted that simplified work processes and reduced bureaucracy enable superior service delivery. Similarly, Rahmawati & Tjenreng (2025), Raymond et al (2015), and Monoarfa (2012) confirmed that service efficiency—characterized by

speed, accuracy, and ease of access—directly enhances perceived service quality. Thus, the following hypothesis is proposed:

H5: Service efficiency has a significant effect on service quality at PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan Berau.

### **The Mediating Role of Service Efficiency in the Relationship between GCG and Service Quality**

The implementation of GCG leads to better decision-making, reduced misuse of authority, and more streamlined operational processes, which in turn enhance service efficiency. Improved efficiency subsequently contributes to higher service quality delivered to stakeholders. Empirical evidence from Razak et al (2023) confirms that GCG influences management efficiency in state-owned enterprises, while Ferlinda (2010) demonstrated that GCG directly improves service quality. These findings suggest that service efficiency may act as an important mediating mechanism in this relationship. Accordingly, this study proposes:

H6: Good Corporate Governance has a significant effect on service quality through service efficiency at PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan Berau.

### **The Mediating Role of Service Efficiency in the Relationship between ICT and Service Quality**

ICT adoption enables faster processes, task automation, and easier access to information, which collectively enhance operational efficiency. Increased efficiency reduces service delivery time and costs, improves productivity, and ultimately leads to better service quality. Zein et al (2025) and Nur Mansyur et al (2025) provide empirical support that ICT utilization improves efficiency and service quality in public sector organizations. These findings indicate that service efficiency plays a mediating role in translating technological advancements into improved service outcomes. Therefore, the following hypothesis is proposed:

H7: Information and Communication Technology has a significant effect on service quality through service efficiency at PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan Berau.

## **RESEARCH METHODOLOGY**

### **Research Object and Setting**

This study was conducted at PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan (UP3) Berau, a state-owned enterprise responsible for electricity service delivery to the public. The organization was selected due to increasing performance efficiency demands on Indonesian state-owned enterprises (SOEs), particularly in the context of Society 5.0, which emphasizes digitalization, automation, and sustainable governance. PT PLN (Persero) is also required to improve operational efficiency, reduce energy losses, enhance digital service systems, and contribute to Indonesia's Net Zero Emission 2060 target through renewable energy adoption and carbon emission reduction initiatives. These conditions make PLN UP3 Berau a relevant empirical setting for examining governance, technology, efficiency, and service quality.

### **Research Design**

This study adopts a quantitative research approach based on the positivist paradigm, aiming to test hypotheses and examine causal relationships among variables. Quantitative research is appropriate for analyzing relationships between latent constructs using statistical methods (Sugiyono, 2021, 2008). The research design is explanatory research, which seeks to explain causal relationships between variables (Sugiyono, 2013, 2018). Specifically, this study examines the effects of Good Corporate Governance (GCG) and Information and Communication Technology (ICT) on Service Quality, with Service Efficiency acting as a mediating variable.

### **Population and Sample**

#### **Population**

The population of this study consists of all employees of PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan (UP3) Berau, totaling 72 employees, comprising 66 male and 6 female staff members. This population includes employees across various functional units and job levels who are directly involved in operational and service-related activities, making them relevant sources of information for assessing the implementation of Good Corporate Governance, the utilization of Information and Communication Technology, as well as service efficiency and service quality within the organization.

### **Sample**

Given that the population size is fewer than 100 respondents, this study employs a census (saturated sampling) technique, in which all members of the population are included as the research sample (Arikunto, 2021; Sugiyono, 2019). This approach was selected to ensure comprehensive representation and to minimize sampling bias, as every employee had an equal opportunity to contribute their perceptions. From the total population, 69 valid questionnaires were successfully collected and deemed suitable for analysis, and these responses constitute the unit of observation in this study, providing a reliable basis for examining the relationships among governance, technology utilization, service efficiency, and service quality.

### **Types and Sources of Data**

#### **Data Type**

This study utilizes quantitative data, expressed in numerical form and suitable for statistical analysis, which were obtained from respondents' responses to structured questionnaires. The questionnaires employed Likert-scale measurements to capture the level of agreement or perception of respondents regarding Good Corporate Governance, Information and Communication Technology, Service Efficiency, and Service Quality, thereby enabling objective measurement and empirical testing of the proposed research model.

#### **Data Sources**

This study employed two types of data sources: primary data, collected directly from respondents through questionnaire distribution and organizational observation, and secondary data, obtained from organizational documents, reports, and previous studies related to governance, information and communication technology, service efficiency, and service quality. The respondents in this study were employees of PT PLN (Persero) Unit Pelaksana Pelayanan Pelanggan (UP3) Berau who are directly involved in operational and service activities. Employees were selected as respondents because they possess comprehensive knowledge of the implementation of Good Corporate Governance, the utilization of Information and Communication Technology, and the conditions of service efficiency and service quality within the organization, enabling them to provide accurate and relevant assessments in line with the research objectives.

### **Operational Definition and Measurement of Variables**

#### **Research Variables**

This study consists of four main research variables. The independent variables are Good Corporate Governance (X1), which reflects the principles of transparency, accountability, responsibility, independence, and fairness in organizational management, and Information and Communication Technology (X2), which refers to the utilization of digital systems and technological infrastructure to support organizational processes and service delivery. The mediating variable is Service Efficiency (Z), representing the organization's ability to deliver services optimally by minimizing time, cost, and resource usage. The dependent variable is Service Quality (Y), which describes the level of excellence of services perceived by service users in meeting their expectations and needs.

#### **Measurement Scale**

All variables were measured using a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree. Each construct was operationalized through multiple reflective indicators adapted from relevant literature.

#### **Data Collection Technique**

Data were collected using a closed-ended questionnaire, where respondents selected predefined response options. This method ensures uniformity of responses and facilitates quantitative analysis. The questionnaires were distributed directly to employees of PT PLN (Persero) UP3 Berau.

#### **Data Analysis Technique**

##### **Structural Equation Modeling (SEM-PLS)**

This study employs Structural Equation Modeling (SEM) using the Partial Least Squares (PLS) approach, analyzed with SmartPLS software. SEM-PLS is suitable for predictive research, complex models with mediation effects, small sample sizes, and data that do not require multivariate normality (Hair Jr et al., 2021).

**Measurement Model Evaluation (Outer Model)**

The measurement model was evaluated to ensure the adequacy of validity and reliability. Convergent validity was assessed through indicator loadings greater than 0.70 and Average Variance Extracted (AVE) values exceeding 0.50, indicating that the indicators adequately represent their respective constructs (Hair Jr et al., 2017). Discriminant validity was examined using cross-loadings and the Fornell–Larcker criterion to confirm that each construct is empirically distinct from the others. Reliability was evaluated using Composite Reliability and Cronbach’s Alpha, with values above 0.70 demonstrating satisfactory internal consistency and measurement reliability (J. Hair et al., 2017).

**Structural Model Evaluation (Inner Model)**

The structural model (inner model) was evaluated to assess the relationships among constructs by examining the coefficient of determination ( $R^2$ ) to determine the model’s predictive power, path coefficients to evaluate the strength and direction of the hypothesized relationships, as well as effect sizes and mediation effects within the model. According to J. F. Hair (2014),  $R^2$  values of 0.75, 0.50, and 0.25 indicate strong, moderate, and weak levels of predictive power, respectively, providing a basis for interpreting the explanatory capability of the proposed model.

**Hypothesis Testing**

Hypothesis testing was conducted using the bootstrapping procedure in SmartPLS with 5,000 resamples, as recommended by Hair Jr et al (2017), to ensure robust estimation of path significance. The significance of the structural relationships was evaluated using t-statistics, with critical values of 1.65, 1.96, and 2.58, corresponding to the 10%, 5%, and 1% significance levels, respectively. Furthermore, mediation effects were examined by analyzing direct, indirect, and total effects, following the Baron & Kenny (1986) approach adapted to the SEM-PLS framework.

**Table 1. Research Variables, Operational Definitions, and Measurement Indicators**

No	Variable	Operational Definition	Dimensions and Indicators
1	Good Corporate Governance (X1)	A system that regulates, manages, and supervises business control processes in order to improve service quality at PT PLN (Persero) UP3 Berau (KNKG, 2021).	a) Transparency b) Accountability. c) Responsibility d) Independency e) Equality and Fairness
2	Information and Communication Technology (X2)	Tools and systems used by PT PLN (Persero) UP3 Berau to facilitate information exchange and communication in supporting organizational activities (Khairunnisa & Sari, 2022; Meiryani et al., 2019; Sultana et al., 2025).	a) Computer systems; b) Communication facilities; c) Technology usage skills; d) Information timeliness; e) Information accuracy; f) Capability to provide real-time data.
3	Service Quality (Y)	The ability of PT PLN (Persero) UP3 Berau to deliver services that meet customer expectations through the effective utilization of available resources (Kotler et al., 2016).	a) Reliability; b) Tangibles (physical facilities and service infrastructure); c) Responsiveness (employees’ willingness to help); d) Assurance (security and trust in service delivery); e) Empathy (employees’ care and individualized attention).
4	Service Efficiency (Z)	The ability of PT PLN (Persero) UP3 Berau to provide services optimally by utilizing minimal resources to achieve maximum results (Monoarfa, 2012).	a) Input–output ratio; b) Service time; c) Simplified service procedures; d) Service innovation; e) Service costs.

Source: Processed by the authors (2026)

## RESULTS AND DISCUSSIONS

This study involved a total of 72 respondents with specific characteristics determined by the researcher, namely employees of PT PLN (Persero) UP3 Berau. The respondent characteristics analyzed in this study include age, gender, educational background, and length of employment. A detailed description of respondent characteristics is presented in Table 2 below.

**Table 2. Profile of Respondents Based on Demographic Characteristics**

Characteristics	Category	Frequency	Percentage (%)
Age	21–30 years	28	38.9
	31–40 years	40	55.6
	41–50 years	2	2.8
	51–60 years	2	2.8
Gender	Male	66	91.7
	Female	6	8.3
Education	Senior High School (SMA/SMK)	24	33.3
	Diploma 1 (D1)	6	8.3
	Diploma 3 (D3)	15	20.8
	Bachelor's Degree (S1)	26	36.1
	Master's Degree (S2)	1	1.4
Length of Employment	< 1 year	2	2.8
	1–5 years	10	13.9
	6–10 years	23	31.9
	11–15 years	28	38.9
	16–20 years	7	9.7
	> 20 years	2	2.8

Source: Processed by the authors (2026)

Based on the descriptive statistics presented in Table 2, the majority of respondents were aged 31–40 years, accounting for 55.6% of the total sample. In terms of gender, most respondents were male (91.7%), indicating a male-dominated workforce at PT PLN (Persero) UP3 Berau. Regarding educational attainment, the largest proportion of respondents held a Bachelor's degree (S1), representing 36.1% of the sample. Furthermore, most respondents had a length of employment of 11–15 years, with a percentage of 38.9%, reflecting a relatively experienced workforce.

### Outer Model Evaluation Results (Convergent Validity and Construct Reliability)

The outer model evaluation was conducted to assess the validity and reliability of the measurement model. This evaluation aims to ensure that each indicator appropriately measures its latent construct before proceeding to structural model analysis. The assessment criteria include convergent validity, measured through outer loading values and Average Variance Extracted (AVE), as well as construct reliability, evaluated using Cronbach's alpha and composite reliability. An indicator is considered valid if its outer loading exceeds 0.70, while a construct is deemed reliable if the AVE value is greater than 0.50 and both reliability coefficients exceed 0.70.

Table 3. Convergent Validity and Construct Reliability Results

Variable	Dimension	Indicator	Outer Loading	AVE	CA	CR
<b>Good Corporate Governance (X1)</b>	Transparency	X1.1.1	0.956	0.892	0.959	0.971
		X1.1.2	0.874			
		X1.1.3	0.970			
		X1.1.4	0.975			
	Accountability	X1.2.1	0.962	0.879	0.953	0.967
		X1.2.2	0.961			
		X1.2.3	0.977			
		X1.2.4	0.845			
	Responsibility	X1.3.1	0.820	0.812	0.882	0.928
		X1.3.2	0.941			
		X1.3.3	0.937			
	Independency	X1.4.1	0.984	0.970	0.969	0.985
		X1.4.2	0.986			
	Equality and Fairness	X1.5.1	0.960	0.916	0.954	0.970
		X1.5.2	0.949			
X1.5.3		0.962				
<b>Information and Communication Technology (X2)</b>	Computer System	X2.1.1	0.972	0.946	0.943	0.972
		X2.1.2	0.973			
	Communication Facilities	X2.2.1	0.958	0.909	0.901	0.953
		X2.2.2	0.949			
	User Skills	X2.3.1	0.946	0.909	0.900	0.952
		X2.3.2	0.961			
	Information Timeliness	X2.4.1	0.893	0.775	0.710	0.873
		X2.4.2	0.867			
	Information Accuracy	X2.5.1	0.966	0.934	0.930	0.966
		X2.5.2	0.967			
Real-Time Data Capability	X2.6.1	0.980	0.959	0.957	0.979	
	X2.6.2	0.978				
<b>Service Quality (Y)</b>	Reliability	Y1.1	0.939	0.884	0.868	0.938
		Y1.2	0.941			
	Tangibles	Y2.1	0.992	0.984	0.983	0.992
		Y2.2	0.992			
	Responsiveness	Y3.1	0.944	0.891	0.878	0.943
		Y3.2	0.945			
	Assurance	Y4.1	0.932	0.871	0.852	0.931
		Y4.2	0.935			
	Empathy	Y5.1	0.952	0.896	0.884	0.945
		Y5.2	0.941			
<b>Service Efficiency (Z)</b>	Input-Output Ratio	Z1.1	0.954	0.915	0.907	0.955
		Z1.2	0.958			
	Service Time	Z2.1	0.973	0.947	0.953	0.977
		Z2.2	0.973			
	Simplified Procedures	Z3.1	0.978	0.955	0.899	0.952
		Z3.2	0.977			
	Service Innovation	Z4.1	0.937	0.850	0.825	0.919
		Z4.2	0.907			
	Service Cost	Z5.1	0.951	0.908	0.944	0.973
		Z5.2	0.955			

Source: Primary data, processed by the researchers using SmartPLS 4

Based on Table 3, the results indicate that all indicators demonstrate strong convergent validity, as reflected by outer loading values exceeding the recommended threshold of 0.70. Additionally, the AVE values for all constructs are greater than 0.50, confirming that each construct explains more than half of the variance of its indicators. Regarding reliability, all dimensions exhibit Cronbach's alpha values above 0.70, indicating satisfactory internal consistency. Similarly, composite reliability values exceed 0.70 for all constructs, demonstrating high construct reliability. These findings confirm that the measurement model is both valid and reliable, and therefore appropriate for further analysis of the structural model and hypothesis testing.

### Structural Model Analysis Results

The structural model (inner model) evaluation was conducted to assess the robustness and explanatory power of the proposed research model. This evaluation aims to ensure that the relationships among latent variables are statistically meaningful and theoretically sound. The assessment of the inner model includes the analysis of the coefficient of determination ( $R^2$ ) and predictive relevance ( $Q^2$ ). Each evaluation result is explained as follows.

#### Coefficient of Determination ( $R^2$ )

The coefficient of determination ( $R^2$ ) is used to measure the extent to which exogenous variables explain the variance of endogenous variables. In other words,  $R^2$  indicates the explanatory power of the independent variables on the dependent variables in the model. The results of the  $R^2$  analysis are presented in Table 4.

**Table 4 Coefficient of Determination ( $R^2$ ) Results**

Dependent Variable	R Square	Adjusted R Square
Service Efficiency (Z)	0.769	0.763
Service Quality (Y)	0.670	0.655

Source: Primary data processed by the authors (SmartPLS output)

Based on Table 4, the  $R^2$  value for Service Efficiency (Z) is 0.769, indicating that 76.9% of the variance in service efficiency can be explained by Good Corporate Governance (X1) and Information and Communication Technology (X2). This result suggests that the combined contribution of GCG and ICT to service efficiency is substantial, while the remaining 23.1% is influenced by other variables not included in this study. Meanwhile, the  $R^2$  value for Service Quality (Y) is 0.670, which means that 67.0% of the variance in service quality can be explained by Good Corporate Governance (X1), Information and Communication Technology (X2), and Service Efficiency (Z). The remaining 33.0% of the variance is attributed to other factors beyond the scope of this research. According to commonly accepted criteria in PLS-SEM,  $R^2$  values above 0.50 indicate moderate to substantial explanatory power, suggesting that the proposed structural model demonstrates strong predictive capability.

#### Predictive Relevance ( $Q^2$ )

Predictive relevance ( $Q^2$ ) is used to evaluate how well the model predicts observed values. A  $Q^2$  value greater than zero indicates that the model has adequate predictive relevance, whereas a  $Q^2$  value less than zero suggests poor predictive capability. The  $Q^2$  values were obtained using the blindfolding procedure, and the results are presented in Table 5.

**Table 5 Predictive Relevance ( $Q^2$ ) Results**

Dependent Variable	SSO	SSE	$Q^2 (= 1 - SSE/SSO)$
Service Efficiency (Z)	720.000	419.559	0.417
Service Quality (Y)	720.000	502.732	0.302

Source: Primary data processed by the authors (SmartPLS output)

The results shown in Table 5 indicate that both endogenous variables produce  $Q^2$  values greater than zero, confirming that the model has good predictive relevance. Specifically, the  $Q^2$  value of 0.417 for Service Efficiency (Z) and 0.302 for Service Quality (Y) demonstrate that the exogenous variables are capable of accurately predicting the variability of the endogenous constructs. Overall, these findings confirm that the proposed structural model possesses strong explanatory power and adequate predictive capability, making it suitable for further hypothesis testing and mediation analysis.

Hypothesis Testing

Hypothesis testing was conducted to examine the significance of the effects between exogenous and endogenous variables using the bootstrapping procedure in SmartPLS. A relationship was considered significant if the T-statistic was  $\geq 1.96$  or the P-value was  $< 0.05$  at the 5% significance level. The results of the hypothesis testing and structural model are presented in the following figure and table.

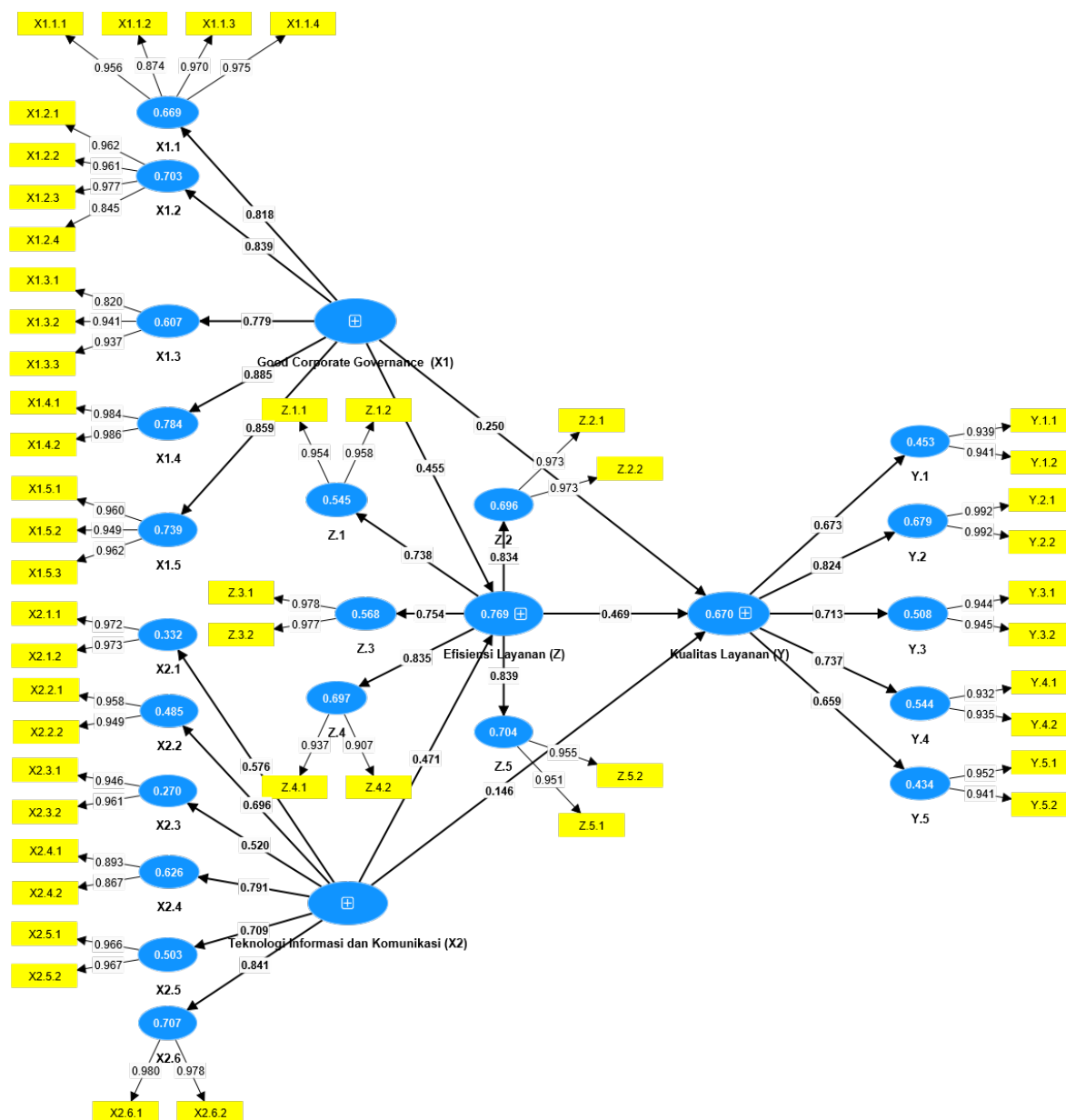


Figure 1 SEM-PLS Construct with Path Coefficient Values

Figure 1 displays the SEM-PLS graphical output of the hypothesis testing results. The findings indicate that Good Corporate Governance has a positive and significant effect on both Service Quality and Service Efficiency, while Information and Communication Technology significantly influences Service Efficiency but does not have a significant direct effect on Service Quality. Furthermore, Service Efficiency has a strong positive effect on Service Quality and functions as a mediating variable that strengthens the indirect effects of both Good Corporate Governance and Information and Communication Technology on Service Quality. Overall, the graphical results confirm that all proposed hypotheses are supported, except for the direct effect of Information and Communication Technology on Service Quality. The hypotheses were tested using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach by examining path coefficients, T-statistics, and p-values, where a hypothesis is considered supported if the T-statistics value exceeds 1.96 and the p-value is less than 0.05, and not supported if these criteria are not met.

This analysis aims to evaluate the effects of Good Corporate Governance (GCG) and Information and Communication Technology (ICT) on Service Quality, both directly and indirectly through Service Efficiency as a mediating variable.

**Table 6 Results of Hypothesis Testing for Direct Effects**

Hypothesis	Relationship	Effect Type	Path Coefficient	T-Statistics	P-Value	Conclusion
H1	Good Corporate Governance → Service Quality	Direct	0.250	2.012	0.044	Supported
H2	Information and Communication Technology → Service Quality	Direct	0.146	1.216	0.224	Not Supported
H3	Good Corporate Governance → Service Efficiency	Direct	0.455	4.499	0.000	Supported
H4	Information and Communication Technology → Service Efficiency	Direct	0.471	4.743	0.000	Supported
H5	Service Efficiency → Service Quality	Direct	0.469	3.982	0.000	Supported
H6	Good Corporate Governance → Service Efficiency → Service Quality	Indirect	0.214	2.874	0.004	Supported
H7	Information and Communication Technology → Service Efficiency → Service Quality	Indirect	0.221	3.123	0.002	Supported

Based on the results presented in Table 6, H1 indicates that Good Corporate Governance has a positive and significant effect on Service Quality, as reflected by a path coefficient of 0.250, a T-statistics value of 2.012, and a p-value of 0.044, suggesting that better governance implementation leads to improved service quality. In contrast, H2 shows that Information and Communication Technology does not have a significant direct effect on Service Quality, with a T-statistics value of 1.216 and a p-value of 0.224. Furthermore, H3 demonstrates that Good Corporate Governance has a positive and significant effect on Service Efficiency (path coefficient = 0.455; T-statistics = 4.499; p-value = 0.000), while H4 confirms that Information and Communication Technology also has a positive and significant effect on Service Efficiency (path coefficient = 0.471; T-statistics = 4.743; p-value = 0.000).

In addition, H5 reveals that Service Efficiency has a positive and significant effect on Service Quality, with a path coefficient of 0.469, a T-statistics value of 3.982, and a p-value of 0.000, indicating that higher efficiency contributes to better service quality. The mediation analysis further shows that H6, which examines the indirect effect of Good Corporate Governance on Service Quality through Service Efficiency, is supported (T-statistics = 2.874; p-value = 0.004), confirming the mediating role of Service Efficiency. Similarly, H7 is supported, as Information and Communication Technology has a significant indirect effect on Service Quality through Service Efficiency (T-statistics = 3.123; p-value = 0.002), indicating that although ICT does not directly influence service quality, it enhances service quality indirectly by improving service efficiency.

## Discussion

### Good Corporate Governance on Service Quality

The results show that Good Corporate Governance has a positive and significant effect on Service Quality, as indicated by a path coefficient of 0.250, a T-statistics value of 2.012, and a p-value of 0.044, confirming that H1 is supported. This finding suggests that the effective implementation of Good Corporate Governance enhances decision-

making processes, accountability, and transparency, which in turn improves service delivery. The application of GCG principles—such as transparency, accountability, responsibility, independence, and fairness—encourages organizations to operate more efficiently and to focus on meeting stakeholder and customer needs. This result is consistent with the study by Ferlinda (2010), which found that the implementation of Good Corporate Governance at PT Telkom Banyuwangi significantly improved service quality, reinforcing the role of GCG as a key determinant of service quality in service-oriented organizations.

### **Information and Communication Technology on Service Quality**

The results indicate that Information and Communication Technology does not have a significant direct effect on Service Quality, as shown by a T-statistics value of 1.216 and a p-value of 0.224, leading to the conclusion that H2 is not supported. Although theoretically ICT is expected to enhance service quality by improving efficiency, accessibility, transparency, and service personalization—thereby accelerating processes, reducing bureaucracy, and enabling real-time service tracking—the empirical findings suggest that these benefits may not be realized directly. This result implies that ICT implementation alone is insufficient to improve service quality without being supported by effective processes or intermediary mechanisms. Nevertheless, this finding contrasts with the study by Nur Mansyur et al (2025), which reported that optimal utilization of ICT significantly improves public service quality and contributes positively to citizen satisfaction, indicating that the impact of ICT on service quality may be context-dependent or mediated by other factors within the organization.

### **Good Corporate Governance on Service Efficiency**

The results demonstrate that Good Corporate Governance has a positive and significant effect on Service Efficiency, as indicated by a path coefficient of 0.455, a T-statistics value of 4.499, and a p-value of 0.000, confirming that H3 is supported. This finding suggests that the implementation of Good Corporate Governance enhances decision-making quality, minimizes the misuse of authority, and promotes more professional and transparent management, which in turn leads to more efficient service processes and optimal resource utilization. This result is partially aligned with the study by Razak et al (2023), which examined the effect of Good Corporate Governance on the management efficiency of State-Owned Enterprises and found that public ownership had a positive effect on efficiency, while the board of directors and independent commissioners did not show a significant positive effect. These findings indicate that although the impact of specific GCG mechanisms may vary, the overall implementation of Good Corporate Governance plays an important role in improving service efficiency.

### **Information and Communication Technology on Service Efficiency**

The results show that Information and Communication Technology has a positive and significant effect on Service Efficiency, as indicated by a path coefficient of 0.471, a T-statistics value of 4.743, and a p-value of 0.000, confirming that H4 is supported. This finding suggests that the effective use of ICT enhances service efficiency by enabling task automation, accelerating service processes, improving communication, and increasing access to information, which collectively reduce operational costs and improve productivity and decision-making accuracy. This result is consistent with the study by Zein et al (2025), which found that digitalization plays a critical role in improving public service efficiency by reducing bureaucratic complexity, accelerating decision-making, and enhancing accountability and transparency. However, the study also highlights that challenges such as limited ICT infrastructure, regional digital disparities, low digital literacy among public officials, and resistance to bureaucratic change may constrain the full realization of ICT-driven efficiency improvements.

### **Service Efficiency on Service Quality**

The results indicate that Service Efficiency has a positive and significant effect on Service Quality, as reflected by a path coefficient of 0.469, a T-statistics value of 3.982, and a p-value of 0.000, confirming that H5 is supported. This finding suggests that efficient service processes—characterized by simplicity, speed, accuracy, and minimal bureaucracy—lead to improved service quality by enhancing customer satisfaction across key dimensions such as reliability, responsiveness, empathy, and assurance. Efficient processes enable faster and more responsive service delivery, which strongly influences customers' perceptions of service quality (Chandra et al., 2020). This result is consistent with the findings of Munarko (2022), who emphasized that streamlined work processes without excessive bureaucracy contribute to excellent service quality, as well as studies by Rahmawati & Tjenreng (2025) and Raymond et al (2015), which found that timely, accurate, and easily accessible services directly enhance positive customer perceptions. Similarly, Monoarfa (2012) confirmed that service efficiency positively affects service quality, as

efficiency in terms of speed, accuracy, and convenience represents a key dimension perceived by customers as an integral component of high-quality service.

### **Good Corporate Governance on Service Quality through Service Efficiency**

The results indicate a significant indirect effect of Good Corporate Governance on Service Quality through Service Efficiency, as evidenced by a T-statistics value of 2.874 and a p-value of 0.004, confirming that H6 is supported. This finding demonstrates that the implementation of Good Corporate Governance improves service quality not only directly but also indirectly by enhancing service efficiency through better decision-making, reduced misuse of authority, and more transparent and professional processes. This result is consistent with the study by Razak et al (2023), which found that Good Corporate Governance mechanisms—such as public ownership, boards of directors, and independent commissioners—influence the efficiency of State-Owned Enterprise management. Furthermore, the findings align with Ferlinda (2010), who showed that effective implementation of Good Corporate Governance at PT Telkom Banyuwangi led to improved service quality, thereby reinforcing the mediating role of service efficiency in the relationship between governance practices and service quality.

### **Information and Communication Technology on Service Quality through Service Efficiency**

The results indicate a significant indirect effect of Information and Communication Technology on Service Quality through Service Efficiency, as shown by a T-statistics value of 3.123 and a p-value of 0.002, confirming that H7 is supported. This finding suggests that although ICT does not exert a significant direct influence on service quality, it enhances service quality indirectly by improving service efficiency through faster processes, task automation, and easier access to information, which reduce costs and increase productivity. This result is consistent with the study by Zein et al (2025), which found that digitalization streamlines bureaucratic procedures, accelerates decision-making, and enhances accountability and transparency in public institutions, thereby improving service efficiency. In addition, Nur Mansyur et al (2025) reported that effective utilization of information technology positively influences public service quality and contributes to higher community satisfaction, further supporting the mediating role of service efficiency in the relationship between ICT and service quality.

## **CONCLUSIONS AND SUGGESTIONS**

### **Conclusion**

This study examines the effects of Good Corporate Governance (GCG) and Information and Communication Technology (ICT) on Service Quality, both directly and indirectly through Service Efficiency. The results demonstrate that Good Corporate Governance has a significant direct effect on Service Quality and Service Efficiency, highlighting the importance of transparent, accountable, and responsible governance practices in improving organizational performance. Information and Communication Technology, while not showing a significant direct effect on Service Quality, has a strong positive effect on Service Efficiency. Furthermore, Service Efficiency is proven to have a significant positive effect on Service Quality, confirming its critical role in shaping service outcomes. The mediation analysis reveals that Service Efficiency significantly mediates the relationship between both GCG and ICT with Service Quality. Overall, the findings indicate that improvements in service quality are achieved not only through governance and technological adoption but also through their ability to enhance service efficiency.

### **Managerial Implications**

The findings of this study provide several important managerial implications for organizations, particularly in public service institutions. First, managers should prioritize the consistent implementation of Good Corporate Governance (GCG) principles, as strong governance not only directly improves service quality but also enhances service efficiency, which in turn leads to better service outcomes. Clear accountability structures, transparent decision-making processes, and effective oversight mechanisms are essential to ensure efficient service delivery. Second, although Information and Communication Technology (ICT) does not directly influence service quality, its significant impact on service efficiency indicates that managers should focus on aligning ICT adoption with service process redesign. Investments in digital systems should be accompanied by workflow optimization, employee training, and change management initiatives to ensure that efficiency gains translate into improved service quality. Finally, improving Service Efficiency should be a strategic priority, as it serves as a key mechanism linking governance and technology to service quality. Managers are encouraged to streamline procedures, reduce unnecessary bureaucracy, and enhance responsiveness to meet stakeholder expectations more effectively.

### Limitations

Despite its contributions, this study has several limitations. First, the research focuses on a specific organizational and sectoral context, which may limit the generalizability of the findings to other institutions or industries with different governance structures and technological capabilities. Second, the study relies on self-reported data collected through questionnaires, which may be subject to response bias or common method variance. Third, the model includes a limited number of variables, focusing only on governance, technology, service efficiency, and service quality; other relevant factors such as organizational culture, leadership style, employee competence, and customer satisfaction were not examined. Future studies are therefore encouraged to incorporate additional variables, apply longitudinal designs, or use mixed-method approaches to provide a more comprehensive understanding of the mechanisms influencing service quality.

### Suggestions

Based on the findings, organizations—particularly public service institutions—are encouraged to strengthen the implementation of Good Corporate Governance principles, including transparency, accountability, responsibility, independence, and fairness, as these practices directly and indirectly contribute to improved service quality. In addition, organizations should focus on optimizing the use of Information and Communication Technology by integrating digital systems with service processes to ensure efficiency gains translate into tangible service quality improvements. Enhancing employee digital competencies, improving ICT infrastructure, and addressing organizational resistance to change are also essential to maximize the benefits of technology adoption. For future research, it is recommended to include additional mediating or moderating variables, such as organizational culture, employee competence, or customer satisfaction, and to expand the research scope to different sectors or regions to improve the generalizability of the findings.

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**THE ROLE OF GOOD CORPORATE GOVERNANCE AND INFORMATION AND COMMUNICATION TECHNOLOGY IN IMPROVING SERVICE QUALITY THROUGH SERVICE EFFICIENCY: EVIDENCE FROM PT PLN (PERSERO) UP3 BERAU**

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