



## The Impact of Digital Service Transformation and Quality of Engineering Services Through Application PLN Mobile on Customer Satisfaction at PT PLN (PERSERO) ULP Seberang UP3 Jambi City

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### Keywords

*Digital Service Transformation, Service Quality, Customer Satisfaction*

### Abstract

In Indonesia's rapidly digitizing economy, PT PLN (Persero), as the national electricity provider, faces escalating demands for efficient service delivery. The PLN Mobile application represents a critical tool for customer engagement, yet its impact on satisfaction amid frequent outages (19,653 cases in 2024) remains underexplored. This study investigates how digital service transformation and engineering service quality via PLN Mobile influence customer satisfaction at PT PLN's Jambi branch. A quantitative analysis of 100 sampled respondents (Slovin formula) from 19,653 complaint reports assessed two variables: digital transformation (X1) and service quality (X2), using regression analysis. Both variables significantly boost satisfaction (X1:  $\beta=0.471$ ,  $p=0.000$ ; X2:  $\beta=0.514$ ,  $p=0.000$ ). However, app crashes and inaccurate repair-time estimates emerged as critical pain points. The study underscores the need for AI-driven optimization (e.g., real-time outage tracking) and UX improvements to align with global utility standards. It also highlights the role of localized digital solutions in SOEs, contributing to literature on emerging markets.



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## Introduction

The current era of digitalization continues to develop, utilizing information technology is an obligation to improve the efficiency and effectiveness of several work sectors, including in the service sector. The existence of digital applications is a solution to improve business processes and improve the performance of a company (Choirinisa & Ikhwan, 2022).

The State Electricity Company (PLN) is a state-owned enterprise responsible for the provision, distribution, and service of electricity for the people in Indonesia. As the only company with authority in the electricity sector in Indonesia, PLN has a strategic role in supporting economic growth, community welfare, and infrastructure development throughout Indonesia. PT PLN (Persero) has a vision to become a leading electricity company in Southeast Asia, PLN is moving to become the number 1 choice of customers for Energy Solutions. PLN carries a Transformation agenda with the aspirations of Green, Lean, Innovative, and Customer Focused in

order to provide electricity for a Better Life. PLN can be contacted through the PLN Mobile application available on the PlayStore or AppStore (web.pln.co.id, 2024). PLN has faced various challenges and changes in managing electricity infrastructure. Some of these challenges include increasing demand for sustainable electricity, maintaining adequate infrastructure, and sustainability in energy resource management. In the midst of global energy market dynamics and rapidly developing technology trends, PLN is also required to continue to innovate and adapt to remain competitive and able to meet the community's needs for reliable, affordable, and environmentally friendly electricity (Sembiring, 2014). Understanding the importance of PLN's role in providing electrical energy for the progress of the nation, a deep understanding of various aspects related to this company is needed. Therefore, this chapter will outline several important aspects of PLN, including its history and development, organizational structure, strategic role, and challenges and opportunities faced in managing the electricity sector in Indonesia. The development of information and communication technology, especially in the form of mobile applications, has had a significant impact on various industrial sectors, including the electricity sector. PLN as a state-owned enterprise responsible for electricity supply, has utilized digital technology to improve the efficiency of customer service, such as through the PLN Mobile application which makes it easier for customers to access information and services. In addition, PLN continues to innovate in building infrastructure that supports digitalization, such as the development of smart grids to improve electricity distribution efficiency. This is in line with PLN's efforts to support the national digital transformation agenda and meet customer needs in the modern era.

The innovation introduced by PLN is the PLN Mobile application, which is designed to make it easier for customers to access information related to bills, power outages, and other services. This application is a manifestation of PLN's efforts to adopt service digitalization to increase customer satisfaction. The phenomenon of digitizing services in PLN, especially through the PLN Mobile application, reflects a significant transformation in the way companies interact with customers. By utilizing the sophistication of mobile technology, PLN seeks to provide a better and efficient service experience for customers, as well as optimize the use of company resources (Sembiring, 2014). The PLN Mobile application is part of the transformation that PLN is carrying out to improve service to customers. Since its launch with various new features and features at the end of 2020, PLN has continuously provided feature updates and various services to customers (Aristi, 2022). Frequent power outages not only disrupt daily activities, but also have a significant economic impact especially for business customers. Bills that are inaccurate or not in accordance with consumption can create customer distrust of transparency in PLN's billing process. Slow or unsatisfactory response to customer complaints also gives the impression that PLN is not sensitive to the needs of their customers. The number of power outages at PT PLN (Persero) ULP Seberang Kota has fluctuated from 2022 to 2024, with a significant upward trend in 2024. After slightly declining from 12,909 outages (2022) to 12,731 outages (2023), the number jumped sharply to 19,653 outages (2024), an increase of about 54% compared to the previous year. The month with the highest disruption in 2024 is June (1,879 cases), while the lowest disruption occurred in January (1,099 cases). Although there has been an improvement on an annual basis, the varied patterns of disruption indicate the need for further analysis of the causative factors, especially in months with significant changes.

The phenomenon that occurs in relation to digital customer service is the use of applications that can be accessed using each customer's smartphone. Services can be done anywhere, anytime and anyone as long as they are connected to an internet connection. Now every customer doesn't need to bother coming to the service office, simply through a smartphone you can check how much electricity consumption and how much bill will be paid. Complaints and complaints can also be made through this application. Customers can easily convey their service needs. The State Electricity Company (PLN) as the main provider of electricity services in Indonesia is committed to providing optimal technical services to customers to create high satisfaction. Quality technical service is not only important to ensure a smooth electricity supply, but also to maintain good relations with customers. Optimal technical services include various aspects, such as handling power outages, maintenance of distribution networks, electrical system repairs, and various other technical services. Quick response to disturbances, good repair quality, and effective communication between PLN and customers are key in creating optimal customer satisfaction.

This research was conducted with the aim of determining the influence of digital service transformation and the quality of engineering services through the PLN Mobile application on customer satisfaction at PT PLN (Persero) ULP Seberang Kota UP3 Jambi. This study distinguishes itself from prior research by specifically examining the combined impact of digital service transformation and engineering service quality via the PLN

Mobile application on customer satisfaction at PT PLN (Persero) ULP Seberang Kota UP3 Jambi, a regional utility provider in Indonesia. While existing literature (e.g., Carvalho, 2023; Ali & Gardi, 2021) broadly explores service quality and digitalization in utilities, this research provides localized insights into a state-owned enterprise (SOE) navigating unique infrastructural and customer behavior challenges in a developing market. Additionally, it addresses real-time technical service barriers (e.g., app crashes, delayed repair estimates) not extensively covered in prior studies (e.g., Chuenyindee, 2022; Uzir & Halbusi, 2021), offering actionable recommendations for improving digital tools in the energy sector. The integration of empirical data from 2024 outage reports (19,653 cases) and direct user feedback further enhances its practical relevance.

## Materials and Methods

The population in this study is all customer complaints of PT PLN (Persero) ULP Seberang Kota UP3 Jambi who use the PLN Mobile application in 2024 as many as 19,653 customer complaint reports based on data on the PLN customer complaint application, but from this total there is a possibility that customers report more than 1 time in 1 year, so this study takes an average of 1,637 complaints every month. The sample used in this study was 100 respondents using the Slovin formula.

## Results and Discussions

- 1) The digital service transformation variable (X1) has a beta value of 0.471 with a significant value of 0.000 which is smaller than 0.05. This shows that the digital service transformation variable has a positive and significant influence on customer satisfaction at PT PLN (Persero) ULP Seberang Kota UP3 Jambi. This proves that the first hypothesis on the variable of digital service transformation has a positive and significant effect is acceptable.
- 2) The service quality variable (X2) has a beta value of 0.514 with a significant value of 0.000 which is less than 0.05. This shows that the service quality variable has a positive and significant influence on customer satisfaction at PT PLN (Persero) ULP Seberang Kota UP3 Jambi. This proves that the second hypothesis on the variable of service quality has a positive and significant effect is acceptable.

## Discussion

### The Effect of Digital Service Transformation on Customer Satisfaction at PT PLN (Persero) ULP Seberang Kota UP3 Jambi

Research results (Härkönen, 2024); (Safari, 2024); (Tsai, 2024); (Ekechi, 2024); (Khan, 2024); (Pereira, 2024); (Motherland, 2024); (March, 2024); (Navanti, 2024); (Sapiri & Awaluddin, 2024); (Amarta, 2024); (Dangaiso, 2023); (Mijač, 2023); (Mamakou, 2023); (Ashiq, 2023); (Carvalho, 2023); (Masitoh, 2023); (Ghonim, 2022); (Mulyono, 2022) shows the results that digital services have a positive and significant effect on customer satisfaction.

Respondents' responses to the PLN Mobile application indicator never crashed showed the lowest value. This shows that the PLN Mobile application still often crashes when used by customers. Based on direct interviews, the author with several respondents who are customers of PT PLN (Persero) who use the PLN Mobile application said that crashes often occur when used. In addition, customers also said that when opened, applications often cannot be opened/exited from the application or the process of opening the application which takes a long time. Customers complain very much about the use of applications that are still not fast in their response to use, especially when needed or in emergency conditions.

The indicator with the PLN Mobile application providing efficiency in meeting customer needs shows the highest score. This shows that the existence of the PLN Mobile application can speed up the process of both customer needs and complaints. Call center services and the various types of services offered make customers do not need to come to the PT PLN (Persero) unit office but can be done directly through the PLN Mobile application.

### The Effect of Technical Service Quality through the PLN Mobile Application on Customer Satisfaction at PT PLN (Persero) ULP Seberang Kota UP3 Jambi

Research results (Carvalho, 2023); (Aeny, 2023); (Kim, 2023); (Connie, 2023); (Ifeoma et al., 2023); (Ajaleen, 2023); (Chien & Chi, 2023); (Abd-El-Salam & Shawky, 2023); (Owino, 2023); (Nova Nur., Zunaidah., Marlina W. 2022); (Chuenyindee, 2022); (Meida et al., 2022); (Ali & Gardi, 2021); (Uzir & Halbusi, 2021); (Dam

& Cuong, 2021); (Tran & Le, 2020); (Fida & Ahmed, 2020); (Haron et al., 2020); (Cameran, 2020); (Zameer & Tara, 2020); (Puspasari, 2020); (Purwanti, 2020); (Alzoubia et al., 2020) showed results that service quality has a positive and significant effect on consumer satisfaction.

The indicator of accurate information regarding the estimated repair time shows the lowest value. This shows that the estimated arrival of repair workers is still not in accordance with the set schedule.

The clear officer identity indicator (ID card, PLN logo) shows the highest score. This shows that the procedure set by PT PLN (Persero) for all its employees, both permanent and contract employees, must use an identity in the form of an ID card that is in accordance with the standards and used during working hours for all employees.

## Conclusion

The study concludes that both digital service transformation and the quality of engineering services via the PLN Mobile app significantly enhance customer satisfaction at PT PLN (Persero) ULP Seberang Kota UP3 Jambi. Building on these findings, future research could explore the integration of emerging technologies (AI, IoT, Big Data) to further optimize service delivery, compare PLN Mobile's performance with global utility apps, assess long-term impacts on loyalty, analyze UX drivers (e.g., ease of use, personalization), or examine sustainability features (e.g., carbon tracking) to align with evolving customer expectations in the energy sector.

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