The effectiveness of the new PLN mobile application in improving service quality, customer satisfaction, and electrifying lifestyle during the new normal period in Tanjung pandan city

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Abstract. PT. PLN (Persero) as one of the State-Owned Enterprises (BUMN) received a mandate from the Indonesian government to provide electricity services. PLN ensures that the availability of electricity supply throughout Indonesia is currently sufficient through a power plant development program of 35 Gigawatt. On the other hand, the condition of the Covid-19 Pandemic during the New Normal period in Indonesia significantly impacted people's behavior in Indonesia in all respects, especially in accessing public services. To provide solutions related to the high community needs in obtaining services in the electricity sector in the current new normal period, PT. PLN (Persero) has made innovations by providing alternative online service media such as the mobile-based PLN New Mobile Application and has been integrated with other PLN applications such as the Centralized Customer Service Application and the Integrated Complaints and Complaints Application as well as digital payment services. This study measures the effectiveness of the New PLN Mobile Application in improving service and satisfaction for customers in the New Normal era in Tanjung Pandan City. Thus, we use four variables often used in electronically assessing service quality, namely Efficiency, Fulfilment, Service Availability, and Privacy. The method used in this study is a quantitative method with a questionnaire approach. The sampling method used is purposive sampling with the criteria of respondents who have used the New PLN Mobile application. The number of samples used was 396 respondents. Based on the analysis of the results of the questionnaire test, observation, and other supporting data, it can conclude that New PLN Mobile Application has been significantly effective because it has fulfilled all the variables mentioned above.

Keywords: New PLN Mobile Application, efficiency, fulfillment, privacy, service availability

1. Introduction
The Covid-19 pandemic has spread all around the world until early October 2021, it was reported that there were 236,599,025 cases of COVID worldwide with a death rate of 4,831,486 people with the most cases in five countries, namely America, Brazil, India, The United Kingdom, and Russia [1]. The Covid-19 pandemic that has been going on since the beginning of 2020 has caused many lifestyle changes that have occurred among people around the world, especially in Indonesia. For example, changes in
increasing public awareness on aspects of a cleaner and more hygienic lifestyle. And another example is the change in parts of communication and shopping transactions, in which currently people use virtual media and online transactions more. The policies that the Government of Indonesia has taken to suppress the spread of the Covid-19 pandemic include social distancing, large-scale social restrictions (PSBB), the prohibition of Eid homecoming, and restrictions on community activities (PPKM). With these conditions, people spend more time working and studying at home. Seeing this condition PT. PLN (Persero) (PLN, English: State Electricity Company) is an Indonesian State-Owned Enterprise which is engaged in the development of electricity starting from the fields of generation, transmission, distribution and service of electric power in Indonesia has taken the initiative to provide service solutions and new experiences for customers through the New PLN Mobile application super apps, which were launched on December 20, 2020. The New PLN Mobile application is equipped with nine new features that are ready to serve Indonesian electricity customers through the hand on the customer's gadget without must go to the PLN office or calling the PLN contact center. Learn from the Old PLN Mobile application which is only installed by 500,000 customers and gets a customer satisfaction rating of 2.6 on the google play store. From the results of the analysis of the achievement of the Old PLN Mobile application, several things that cause this, such as customer data not being managed properly, customers cannot make transactions, complicated complaints, services are not connected and not integrated (very limited features). Learning from these achievements, at this time PLN has improved and corrected the New PLN Mobile Application be an application with a fresh look and user friendly, focused to manage and maintain customer data, payment transactions are very easy, complaints are faster and easier, integrated services, new features continue to develop. So, from the results of these improvements, currently, 10 million PLN customers have downloaded the New PLN Mobile Application, in other words, there are 12% (twelve percent) of customers and downloaders from a total of 80 million PLN customers in Indonesia and it has improved a customer satisfaction rating become 4.5 stars in Google Play Store.

Customer satisfaction is the result of the accumulation of consumers or customers in using products or services [2]. Customers will feel satisfied if they get value or benefits from a product or service. Customer satisfaction will increase consumer loyalty of a company and consumers are not easy to bid from the competition [3]. Customer satisfaction will increase consumer loyalty, reduce price elasticity, protect market share from competitors, reduce costs of attracting new customers, and improve customer reputation in the market. Furthermore, according to [4], It can measure the level of customer satisfaction when customers make online purchases on the website, make the right choice by making purchases on the website, and feel satisfied every time they purchase on the website. According to Chase, Jacobs, and Aquilano, e-service quality is the ability of a site to provide facilities for shopping, purchasing, and distribution activities effectively and efficiently via the internet [5]. And in assessing the quality of electronic services, Zeithaml, Malhotra, and Parasuraman argue that four dimensions that are the core of electronic services, including efficiency, fulfillment, system availability, and privacy [6].

Through the New PLN Mobile application, customers in Tanjung pandan City and its surroundings currently receive many benefits such as token purchases and bill payments, new installation and power change services, disturbance complaints and customer complaints, independent meter recording, stimulus info, and other related information. Programs organized by PT. PLN (Persero) independently through the customer's cellphone. This study was conducted to know the effectiveness of the New PLN Mobile application in improving the service and customer satisfaction of PLN, which amounts to around 69,911 customers in Tanjung pandan City, also PT. PLN (Persero) invites the public to apply a new electrifying lifestyle by using all-electric equipment that is emission-free and environmentally friendly, such as electric motors, electric stoves, air fryers, water heaters, scooters, and electric cars. This program is activated by the community to increase public awareness to use environmentally friendly energy, which ultimately aims to save the earth together. The government program to reduce carbon emissions by using electric vehicles and accommodated by PLN Mobile Application with the declaration of SPKLU in Indonesia according to government regulations This goal is in line with the Minister of
Energy and Mineral Resources (ESDM) Number 13 of 2020 concerning Provision of Electric Charging Infrastructure for Battery-Based Motor Vehicles. With the PLN Mobile application users can find out access to the nearest SPKLU location and can purchase kw/h of electricity. This paper aims to analyze the implementation of the New PLN Mobile Application to improve service quality, customer satisfaction, and electrifying lifestyle in Tanjung pandan City. In addition, the long-term aims of this study plan to contribute to green technology or the sustainability of environmentally friendly programs.

2. Methodology
This research was conducted in Tanjung pandan City from June to August 2021. The method used in this study used a quantitative method with a questionnaire approach. Sampling was carried out using a purposive sampling technique [7], which included Tanjung pandan City by targeting the 450 VA and 900 VA power customers. Sample informants were taken as many as 396 respondents from a total population of 36,892 people according to Slovin’s formula is calculated as follows:

\[ n = \frac{N}{1 + (N \times e^2)} \]

Where:
- \( n \) = sample size
- \( N \) = Total population
- \( e \) = error tolerance

Slovin’s formula allows a researcher to sample the population with the desired degree of accuracy [8]. Before calculating the sample using this formula, it is necessary to determine the confidence level stage. The confidence level is the level of confidence in the results of the truth of the research, or it can also be defined as the level of significance for the tolerance of errors that may occur. This study used a confidence level of 95%, this means that there are 95 chances in 100 that the sample represents the true condition of the population within a specified precision range against 5 chances in 100 that it does not. The criteria for the sample of informants taken in this study are PLN Tanjung pandan City customers who have installed and used the New PLN Mobile Application. The search is carried out using a google form which is sent directly to each predetermined respondent.

Primary data is obtained through the results of answers through questions that have been loaded into the google form based on the variables efficiency, fulfillment, system availability, and privacy. The secondary data obtained in this study comes from the amount of data on the realization of the customer's New Install and Change Power services as well as customer complaints through the New PLN Mobile application. This study will analyze and elaborate the data obtained and conclude the conclusions results. Descriptive presentation of data obtained through primary and secondary data. The qualitative research approach begins with assumptions and theoretical interpretive frameworks that shape or influence research problems related to the meanings imposed by individuals or groups on a social or human problem [9].

3. Results and Discussion
Tanjung pandan city, located on Belitung Island and famous for its beautiful beach tourism, now has 103,062 people. Meanwhile, the number of PLN customers at the Tanjung pandan Service Unit Office with tariff class R1 (Household) with a power of 450 VA is 4,637 customers, and a power of 900 VA is 32,355 customers. In terms of increasing the number of users of the New PLN Mobile Application, PLN makes various efforts to attract customers' interest in downloading the application, such as conducting outreach to the public through multiple media. Social media is popular among the people, such as Youtube, Instagram, TikTok, and other social media. Even PLN also attracts influencers and artists already known to the public to socialize the New PLN Mobile application. In addition, direct socialization by meeting with leaders and community leaders has also been carried out by PLN. Disamping itu PLN juga meluncurkan program electrifying lifestyle by using all-electric equipment dan electrifying agriculture untuk meningkatkan produktivitas bidang pertanian berbasis teknologi dengan pemanfaatan listrik yang ramah lingkungan. Sehingga gaya hidup petani di sektor pertanian akan lebih
maju dan modern serta mendorong petani go digital untuk menjual produknya di marketplace. Synergistic collaboration with various parties ranging from education, the private sector, and government agencies is also expected to increase the number of users of the New PLN Mobile Application.

After going through the evaluation of the implementation of the Socialization and Marketing of the New PLN Mobile Application, a positive impact can be seen with the increase in the number of downloaders of the New PLN Mobile Application with the currently registered PLN Customer ID amounting to 10.5 million subscribers. Through New PLN Mobile, PLN is now on a digital-based company line, including business processes, electricity services, and marketing. Along with PLN's future sources of growth based on innovation, New PLN Mobile must continue to be developed and optimized to continue to be developed, both new and related to new products and processes [10].

From the results of the increase in the number of downloaders and users of the New PLN Mobile Application, it also causes services through the New PLN Mobile application channel to increase, for example at the PLN ULP Tanjung pandan Office for the number of realizations of New Install / Change Power services and customer complaints at ULP Tanjung pandan through the New PLN Mobile Application period June – August 2021 can be seen in Figure 1.

**Figure 1.** Realization of Service Requests for New Installations / Change of Power and Complaints of Customer Disturbances.

Figure 1 shows that the trend of realization of service requests for new installations and change of power and complaints of customer disturbances through the New PLN Mobile application from June 2021 to August 2021 experienced a significant increase. Based on the figure, the percentage increase in the Number of Customer Complaints through the New PLN Mobile Application is 48% and Power Addition and Power Change Services is 328% for the period June – August 2021. Based on these observations, one indicator that illustrates that there is increased sustainable use of the New PLN Mobile Application in that period due to several benefits felt by PLN customers, namely in terms of ease of access through the new PLN mobile application that has been installed on each of the customer's gadgets without the need to visit the PLN office or contact the PLN Call Center first, then services submitted by customers through the new PLN Mobile application online received a good response and were immediately followed up by PLN Officer. Furthermore, efforts to support the government in implementing PPKM limit community activities and mobility. In addition, 72% of customers in Tanjung pandan are aware of
the SPKLU menu in the PLN Mobile application and they agree to support an electrifying lifestyle program that is environmentally friendly and can reduce environmental pollution. At this time, there are 187 SPKLU points spread across 155 locations in Java, Sumatera, and Sulawesi, including at PLN offices and several busy center locations such as shopping centers. In addition, there are 153 points of General Electric Vehicle Battery Exchange Station (SPBKLU) spread over 86 locations.

Table 1. Validation tests for efficiency, fulfilment, system availability and privacy, Of New PLN Mobile Application.

| No | Tested question                                                                 | Number of respondents | R calculated | R table | Result |
|----|----------------------------------------------------------------------------------|-----------------------|--------------|---------|--------|
| 1  | The New PLN Mobile application makes it easy for me to get the PB and PD Services / Electric Trouble Complaints / Purchase tokens that I need | 396                   | 0.255        | 0.098   | Valid  |
| 2  | The New PLN Mobile application does not require a large memory when used         | 396                   | 0.284        | 0.098   | Valid  |
| 3  | The process of registering and logging in to the New PLN Mobile Application is easy and fast | 396                   | 0.647        | 0.098   | Valid  |
| 4  | The display of the New PLN Mobile Application is user-friendly and easy to use   | 396                   | 0.488        | 0.098   | Valid  |
| 5  | I am satisfied with the addition of features to the New PLN Mobile Application at this time compared to the previous version | 396                   | 0.421        | 0.098   | Valid  |
| 6  | All-New PLN Mobile Application Features can function properly when I use it     | 396                   | 0.515        | 0.098   | Valid  |
| 7  | Service response through the New PLN Mobile Application is good and fast         | 396                   | 0.484        | 0.098   | Valid  |
| 8  | I feel that the socialization of the New PLN Mobile Application is appropriate and effective to attract PLN customers' interest in using the New PLN Mobile application | 396                   | 0.578        | 0.098   | Valid  |
| 9  | The New PLN Mobile application makes it easier for me to get services online     | 396                   | 0.288        | 0.098   | Valid  |
| 10 | The New PLN Mobile application provides all the services I need quickly         | 396                   | 0.188        | 0.098   | Valid  |
| 11 | I feel that PLN Services through the New PLN Mobile Application are very effective during the current PPKM implementation | 396                   | 0.395        | 0.098   | Valid  |
| 12 | I feel that my privacy is protected while accessing the New PLN Mobile application | 396                   | 0.679        | 0.098   | Valid  |
| 13 | I feel safe doing transactions and data entry with the New PLN Mobile Application | 396                   | 0.298        | 0.098   | Valid  |

If seen from table 1 above, shows the Pearson correlation value (r count) for each question is greater than the value of the r table. This means that all indicators/question items that measure all variables have a very strong and valid correlation.
3.1. Reliability Test

The following table presents reliability test results as follows:

**Table 2. Test of Reliability efficiency, fulfilment, system availability, and privacy of New PLN Mobile Application.**

| No | Tested Questions | Cronbach’s alpha | R Table | Result |
|----|------------------|------------------|---------|--------|
| 1  | Question 1       | 0.600            | 0.098   | Reliable |
| 2  | Question 2       | 0.627            | 0.098   | Reliable |
| 3  | Question 3       | 0.515            | 0.098   | Reliable |
| 4  | Question 4       | 0.624            | 0.098   | Reliable |
| 5  | Question 5       | 0.632            | 0.098   | Reliable |
| 6  | Question 6       | 0.570            | 0.098   | Reliable |
| 7  | Question 7       | 0.594            | 0.098   | Reliable |
| 8  | Question 8       | 0.556            | 0.098   | Reliable |
| 9  | Question 9       | 0.565            | 0.098   | Reliable |
| 10 | Question 10      | 0.510            | 0.098   | Reliable |
| 11 | Question 11      | 0.599            | 0.098   | Reliable |
| 12 | Question 12      | 0.584            | 0.098   | Reliable |
| 13 | Question 13      | 0.544            | 0.098   | Reliable |

Based on Table 2 above, shows that all statements of the variables efficiency, fulfillment, Service Availability, and Privacy have a value of Cronbach Alpha (α) > r table. So, each question item in this study can be stated to have a consistent reliability value and is feasible to be used in this study [11].

3.2. Efficiency

Based on the results of a survey of 396 respondents which shows that the average value for all efficiency indicators is 3.6 from a Likert scale of 4 as can be seen in Figure 2. It indicates that the variable efficiency indicator for the New PLN Mobile application is in the effective and efficient category because customers can feel the ease and speed of the registration and log-in process, as well as convenience in using all services, features available in the New PLN Mobile application.
Figure 2. The Efficiency of New PLN Mobile Application for Customers in Tanjung pandan City.

3.3. Fulfillment

For the variable fulfillment indicator, the average value is 3.65 from a Likert scale of 4 as can be seen in Figure 3. It indicates that the fulfillment variable has met what customers need and expect from the updated version of the New PLN Mobile Application compared to the previous version with a more contemporary appearance and ease of use of the features provided are in line with those stated by [12].

Figure 3. The fulfilment of New PLN Mobile Application for Customers in Tanjung pandan City.

3.4. System Availability

For the System Availability variable indicator, the average value is 3.71 from a Likert scale of 4. It shows that the service availability variable has met customer needs in the application aspect that accommodates all the needs and desires of users of the New PLN Mobile Application and the services provided can be accessed anytime and anywhere.
3.5. Privacy

For the Privacy variable indicator, the average value is 3.7 from a Likert scale of 4. It shows that the privacy variable has fulfilled the customer’s sense of security for their privacy when processing transactions and data entry in the New PLN Mobile application. This result is in line with opinion [13].

4. Conclusion

From this study, the following conclusions were obtained:

a). The survey using a Likert scale of 4 gives results with the following average values: the level of variable efficiency perceived by customers is 3.6, fulfillment is 3.65 and if based on percentage values, namely, service availability is 3.71, and privacy is 3.7. The results of these calculations indicate that the service quality of the New PLN Mobile Application for users in the Tanjung pandan City area can meet user satisfaction and what is expected by most users. This is also directly proportional to the data on the realization of the use of the application during the pandemic which increased significantly for the realization of new pairs and changes in power as well as complaints of customer disturbances in the period June - August 2021. On the other hand, the electrifying lifestyle program has driven an increase in demand from the electric vehicle sector, which can take advantage of PLN mobile application to access nearest SPKLU locations and electrifying agriculture to increase productivity in agriculture and to overcome the condition of oversupply of electricity which averages around 25%.

b). The effectiveness of the New PLN Mobile Application in improving PLN service quality, customer’s satisfaction, and electrifying lifestyle in Tanjung pandan City during the implementation of Community Mobility Restrictions can be said to have been very effective based on the results of survey questionnaire tests, observations, and other supporting data.

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